ANALYSIS OF MORPHO-MOLECULAR DIVERSITY, COMBINING ABILITY AND STABILITY IN MAIZE (*Zea mays* L.)

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DEPARTMENT OF GENETICS AND PLANT BREEDING

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Certificate

This is to certify that the thesis entitled **"ANALYSIS OF MORPHO-MOLECULAR DIVERSITY, COMBINING ABILITY AND STABILITY IN MAIZE (*Zea mays* L.)"** submitted in partial fulfillment of the requirements for the degree of **DOCTOR OF PHILOSOPHY** in **GENETICS AND PLANT BREEDING** to the University of Agricultural Sciences, GKVK, Bangalore is a record of research work done by **Mr. VIVEK, B. C.,** ID No. **PAL 0059,** during the period of his study in this University under my guidance and supervision and the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar titles.

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Abstract

ANALYSIS OF MORPHO-MOLECULAR DIVERSITY, COMBINING ABILITY AND STABILITY IN MAIZE (*Zea mays* L.)

VIVEK, B. C.

ABSTRACT

An investigation was carried out at ZARS, V.C. Farm, Mandya; ARS, Bavikere and Farmer's field, Yatnahalli village, Ranibennur Tq. to analyze the morphological and molecular (SSR) diversity, combining ability of inbreds and stability of hybrids for 16 morphological characters during kharif 2012. Pooled analysis of variance revealed significant differences among 100 inbreds and 225 hybrids for all the 16 characters. One hundred inbreds were grouped into 10 clusters and cluster I (48) accommodated maximum number of inbreds. The character days to brown husk contributed highest for total divergence and the inbred MAI-706 recorded highest mean values for more number of characters. At the molecular level, inbreds were grouped into seven clusters and cluster III was the largest with 35 entries. A total of 213 SSR alleles were detected and the marker *umc2078* sampled highest number of alleles and maximum PIC was observed for *umc1542*. There was no agreement between morphological and molecular diversity. Predominance of additive genetic variance was noticed for characters grain yield, test weight, grain rows per cob, cob length and cob girth. The inbreds LM-13,V-1712-1, V-1154 and CIMMYT-5 were good general combiners and the crosses MAI-117 × LM 13, Z-62-67 × MAI 105 and Z-62-55 × LM 13 were good specific combiners.The crossesCIMMYT-5 × LM 13, LTP-1 × SKV 50 and CIMMYT-5 × SKV 50 manifested significant standard heterosis for highest number of characters.The test hybrids V-2232 × MAI 105, V-1649 × MAI 105, CIMMYT-5 × LM 13, V-1712-1 × MAI 105, Z-63-30 × LM 13, V-632-112 × LM 13, V-1168 × LM 13, V-291-2 × LM 13, V-632-67 × LM 13, CML-172 × MAI 105, V-1154 × LM 13, V-241-2 × LM 13, CIMMYT-47 × LM 13, Z-51-1 × LM 13, HKI-193-1 × LM 13, V-2232 × LM 13 and V-1649 × LM 13 were stable with high grain yield and could be further evaluated for confirmation of their superiority.

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Major Advisor

ಮೆಕ್ಕೆಜೋಳದ ರೂಪ–ಆಣ್ವಿಕ ವೈವಿಧ್ಯತೆ, ಸಂಯೋಜನಾ ಸಾಮರ್ಥ್ಯ ಮತ್ತು ಸ್ಥಿರತೆಯ ವಿಶ್ಲೇಷಣೆ

ವಿವೇಕ್, ಬಿ. ಸಿ.

ಪ್ರಬಂಧದ ಸಾರಾಂಶ

ಪ್ರಸ್ತುತ ಅಧ್ಯಯನವನ್ನು ಮಂಡ್ಯದ ವಲಯ ಕೃಷಿ ಸಂಶೋಧನಾ ಕೇಂದ್ರ, ಬಾವಿಕೆರೆಯ ಕೃಷಿ ಸಂಶೋಧನಾ ಕೇಂದ್ರ ಹಾಗೂ ಯತ್ತಿನಹಳ್ಳಿಯ (ರಾಣೆಬೆನ್ನೂರು ತಾ.) ರೈತರ ಜಮೀನಿನಲ್ಲಿ, ೨೦೧೨ರ ಮುಂಗಾರಿನಲ್ಲಿ ಕೈಗೊಳ್ಳಲಾಯಿತು. ರೂಪ ಮತ್ತು ಆಣ್ವಿಕ ವೈವಿಧ್ಯತೆಯನ್ನು ೧೦೦ ಒಳಸಂಕರಿತಗಳಲ್ಲಿ, ಸಂಯೋಜನಾ ಸಾಮರ್ಥ್ಯವನ್ನು ೫೮ ಒಳಸಂಕರಿತಗಳಲ್ಲಿ ಹಾಗೂ ಸ್ಥಿರತೆಯನ್ನು ೨೨೫ ಸಂಕರಣಗಳಲ್ಲಿ ಹದಿನಾರು ಸ್ವರೂಪ ಗುಣಗಳಿಗೆ ಅಭ್ಯಸಿಸಲಾಯಿತು. ಎಲ್ಲಾ ಹದಿನಾರು ಗುಣಗಳಿಗೂ ಒಳಸಂಕರಿತ ಮತ್ತು ಸಂಕರಣ ಸಾಲುಗಳಲ್ಲಿ ವಿಶ್ಲೇಷಣಾ ಭಿನ್ನಾಭಿಪ್ರಾಯವು ಗಮನಾರ್ಹವಾಗಿರುತ್ತದೆ. ನೂರು ಒಳಸಂಕರಿತ ಸಾಲುಗಳನ್ನು ೧೦ ಸಮೂಹಗಳಾಗಿ ವಿಂಗಡಿಸಲಾಗಿದ್ದು, ಅವುಗಳಲ್ಲಿ ಒಂದನೇ ಸಮೂಹವು ಅತಿ ಹೆಚ್ಚು (೪೮) ಒಳಸಂಕರಿತಗಳನ್ನೊಳಗೊಂಡಿರುತ್ತದೆ. ಕಂದು ಸಿಪ್ಪೆಯಾಗಲು ಬೇಕಾಗುವ ದಿನಗಳು ಅತ್ಯುನ್ನತ ಕೊಡುಗೆಯನ್ನು ಒಟ್ಟಾರೆ ವೈವಿಧ್ಯತೆಗೆ ನೀಡಿದ್ದು, ಎಮ್‌ಎಐ–೭೦೬ ಒಳಸಂಕರಿತವು ಅತೀ ಹೆಚ್ಚಿನ ಗುಣಗಳಿಗೆ ಹೆಚ್ಚಿನ ಸರಾಸರಿ ಮೌಲ್ಯವನ್ನು ದಾಖಲಿಸಿದೆ. ಆಣ್ವಿಕ ವಿಶ್ಲೇಷಣೆಯಲ್ಲಿ ಒಳಸಂಕರಿತ ಸಾಲುಗಳನ್ನು ಏಳು ಸಮೂಹಗಳಾಗಿ ವಿಂಗಡಿಸಲಾಗಿದ್ದು, ಅವುಗಳಲ್ಲಿ ಮೂರನೇ ಸಮೂಹವು (೩೫) ಅತೀ ಹೆಚ್ಚಿನ ಸಾಲುಗಳನ್ನು ಒಳಗೊಂಡಿದೆ. ಆಣ್ವಿಕ ವಿಶ್ಲೇಷಣೆಯಲ್ಲಿ ಒಟ್ಟಾರೆ ೨೧೩ ಎಸ್.ಎಸ್.ಆರ್. ಅಲೀಲ್‌ಗಳನ್ನು ಗುರುತಿಸಿದ್ದು, *ಯುಎಮ್‌ಸಿ ೨೦೭೮* ಗುರುತುಕಾರಕವು ಅತೀ ಹೆಚ್ಚಿನ ಅಲೀಲ್‌ಗಳನ್ನು ಹೊಂದಿರುತ್ತದೆ. ಅಲ್ಲದೇ ಅತೀ ಹೆಚ್ಚಿನ ಭಿನ್ನತೆಯನ್ನು *ಯುಎಮ್‌ಸಿ ೧೫೪೨* ಗುರುತುಕಾರಕದಲ್ಲಿ ಗಮನಿಸಲಾಗಿದೆ. ರೂಪ ಹಾಗೂ ಆಣ್ವಿಕ ವೈವಿಧ್ಯತೆಯ ನಡುವೆ ಪರಸ್ಪರ ಸಾಮ್ಯತೆ ಕಂಡುಬಂದಿರುವುದಿಲ್ಲ. ಪ್ರಬಲ ಸರ್ವೇಸಾಮಾನ್ಯ ಸಂಯೋಜನಾ ಸಾಮರ್ಥ್ಯವನ್ನು ಧಾನ್ಯದ ಇಳುವರಿ, ನೂರು ಕಾಳಿನ ತೂಕ, ಪ್ರತಿ ತೆನೆಯ ಕಾಳಿನ ಸಾಲುಗಳು, ತೆನೆಯ ಉದ್ದ ಮತ್ತು ದಪ್ಪಗಳಲ್ಲಿ ಗಮನಿಸಲಾಗಿದ್ದು, ಹೆಚ್ಚಿನ ನಿಶ್ಚಿತ ಸಂಯೋಜನಾ ಸಾಮರ್ಥ್ಯವು ಉಳಿದ ಗುಣಗಳಲ್ಲಿ ಕಂಡುಬಂದಿರುತ್ತದೆ. ಒಳಸಂಕರಿತ ಸಾಲುಗಳಾದ ಎಲ್‌ಎಮ್-೧೩, ವಿ-೧೭೧೨–೧, ವಿ-೧೧೫೪ ಮತ್ತು ಸಿಮಿಟ್-೫ ಗಳನ್ನು ಉತ್ತಮ ಸರ್ವೇಸಾಮಾನ್ಯ ಸಾಲುಗಳೆಂದು, ಅಡ್ಡಹಾಯುವಿಕೆಗಳಾದ ಎಮ್‌ಎಐ-೧೧೭ x ಎಲ್‌ಎಮ್ - ೧೩, ಜಡ್-೬೨–೬೭ x ಎಮ್‌ಎಐ-೧೦೫ ಮತ್ತು ಜಡ್–೬೨–೫೫ x ಎಲ್‌ಎಮ್–೧೩ ಗಳನ್ನು ಉತ್ತಮ ನಿಶ್ಚಿತ ಸಂಯೋಜನಾ ಸಾಮರ್ಥ್ಯ ಹೊಂದಿರುವ ಸಂಕರಣಗಳೆಂದು ಗುರುತಿಸಲಾಗಿದೆ. ಸಂಕರಣಗಳಾದ ಸಿಮಿಟ್-೫ × ಎಲ್‌ಎಮ್-೧೩, ಎಲ್‌ಟಿಪಿ-೧ × ಎಸ್‌ಕೆವಿ-೫೦ ಮತ್ತು ಸಿಮಿಟ್-೫ × ಎಸ್‌ಕೆವಿ-೫೦ ಗಳು ಉತ್ತಮ ಸಂಕರಣ ಓಜವನ್ನು ಹೆಚ್ಚಿನ ಗುಣಗಳಿಗೆ ತೋರಿದ್ದು, ಪರೀಕ್ಷಾ ಸಂಕರಣಗಳಾದ ವಿ-೨೨೩೨ × ಎಮ್‌ಎಐ-೧೦೫, ವಿ-೧೬೪೯ × ಎಮ್‌ಎಐ-೧೦೫, ಸಿಮಿಟ್-೫ × ಎಲ್‌ಎಮ್-೧೩, ವಿ-೧೭೧೨–೧ × ಎಮ್‌ಎಐ-೧೦೫, ಜಡ್-೬೩–೩೦ × ಎಲ್‌ಎಮ್-೧೩, ವಿ-೬೩೨–೧೧೨ × ಎಲ್‌ಎಮ್-೧೩, ವಿ-೧೧೬೮ × ಎಲ್‌ಎಮ್–೧೩, ವಿ-೨೯೧–೨ × ಎಲ್‌ಎಮ್-೧೩, ವಿ-೬೩೨–೬೭ × ಎಲ್‌ಎಮ್-೧೩, ಸಿಎಮ್‌ಎಲ್-೧೭೨ × ಎಮ್‌ಎಐ-೧೦೫, ವಿ-೧೧೫೪ × ಎಲ್‌ಎಮ್-೧೩, ವಿ-೨೪೧–೨ × ಎಲ್‌ಎಮ್-೧೩, ಸಿಮಿಟ್-೪೭ × ಎಲ್‌ಎಮ್–೧೩, ಜಡ್-೫೧–೧ × ಎಲ್‌ಎಮ್–೧೩, ಹೆಚ್‌ಕೆಐ-೧೯೩–೧ × ಎಲ್‌ಎಮ್-೧೩, ವಿ-೨೨೩೨ × ಎಲ್‌ಎಮ್-೧೩ ಮತ್ತು ವಿ-೧೬೪೯ × ಎಲ್‌ಎಮ್–೧೩ ಗಳನ್ನು ಇಳುವರಿಗೆ ಹಾಗೂ ಸ್ಥಿರತೆಗೆ ಉತ್ತಮ ಎಂದು ಗುರುತಿಸಲಾಗಿದೆ.

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Introduction

I. INTRODUCTION

Maize (*Zea mays* L., 2n=2x=20), the 'king of cereals' is one of the nature's most amazing energy storing devices of the tribe Maydeae and family Poaceae. From a seed which weighs little more than one hundredth of an ounce, a plant 7 to 10 feet tall develops in about nine weeks. In the following eight weeks, this plant produces 600 to 1000 seeds similar to the one from which it started. How does the maize plant get this job done? First, by producing a large efficient energy factory, the plant with its roots, leaves, stalks and flowering parts and then by storing huge amounts of energy in a concentrated product, the maize grain (Aldrich and Earl, 1966).

The very absence of any old world historical references to maize before 1492 is evidence of its American origin. The earliest historical reference to maize tells us that it was on November 5th 1492, when two Spaniards, whom Christopher Columbus had delegated to explore the interiors of Cuba, returned to him with a report of "a sort of grain they called *maiz* which was well tasted, baked, dried and made into flour".

Later explorers to America found maize being grown by the Indians in all parts of America where agriculture was practiced. We now know that it was the basic food plant of all the advanced cultures and civilizations of the new world. The seminomadic hunting and fishing Indians in both North and South America augmented their diet of fish and game with maize from cultivated fields. The abundant harvest that this cereal yielded gave these ancient people a measure of leisure which the constant quest for food in a hunting and gathering culture could not provide leisure for weaving beautiful fabrics, for moulding exquisite pottery, for building magnificent highways and towering pyramids; leisure to study the sun, moon, star, seasons, to invent a system of

arithmetic and to perfect a calendar more accurate than the old world calendar. These were maize-fed civilizations and maize was indeed "the grain that built a hemisphere". Columbus carried the grain '*maiz*' to Spain when he returned. Within one generation it had spread through Southern Europe and within two generations it had spread all around the world. Only two other new world products, tobacco and syphilis disease, spread with equal rapidity (Mangelsdorf, 1974).

To thrive under such a wide variety of environmental conditions, a species usually must possess a great diversity of forms. This characteristic the maize plant exhibits to a degree probably not found in any other crop plant. Maize varieties differ from each other in many characteristics and by wide extremes. Commercially speaking there are five main types – dent, flint, flour, sweet and pop, which are distinguished by differences in the nature of storage material in the grain. There are early maturing varieties which mature in sixty to seventy days and very late varieties that require ten to eleven months. The leaves varies from eight to forty-eight, the height of stalk from less than two feet to more than twenty, the number of stalks produced by a single seed range from one to fifteen, the size of ear varies from the tiny ears of some popcorn varieties which are smaller than a man's thumb to gigantic maize which produces ears up to two feet in length.

Today, maize or corn, as it is known in many parts of the world, is grown in every suitable agricultural region of the globe. A crop of maize is maturing somewhere in the world every month of the year. It grows from north latitude 58^0 in Canada and Russia to south latitude 40^0 in the southern hemisphere. Fields of maize are growing below sea level in the Caspian plane and at altitudes of more than 12000 feet in the Peruvian Andes. Maize is grown in regions with less than 10 inches of annual rainfall in semiarid planes of Russia and in regions of more than 400

inches of rainfall on pacific coast of Colombia. It thrives almost equally well in the short summers of Canada and perennial summers of tropical equatorial regions of Ecuador and Columbia (Mangelsdorf, 1974).

Maize is grown in about 166 countries occupying 165 mha area with production of more than 800 mt and productivity of 5.1 t ha^{-1}. It is used worldwide for about 3500 products of different uses as feed (61%), food (17%) and also serves as a source of basic raw material of number of industries (22%) *viz.*, starch, ethanol, oil, alcoholic beverages, food sweeteners, pharmacy, cosmetics *etc.* (FAOSTAT, 2011) No other cereal can be used in such many ways as maize and which quite literally stand between mankind and starvation.

In India, maize recorded higher growth rate among food crops contributing 5% area, 2.4% production to world maize and Rs. 155 billion to Indian agriculture GDP. As per the latest reports (2011-12) maize area, production and productivity is 8.71 mha, 21.57 mt and 2.47 t ha^{-1}, respectively. The maize production has increased >13 times from a mere 1.73 mt (1950-51) to 21.57 mt. The demand for maize will touch 42 mt by 2025 as per the trade predictions (Ministry of Agriculture, Govt. of India). Maize is accounting over 9% of the total cereals and occupied third place after rice and wheat. Despite India ranks 4th in the world for both area and production of maize, its productivity is far lower than world average. With increased demand for maize as food, feed and industrial applications, it could become the important cereal in terms of area and production in the next few decades. It is predicted that by 2025, the total global maize demand will exceed the demand for wheat and rice. It is the crop of future as mentioned by the father of the Green Revolution, renowned Nobel laureate Dr. Norman E. Borlaug.

Maize is grown in almost all 28 states of the country, but 60% of its area is concentrated in 6 major states i.e., Andhra Pradesh, Uttar

Pradesh, Karnataka, Rajasthan, Bihar and Madhya Pradesh. Maize is grown in wide range of production environments, ranging from the temperate northern hilly zones in Himachal Pradesh to the westren semi-arid desert margins in Rajasthan to the southern humid tropical zones in Karnataka.

Karnataka is one of the major maize producing states in the country. During 2011-12, a total of 1.33 mh of maize was planted with a realization of 4.44 mt production and 3.45 t ha^{-1} productivity and it was possible through the adoption of almost cent per cent modern production technologies. The average productivity of state is much higher than the national productivity, but still there exists a greater scope to increase maize productivity to a global level.

Genetic architecture of a population is the result of prolonged natural selection. The populations which exist in diverse environments might have been strongly genetically diversified. So, it is necessary to understand the extent of genetic divergence existing between the diversified forms. A cross involving genetically diverse parents is likely to produce highly heterozygous as well as heterotic offsprings with high variability in the segregating generations and hence, genetic divergence among the parents is important. Genetic divergence, as one of the criterion for selection of parents, is considered in plant breeding as early as 1962 (Murthy and Pavate, 1962). Moll *et al.* (1965) and Arunachalam *et al.* (1984) have also stated that, it is necessary to cross parents with maximum divergence for exploiting heterosis as a means of increasing production.

The availability of statistical tools to quantitatively measure the genetic divergence between two or more populations and the relative contribution of individual characters to the total divergence have permitted to trace the evolutionary patterns in some crops and in

choosing the parents for hybridization in other crops (Murthy and Arunachalam, 1966). Among the several statistical methods developed for measuring the divergence between the populations, multivariate D^2 analysis developed by Mahalanobis in 1936 has been found to be a potent tool, which is found effective in quantifying the degree of divergence at genetic level and also provides a quantitative measure of the association between geographic and genetic diversity based on generalized distance. It is well known that the estimates of genetic divergence are largely influenced by environments and hence, if the divergence analysis is conducted across a range of environments and parents are selected on the basis of consistent divergence over the locations, the problem of environmental influence on estimates of divergence can be largely overcome.

Once the divergent parents are identified, a successful plant breeding programme depends on the choice of best combination of parents for hybridization. But, such a choice is relatively tough in case of complex traits like yield as they are the result of large number of genes which are influenced by environments and seasons to different degrees. Thus, breeders often face difficulty in selecting parents in advance which are likely to yield superior progenies. In such a situation, knowledge on the nature of gene action on such complex quantitative traits of economic importance is necessary to plan and adopt appropriate selection techniques and breeding methodology (Simmonds, 1991).

Combining ability analysis provides useful information for parental selection based on the progeny performance. In addition, it also provides information on the nature and magnitude of gene action involved in the expression of quantitative traits (Dhillon and Singh, 1975). Several biometrical techniques are available for the estimation of combining ability, among them line x tester model is extensively used for initial

screening. The advantage of this analysis is that a large number of inbred lines can be screened in comparision with diallel analysis besides providing information regarding the gene action in contrast to top cross or polycross (Kempthorne, 1957). It is now clear that the estimates of combining ability are also environment specific and therefore, it is possible to overcome such problems by estimating combining ability across environments.

Maize was the first major cereal crop in human civilization to be affected by hybridization. Identification of parental combinations that produce superior offsprings is one of the most important steps in hybrid breeding. However, this is one of the most costly and time consuming steps as it is necessary to cross all the available parental lines and evaluate the hybrids in extensive yield trials. Development and evaluation of only a limited number of hybrids generated from a relatively fewer number of parents saves substantial resources (Bernardo, 1992). Thus, it becomes necessary to identify relatively fewer numbers of parents that are likely to result in high frequency of heterotic hybrids. The choice of such fewer parents from available ones is critical, because *per se* performance of parent is not always a true indicator of its potential to nick well in hybrid combinations.

In several crops, parental genetic diversity *per se* and parental combining ability have been successfully used to develop higher frequencies of heterotic hybrids. Parents with high general combining ability and a large genetic distance between them are known to produce hybrids with better yield performance (Diers *et al.*, 1996). Advances in genome research have generated interest in predicting hybrid performance using molecular markers as indicated by positive association between DNA marker-based genetic distance and heterosis (Betran *et al.*, 2003, Legesse *et al.*, 2009 and Krystkowiak *et al.*, 2009).

In numerous instances, several researchers have established that, crosses between divergent parents usually produce greater heterosis than those between closely related ones. However, when divergent parents are crossed, heterosis does not occur always (Cress, 1966). Thus, it becomes essential to explore the possible limits to parental divergence within which there is a reasonably higher chance for the occurrence of heterosis.

A successfully developed new hybrid should have stable performance and adaptability over a range of environments in addition to its high yield potential. Evaluation for performance stability is becoming increasingly important in plant breeding programmes because of their impact on selection criteria. When new hybrids are tested over a series of locations, the relative ranking of the hybrids for any given attribute is rarely the same at each location and which in turn increase the difficulty of identifying superior stable genotypes.

A reliable method of estimating stability is one of the important prerequisite for effective selection. Various procedures have been used to characterise individual varieties for behaviour in varying environmental conditions. Performance tests over a series of environments, when analysed in the individual manner, provides information on genotype by environment interaction, but fails to measure the stability of individual entries. Finlay and Wilkinson (1963) proposed a simple model for measuring the varietal adaptation. They suggested that the average yield of all cultivars grown at particular site provide a measure of that environment for use in a regression analysis of yield stability. Later, Eberhart and Russell (1966) modified and elaborated this method based on the regression technique for measuring the stability of genotypes. This method of stability analysis is being used by many workers and preferable because of its explicit nature. If care is not taken to select for

both yield and stability of performance, one may end-up with a high yielding genotype that is suitable only for a particular environment (Allard and Bradshaw, 1964).

Keeping these points in view, the present investigation was planned and performed with the following objectives,

- Assessment of morphological and molecular diversity among the inbred lines
- Analysis of combining ability and heterosis
- Analysis of functional relationship between parental diversity, heterosis, *sca* effects and *per se* performance
- Identification of stable hybrids across a range of environments

Review of Literature

II. REVIEW OF LITERATURE

The literature pertaining to the present investigation has been reviewed under the following headings:

2.1 Genetic divergence

2.2 Combining ability and heterosis

2.3 Relationship between parental diversity, heterosis, *sca* effects and *per se* performance

2.4 Stability analysis

2.1 GENETIC DIVERGENCE

2.1.1 Diversity at morphological level

Mahalanobis (1936) developed the model to determine divergence among populations in terms of 'generalized group distance'. It is widely used in psychometric and anthropometry for classificatory purposes (Rao, 1952) and in biology for estimating diversity (Chandrasekhariah *et al.*, 1969; Murthy and Arunachalam, 1966). Rao (1960) opined that D^2 concept lies at the heart of morphometric analysis, which has led to many useful developments and thus became indispensable tool.

Murthy and Pavate (1962) suggested that this technique can be extended to situation where overlapping species are to be discriminated at sub species level. They used it for testing genetic diversity among 13 flue-cured tobacco varieties. Since, then the D^2 is widely employed to resolve genetic divergence at inter-varietal, sub-species and species levels in several crops.

Moll *et al.* (1962) reported that heterosis in maize appears to increase with increased genetic divergence of the parent populations over a rather wide range of diversity. It does not necessarily follow, however,

that this relationship will hold throughout the entire range of diversity in the species. It is widely accepted that cumulative differences between isolated populations may eventually become great enough to cause genic imbalance in population hybrids, which may manifest poor F_1 viability.

Arunachalam *et al.* (1984) established that there exists a limit to the parental divergence for the occurrence of heterosis in groundnut and brassica. They found higher frequency of heterotic crosses coupled with higher magnitude of heterosis for seed yield and its components in groundnut crosses between the parents with intermediate divergence than extreme ones.

Thanga *et al.* (2006) have analysed genetic divergence through D^2 statistics in maize inbred collection and revealed the existence of considerable diversity. The accessions were grouped into seven clusters. The cluster III was the largest with 20 inbreds followed by cluster II and IV with seven and five inbreds, respectively. The grouping of inbreds indicated the presence of genetic divergence. The highest inter clusters distance was noticed between cluster IV and cluster VI. Intercrossing among the genotypes belonging to cluster V, VI and VII was suggested to develop high yielding hybrids with desirable characters.

One hundred maize inbreds along with four checks were evaluated for genetic divergence through multivariate Mahalanobis D^2 statistic by Singh *et al.* (2007). The analysis of variance revealed significant differences among the genotypes for all the traits. The 104 genotypes were grouped into 23 clusters, where cluster III accommodated maximum numbers of entries (51). The inter-cluster distance was highest between cluster II and XXIII and followed by cluster II and XIII, XVI, II and XVII. The maximum contribution towards genetic divergence was observed by grain yield per plant followed by plant height and ears per plant. Based on inter-cluster distance and *per se* performance of

genotypes, fifteen inbreds were selected for intercrossing in anticipation of obtaining heterotic hybrids.

A study on genetic diversity among 50 genotypes of maize was conducted using Mahalanobis D^2 statistic for eleven characters by Alam and Alam (2009). Fifty inbred lines of maize were grown in an alpha lattice design with three replications. Eight clusters were formed among which, the inter-cluster distances were larger than the intra-cluster distance suggesting wider genetic diversity among the genotypes of different groups. The maximum number of genotypes were found under cluster VII. The highest mean values for yield/plant (g), rows/ear and ear diameter was observed in cluster V. The lowest mean value for days to tasseling, days to pollen shedding, days to silking and husk cover were found in cluster III. The highest inter cluster distance was observed between cluster I and IV and the lowest between cluster V and VIII. The highest intra-cluster distance was observed in cluster I and lowest in cluster VI.

The genetic divergence among exotic maize germplasm was assessed by Marker and Krupakar (2009) using Mahalanobis D^2 analysis based on 14 characters. The genotypes were grouped into five clusters. Cluster V was the largest with 5 genotypes followed by cluster I and IV containing four genotypes each. The highest inter cluster distance was observed between cluster II and cluster V followed by cluster I and V suggesting more variability in genetic makeup of the genotypes included in these clusters. Cluster II had highest mean values for days to tasseling, days to silking, plant height, ear height, ear length, grains per row, harvest index and protein content. Qualitative characters contributed maximum towards genetic divergence. Based on inter cluster distances, genotypes present in cluster I, II and IV were recommended as parents for hybridization programme.

Ganesan *et al.* (2010) have assessed genetic divergence among 105 indigenous maize germplasms by employing Mahalanobis D^2 analysis based on four characteristics *viz.* plant height, cob height, cob length and number of kernel rows per cob. The genotypes were grouped into four clusters. Cluster IV was the largest with 53 genotypes followed by cluster II with 32 genotypes. The highest inter cluster distance was observed between cluster III and cluster IV followed by cluster I and III suggesting more variability in genetic makeup of the genotypes included in these clusters. Qualitative characters contributed maximum towards genetic divergence. Based on inter cluster distances genotypes present in cluster I, III and IV were recommended as parents for hybridization programme to develop heterotic hybrids.

Alam *et al.* (2013) have conducted genetic divergence studies in 17 CIMMYT maize inbreds along with a check based on morphological traits and grain yield using Mahalanobis D^2 statistics. The experiment was carried out in alpha lattice design with two replications. The genotypes were grouped into four clusters. The cluster II contained the highest number of lines (6), while the cluster I contained only single genotype. The maximum inter-cluster distance was noticed between the cluster I and IV and minimum between cluster I and II. The highest intra-cluster distance was observed in the cluster IV and lowest in cluster I. The genotypes in the cluster III showed better performances having shorter growth duration, short stature, shortest ear height, better shelling percentage and reasonable yielding ability. It was expected that crossing of inbred lines with high to medium D^2 values tend to produce high heterosis for yield. Ear aspect had the greatest contribution to the genetic divergence. Days to pollen shedding, silking, maturity and 1000-grain weight were found to be responsible for primary differentiation.

An investigation was carried out by Udaykumar *et al.* (2013) to understand the genetic diversity among the inbred lines of maize during *Kharif 2011*. Seventy nine inbred lines and three checks were evaluated and observations were recorded for thirteen quantitative traits. Analysis of variance revealed highly significant differences among all inbred lines. Inbred lines were grouped into fourteen clusters, indicating the presence of genetic diversity. The cluster I accommodated highest number of genotypes (67). The maximum inter cluster distance was observed between clusters II and XII and highest intra cluster distance was in cluster XII and also wide range of variation was observed in cluster mean performance for the characters studied.

2.1.2 Diversity at molecular level

Enoki *et al.* (2002) have analysed simple sequence repeat (SSR) diversity of 60 loci distributed uniformly throughout the maize genome for 65 inbred lines adapted to cold regions of Japan in order to assess genetic diversity among the inbred lines and to assign them to heterotic groups. The mean polymorphic-index content (PIC) of 0.69 for the SSR loci provided sufficient discrimination ability for the assessment of genetic diversity among the inbred lines. The results indicated that SSR analysis is effective for the assessment of genetic diversity among maize inbred lines and for the assignment of inbred lines to heterotic groups.

Assessment of genetic diversity among Portuguese inbred collection was conducted by Vaz *et al.* (2004). Microsatellite analysis was carried out for 54 inbreds representing the diversity of Portuguese dent and flint maize germplasm. Fifty American and other European elite inbreds were also analysed for comparison. Fifteen microsatellite loci distributed throughout the maize genome were chosen based on their repeat unit and base composition. A total of 80 alleles were detected with an average allele number of 5.33 per locus. Polymorphism information content (PIC)

values and observed genetic distances showed the existence of large variability among inbreds. Cluster analysis indicated that almost all the inbreds could be distinguished from each other and Portuguese inbreds were present in all clusters formed. These associations were consistent with the known pedigree records of the inbreds, confirming a mixed origin of Portuguese materials.

Xia *et al.* (2004) have conducted an experiment with an objective of investigating the genetic diversity among tropical lowland inbred lines. Simple Sequence Repeat (SSR) analysis of 79 markers distributed uniformly throughout the maize genome was performed for 155 tropical lowland inbreds from the CIMMYT. Inbred lines were extracted from 60 broad based populations and pools with mixed origin. They observed an average of 7.4 alleles per marker with a range from 2 to 18. The polymorphic information content (PIC) of the 79 SSRs ranged from 0.13 to 0.87, with an average of 0.60. Cluster analysis of the tropical yellow and white lines revealed the lack of structure within this germplasm, which has been be explained by the mixed origin of the populations used to extract these lines.

One hundred and thirty three varieties, representative of the maize grown in France during the last five decades were fingerprinted using 51 SSR markers by Le *et al.* (2005). The varieties were grouped into four periods. For each period, allelic richness, genetic diversity and genetic differentiation among periods were computed. A total of 239 alleles were generated with allelic richness, in terms of number of alleles per locus, for each period was 4.5, 3.6, 3.9 and 3.6, respectively.

Beyene *et al.* (2006) have analyzed 62 traditional Ethiopian highland maize accessions using 20 simple sequence repeat (SSR) markers and 15 morphological traits, to assess genetic diversity and relationships among these accessions and to assess the level of

correlation between phenotypic and genetic distances. The accessions varied significantly for all of the measured morphological traits. The average number of alleles per locus was 4.9. Pair-wise genetic dissimilarity coefficients ranged from 0.27 to 0.63 with a mean of 0.49. The relationship between morphological and SSR-based distances was significant and positive ($r = 0.43$, $p = 0.001$).

A study was conducted by Zamarud *et al.* (2007) to determine genetic diversity among 17 Pakistani maize genotypes using 10 SSR primers. To estimate the genetic diversity among the genotypes, bivariate data matrix was generated and genetic distances were calculated. A total of 196 alleles were amplified with an average of 1.56 alleles per microsatellite locus. SSR primer sets *p-umc1354*, *p-umc1984*, *p-umc1186*, *p-umc1325*, *pumc2281*, *p-umc1586*, *p-umc1824* and *p-umc1154* amplified 2.90, 1.06, 2.00, 1.35, 1.50, 1.50, 1.00 and 1.18 loci per genotype, respectively.

Genetic diversity of 54 maize landraces from southwest China was tested by Qilun *et al.* (2007) using bulk DNA samples and 42 microsatellite (SSR) loci distributed on all the 10 chromosomes of maize. A total of 256 alleles were detected among the landraces. At each locus, the number of alleles varied from 2 to 9, with an average of 6.1. On the basis of the genetic similarity coefficients, clustering analysis separated the landraces into four groups. The landraces collected from the same region were mostly grouped together.

Yu *et al.* (2007) have conducted an experiment using 288 maize inbred lines, including 242 inbreds of the core collection established in China and elite lines from other origins for diversity analysis at 49 SSR loci. The average alleles per locus was 5.34 and gene diversity for the SSRs was 0.57. Clustering analysis placed 288 lines in 4 clusters that correspond to major breeding groups, largely consistent with known

pedigrees of the lines. A mini core set, including 94 genetically diverse inbreds out of 288, mainly of Chinese and temperate origins was defined.

A study was performed to assess genetic diversity and genetic distance among representative inbreds from known heterotic groups in China and broad based American populations by Zheng *et al.* (2008). A total of 36 maize inbreds, 18 each from America and China, were evaluated at 109 SSR loci. SSR data revealed greater genetic diversity with an overall mean polymorphic information content (PIC) of 0.66 and mean number of 6 alleles per locus. Among the alleles, 25.5% and 19.8% were inbred-specific to Chinese and American inbreds respectively and inbreds were clustered into five groups.

Karanja *et al.* (2009) have used 28 agronomic traits and 14 SSR markers which were distributed uniformly in ten inbred lines from Kenya, CIMMYT and another (OSU 23i) from USA. The dissimilarity calculated using SSR markers had a mean morphological dissimilarity of 0.89, an r value of -0.1421 and a p -0.9840. The dissimilarity between the molecular and morphological traits was 0.86. Comparison between the molecular and morphological data had a dissimilarity matrix with an r -0.2323 and a p value of 0.0120. This was probably due to intrinsic synteny in maize genome. The dendrograms generated with hierarchical Unweighted Pair Group Method with Arithmetic mean (UPGMA) cluster analysis of the Jaccard's similarity coefficient matrices revealed four major clusters. The co-ancestry distance showed six tied groups with the Kenya cluster showing some differentiation with exact tests for population differentiation with a p = 0.0513. The American inbred line (OSU 23i) segregated alone, while the Kenya lines (EM11-133 and EM12-210) had close homology with the CIMMYT inbred lines (CMLs). A total of 2.0 alleles were detected among the inbred lines using bulk DNA samples and 14 SSR loci. Clustering analysis based on the genetic similarity

coefficients separated the inbred lines into 4 groups with the American inbred line seeming to be genotypically more diverse from the others.

Molecular diversity of 102 maize landraces from Hubei Province of China was evaluated by Kai *et al.* (2009) on the basis of phenotypic data and SSR data. The results indicated significant differences in important traits among the landraces, especially in kernel weight and ear height. The comparison of the yield components of two elite populations, BSSSC9 and Suwan2, with those of landraces indicated that the ear length of 28 landraces, the kernel weight of 35 landraces, the row number per ear of 11 landraces, and the kernel number of 3 landraces were better than those of the two elite populations, implicating that abundant genetic diversity and favorable genes were accumulated within these landraces. Thirty-six SSR markers revealed a total of 179 alleles in 102 landraces, with an average of 4.97 alleles per loci, and 0.4362 polymorphism information content (ranging from 0.3141 to 0.5601). Cluster analysis based on the phenotypic data and SSR data divided the 102 landraces into two or three major groups. Integrating the phenotypic data and SSR diversity, the authors suggested that abundant genetic variability and specific alleles were exhibited by these landraces.

Veronica *et al.* (2009) have conducted an experiment in the highland region of North Western Argentina to examine the genetic diversity and racial affiliations of the landraces. Eighteen microsatellite markers were used to characterize 147 individuals from 6 maize races representative of traditional materials. A total of 184 alleles were found, with an average of 10.2 alleles per locus and average gene diversity 0.571. The observed patterns of genetic differentiation suggested that historical association is probably the main factor in shaping population structure for the landraces studied here.

A study was conducted by Astha and Singh (2010) to determine molecular diversity among twenty maize genotypes using ten SSR primers. The number of alleles per marker varied from two to four with an average of 2.5 alleles. *bnlg1922* detected maximum of four alleles, while five loci (*bnlg1866*, *mmc0063*, *bnlg1046*, *bnlg1070* and *umc1310*) revealed three alleles, three loci (*bnlg1523*, *bnlg1126* and *umc1414*) detected two alleles. The PIC values of the SSR loci varied from 0.43 (*umc1414*) to 0.91 (*bnlg1070*) with mean of 0.70. The pair wise similarity was calculated by Jacquard's similarity coefficients, which ranged from 0.12 to 0.73 with an average similarity of 0.42. The minimum similarity (0.12) was found between two pairs, HUZM-356 with HUZM-47 and HUZM-53 with HUZM-147 which are more diverse. The less diversity and maximum similarity (0.73) was found between HUZM-147 with HUZM-36 genotypes.

Sharma *et al.* (2010) have conducted a study for providing details of phenotypic and molecular characterization of a set of 48 selected maize landrace accessions of North East Himalayan (NEH) region in India, including the 'Sikkim Primitives' which have a unique habit of prolificacy (5-9 ears on a single stalk). Multi-location phenotypic evaluation of these 48 accessions revealed significant genetic variability for grain yield and its components, leading to identification of several promising accessions. The accessions were genotyped using 42 SSR markers using a 'population bulk DNA fingerprinting strategy', with allele resolution using an automated DNA Sequencer. The study revealed a high mean number of alleles per SSR locus (13.0) and high PIC value of 0.60. The analysis also led to identification of 163 unique alleles, differentiating 44 out of 48 accessions. Six highly frequent SSR alleles were detected at different loci (*phi014*, *phi062*, *phi090*, *umc1266*, *umc1367* and *umc2250*) with individual frequencies of 0.75. Cluster analysis using Rogers' genetic distance also revealed distinct genetic

identity of the 'Sikkim Primitives' from the rest of the accessions in India, including Sikkim. Mantel's test revealed significant and positive correlation between the phenotypic and molecular genetic dissimilarity matrices.

Marcelo *et al.* (2010) have reported the analysis of 25 inbred orange flint germplasm and one dent using 21 SSRs. Genetic diversity values for flint germplasm (25 inbreeds) was relatively high. The number of alleles per locus was 5.14. When testing for genetic differentiation among the four heterotic populations established by topcross, twelve loci from a total of twenty-one displayed significant *P-values*. There was no agreement between groupings based on topcross and clustering based on molecular data. On the other hand, Bayesian grouping performed better when compared to the clustering based on Roger's distance.

Genetic diversity among 173 inbred lines that were commercially important and were parental lines used for breeding in China were investigated by Ming *et al.* (2011). Using the model-based Bayesian clustering analysis, these lines could be assigned to four subgroups, most of which were in agreement with the pedigree information. Using 78 SSR markers, the genetic diversity was determined to be an average of 8.1 alleles per locus (range 2 to 17). The average values of PIC and gene diversity were 0.667 and 0.704, respectively.

Ashish *et al.* (2012) made an attempt to assess the genetic diversity among 91 maize genotypes using morpho-physiological and molecular markers. Variability was observed for six morpho-physiological traits as well as with SSR markers. A total of 124 alleles were generated and the number of alleles scored for 40 SSR loci ranged from 2 to 5 with a mean of 3.1 alleles per locus. PIC ranged from 0.054 to 0.82 with a mean of 0.55 suggesting that all the selected genotypes possessed high level of polymorphism. The study indicates that five genotypes, RJR-247, RJR-

159, NSJ-179, RJR-55 and Z101-15 were most diverse and these lines were recommended for future maize improvement programme.

DNA fingerprinting of 48 landrace accessions from diverse regions of India was undertaken by Samanthi *et al.* (2012) using 42 SSR markers, followed by allele resolution using DNA sequencer and analysis of molecular diversity within and among these landraces was conducted. The study revealed a large number of alleles (550), with high mean number of alleles per locus (13.1) and PIC of 0.60, reflecting the level of diversity in the landrace accessions. Besides identification of 174 unique alleles in 44 accessions, six highly frequent SSR alleles were detected at six loci (*phi014*, *phi090*, *phi112*, *umc1367*, *phi062* and *umc1266*) with individual frequencies greater than 0.75, indicating that chromosomal regions harbouring these SSR alleles are not selectively neutral. Cluster analysis of SSR data using Nei's genetic distance and UPGMA revealed considerable genetic diversity in these populations, although no clear separation of accessions was observed based on their geographic origin.

2.2 COMBINING ABILITY AND HETEROSIS

Sprague and Tatum (1942) formulated the concept of combining ability. General combining ability is the average performance of a strain in a series of cross combinations, estimated from the performance of F_1 from the crosses, whereas specific combining ability is used to designate those cases in which certain combinations do relatively better or worse than would be expected on the basis of average performance of lines involved. Griffing (1956) showed relationship between various heritable variance components *i.e.*, GCA and SCA variances. GCA variance is due to additive variance and additive × additive interaction variance while, SCA variance is due to dominance variance, additive × dominance and dominance × dominance variance components. Estimates of the

variances due to GCA and SCA provide an appropriate diagnosis of the predominant role of additive or non-additive gene action.

Ratio of additive to non-additive gene action is to be considered in order to decide the predominance of the kind of genetic variation for a given character. If the ratio of additive to non-additive gene action is more than unity it indicates the major role of additive variance in controlling the expression of a character, whereas, less than unity indicates the importance of non-additive variance (Gardner, 1963). Tandon *et al.* (1970) opined that the combining ability analysis was better than graphical analysis in predicting the prepotency of cultures especially in the later generations, when the expression of dominance effect is reduced.

Shull (1908) coined the term heterosis to provide a term to describe the phenomenon but it did not included a description of genetic mechanism involved in its expression. Bruce (1910) and Keeble and Pellow (1910) put-forth the support for dominance hypothesis, which suggested that increase in vigour after crossing resulted from the combination of various dominant alleles by each parent. Shull (1911), East and Hayes (1912) challenged the dominance theory and proposed over-dominance hypothesis indicating heterosis as the result of heterozygosis. Ashby (1930 and 1932) suggested that heterosis resulted from the maintenance of the initial advantage in embryo size and not from an acceleration of metabolic process. East (1936) concluded that seed size or the size of any part of the seed cannot be the cause of heterosis. Hull (1945, 1946 and 1948) reported the evidence of overdominance in the expression of heterosis.

The degree of geographical separation and the degree of ancestral relationship can be used as an indication of genetic diversity. The greater genetic diversity of the parents is associated with greater heterosis in the

F_1 (Moll *et al.*, 1962, Paternani and Lonnquist, 1964; Wellhausen, 1965; Heidrich and Cordeiro, 1975; Vasal *et al.*, 1992). Moll *et al.* (1965) reported that heterosis increased with increased divergence within certain limits and extremely divergent crosses in maize resulted in decreased heterosis. Griffing and Zsiros (1971) viewed heterosis as not entirely the result of genetic stimuli but rather as a result of the interaction between genetic and environmental stimuli and implicated that the environment was a significant factor in the manifestation of heterosis.

Three male testers and six female lines together with their 18 F_1 hybrids were evaluated to study the combining ability estimates and heterosis following line x tester approach by Karadeniz *et al.* (2000). Analysis of variance indicated the existence of significant variation among F_1 and parents for all characters. Average heterosis was significant for all characteristics studied and was positive, except for days to tasseling, with the average yield of hybrids being 79.8% above that of the parents. In view of the general combining ability effects of the parents, the parental lines YUZ P709 and FR 64A were identified as best overall parent combiners in the experiment for grain yield and yield components. Combining ability analysis showed that general combining ability effects were significant for all attributes and specific combining ability effects were significant for ear diameter, ear height and grain yield per unit area. With respect to ear height and grain yield per unit area, *sca* effects were more pronounced when compared to *gca* effects, indicating the predominance of non-additive gene action in the inheritance of these traits.

Combining ability analysis was conducted in early maturing maize (*Zea mays* L.) inbred lines for quality and yield attributes by Dadheech and Joshi (2007_b). The ratio of non-additive /additive gene effect revealed

that there was preponderance of non-additive gene action in the expression of all the traits under study. Inbred lines L9 and L10 were good general combiner for all the three quality traits. While inbred line L9 was also good general combiner for grain yield, oil content, starch content and protein content. Single cross L15 x T1 had positive significant *sca* effects for oil content along with starch content with highest estimate of heterobeltiosis for oil content. In general, parental inbreds possessed high *per se* performance for quality traits along with grain yield per plant and 100 grain weight.

Fifteen phenotypically diverse white maize lines were crossed to three testers in line x tester fashion to generate 45 test cross progenies, which were evaluated in two diverse locations of Kashmir valley namely High Altitude Research Station, Larnoo and Regional Research Station, Wadura, representing diverse climatic conditions by Parvez *et al.* (2007). The analysis of variance for line x tester design pooled over locations revealed significant environmental variances for all traits except harvest index, g x e interaction was significant for all traits except 100 seed weight indicating greater influence of environment on these traits. Grain yield recorded heterosis up to 78%. The mean heterosis among component traits was highest for ear diameter (25%), followed by ear height (23%), 100 seed weight (21%) whereas, it was lowest in case of harvest index (7%).

A line x tester set was obtained by crossing 8 lines with 3 testers in popcorn by Vijayabharathi *et al.* (2009). The resultant 24 F_1s were evaluated along with 11 parents to estimate combining ability variances and effects for 14 characters. The results showed predominant role of non-additive gene action for all the characters studied. Based on both *per se* performance and *gca*, the genotypes UPC 5, UPC 4, UPC 1 among lines and Amber popcorn, Bangalore popcorn among the testers were

proved as good general combiners for yield and quality traits. High *per se*, significant *sca*, standard heterosis exhibited by three hybrids.

Legesse *et al.* (2009) have conducted an experiment to examine combining ability of highland transition maize inbred lines for grain yield and other desirable traits, to determine heterotic groups and to identify promising hybrids. Twenty-six inbreds were crossed with six testers and the resulting F_1s along with two checks and the parents were evaluated in separate trials at five locations. General combining ability (GCA) and specific combining ability (SCA) effects were calculated using line x tester analysis. GCA mean squares due to lines and testers were highly significant for all the traits. Similarly SCA mean squares for most traits except for days to physiological maturity and for northern leaf blight were found highly significant. The ratio of GCA/SCA mean square further exhibited the preponderance of additive gene effects in the inheritance of all traits. Estimates of *gca* effects indicated that three inbred lines were good combiners for grain yield, four for days to silking, three for grey leaf spot and one for NLB. Inbred lines revealed significantly negative *gca* effects. Significantly different *sca* effects of crosses were revealed for most of the traits. A number of single crosses out-yielded the hybrid checks and also revealed desirable plant height performances.

Combining ability analysis for yield and its contributing traits was carried out in maize by Asif *et al.* (2010) with 45 F_1s generated by crossing fifteen lines with three well adapted testers. The analysis of variance revealed highly significant differences among lines, testers and line x testers for all traits studied. The estimation of genetic components of variance indicated higher proportion of dominance variance for all traits studied except for grain yield/ha and days taken to 50% husk browning. Inbred lines KDM 334 (yield), KDM 335 (anthesis and silking) and KDM 349 (husk browning, plant height and ear height) recorded

highest gca effects towards desired direction, whereas, KDM 331 × KDM 346 and KDM 336 × KDM 346 were the best specific cross combinations for early flowering and maturity traits. Highest specific combining ability for grain yield/ha was recorded in KDM 349 × KDM 346.

Combining ability and heterosis for grain yield and growth characters was examined by Premlatha and Kalamani (2010) in maize through line x tester mating design using nine lines and four testers along with check COH (M) 4. Combining ability analysis showed the predominant role of non-additive gene action for all the characters studied. The lines UMI 199 and UMI 278 and the testers UMI 217 and UMI 314 had recorded high *per se* and *gca* for yield and majority of the characters studied. The hybrids UMI 278 x UMI 217 and UMI 334 x UMI 217 had significant and superior *per se* performance for grain yield per plant. The hybrid UMI 348 x UMI 330 exhibited high *sca* effect for plant height. Growth influencing characters positively influenced hybrid performance in grain yield. The hybrid UMI 278 x UMI 217 was observed as best followed by UMI 334 x UMI 217.

Eighty seven single cross hybrids of maize were developed by crossing 29 new lines developed from the National Yellow Pool with three testers in a line x tester method and evaluated for grain yield and its component traits by Wali *et al.* (2010). The mean of male lines was higher than the female lines for grain yield per plant. The interaction effect of line x tester variance was found significant for all the traits except ear length, circumference, shelling percentage and fodder yield. However, the variance due to line x tester variance was found to be significant for yield contributing traits *i.e.,* number of kernel rows per ear, number of kernels per row, 100 grain weight and grain yield per plant. Among the parental lines YPU407-20 was found to be best general combiner. Whereas, among the hybrids the cross YPU407-20 X CI-5 was identified as a

potential single cross combination with mean grain yield of 67.29 q/h and also recorded heterosis of 53.5 % over standard check for grain yield.

Singh *et al.* (2010) have studied heterotic expression and combining ability for fifteen yield and related traits in maize involving 66 F_1 crosses produced in line x tester design. Pooled analysis of variance revealed significant differences among lines, testers and line x tester crosses except for leaves per plant and ear girth due to testers. Inbred lines L9, L13, L14, L15 and L18 were good general combiners for earliness; L2, L3, and L5 for higher plant height, ear height and number of leaves per plant; L2 and L3 for ear length, ear girth, kernel rows per ear, kernels per row, 100 kernels weight, grain yield per plant, dry stover yield per plant and biological yield per plant. On the basis of *sca* and *per se* performance of hybrid L15 x T3 was identified as early in flowering traits. Crosses *viz.,* L19 x T3, L11 x T3 and LII x T3 revealed high *sca* effects for grain yield per plant. When one or both the parents were poor general combiners, they resulted in a hybrid having highly significant *sca* effects upon crossing. This was exemplified by hybrid L19 x T3 for ear length, kernel rows, kernels per row, 100 kernel weight, grain yield, dry stover yield and biological yield. High percentage of better parent heterosis and standard heterosis for grain yield per plant was recorded by hybrid L3 x T1 and L3 x T3, respectively. Hybrid L3 x T1 had considerable higher desirable heterosis over better parent for days to 50 per cent silking, days to maturity, leaves per plant and ear girth and standard heterosis for plant height, ear length, ear girth and kernels row per ear.

Combining ability and heterosis for grain yield components and quality traits in maize was analysed by Premlatha *et al.* (2011) through line x tester mating design using nine lines and four testers. The analysis indicated the predominant role of non-additive gene action for all the

characters studied. The line UMI 199 was good general combiner for number of grains per row, hundred grain weight, grain yield per plant, protein content and oil content. The line UMI 235 was good general combiner for number of grains per row, hundred grain weight, grain yield per plant, protein content and oil content and the line UMI 278 was identified as better combiner for number of rows per cob, number of grains per row, hundred grain weight, grain yield per plant, protein content and oil content. The line UMI 348 showed high *gca* for grain yield per plant. In case of testers UMI 217 was identified for high *gca* effects for number of rows per cob, number of grains per row, hundred grain weight, grain yield per plant and oil content. The tester UMI 330 recorded high *gca* effect for protein content. The hybrid UMI 278 x UMI 314 had highly significant positive *sca* with highest estimates of economic heterosis for number of rows per cob, hundred grain weight and protein content and UMI 334 x UMI 314 had highly significant positive *sca* with highest estimates of economic heterosis for protein content and oil content.

A study was undertaken to estimate combining ability effects in maize for different characters in a line × tester programme comprising 70 hybrids produced by crossing 14 lines and five testers by Chikkalingaiah and Murali (2012). The interaction of line × tester was highly significant for twelve traits studied except for protein content. Significant general and specific combining ability variance were observed for all characters except protein content. The ratio of GCA: SCA variance was lower than unity for all characters indicating predominance of non-additive gene action. Among the lines, QPM 3 was found to be the best general combiner with better mean performance for most yield contributing traits followed by QPM 1 and QPM 187. Among the testers, T 323-8 was found to be the best general combiner with better mean performance for most of the yield contributing traits followed by T 209 and T 295 genotypes.

Among the crosses, QPM 35 × T 295 was superior with positive significant *sca* effects and better mean performance for grain yield and plant height. Similar superior positive significant *sca* effects with better mean performance were also observed in QPM 6 × T 295 (ear length, test weight and grain yield per plant) and QPM 43 × T 193-2 (ear length and grain yield per plant).

Several selected lines were crossed with three different testers in three isolations to generate testcrosses by Ali *et al.* (2012). The testcrosses were evaluated in a partial lattice square design with two replications to assess combining ability and heterosis. The 87 testcrosses possessed highly significant differences for the investigated traits. Proportional contribution of lines, testers and their interaction to the total variability for anthesis silking interval (ASI) was 38.33, 2.34 and 59.33%, respectively. Mean yield ranged from 2547.45 to 9842.02 kg ha^{-1}. Maximum yield was observed for CMI-76, using OPV Jalal as a tester, while minimum yield was detected for CMI-190-2, using WD3 x 6 as a tester. In general, tester parent OPV Jalal showed better heterotic effect with each line as compared to other testers.

A line × tester method for estimating general combining ability of parent and specific combining ability of their F_1 hybrids was used by Abuali *et al.* (2012). Five inbred lines, two testers and hybrids were evaluated across two locations. Genetic components resulting from additive and non-additive type of gene action were also estimated. The analysis of variance for combining ability revealed that both GCA and SCA variances were highly significant for most of the studied characters indicating importance of additive as well as non-additive types of gene action in controlling these traits. GCA mean squares for inbred lines were significant for all the traits except cob length and number of kernels/row while GCA due to testers was significant for only 100-

kernels weight. Moreover, variances due to SCA were higher in magnitude than GCA for the yield and yield components except cob diameter, number of rows/cob, number of kernels/row and harvest index. GCA to SCA ratios were less than one for most of the traits except cob diameter, number of kernel rows/cob, number of kernels/row and harvest index indicating a preponderance of additive over non-additive gene action. High positive heterosis for grain yield and its components was found for more than half of the hybrids studied. Crosses involving 160 x 3 and 66Y x 2 produced the highest heterosis.

An experiment was conducted by Rahman *et al.* (2013) to test 15 maize S_2 lines of maize variety Sarhad White in test cross combinations. During spring season (February-June) S_2 lines of maize variety Sarhad-White were out crossed at three isolations with 2 hybrids; WD3×6, Kiramat and an open pollinated variety Jalal. Parents and crosses for yield traits showed highly significant differences. The traits were further analysed for general combining ability and specific combining ability effects. Maximum ear length (18.83cm) was produced when S_2 line No.5 was crossed with WD3×6 as a tester. Maximum general combining ability value 1.81 was observed for S_2 line No.2. Least desirable specific combining ability effect was observed for S_2 line No.4 using WD2×8 as tester. Maximum kernel rows ear^{-1} (17) was observed for test crosses TC6 and 14, using WD3×6 as a tester. Maximum desirable general combining ability (1.70) was recorded for S_2 line No. 6(1.59). S_2 line No.15 was good specific combiner with testers WD2×8 (1.99) and Jalal (1.81). Heaviest grains were produced by test cross TC7 (39.5 g), using WD2×8 as a tester. For grain yield S_2 line no. 2 was the best general combiner, followed by S2 line 9. For SCA, S_2 line 2, 3 and 6 were the best specific combiners when crossed with tester WD2 x 8, Jalal and WD3x6, respectively.

An investigation was undertaken by Sadaiah *et al.* (2013) in sweet maize to carry out the combining ability analysis and to estimate heterosis for yield and its contributing characters. Eight divergent parents were selected and crossed in diallel fashion excluding reciprocals during *kharif*, 2010. The resulting 28 crosses along with parents and a standard check Sugar 75 and Madhuri were evaluated in Randomized Block Design replicated thrice. The data were collected on various agronomic characters in which emphasis was given to sugar content in the kernel in percentage. The combining ability analysis revealed importance of both additive and non-additive gene actions in governing the characters but non-additive gene action was found predominant. The parental lines 6072-3 and 6069 contributed maximum favourable genes for character under study and can be given status of good combiners. The hybrids *viz.,* 6072-3 x 6100-2, 6072-3 x 6069, 6104 x 6082 and 6127 x 6100 were the good specific combiners for sugar content in the kernel. Estimates of heterosis, heterobeltiosis and standard heterosis were variable among crosses in desirable direction and some of them turned out to be best specific crosses.

Kambe Gowda *et al.* (2013) have assessed the general combining ability effects of parents and specific combining ability effects of hybrids for yield and yield related traits. One hundred seventy F_1s generated by crossing 34 lines with five testers were evaluated. The ratio of GCA / SCA variance revealed that there was preponderance of non-additive gene action in the expression of all the traits under study. Inbred lines *viz.,* MAI 708, MAI 109, MAI 111, MAI 121, Cymt 3 and Cymt 30 were good general combiners for yield and yield attributing characters. Tester CM 500 was high combiner for grain yield. Among the hybrids, MAI 109 X MAI 105, MAI 109 X CM 202, Cymt 30 X NAI 137, Cymt 3 X SKV 50 and Cymt 3 X CM 202 exhibited highest significant *sca* effects and high heterosis over checks for yield and yield attributing traits.

2.3 RELATIONSHIP BETWEEN PARENTAL DIVERSITY, HETEROSIS, *SCA* EFFECTS AND *PER SE* PERFORMANCE

Correlation between the genetic diversity and heterosis was analysed by Betran *et al.* (2003) by evaluating 17 lowland white tropical inbred lines and hybrids produced by diallel mating. Inbred lines and hybrids were evaluated in 12 stress and non-stress environments. The expression of heterosis was greater under drought stress and smaller under low N environments than under all non-stress environments. A set of DNA markers identifying 81 loci was used to fingerprint 17 lines. The level of genetic diversity was high with 4.65 alleles/locus and PIC values ranging from 0.11 to 0.82. Genetic distance based on RFLP marker data classified the inbred lines in accordance with their pedigree. Positive correlation was found between genetic diversity, F_1 performance, midparent heterosis (MPH) and high-parent heterosis (HPH).

Legesse *et al.* (2003) conducted an experiment to determine the relationship of genetic diversity (GD) with hybrid performance and mid-parent heterosis (MPH). A total of 26 inbreds were crossed with six testers in a factorial-mating scheme. The F_1's and the parents were evaluated at five locations in Ethiopia. Nine amplified fragment length polymorphism (AFLP) primer pairs were used to genotype all the parents. The F_1's were found to vary widely for grain yield and other traits measured. Yield superiority of more than 30% over the best hybrid check was obtained for some testcross hybrids. Mid-parent heterosis on average was moderate for grain yield and plant height. For days to silking, MPH values were mostly negative. Mean GD values determined from the inbred lines by population tester (0.680) and line tester (0.661) combinations were not significantly different. Cluster analysis separated tester parents from the corresponding inbred lines. AFLP grouping of the inbred lines was in agreement with their pedigree records. Genetic distances derived from the inbred lines, all testers and from the

population testers sub-groups were not positively correlated with hybrid performance and MPH for most traits. In contrast, correlations of GDs involving the line testers' sub-group with F_1's and MPH were significantly positive but with low magnitude to be of predictive value.

The relationship between heterosis and genetic distance determined by SSR markers was analysed by Reif *et al.* (2003). Published data of a diallel of seven tropical maize populations evaluated for agronomic traits in seven environments were reanalyzed to calculate PMPH in population hybrids. In addition, 48 individuals from each population were sampled and assayed with 85 SSR markers covering the entire maize genome. A total of 532 alleles in 7 x 48 genotypes assayed were detected. The correlation between PMPH and the squared modified Roger's distance (MRD) based on SSR markers was significantly positive only for grain yield (r = 0.63). They also concluded that SSR markers provide a powerful tool for grouping of germplasm and are a valuable complementation to field trials for identifying groups with satisfactory heterotic response.

Xu *et al.* (2004) surveyed the genetic diversity among 15 elite inbred lines of maize in China with SSR markers and assessed the relationship between SSR marker based diversity and heterosis in a diallel set of 105 crosses. Fortythree SSR primers selected from all 63 primers gave stable profiles amplified in the sample of 15 inbred lines, which could clearly resolve on 4% metaphor agarose gel. The average number of alleles per SSR locus was 4.44 with a range from 2 to 9. The PIC for the SSR loci varied from 0.28 to 0.81 with a mean of 0.6281. Genetic similarity (GS) among 15 lines was estimated with 191 alleles identified as raw data, the Nei's coefficient of GS ranged from 0.492 to 0.745 with a mean of 0.619. Genetic distance (GD) based on SSR data was significantly correlated with heterosis, the correlation coefficient (r)

being 0.5432 and 0.4271 in 1999 and 0.4305 and 0.3614 in 1998 field tests, respectively, whereas the determination coefficient (R^2) was lower.

A study was conducted by Daniela *et al.* (2006) to evaluate the genetic diversity of 16 maize inbred lines and to determine the correlation between genetic distance and hybrid performance, using random amplified polymorphic DNA (RAPD) molecular markers. Twenty-two different random primers were used, which resulted in the amplification of 265 fragments, 237 (84.44%) of them being polymorphic. A genetic similarity matrix was created from the RAPD data using Jaccard's coefficient and a dendrogram was constructed. Hybrid analyses were carried out using random block design and Griffing method VI for diallel crossings. The genetic associations showed five distinct heterotic groups. Correlations between genetic divergences detected by RAPD, as well as the means observed in the diallel crossings were positive and significant for plant height, ear height, prolificacy and grain weight. The correlation of genetic divergences, detected by RAPD, and the specific combining ability between heterotic group associations, showed significance in all characteristics under study, except prolificacy. A direct relationship between genetic divergence and productivity was found in 79.2% of the 120 hybrids confirming the hypothesis that genetic divergence is directly related to the performance of hybrids and is efficient in predicting it.

Choukan *et al.* (2006) investigated the genetic distance (GD) based on SSR markers between pairs of five maize testers and 28 inbred lines and assessed the relationship between GD and F_1 hybrid performance, specific combining ability (SCA) and mid-parent heterosis (MPH). One hundred and forty testcrosses were evaluated for grain yield in 2003, 2004 and 2005 at two locations, Karaj and Gorgan (only 2004), Iran. Significant positive but low correlations were found between GD and F_1

performance, SCA and MPH (0.27**, 0.39** and 0.28**, respectively). Testers affected the magnitude of correlations, with relatively high values revealed in the Mo17 crosses (0.54**, 0.61** and 0.61** for F_1, SCA and MPH, respectively) and lowest values in the B73 crosses. Although GD between parents correlated significantly with hybrid performance, the estimates of GD did not consistently identified the best crosses.

An experiment was conducted to evaluate grain yield of maize single cross hybrids obtained from diallel crosses among contrasting lines, to estimate the combining ability of the lines, and finally to confirm if the genetic diversity among those lines assessed by molecular markers was correlated with single cross hybrids heterosis by De-Souza *et al.* (2007). The 36 single cross hybrids resulting from partial diallel and 12 parental lines were evaluated in Campinas in randomized block design, with three replicates and two checks. General combining ability of the lines was estimated according to Griffing model 4. Correlations among matrices were estimated through Mantel statistics, considering heterosis, yield and specific combining ability with genetic divergence assessed by AFLP and SSR. The hybrids PM518 x L111 exhibited an outstanding yield and the lines PM518, IP4035 and L111 showed positive general combining ability. The estimated heterosis ranged from 927 to 6,698 kg ha^{-1}. A positive and significant correlation was observed in parental lines between heterosis and genetic diversity assessed by AFLP and SSR. The genetic divergence, however, was not enough to determine the specific combining ability and the hybrids yield.

Elisa *et al.* (2008) conducted an experiment to evaluate single cross hybrids of maize obtained from partial diallel crosses among contrasting inbred lines, to estimate the combining ability of the lines and to verify whether the genetic diversity among those lines assessed by molecular markers was correlated with heterosis. Thirtysix single crosses resulting

from partial diallel and the 12 parental lines were evaluated in Campinas, State of Sao Paulo, in randomized block design, with three replicates and two commercial checks. Correlations among matrices were estimated through Mantel statistics, considering heterosis, yield and specific combining ability with genetic divergence assessed by AFLP and SSR. Estimated heterosis ranged from -559 to 6.320 kg ha^{-1}. Non-significant correlation was observed between heterosis, specific combination ability or grain yield with genetic distance assessed by AFLP and SSR. Therefore, no prediction of hybrids performance was made on the basis of the genetic divergence of the parent lines.

An investigation was conducted by Pooja and Singh (2011) with five inbred lines, 10 single cross maize hybrids and two standard checks to study the combining abilities and heterosis under three environmental conditions. RAPD markers were used to study the genetic diversity (GD) and further to analyse relationship of RAPD based GD with combining ability and heterosis in short duration maize. Spearman's rank correlation coefficients and linear regressions were employed to identify the most important factor determining heterosis and *per se* performance of the hybrids. Variances due to GCA, SCA and their interactions with environment were found to be significant. Twenty random primers generated 179 RAPD fragments. Of these, 102 RAPD fragments were polymorphic. GD was determined using Jaccard's similarity coefficient and a dendogram was constructed by UPGMA cluster analysis. The RAPDs based GD exhibited non-significant negative or positive association, non-significant linear regression along with very low coefficient of determination (R^2) with SCA, high and mid parent heterosis (HP and MP) and *per se* performance of the hybrids. Significant positive correlations and regressions along with high coefficients of determination were recorded for SCA with HP, MP and *per se* performance of the hybrids. The HP and MP also established significant positive association

and linear regression along with high coefficient of determination with *per se* performance of hybrids whereas the parental mean did not establish any significant correlations with the GD, HPH, MPH and grain yield of F_1. Their investigation did not report any role of RAPDs based GD in determining hybrid heterosis and hybrid performance in short duration sub-tropical maize.

Dan *et al.* (2011) assessed the relationship between F_1 hybrid performance, genetic diversity and heterosis. The F_1 diallel hybrids and parental inbreds were evaluated under drought stress, low N stress and well-watered conditions at six locations in three countries. Clustering based on genetic distance (GD) calculated using combined marker data grouped lines according to pedigree. Positive correlation was found between mid-parent heterosis (MPH) and specific combining ability (SCA), genetic diversity and grain yield.

A study was conducted by Kustanto *et al.* (2012) to find out the heterosis value and genetic distance on several inbred lines and to find out the relationship between the genetic distance and heterosis in maize. Materials of the laboratory research included 35 genotypes of maize, which comprised of 33 inbred lines of the sixth-generation of selection (S6) and two open pollinated varieties *viz.,* Bisma and Lamuru. Materials for the field experiment included 140 F_1 hybrids, 28 lines, five testers were evaluated using Randomized Complete Block Design (RCBD) with two replications. Results of the research indicated the interaction of Line x Tester in all characters except for leaf length and kernel water content. The genetic distance between parents of the F_1 hybrid ranged from 0.25 to 0.65. Spearman's rank correlation coefficient between the genetic distance and SCA ranged from -0.009 – 0.143 and between the genetic distance and heterosis ranged from 0.120 – 0.181.

Twelve maize hybrids recommended for cropping in the south-central region of the Parana State and 66 crossings obtained among these hybrids were evaluated for agronomic and morphological traits by Rodrigo *et al.* (2012). These genotypes were evaluated in three experiments performed in Laranjeiras do Sul, Guarapuava and Cantagalo, Parana State, Brazil. Heterosis and specific combining ability (SCA) were estimated for yield of husked ears. Data from measuring 22 morphological traits of the parents were subjected to a multivariate joint analysis of variance and cluster analysis to group the parental hybrids via the neighbor method, using the generalized Mahalanobis distance. Pearson correlation coefficients between heterosis, SCA, D^2 and yield of husked ears were obtained. The cross P30F44 x Sprint displayed a high mean and a high heterosis for yield of husked ears, but a moderate estimate of genetic divergence. Estimates of genetic divergence were not effective in predicting the most heterotic crossings, as Pearson correlation coefficients between D^2 and heterosis and D^2 and SCA were non-significant. Positive significant correlations were observed between yield means and SCA and heterosis.

2.4 STABILITY ANALYSIS

2.4.1 Genotype x environment interaction

Successful cultivars must possess good yield and performance over a wide range of environments. The basic cause of differences in stability between genotypes is wide occurrence of genotype x environment interactions (G x E). It is therefore the interplay between genetic and non-genetic effects on development (Comstock and Moll, 1963). In other words, G x E is differential genotypic expression across environments (Basford and Cooper, 1998).

The phenotype of an individual is determined by the effects of its genotype and the environment surrounding it. The effects of genotype

and environment on phenotype may not be always independent. The phenotypic response to change in environment is not constant for all genotypes. Very often breeders encounter situations where the relative rankings of varieties change from location to location and/or from year to year. G x E interaction is present whether varieties are purelines, single-crosses, double-crosses, top-crosses, S_1 lines or any other material with which the breeder is working (Dabholkar, 1999).

An understanding of environmental and genotypic causes of G x E interaction is important at all stages of plant breeding, including ideotype design, parent selection based on traits and selection based on yield (Jackson *et al.*, 1998; Yan and Hunt, 1998). Understanding of the cause of G x E interaction can be helpful to establish breeding objectives, to identify ideal test conditions and to formulate recommendations for areas of optimal cultivar adaptation. It can also help to reduce the cost of extensive genotype evaluation by eliminating unnecessary testing sites and by fine tuning the breeding programmes. The presence of a large G x E interaction may necessitate establishment of additional testing sites, thus increasing the cost of developing commercially important varieties (Kang, 1996).

2.4.2 Genes and environment

Organisms are neither shaped by their genes nor by the environment, they are the consequence of interaction of both. Genotype describes the complete set of genes inherited by an individual which are important for the expression of traits under investigation. Phenotype describes all aspects of the individual's morphology, physiology and ecological relationships. The genotype is essentially a fixed component of the organism; it remains constant throughout life and is unchanged by environmental effects. The phenotype changes continually and the

direction of that change is a function of the sequence of environments that the individual experiences (Suzuki *et al.*, 1981).

Comstock and Moll (1963) classified environments into two categories, (i) Macro-environment *i.e.,* the environment which is associated with a given location at a particular period of time and (ii) Micro-environment *i.e.,* the environment of a single organism as opposed to that of another organism growing at the same time and in almost the same place. It includes physical and chemical attributes of soil, climatic variables, solar radiation, pests and diseases.

The terms 'predictable and unpredictable environments' were coined by Allard and Bradshaw (1964) to define and classify environments. The predictable environment includes the regular and more or less permanent features of the environment such as climate as determined by its longitude and latitude, soil type, rainfall and day length. It also includes what are called controllable variables (Perkins and Jinks, 1971) *e.g.* the level of fertilizer applied, sowing date and sowing density, amount of irrigation and others that can be artificially created. The unpredictable or uncontrollable environments, on the other hand, include weather fluctuations such as differences between seasons in terms of amount and distribution of rainfall and the prevailing temperature during the crop growth. The absence or low level of interaction will be useful for uncontrollable variables, whereas for the controllable variables a high level of interaction in the favourable direction is desirable to obtain maximal performance (Chahal and Gosal, 2002).

2.4.3 Classification of genotype x environment interaction

Genotype by environment interaction is evident when differences between genotypes are not consistent in all the locations within and

across the years (Edmeades *et al.*, 1989). It is the inconsistency of relative performance of genotypes over environments (Hill *et al.*, 1998). If two genotypes, A and B are evaluated in two environments 1 and 2, G x E interaction occurs when $A_1 - B_1 \neq A_2 - B_2$ where, A_1 and B_1 are the performance of genotype A and B in environment 1 and A_2 and B_2 are the performance of genotype A and B in environment 2.

When two genotypes A and B are grown in two different environments E_1 and E_2, six types of crossover and non-crossover interactions are possible (Allard and Bradshaw, 1964). The two varieties may show similar behaviour *i.e.,* parallel lines when grown in two environments which indicates independence in the performance of genotype and environment. The presence of G x E interaction leads to non-parallel response curves of varieties without intersecting each other or with interaction. The existence of non-intersecting but non-parallel lines suggests the relative ranking of varieties remains same, though their absolute differences vary with the environment. The G x E interaction is considered as crossover or qualitative if it leads to change in relative ranking of genotypes in different environments. The non-crossover or quantitative G x E interaction, on the other hand results in differential change of mean but not ranking of different genotypes.

Crossover interactions are of interest in plant breeding because these affect the genotypes to be selected in a given environment. Such interactions also suggests that genotypes are specifically adapted to environments. The non-crossover interaction, on the other hand, influences the nature and magnitude of components of genetic variances and other related parameters like heritability and genetic advance.

Performance tests over a series of environments provides information on G x E interaction at population level, but from practical point of view, it is important to measure the stability of the performance

of an individual genotype (Eberhart and Russell, 1966). The effects of genotypes and environments are statistically non-additive, which means that differences between genotypes are dependents of the environment.

G x E interaction occurs in both short term and long term crop performance testing. Usually researchers ignore G x E interaction encountered, especially in short term trials and genotype selection is based solely on mean performance across environments. Recently it was suggested that, it could be useful to incorporate G x E interaction into genotype selection in short term trials as well (Kang and Pham, 1991; Kang, 1993; Magari and Kang, 1993).

2.4.4 The concept of stability

The term "stability of genotypes" is central to all types of analyses of G x E interactions with special reference to plant breeding. Stability has been described in many ways over the years and there have also been different concepts of stability (Lin *et al.,* 1986).

Researchers use the terms adaptation, phenotypic stability and yield stability in different ways (Becker and Leon, 1988). Stability in common usage connotes consistency in performance that would mean minimum variation among environments for a particular genotype (Chahal and Gosal, 2002).

The stability with which a plant breeder is concerned implies stability in those aspects of phenotype which are important economically, such as grain yield and quality. Such stability may depend upon holding some aspects of morphology and physiology in a steady state but allowing others to vary. In this way, the desirable varieties will show low G x E interaction for agriculturally important characters, especially grain yield, but not necessarily for other characteristics. Two basic concepts of phenotypic stability are; i) the biological concept and ii) the dynamic

concept. The biological concept of stability refers to the constant performance of a genotype over a wide range of environments. This idea of stability is in agreement with the concept of homeostasis widely used in genetics. According to Becker and Leon (1988), in static stability a genotype possess unchanged performance regardless of variation of the environments, thus implying that its variance among environments is zero. This type is seldom a desired feature of crop cultivars, since no response to improved growing conditions would be expected. On the other hand dynamic stability, also termed as agronomical concept of stability, implies that a stable genotype should always give high yield expected at the level of productivity of the respective environments, *i.e.,* a variety with G x E interaction as small as possible (Becker, 1981; Dabholkar, 1999). With quantitative traits, the majority of genotypes often react similarly to favourable or unfavourable environmental conditions. Becker and Leon (1988) stated that all stability procedures based on quantifying G x E interaction effects belong to the dynamic stability concept. This includes the procedures for partitioning the G x E interactions of Wricke's (1962) ecovalence and Shukla's (1972) stability of variance, procedures using the regression approach proposed by Finlay and Wilkinson (1963), Eberhart and Russell (1966) and Perkins and Jinks (1968_a and 1968_b), as well as non-parametric stability statistics.

All living beings can make physiological adjustments which permit them to cope with fluctuations in their immediate environment. These adjustments themselves are known as adaptations. Adaptation is the property of a genotype which enables survival under selection. An adapted genotype or population is simply one which performs better than the standard under comparison (Dabholkar, 1999). According to Simmonds (1962) adaptation has the following four separable aspects;

1. *Specific genotypic adaptation*: Adaptation of the genotypes to a limited environment.
2. *General genotypic adaptation*: Capacity of a genotype to produce a range of phenotypes adapted to a variety of environments.
3. *Specific population adaptation*: is analogous to (1) and is the aspect of specific adaptation of heterogeneous population that is attributable to interaction between components rather than to the adaptations of components themselves.
4. *General population adaptation*: is analogous to (2) and is the capacity of a heterogeneous population to adapt to a variety of environments.

The aim of any breeding programme is to identify genotypes which are widely adapted. Ramagosa and Fox (1993) concluded that if a genotype maintains high yield over a wide range of environments, it is referred as general or wider adaptation. On the other hand, if this is true only for a limited range of environments, that genotype has specific or narrow adaptation.

Further to the stability concept by Becker and Leon (1988), Lin *et al.* (1986) categorized stability into three types;

1. If the variance of a genotype across environments is small, the genotype is considered to be stable. This concept is useful for quality traits, disease resistance or for stress characters. According to this concept the genotype performs similarly in different environments. This stability is static or can be seen as biological concept of stability (Becker and Leon, 1988). Genotype variances across environments (S_i^2) and the coefficient of variability (CV_i) are used as parameters to describe this type of stability (Francis and Kannenburg, 1978).

2. A genotype is considered stable if its response to environments is parallel to the mean response of all genotypes in the trial. According to Becker and Leon (1988) this concept is called the dynamic or agronomic concept of stability. In this case, a stable genotype has no deviations from the general response to environments and provides a way of predicting the response of a particular genotype to a specific environment. Parameters used to describe this type of stability are regression coefficients (b_i) (Finlay and Wilkinson, 1963; Shukla, 1972).
3. A genotype is considered stable if the residual mean square from the regression model on an environmental index is small. The environmental index is the deviation of mean yield of all the genotypes in each location from the grand mean of all the genotypes across locations. The method of Eberhart and Russell (1966) and Tai (1971) can be used for estimating type III stability.

2.4.5 Statistical methods to measure G x E interaction

Measurement of G x E interaction has always remained as an intriguing problem in the past, though many attempts were made to resolve it. However by early 1950's, the deadlock began to melt and clear concept 'stability of phenotypic performance' has emerged.

Comstock and Robinson (1952) measured the G x E interaction in terms of only one parameter, *i.e.,* means of genotypes over locations and years. Wricke (1962) also proposed his 'Ecovalence' based on means. Finlay and Wilkinson (1963) brilllintly defined and typified the environment, measurable in terms of 'site-mean' and identified two parameters of stability of genotypes; means and regression coefficients (linear response) associated with each genotype. Ebehart and Russell (1966) refined the Finlay and Wilkinson,s model and defined three stability parameters; means, regression coefficients (linear sensitivity)

and deviation from linearity (non-linear sensitivity) to describe varietal performance over time and space. Perkins and Jinks (1968_b) further refined Ebehart and Russell's model and estimated regression of G x E interaction (rather than genotypic means) on 'environmental index', but stability parameters remains the same. Hanson (1970) proposed a composite measure of stability obtained by combining the contribution of the ith genotype to the G x E variance with its response to environmental changes. Freeman and Perkins (1971) also improved the Ebehart and Russell's model with respect to making 'environmental index' really an independent variable. The main purpose of all these analysis is twofold; to select stable genotypes generally adapted over all types of environment or specifically adapted to rich or poor environments and to detect real genotypic differences free from non-heritable influences in genetic studies.

Abera *et al.* (2006) tested ten maize genotypes for grain yield across 15 environments. The combined analysis of variance for environments (E), genotypes (G) and GE interaction was highly significant. Javed *et al.* (2006) analysed stability of six maize genotypes across six locations. Pooled analysis of variance for grain yield indicated significant differences for genotypes across environments, environments across genotypes and their interactions. These significant interactions indicated uneven performance of the genotypes across environments and years.

Twenty one elite genotype of maize were evaluated in four environments by Kaundal and Sharma (2006) to assess the genotype environment interactions for grain yield and some other quantitative traits. The combined environment and genotype × environment variance were highly significant for all the traits.

Abdulai *et al.* (2007) studied nine genotypes for four years at eight locations in Ghana. Stability analysis identified seven stable genotypes,

when b_i values alone were considered. When the b_i values and the deviations from regression (S^2d_i) were considered (GH24 × 1368) × 5012 and (GH22 × 1368) × 5012 were most stable, but when coefficient of determination was added to the b_i value and S^2d_i, GH132-28 was the most stable genotype.

Seventy four genotypes of maize under four environments were evaluated by Dadheech and Joshi (2007a). Variance due to genotype, environment and genotype × environment interactions were found significant for oil, starch and protein contents.

Cardoso *et al.* (2007) assessed adaptability and yield stability of 15 maize cultivars and two triple maize hybrids under 41environments and revealed the performance of the cultivars significantly varied among the environments.

The stability of performance of CIMMYT tropical and subtropical elite QPM hybrids across stressed (drought and low N) and unstressed environments was assessed by Zaidi *et al.* (2008). In general, stress significantly affected all agronomic traits except male flowering. The effect was comparatively large under drought stress. Among the quality traits, grain protein, tryptophan and lysine contents showed significant variation across environments. However, the effect of stressed environments was comparatively small on protein quality traits, including tryptophan and lysine content in protein. The variation in protein quality across environments was statistically significant but largely due to genotypic variability. Variation due to environment and genotype by environment (G x E) interaction was statistically non-significant for protein quality traits, except in the case of lysine content in protein, where G x E was significant.

A study was conducted by Mosa *et al.* (2011) to identify the stable superior hybrids for grain yield under varying locations. Five promising white single crosses as well as four yellow three way crosses in addition to three cheek hybrids were evaluated in on-farm trials at eleven locations across Egypt. Highly significant differences among hybrids for grain yield were detected at each location and in the combined analysis across locations. Variances due to locations and hybrids x locations interaction were highly significant for grain yield. Linear and nonlinear components were highly significant. Behera location had highest environmental index and therefore it was considered as the most favorable environment for realizing the genotypes grain yield potential, while Minia was considered the poorest grain yielding location.

Mendes *et al.* (2012) have evaluated the performance, adaptability and stability of maize cultivars simultaneously in unbalanced experiments, using the method of harmonic means of the relative performance of genetic values. The 45 cultivars, including hybrids and varieties were evaluated in 49 environments in two growing seasons and revealed significant G x E interactions.

Material and Methods

III. MATERIAL AND METHODS

The details of the material used, methods followed and statistical tools employed for executing the experiment, collection and analysis of the data are presented in this chapter in the following order;

3.1 Experimental Site

3.2 Experimental material and layout

3.3 Analysis of variance

3.4 Analysis of genetic divergence

3.5 Analysis of combining ability and heterosis

3.6 Analysis of functional relationships

3.7 Stability analysis

3.1 EXPERIMENTAL SITE

The crossing work as well as multiplication of inbreds were carried out during *kharif* 2011 at the experimental plots of D block, Zonal Agricultural Research Station V.C. Farm, Mandya (Zone 6). Evaluation of inbreds and hybrids for diversity, combining ability and stability was conducted during *kharif* 2012 at three locations *viz.,*

1. Environment 1 (E_1): Farmer's field, Yatnahalli village, Masur Hobli, Ranibennur Taluk (Zone 8, 12^0 34' 05.01" N 76^0 49' 37.68" and E 2324 ft. MSL)
2. Environment 2 (E_2): Agricultural Research Station, Bhavikere (Zone 7, 13^0 43' 37.11" N 75^0 43' 35.52" and E 2141 ft. MSL)
3. Environment 3 (E_3): Zonal Agricultural Research Station, Mandya (Zone 6, 14^0 20' 50.49" N 75^0 27' 40.91" and E 1966 ft. MSL)

The molecular work was conducted at MAS Lab, Department of Genetics and Plant Breeding, Gandhi Krishi Vignana Kendra, University of Agricultural Sciences, Bangalore.

3.2 EXPERIMENTAL MATERIAL AND LAYOUT

3.2.1 Field experiments

Material for this study included 100 inbreds (Table 1) collected from All India Coordinated Maize Improvement Project, ZARS, V.C. Farm, Mandya, 216 hybrids produced by crossing 54 inbreds with four testers (CM-500, SKV-50, MAI-105 and LM-13) in Line x Tester mating design and nine commercial check hybrids (Hema, Nityashree, Decalb 8101, 30V92, NK 6240, Pinnacle, CP 818, 900M Gold and PHI 3501) notified by the Central Variety Release Committee (CVRC) for South Zone. The data were recorded on 16 morphological characters for all the 100 inbreds for pooled diversity analysis across three locations. The data recorded on 58 parents (*i.e.,* 54 lines and 4 testers), 216 hybrids and 9 check hybrids was analyzed for pooled combining ability, heterosis and stability across three locations.

Simple lattice design with two replications in each location was laid out for inbreds (10 x 10) and hybrids (15 x 15) separately. A total of 100 inbreds and 225 hybrids (216 newly developed hybrids + nine commercial checks) were allotted to each plot of every replication in each location completely at random. Each genotype was sown in single row of four meter length with a spacing of 0.2 m between the plants and 0.6 meter between the rows. The recommended package of practices for respective locations were followed to raise healthy crop.

3.2.2 Recording of observations

Five plants in each genotype were tagged at random from each and every replication for recording observations on following traits except for

Table 1. List of maize inbreds used in the present investigation

Sl. No.	Inbred	Source	Sl. No.	Inbred	Source	Sl. No.	Inbred	Source
1	V-1005	DMR	34	CML-358	CIMMYT	67	SKV-42	DMR
2	V-1036	DMR	35	CML-359	CIMMYT	68	SKV-65	DMR
3	V-1150	DMR	36	CML-411	CIMMYT	69	SKV-70	DMR
4	V-1154	DMR	37	DMR-N-21	DMR	70	V-632-112	DMR
5	V-1168	DMR	38	EC-598475	DMR	71	V-632-67	DMR
6	V-1522	DMR	39	HKI-1105	DMR	72	Z-49-20	CIMMYT
7	V-1649	DMR	40	HKI-164-4	DMR	73	Z-50-3	CIMMYT
8	V-1742	DMR	41	HKI-193-1	DMR	74	Z-51-1	CIMMYT
9	V-2205	DMR	42	HKI-193-2	DMR	75	Z-51-6	CIMMYT
10	V-2232	DMR	43	HKI-36 (1+2)	DMR	76	Z-52-29	CIMMYT
11	V-1410-1	DMR	44	K-10-11 (1201)	DMR	77	Z-52-3	CIMMYT
12	V-1712-1	DMR	45	LTP-1	DMR	78	Z-52-4	CIMMYT
13	V-241-2	DMR	46	MAI-115	DMR	79	Z-54-2	CIMMYT
14	V-2436-1	DMR	47	MAI-107	DMR	80	Z-55-10	CIMMYT
15	V-2437-1	DMR	48	MAI-109	DMR	81	Z-56-1	CIMMYT
16	V-2441-4	DMR	49	MAI-112	DMR	82	Z-56-5	CIMMYT
17	V-2459-2	DMR	50	MAI-121	DMR	83	Z-56-8	CIMMYT
18	V-2516-2	DMR	51	MAI-137	DMR	84	Z-57-27	CIMMYT
19	V-2608-1	DMR	52	MAI-27	DMR	85	Z-57-4	CIMMYT
20	V-291-2	DMR	53	MAI-29	DMR	86	Z-57-5	CIMMYT
21	V-70-1	DMR	54	MAI-35	DMR	87	Z-59-36	CIMMYT
22	CIMMYT-10	CIMMYT	55	MAI-40	DMR	88	Z-60-22	CIMMYT
23	CIMMYT-47	CIMMYT	56	MAI-44	DMR	89	Z-62-55	CIMMYT
24	CIMMYT-5	CIMMYT	57	MAI-45	DMR	90	Z-62-67	CIMMYT
25	CM-115	DMR	58	MAI-48	DMR	91	Z-62-9	CIMMYT
26	CM-149	DMR	59	MAI-706	DMR	92	Z-63-16	CIMMYT
27	CM-212	DMR	60	Q-Y-2593-3	DMR	93	Z-63-17	CIMMYT
28	CML-165	CIMMYT	61	S-9951 YQ	DMR	94	Z-63-18	CIMMYT
29	CML-166	CIMMYT	62	SKV-15	DMR	95	Z-63-30	CIMMYT
30	CML-169	CIMMYT	63	SKV-24	DMR	96	CM 500*	DMR
31	CML-172	CIMMYT	64	SKV-31	DMR	97	SKV 50*	DMR
32	CML-304	CIMMYT	65	SKV-32	DMR	98	MAI 105*	DMR
33	CML-335	CIMMYT	66	SKV-39	DMR	99	LM 13*	DMR
Note: * Inbred used as tester						100	HKI 193	DMR

days to 50 per cent tasseling, silking and brown husk. The observations were recorded at appropriate stages of plant growth in a prescribed manner at all the three locations. Mean of 5 samples for each character was used for all the intended statistical analysis.

1. **Days to 50 per cent anthesis**: The number of days from sowing up to the day on which 50 per cent of the plants shed pollen grains was recorded.
2. **Days to 50 per cent silking**: The number of days from sowing up to the day on which 50 per cent of plants exhibited silk emergence was recorded.
3. **Anthesis silking interval**: The difference between the days to 50 per cent anthesis and days to 50 per cent silking was calculated.
4. **Days to 50 per cent brown husk**: The number of days from sowing up to the day on which 50 per cent of plants exhibited complete brown hush was recorded.
5. **Ear height (cm)**: Height from ground level up to the base of the upper most ear bearing internode was recorded in centimetres.
6. **Plant height (cm)**: Height of the plant from ground level up to the base of fully opened flag leaf at maturity was recorded in centimetres.
7. **Ear weight per plant (g)**: The average weight of sun dried ears from five randomly tagged plants was recorded in grams.
8. **Cob weight per plant (g)**: The average weight of sun dried cobs from five randomly tagged plants was recorded in grams.
9. **Grain yield per plant (g):** The average weight of sun dried grains after shelling from five randomly tagged plants was recorded in grams.

10. **Shelling percentage**: The grain yield per plant was expressed as percentage of cob weight per plant.
11. **Harvest index**: The grain yield per plant was expressed as percentage of total shoot biomass.
12. **Test weight (g)**: The weight of sun dried 100 grain samples drawn at random was recorded in grams.
13. **Grain rows per cob**: Grain rows per cob were counted and recorded.
14. **Grains per row**: Grains per row were counted and average was recorded.
15. **Cob length (cm)**: Length of the cob measured from bottom to the top in centimetres was recorded.
16. **Cob girth (cm)**: Diameter of the cob in the middle portion was measured and recorded in centimetres.

3.3 ANALYSIS OF VARIANCE (Simple Lattice Design)

The total variance present in inbreds and hybrids was dissected into the following attributes (Snedecor and Cochran, 1968).

Source of variation	**Degrees of freedom**	***MSS***
Replications	*(r-1)*	*RMSS*
Treatments - unadjusted	(t^2-1)	*TMSS (unadj.)*
- adjusted	(t^2-1)	*TMSS (adj.)*
Blocks within reps (adj.)	*r(t-1)*	*BMSS (adj.)*
Intra-block error	*sub*	*EMSS*
Total	(rt^2-1)	

Where,

r = no. of replications

t = no. of treatments

3.4 ANALYSIS OF GENETIC DIVERGENCE

3.4.1 Morphological diversity

Mahalanobis (1936) D^2 statistic was used for assessing the pair wise genetic divergence among test inbred entries. The location wise adjusted mean values were subjected for pooled phenotypic diversity analysis.

$$D^2_p = d^1 S^{-1} d$$

Where,

D^2_p = Square of distance considering 'p' traits

d = Vector of observed differences of the mean values of 'p' traits

d^1 = Transpose of vector of observed differences of the mean value of 'p' traits

x_{i1} = Vector of the mean values of all the characters

S^{-1} = Inverse of variance and covariance matrix

Since investigating the inverse matrix is complicated, the original correlated variable (x_i) was transformed to non-correlated variables (y_i). The computation of D^2 values reduced to simple summation of the squares of the difference between the values of transformed variables of the two populations. This transformation was done by pivotal condensation method. These newly transformed uncorrelated variables were used to calculate the square of distance using the formula

$$D^2 = (Y_{i1} - Y_{i2})^2$$

Where,

Y = transformed mean values of 'p' traits

The square root of D^2 provided general distance between two genotypes. The D^2 values were arranged in a matrix form. The significance of D^2 values between any two populations was tested using Hotelling's T^2 statistic.

$$T^2 = [(n_1 + n_2)/n_1 n_2]\ D^2$$

Using T^2, the F values were calculated

$$F = \frac{(n_1 + n_2) - P - 1}{(n_1 + n_2 - 2)\ P} \times T^2$$

Where,

P = number of traits

n_1 = number of individuals in first population

n_2 = number of individuals in second population

This computed F value was compared with the table F value at five and one per cent level of significance at P and $(n_1 + n_2 - P - 1)$ degrees of freedom.

3.4.1.1 Clustering of genotypes based on the D^2 statistic

The genotypes were grouped into different clusters following Tocher's method as described by Rao (1952). All the calculated ${}^nC_2\ D^2$ values were arranged in increasing order of magnitude for each entry. Two genotypes with least distance were considered first and named as cluster I. To this a third genotype with smallest distance from the first two genotypes was added. Now the average increase in D^2 value after addition of third genotype to the cluster I was calculated. If this distance is less than the largest D^2 value between any two genotypes in the first row of the table where the D^2 values were arranged in increasing order of magnitude, then the third genotype was included in cluster I. Similarly the possibility of addition of each genotype in cluster I was explored. If the average increase in the D^2 exceeds the threshold, then such genotype was not included in the corresponding cluster and a new cluster was formed. The process is continued till all the genotypes were included into one or the other cluster.

3.4.1.2 Intra cluster distance

The intra cluster distances were calculated according to Singh and Chaudhary (1977).

$$\text{Intra cluster distance} = \sqrt{(\Sigma D^2_i / n)}$$

Where,

ΣD_i^2 = sum of squared distance between all possible combinations of entries included in a cluster.

n = number of all possible combinations

3.4.1.3 Inter cluster distance

The inter cluster distances were calculated by the formula described by Singh and Chaudhary (1977).

$$\text{Inter cluster distance} = \sqrt{(\Sigma D^2_i / n_i n_j)}$$

Where,

ΣD_i^2 = sum of squared distances between all possible combinations ($n_i n_j$) of entries included in the clusters i and j.

n_i = number of entries in cluster i

n_j = number of entries in cluster j

3.4.2 Molecular diversity

Ninety six inbreds were genotyped using 33 Simple Sequence Repeat (SSR) markers (Table 2) (www.maizegdb.org) as described below.

3.4.2.1 DNA extraction

Leaf sample collection

One young leaf measuring around 15 cm length and free from necrotic areas, lesions and diseases was plucked and placed in aluminium foil with holes to allow good air flow. The labelled and folded foils were placed in ice chest to keep samples cool in the field and then

liquid nitrogen was added to quick-freeze the samples and stored at -80°C.

CTAB extraction buffer

STOCK	100 ml
dH_2O	65 ml
1 M TRIS - 7.5	10 ml
5 M NaCl	14 ml
0.5 M EDTA - 8.0	10 ml
CTAB (Cetyl trimethyl-ammonium bromide)	1 g
14.3 M β-mercaptoethanol	1 ml

Genomic DNA isolation (Saghai-Maroof *et al.*, 1984)

- CTAB extraction buffer was pre heated to 65°C.
- 0.5-1 g of leaf sample was placed in a sterilized pestle and mortar and powdered in liquid nitrogen.
- 50 mg of ground leaf tissue was placed in 2.0 ml tube and 1 ml of CTAB extraction buffer was added and mixed by gentle swirling to homogenize the tissue with the buffer.
- Samples were incubated at 65°C for 90 min with continuous gentle rocking.
- Tubes were removed from the oven and allowed to cool for 5-10 min.
- 500 µl of chloroform: octanol (24:1) was added and mixed gently with continuous rocking for 10 min at room temperature.
- Centrifuged at 3500 rpm at room temperature for 10 min to generate a yellow aqueous phase and a green organic phase.
- Approximately 750 µl of the yellow aqueous phase was removed and placed in a new 1.5 or 2.0 ml tube containing 5 µl RNAse.

Table 2. Details of SSR primers used for molecular diversity analysis

Sl. no.	Primer	Forward (5^{-1}- 3^{-1})	Reverse (5^{-1}- 3^{-1})	Ch. no.	Bin location
1	*bnlg1047*	ATGGAGATGGAGGAGAGAGAGA	GATGCGGCGATGGCTAA	2	2.05
2	*bnlg107*	GCAACTAGAAGTAGATGGCTTGTTATGG	CAACAACAAGTGGCTGGCTAGGGTGAA	6	6.01
3	*bnlg1073*	TCGATCTAAGTATTGTAAACGTACG	GTATTTGGAGGCGCCATAGA	8	8.01
4	*bnlg1091*	GCCAGCTGATGTCTGATGAACAGCACA	GATCGGGCCAGATTTCTCAAGTCGTCA	9	9.01
5	*bnlg1139*	GGGGGGTTGAGAGAGAAAAA	ACGGCGATGATGAATTAAG	6	6.01
6	*bnlg1165*	CGCTTGCATCATCTCAAGAA	TTCAAGTTTAGCCACCCACC	6	6.01
7	*bnlg1200*	CGTCCTCGTTGTTATTCCGT	GTTCCCTCTCTCCCTCCCTC	7	7.01
8	*bnlg1347*	GTGGTCACGACGAAATCCTT	TTGCAATCACACAGGTGGTT	1	1.10
9	*bnlg1407*	CACTCGGTTTTTGCTTAGCC	GTGTCGTCGAGTGCATGC	2	2.05
10	*bnlg1449*	AGTCAACGTAGCTGGCGAGT	TTCACGACGGGTCTCTCTCT	3	3.06
11	*bnlg1716*	AAATAACCAGAACATGCCGC	CGCAACTTTCATCGAGTTGA	10	10.03
12	*bnlg2077*	GACCAGAGGATGGGGAAATT	GTAGGCACATGCACATGAGG	2	2.07
13	*mmc0381*	GTGGCCCTGTTGATGAG	CGACGAGTACCAGGCAT	2	2.08
14	*mmc0041*	CTCAGCTGCACTCCACA	CCTTCCTTCTTCTCCAGC	1	1.08
15	*phi077*	GAGAAGAGGATCAGGTTCGTTCCA	CGCGTTGTACATCTTGCCTGCTT	6	6.01
16	*phi126*	TCCTGCTTATTGCTTTCGTCAT	GCTTGCATATTTCTTGTGGACA	6	6.00
17	*phi402893*	GCCAAGCTCAGGGTCAAG	CACGAGCGTTATTCGCTGT	2	2.00
18	*umc1240*	GCAGCAGGTATTGGAAGTCGTAGT	CTGGTCCCTCAGGAAATCCAT	5	5.00

Sl. no.	Primer	Forward (5^{-1}- 3^{-1})	Reverse (5^{-1}- 3^{-1})	Ch. no.	Bin location
19	*umc1256*	CATCTCGACCTTTGACATTCTCCT	AGAAGACGATGATGATGATGCAGA	2	2.09
20	*umc1260*	CTTAAGCAGAGCTCAAAAACTGCC	TAAATTGTCAAGCGAGGTTTGGAT	5	5.00
21	*umc1409*	GCTAGTAGACATCGACGGATCGAC	ATGACGTCCAGGAGGATGACC	7	7.01
22	*umc1446*	GCGCTGCTGCTTCTTAAATTATCT	GATGAGACCACCTACAAGTTCGCT	1	1.08
23	*umc1542*	TAAAGCTATGATGGCACTTGCAGA	CATATTTGCCTTTGCCCTTTTGTA	2	2.02
24	*umc1553*	TGAATGGAAGAGAAGGGAAATCTG	GCTCTGTACATCCTTAGCGACACA	1	1.11
25	*umc1622*	CGCTACAAATCCTACTGGTGCTTT	CCTCGGATTTTCCAAAACATTTCT	2	2.00
26	*umc1737*	ATGCTTCTCTTCAGAAGCCATCC	TAGCTAGGTAGTGATGTGCGTGCT	1	1.10
27	*umc1883*	GAATAATCAATCCATCGATCTCGC	AACTGCTGTGGATGAAAGAGGAAG	6	6.00
28	*umc1884*	TAGGAGCAGTATGAGAGGGCACTT	CTTTTTCTAGCGATCATTCTCCCA	2	2.05
29	*umc1894*	TTTCTCATGACATTGCAAGCATCT	TATGCAAAAGGTGAGCCTGCTTAT	5	5.10
30	*umc2007*	GTGCATATGCGCACGGAAGT	AGTAGTTACACAACGCAACACGAGG	2	2.04
31	*umc2078*	ACTGATGGTGTTCTTGGGTGTTTT	ATACACGCAGTTACCCGAAGGTT	9	9.01-9.02
32	*umc2363*	TTGACTCGAAAGACTTGTGAGCTG	GTGTGTCAGAAGGAGGACTGATGA	2	2.01-2.02
33	*umc2375*	TCTGACATTGTCCTCTTGACCAAA	GCCGTACTGATGTGATGGTCC	6	6.06

Ch. no. : Chromosome number

- Mixed with gentle inversion and incubated at 37°C for 30 min.
- Equal volume of ice-cold 100% ethanol was added to precipitate the nucleic acid.
- Centrifuged at 3500 rpm at room temperature for 30 min to form a pellet at the bottom of the tube and the supernatant was discarded.
- DNA pellet was gently washed with 1 ml of 75% ethanol and ethanol was discarded by decantation.
- Pellet was air-dried until ethanol evaporated completely and re-suspended in 1 ml of 10 mM TE buffer.
- Samples were stored at 4°C for immediate use.

Purification steps

- 0.4 ml mixture of phenol: chloroform: isoamyl alcohol (25:24:1) was added and mixed by inverting. The tubes were then centrifuged at 14,000 rpm for 10 min.
- The supernatant was transferred to fresh tubes and equal volume of mixture of chloroform: isoamyl alcohol (29:1) was added and centrifuged at 14,000 rpm for 10 min.
- Steps 1 and 2 were repeated. Supernatant was transferred to fresh tubes.
- 200 µl sodium acetate (3 M, pH 5.2) (about 1/10th volume of aqueous layer) and about 2.5 ml absolute alcohol was added to the supernatant, mixed gently and incubated at -20°C for 15-20 min.
- The DNA was dried after washing with 70% alcohol and dissolved in 10 mM TE buffer (200 µl) and stored at 4°C.

3.4.2.2 DNA quantification and quality check

The quantity and quality of DNA was assessed by agarose gel electrophoresis as described below.

Reagents

1. Agarose
2. 1X TBE buffer: 109g of TRIS and 55g of boric acid were dissolved one by one in 800ml distilled water; then 40 ml of 0.5M EDTA (PH 8.0) was added. The volume was made up to 1 liter with distilled water and sterilized by autoclaving. This was stored at 4^0 C. To prepare working solution (1X), the stock solution was diluted 10 times.
3. Ethidium bromide (10 mg/ml): 100mg ethidium bromide was dissolved in 10 ml of distilled water. The container was wrapped with aluminium foil and stored at 4^oC.
4. Loading dye: Bromophenol blue (0.05% w/v), sucrose (40% w/v), EDTA (0.1 M, pH 8.0), and SDS (0.5% w/v).

Procedure

Agarose (0.8 g) was added to 100 ml of 1X TBE buffer and the contents were heated using microwave oven until the agarose completely dissolved. After cooling to 60° C, 5µl ethidium bromide solution was added and resulting mixture was poured into the gel-casting tray for solidification. Before the gel solidified, an acrylic comb of desired well number was placed on the agarose solution to form wells for loading samples. Each well was loaded with 5 µl of sample aliquot having 2 µl distilled water, 2 µl loading dye and 1 µl of DNA sample. The DNA sample of known concentration (Lamda of 50ng/µl) was loaded on to the gel to estimate the DNA concentration of the experimental samples. The

electrophoresis was conducted at 70V for 20 minutes. DNA on the gel was visualized under UV light and photographed. If the DNA was observed as a clear and intact band, the quality was assessed as good, where as a smear of DNA indicated poor quality. The band intensity was compared with lambda DNA to estimate the approximate quantity of DNA.

3.4.2.3 PCR amplification

Reaction mixture

Genomic DNA of all the genotypes were diluted to 5ng/µl and used as template for amplification of SSR markers. PCR reactions were performed in 10 µl reaction mixture consisting of 1µl DNA template, 1 µl of 10X standard Taq buffer, 1 µl 2mM dNTPs, 0.7 µl forward primer and 0.7 µl reverse primer of 10pmole/µl, 0.15 µl Taq polymerase (*SIGMA-ALDRICH*) of 3U/ µl and 5.5 µl sterilized distilled water.

Amplification conditions

Touch-down PCR amplification was carried out in *EPPENDORF AG* (Heating rate 4^0C/S and cooling rate 3^0C/S) and *BIO-RAD* MyCycler™ Thermal Cycler (Heating rate 2.5^0C/S and cooling rate 1.5^0C/S).

1	Initial denaturation temperature	94°C	5 min
2	Denaturation	94°C	1 min
3	Primer annealing	61°C - 58°C (-0.2°C/cycle)	45 sec
4	Primer extension	72°C	1 min
Steps 2, 3, & 4 were repeated 16 times			
5	Denaturation	94°C	1 min
6	Primer annealing	58°C	45 sec
7	Primer extension	72°C	1 min
Steps 5, 6 & 7 were repeated 30 times			
8	Final extension	72°C	10 min
9	Soak temperature (at Hold)	4°C	Hold

3.4.2.4 Gel electrophoresis

High resolution agarose gel of 3.5 per cent was prepared in a volume of electrophoresis buffer (1x TAE) sufficient for constructing a gel (300 ml for 18 x 30 cm gel). Ethidium bromide was added at concentration of 0.5 μg/ml of gel. The gel was allowed to set fully before removing the comb and loading the samples. Five μl of loading dye was added to 10 μl of PCR products and mixed well before loading into the wells. Care was taken to prevent mixing of samples between the wells. A voltage of 1-5 v/cm was given for a time period of three hours for separation of PCR fragments. After electrophoresis, the resolved DNA was viewed under UV light and documented (BIO-RAD Gel doc unit).

3.4.2.5 Scoring for polymorphism

The bands generated by each SSR primers were scored by giving different numbers for each level/allele.

3.4.2.6 Analysis of SSR profiles

The scored data of 33 SSR primers on 96 genotypes was statistically analyzed to estimate pair-wise genetic distance (Jaccard, 1901) and genotypes were grouped into different clusters using Unweighted Pair Group Method with Arithmetic average (UPGMA) algorithm (Sokal and Michener, 1958). The polymorphic information content (PIC), gene diversity and major allele frequency were calculated according to Weir (1996).

***Jaccard's similarity coefficient* (Jaccard, 1901)**

The Jaccard coefficient was employed to measure the overlap between all possible pairs of inbreds. Given two inbreds, A and B, each with n binary attributes (each attribute of A and B can either be 0 or 1),

the total number of each combination of attributes for both *A* and *B* can be specified as follows:

M_{11} = represents the total number of attributes where *A* and *B* both have a value of 1

M_{01} = represents the total number of attributes where the attribute of *A* is 0 and the attribute of *B* is 1

M_{10} = represents the total number of attributes where the attribute of *A* is 1 and the attribute of *B* is 0

M_{00} = represents the total number of attributes where *A* and *B* both have a value of 0

Each attribute must fall into one of these four categories, which means,

$$M_{11} + M_{01} + M_{10} + M_{00} = n$$

Then, Jaccard's similarity coefficient '*J*' was calculated as,

$$J = M_{11} / (M_{01} + M_{10} + M_{11})$$

and Jaccard's distance '*J'*' was calculated as,

$$J' = (M_{01} + M_{10}) / (M_{01} + M_{10} + M_{11})$$

Unweighted Pair Group Method with Arithmetic Mean **(UPGMA)**

The UPGMA algorithm was used to construct a rooted tree (dendrogram) which reflected the structure present in a pairwise similarity matrix generated according to Jaccard (1901). At each step, the nearest two clusters are combined into a higher level cluster according to the procedures defined by Sokal and Michener (1958). The distance between any two inbreds A and B was taken as the average of all distances between pairs of scores '*x*' in A and '*y*' in B. the parameters

viz., PIC, Gene diversity and Major allele frequency were calculated as follows.

Polymorphism Information Content **(Botstein *et al.*, 1980)**

$$\widehat{PIC}_l = 1 - \sum_{u=1}^{k} \tilde{p}_{lu}{}^2 - \sum_{u=1}^{k-1} \sum_{v=u+1}^{k} 2\tilde{p}_{lu}^2 \tilde{p}_{lv}^2$$

Gene diversity

$$\hat{D}_l = (1 - \sum_{u=1}^{k} \tilde{p}_{lu}{}^2)/(1 - \frac{1+f}{n})$$

Major allele frequency

$$\tilde{p}_u = n_u /(2n)$$

$$\mathrm{var}(\tilde{p}_u) \triangleq \frac{1}{2n}(\tilde{p}_u + \tilde{P}_{uu} - 2\tilde{p}_u^2)$$

Where,

n	=	number of individuals
m	=	number of polymorphic loci
P_u	=	population frequency allele A_u genotype
P_{lu}	=	population frequency of lth locus
P_{luv}	=	population frequency of A_uA_v genotype
A_u	=	genetic locus with a series of alleles
n_u & n_{uv}	=	counts of alleles and genotypes
n_{lu} & n_{luv}	=	counts of alleles and genotypes of lth locus

3.4.3 Relationship between morphological and molecular diversity

The test of correlation between morphological and molecular dissimilarity matrices was conducted using Mantel's test (Mantel, 1967), which is based on a simple cross-product term:

$$z = \sum_{i=1}^{n} \sum_{j=1}^{n} x_{ij} y_{ij}$$

and is normalized as:

$$r = \frac{1}{(n-1)} \sum_{i=1}^{n} \sum_{j=1}^{n} \frac{(x_{ij} - \bar{x})}{s_x} \cdot \frac{(y_{ij} - \bar{y})}{s_y}$$

Where,

r = correlation coeffecient

x = variable based on morphological diversity

y = variable based on molecular diversity

n = number of elements in the distance matrices

s_x = standard deviation of variable x

s_y = standard deviation of variable y

Mantel's test of significance was conducted using permutation procedures. The analysis was performed using NTSYS statistical package.

3.5 ANALYSIS OF COMBINING ABILITY AND HETEROSIS

3.5.1 Pooled Modified Line x Tester analysis of variance

The adjusted mean values of the data recorded on five randomly tagged plants in each entry of each replication for three locations on16 traits were subjected to statistical analysis. Pooled variance was analysed according to Kempthorne (1957), keeping in view the cautions given by Arunachalam (1974) using *Windostat Version 9.1* statistical program.

Structure of pooled modified Line x Tester ANOVA

Source of variation	Degrees of freedom	MSS	Expectations of MSS
Replications	*(r-1)*		
Environments	*(e-1)*		
Rep. × Env.	*(r-1)(e-1)*		
Treatments	*(g-1)*		
Parents	*(p-1)*		
Lines	*(l-1)*		
Testers	*(t-1)*		
Lines v/s Testers	*1*		
Parents v/s Crosses	*1*		
Crosses	*(lt-1)*		
Line effect	*(l-1)*	MS_1	$\sigma^2_e + r\sigma^2_{lte} + r\sigma^2_{le} + re\sigma^2_{lt} + rte\sigma^2_l$
Tester effect	*(t-1)*	MS_2	$\sigma^2_e + r\sigma^2_{lte} + r\sigma^2_{te} + re\sigma^2_{lt} + rle\sigma^2_t$
Line × Tester effect	*(l-1)(t-1)*	MS_3	$\sigma^2_e + r\sigma^2_{lte} + re\sigma^2_{lt}$
Env. × Treatments	*(e-1)(g-1)*		
Env. × Parents	*(e-1)(p-1)*		
Env. × Lines	*(e-1)(l-1)*		
Env. × Tesrers	*(e-1)(t-1)*		
Env. × Lines v/s Testers	*(e-1)*		
Env. × Par. v/s Cros.	*(e-1)*		
Env. × Crosses	*(e-1)(lt-1)*		
Env. × Line effect	*(e-1)(l-1)*	MS_4	$\sigma^2_e + r\sigma^2_{lte} + rte\sigma^2_{le}$
Env. × Tester effect	*(e-1)(t-1)*	MS_5	$\sigma^2_e + r\sigma^2_{lte} + rte\sigma^2_{le}$
Env. × (Line × Tester)	*(e-1)(l-1)(t-1)*	MS_6	$\sigma^2_e + r\sigma^2_{lte}$
Error	*sub*	MS_7	σ^2_e
Total	*(reg-1)*		

Where,

e = Number of environments

r = Number of replications

p = Number of parents

g = Number of genotypes/entries

t = Number of male parents (testers)

l = Number of female parents (lines)

σ^2_l = Variance due to lines

σ^2_t = Variance due to testers

σ^2_{lt} = Variance due to line x tester interaction

σ^2_{le} = Variance due to line x environment interaction

σ^2_{te} = Variance due to tester x environment interaction

σ^2_{lte} = Variance due to (line x tester) x environment interaction

Variance components were estimated by equating mean squares due to expectations and used for estimating appropriate components.

$\sigma^2_l = (MS_1\text{-}MS_3\text{-}MS_4\text{+}MS_6)/rtn$

$\sigma^2_t = (MS_1\text{-}MS_3\text{-}MS_4\text{+}MS_6)/rln$

$\sigma^2_{lt} = (MS_3\text{-}MS_6)/rn$

$\sigma^2_{le} = (MS_3\text{-}MS_6)/rt$

$\sigma^2_{te} = (MS_5\text{-}MS_6)/rl$

$\sigma^2_{lte} = (MS_6\text{-}MS_2)/r$

Variance components for GCA, SCA and their respective interactions with the environments were calculated as follows:

σ^2_{gca} = Cov. (HS) = $(MS_1\text{+}MS_2\text{-}2MS_3\text{-}MS_4\text{-}MS_5\text{+}2MS_6)/relt$

σ^2_{sca} = Cov. (FS) – 2 Cov. (HS) = $(MS_3\text{-}MS_6)/re$

Assuming the absence of epistasis:

σ^2_D (Additive genetic variance) = 2 Cov. (HS) = 2 σ^2_{gca}

σ^2_H (Dominance genetic variance) = Cov. (FS) – 2 Cov. (HS) = σ^2_{sca}

Where,

HS = Half sibs

FS = Full sibs

3.5.2 Estimation of general and specific combining ability effects

The following linear model was used to estimate general combining ability (gca) and specific combining ability (sca) effects.

$$X_{ijkr} = \mu + l_i + t_j + (lt)_{ij} + e_k + (le)_{ik} + (te)_{jk} + (lte)_{ijk} + e_{ijkr}$$

Where,

X_{ijkr} = Value of $ijkr^{th}$ observation

μ = population mean

l_i = gca effect of ith line

t_j = gca effect of jth tester

$(lt)_{ij}$ = sca effect of ij^{th} hybrid

e_k = effect of the Kth environment

$(le)_{ik}$ = i^{th} line and k^{th} environment interaction effect

$(te)_{jk}$ = j^{th} line and k^{th} environment interaction effect

$(lte)_{ijk}$ = hybrids and environment interaction effect

e_{ijkr} = random error effects associated with $ijkr^{th}$ observation

l = number of lines

t = number of testers

e = number of environments

k = number of replications

The individual effects were estimated as follows:

3.5.2.1 General combining ability effects

a) Lines: $g_i = (x_i / rte) - (x / rlte)$

Where,

g_i = general combining ability effect of ith line

x_i = total of ith line over all testers, replications and environments.

x = total of all hybrids over replications and environments.

b) Tester: $g_j = (x_j / rle) - (x / rlte)$

Where,

g_j = general combining ability effect of jth tester

x_j = total of jth tester over all lines, replications and environments.

x = total of all hybrids over replications and environments.

3.5.2.2 Specific combining ability effects

$$s_{ij} = (x_{ij} / re) - (x_i / rte) - (x_j / rle) - (x / rlte)$$

Where,

S_{ij} = Specific combining ability effect of ij^{th} hybrid

x_{ij} = Total of ij^{th} combination over all replications and environments

x_i = Total of ith line over all testers, replications and environments.

x_j = Total of jth tester over all lines, replications and environments.

x = Total of all hybrids over replications and environments.

The standard errors for testing the significance of *gca* and *sca* effects were estimated using the following formulae:

Standard error (S.E.) of $g_i = (MS_7/tre)^{1/2}$

Standard error (S.E.) of $g_j = (MS_7/lre)^{1/2}$

Standard error (S.E.) of $s_{ij} = (MS_7/re)^{1/2}$

Where, MS_7 = Error mean sum of squares

The estimates of g_i , g_j and s_{ij} were tested for their statistical significance by means of '*t*' test.

$$t_{gi} = (g_i - 0)/SE_{gi}$$

$$t_{gj} = (g_j - 0)/SE_{gj}$$

$$t_{gj} = (s_{ij} - 0)/SE_{sij}$$

3.5.3 Estimation of heterosis

Mid parent heterosis was calculated as per the procedure suggested by Fonseca and Patterson (1968).

$$\text{Mid parent heterosis} = \frac{\overline{F_1} - \overline{MP}}{\overline{MP}} \times 100$$

Where,

$\overline{F_1}$ = Mean of F_1 hybrid

$\overline{MP}$ = Mean value of mid parent

Standard heterosis was estimated over five checks (Hema, Nityashree, Decalb 8101, 900M gold and PHI 3501) notified by Central Variety Release Committee for release in South India.

$$\text{Standard heterosis} = \frac{\overline{F_1} - \overline{SC}}{\overline{SC}} \times 100$$

Where,

$\overline{F_1}$ = Mean of F_1 hybrid

$\overline{SC}$ = Mean value of standard checks

Standard error for testing the difference between two means was calculated as:

$$\text{S.E.}_{(MP\ heterosis)} = (3MS_7/2re)^{1/2}$$

$$\text{S.E.}_{(SP\ heterosis)} = (2MS_7/re)^{1/2}$$

Where,

MS_7 = Error mean sum of squares in ANOVA table of Line × Tester analysis

r = Number of replication

e = Number of environments

C.D. = √2 × S.E. of estimate × table '*t*' value at error d.f.

3.5.4 Overall *gca* status of parents, *sca* and heterotic status of crosses

Overall *gca* status of parents, *sca* and heterotic status of crosses were determined according to the method suggested by Arunachalam and Bandopadyaya (1979) and modified by Rao *et al.* (2004).

General combining ability effects of parents, specific combining ability effects and estimates of mid parent heterosis (MPH) of crosses were ranked by giving highest rank for the parent or cross which manifested highest *gca* effects and *sca* effects or heterosis. The lowest rank was given for parents or the crosses with lowest *gca* effects and *sca* effects or heterosis for a character, respectively. This was repeated for all characters except for days to 50 per cent anthesis, days to 50 per cent silking, anthesis silking interval and days to 50 per cent brown husk, in which ranking was given in a reverse order. The ranks obtained by parents/crosses were summed up across all characters to arrive at total

score for each of the parent or cross. Further, the mean of total scores thus obtained was used as final norm to ascertain the status of a parent or a cross for their *gca* and *sca*/heterosis. The parents and crosses whose total rank was less than the final norm were given high (H) overall *gca* and *sca*/heterotic status. On the other hand, the parents or crosses whose total rank exceeded the final norm were given low (L) overall *gca* and *sca*/heterotic status.

Further the crosses were grouped into different categories *viz.,* High x High, High x Low and Low x Low based on overall *gca* status of their parents. The overall *sca* and heterotic status of each cross was also mentioned under each category for drawing further inferences.

3.6 ANALYSIS OF FUNCTIONAL RELATIONSHIPS

The following functional relationships were analyzed using simple linear regression model (Montgomery *et al.,* 2003).

1. Mid-parent heterosis *v/s* Morphological diversity
2. Specific combining ability *v/s* Morphological diversity
3. *per se* performance of hybrids *v/s* Morphological diversity
4. Mid-parent heterosis *v/s* Molecular diversity
5. Specific combining ability *v/s* Molecular diversity
6. *per se* performance of hybrids *v/s* Molecular diversity
7. *per se* performance of hybrids *v/s* Mid-parent value
8. Mid-parent heterosis *v/s* Specific combining ability

3.6.1 The fitted simple linear regression model

$$Y_i = \beta_0 + \beta_1 x_i + \varepsilon_i$$

$$\hat{Y} = b_0 + b_1 x$$

Where,

b_1 = Slope (Regression coefficient)

b_0 = Intercept

$$b_1 = \frac{S_{xy}}{S_{xx}}$$

$$S_{yy} = \sum_{i=1}^{n} y_i^2 - \frac{\left(\sum_{i=1}^{n} y_i\right)^2}{n}$$

$$S_{xx} = \sum_{i=1}^{n} x_i^2 - \frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}$$

$$S_{xy} = \sum_{i=1}^{n} x_i y_i - \frac{\left(\sum_{i=1}^{n} x_i\right)\left(\sum_{i=1}^{n} y_i\right)}{n}$$

$$b_0 = \bar{y} - b_1 \bar{x}$$

3.6.2 Test for the significance of regression coefficient

$t = (b_i - 1) / \text{S.E.}_{bi}$

S. E. $_{bi}$ = √ MS due to pooled deviation of ith hybrid / $\sum P^2_j$

Where,

x_i = i^{th} independent variable

y_i = i^{th} dependent variable

S_{xx} = corrected sum of squares of x_i

S_{yy} = corrected sum of squares of y_i

S_{xy} = corrected sum of products of x_i and y_i

3.6.3 Structure of ANOVA for simple linear regression

Source of Variation	Degrees of freedom	Sum of Squares	Mean Squares
Regression	1	$\frac{(S_{xy})^2}{S_{xx}}$	$\frac{(S_{xy})^2}{S_{xx}}$
Residual	n - 2	$S_{yy} - \frac{(S_{xy})^2}{S_{xx}}$	$\frac{S_{yy} - \frac{(S_{xy})^2}{S_{xx}}}{n-2}$
Total	n - 1	S_{yy}	

$$SS_{total} = SS_{regression} + SS_{residual}$$

Where,

$$SS_{tot} = S_{yy}$$

$$SS_{regr} = \frac{(S_{xy})^2}{S_{xx}}$$

$$SS_{resid} = S_{yy} - \frac{(S_{xy})^2}{S_{xx}}$$

3.6.4 Coefficient of Determination

$$R^2 = 1 - (SS_{residual} / SS_{total})$$

$$R^2_{adjusted} = 1 - [SS_{residual} / (n-p)] / [SS_{total} / (n-1)]$$

Where,

n = number of observations

p = number of variables considered in the model

3.6.5 Exploring the possible limits to parental divergence for heterosis

Based on the mean and standard deviation of D^2 Statistic, parental divergence was classified into four classes such as Divergent class 1

(DC_1), Divergent class 2 (DC_2), Divergent class 3 (DC_3) and Divergent class 4 (DC_4) (Arunachalam *et al.* 1984).

Parental divergence classes based on phenotypic D^2 statistic

Diversity class	DC_1	DC_2	DC_3	DC_4
D^2 statistic	$D < (m - s)$	$(m-s) < D < m$	$m < D < (m+ s)$	$D > (m + s)$

DC_1 = less than $(m - s)$

DC_2 = more than $(m - s)$ and less than m

DC_3 = more than m and less than $(m + s)$

DC_4 = more than $(m + s)$

Where,

m = Mean of parental D^2 statistic

s = Standard deviation of parental D^2 statistic

3.7 STABILITY ANALYSIS

Performance consistency of 216 hybrids and 9 checks across three locations were assessed according to the stability model proposed by Eberhart and Russell (1966) using *Windostat Version 9.1* statistical program.

$$Y_{ij} = \mu_i + \beta_i I_j + \delta_{ij}$$

Where,

Y_{ij} = Mean of the ith hybrid at the jth environment.

μ_i = Mean of ith hybrid over all environments.

β_i = the regression coefficient that measures the response of ith hybrid to varying environments.

I_j = the environmental index obtained by subtracting the grand mean from the mean of all hybrid at the jth environment.

δ_{ij} = the deviation from regression of the ith hybrid at the jth environment.

Analysis of variance for stability

Source of variation	Degrees of freedom	*MSS*
Genotypes	*(g-1)*	*GMS*
Environment + (Geno. × Env.)	*g(e-1)*	*EnGEMS*
Environments	*(e-1)*	*EMS*
Geno. × Env.	*(g-1)(e-1)*	*GEMS*
Environments (Linear)	*1*	*ELMS*
Geno. × Env. (Linear)	*(g-1)*	*GELMS*
Pooled Deviation	*g(e-2)*	*PDMS*
Variety 1	*(n-2)*	*V1MS*
Variety 2	*(n-2)*	*V2MS*
.	.	.
.	.	.
Variety n	*(n-2)*	*VnMS*
Pooled Error	*e(g-1)(r-1)*	*EMS*
Total	***(ge-1)***	

Where,

e = Number of environments

g = number of hybrids/genotypes

r = number of replications

With this model, the variation due to environments, hybrid x environments were partitioned into environments (linear), hybrid x environments (linear) and deviation from the regression coefficients.

3.7.1 Stability parameters

The mean (μ), the regression co- efficient (b_i) and the mean square deviation from linear regression line ($\delta^2 d_i$) are the three stability parameters proposed by Ebherhart and Russell (1966) in their stability model and are computed as follows:

Environment index (I_j) = Environment mean – Grand mean

$$I_j = (\sum_j Y_{ij} / t) - (\sum_j Y_{ij} / tn)$$

Where,

t = Number of hybrids

n = Number of environments

With $\sum_j Y_j = 0$

The regression coefficient (for each hybrid)

$$b_i = (\sum_j Y_{ij} I_j / \sum_j I^2_j)$$

Deviation from regression

$$\delta^2 d_i = (\sum_j \delta^2_{ij} / n\text{-}2) - (S^2 e / r)$$

Where,

$S^2 e / r$ = mean square for the estimate of pooled error.

Predicted performance of the hybrids

$$Y_{ij} = X_i + b_i I_j$$

Where,

X_i is the unbiased estimator of μ_i

3.7.2 Testing of hypothesis

Appropriate '*F*' and '*t*' tests were used to test the significance of various stability parameters *viz.,* mean, regression co-efficient and deviation from regression.

To test the significance of the difference among hybrid means

S. Em. = √MS due to pooled deviation / $e - 2$

C.D. = S. Em. × √2 x table '*t*' at pooled error d.f.

This C.D. was used to decode the superiority of the mean of individual hybrids.

To test the significance of regression coefficient

$$t = (b_i - 1) / \text{ S.E.}_{bi}$$

$$\text{S. E. }_{bi} = \sqrt{\text{ MS due to pooled deviation of } i^{th} \text{ hybrid}} / \sum I^2_j$$

To test the individual deviation from linear regression

$$F = (\sum_j \delta^2_{ij} / \ n\text{-}2 \ ) \ / \ MSS \text{ Pooled error}$$

A joint consideration of the three parameters *i.e.,* the mean performance of the genotype over the environments, b_i and S^2d_i was used to define stability of hybrids.

A hybrid with unit regression co-efficient ($b_i = 1$) and the deviation not significantly different from zero ($S^2d_i = 0$) was considered stable. When estimates of S^2d_i were not significant, then the result was interpreted on the basis of joint consideration of mean and b_i as described below.

Regression coefficient	**Stability**	**Mean yield**	**Remarks**
$b_i = 1$	Average	High	Well adapted to all environments
$b_i = 1$	Average	Low	Poorly adapted to all environments
$b_i > 1$	Below average	High	Specifically adapted to favourable environments
$b_i < 1$	Above average	High	Specifically adapted to unfavourable environment

Experimental Results

IV. EXPERIMENTAL RESULTS

The results of the investigation are presented under the following headings;

4.1 Analysis of variance

4.2 Analysis of genetic divergence

4.3 Analysis of combining ability and heterosis

4.4 Analysis of functional relationships

4.5 Stability analysis

4.1 ANALYSIS OF VARIANCE

Analysis of variance revealed significant differences among 100 inbreds and 225 hybrids for all the 16 characters in each location (Table 3_a and 3_b) as well as across locations (Table 4_a and 4_b). Block effect was significant in inbreds for anthesis silking interval, ear height, plant height, ear weight, cob weight, grain yield, shelling per cent, test weight, grain rows per cob, grains per row and cob girth in E_1; days to anthesis, anthesis silking interval, days to brown husk, ear height, plant height, cob weight, grain yield, harvest index, test weight, grains per row and cob girth in E_2 and days to anthesis, days to silking, anthesis silking interval, days to brown husk, ear height, test weight, grain rows per cob, grains per row, cob length and cob girth in E_3.

Significant block effects were revealed in the evaluation of hybrids for days to anthesis, ear height, plant height, ear weight, cob weight, grain yield, test weight, grain rows per cob, grains per row, cob length and cob girth in E_1; ear height, ear weight, cob weight, grain yield, shelling per cent, test weight, grain rows per cob, grains per row and cob length in E_2 and anthesis silking interval, days to brown husk, ear weight, cob weight, grain yield, shelling per cent, harvest index, grain rows per cob, grains per row, cob length and cob girth in E_3.

Table 3a. Analysis of variance for inbreds over environments

Source of variation	*df*	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	26.64	44.65	56.18	11.52	24.15	79.38	2.88	1.81	1.81	11.52	24.85	78.13
Treatments - unadjusted	99	40.49**	39.31**	42.46**	42.33*	46.11*	40.37**	12.69**	14.55**	14.55**	164.70**	169.17**	173.98**
- adjusted	99		39.14**	42.20**			40.13**	12.67**	14.55**	14.06**		169.18**	174.23**
Blocks within reps (adj.)	18	1.28	1.82	4.11	1.06	2.18	4.91	2.00	1.44	2.40	0.88	2.65	5.83
Error - effective	81		1.53	3.25			4.35	1.37	1.42	1.31		2.57	5.11
- RBD design	99	1.88	1.54	3.29	1.60	2.38	4.37	1.42	1.42	1.42	2.07	2.57	5.14
- intrablock	81	2.01	1.48	3.11	1.72	2.42	4.25	1.29	1.42	1.20	2.33	2.55	4.98

Source of variation	*df*	Ear height (cm)			Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	233.45	1639.35	4994.68	470.22	1709.30	1161.18	83.79	13972.91	2035.96	321.34	7222.07	3275.80
Treatments - unadjusted	99	377.53**	330.50**	304.83**	1302.9**	1119.5**	1044.7**	2653.85**	2938.87**	3204.8**	1744.33**	2102.8**	1867.6**
- adjusted	99	377.55**	329.05**	306.85**	1301.1**	1121.8**		2595.97**			1711.80**	2074.57**	
Blocks within reps (adj.)	18	25.70	74.96	46.16	28.95	279.15	65.57	1321.73	608.97	573.04	678.60	486.79	180.32
Error - effective	81	25.60	26.69	34.19	20.71	105.20		455.03			284.05	424.48	
- RBD design	99	25.60	33.05	34.94	21.27	127.56	68.82	570.88	706.61	1069.55	332.10	426.51	291.96
- intrablock	81	25.58	23.74	32.44	19.56	93.87	69.54	404.02	728.30	1179.89	255.10	413.12	316.77

* Significant at p = 0.05 and ** Significant at p = 0.01

Table 3a. Continued....

Source of variation	*df*	Grain yield per plant (g)			Shelling %			Harvest index			Test weight (g)		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	170.21	5325.84	1526.60	101.88	0.71	3.28	0.70	0.39	0.13	98.00	414.72	38.52
Treatments - unadjusted	99	1328.6**	1420.6**	1350.6**	41.68**	44.55**	37.78**	91.93**	25.90**	30.33**	55.34**	53.69**	50.29**
- adjusted	99	1298.3**	1416.0**		43.51**				25.38**		55.69**	49.63**	49.34**
Blocks within reps (adj.)	18	509.95	348.67	132.31	36.18	18.80	7.23	23.64	11.11	10.04	9.78	15.73	19.12
Error - effective	81	213.61	340.16		23.19				9.55		7.35	6.65	11.93
- RBD design	99	249.69	340.22	200.89	24.25	20.00	16.56	23.95	9.61	11.10	7.50	7.75	12.54
- intrablock	81	191.85	338.34	216.13	21.60	20.27	18.63	24.02	9.27	11.34	6.99	5.98	11.08

Source of variation	*df*	Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	0.01	0.01	0.46	2.69	82.48	0.02	2.95	35.22	0.15	0.79	0.11	0.13
Treatments - unadjusted	99	5.69**	5.61**	5.46**	44.15**	48.42**	53.83**	8.03**	8.18**	9.62**	0.39**	0.35**	0.40**
- adjusted	99	5.71**		5.44**	44.36**	48.24**	53.65**			9.58**	0.39**	0.34**	0.39**
Blocks within reps (adj.)	18	0.60	0.34	0.56	8.82	14.41	10.02	1.25	1.02	0.48	0.06	0.08	0.10
Error - effective	81	0.47		0.52	7.36	10.28	7.75			0.31	0.05	0.06	0.04
- RBD design	99	0.48	0.38	0.52	7.42	10.56	7.88	1.70	1.51	0.32	0.05	0.06	0.05
- intrablock	81	0.45	0.39	0.51	7.11	9.71	7.40	1.80	1.62	0.28	0.05	0.05	0.04

* Significant at p = 0.05 and ** Significant at p = 0.01

Table 3b. Analysis of variance for hybrids over environments

Source of variation	*df*	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	38.14	0.01	4.11	0.01	0.01	0.01	0.01	5.12	177.98	0.01	0.01	0.01
Treatments - unadjusted	224	11.78**	19.43**	19.38**	17.80**	16.11**	21.45**	11.84**	6.41**	2.13*	126.22**	15.20**	124.1**
- adjusted	224	11.78**								2.12*			124.2**
Blocks within reps (adj.)	28	2.86	0.30	0.81	0.25	0.27	0.20	0.00	0.44	2.44	1.39	0.53	1.86
Error - effective	196	2.37								1.64			1.64
- RBD design	224	2.38	0.34	0.90	0.34	0.34	0.34	0.00	0.61	1.68	1.58	0.67	1.64
- intrablock	196	2.31	0.34	0.91	0.35	0.34	0.34	0.00	0.63	1.57	1.61	0.68	1.61

Source of variation	*df*	Ear height (cm)			Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	19.64	0.01	8.54	150.22	4050.00	60.50	36891.4	225416	4893.9	150.0	182014	5545
Treatments - unadjusted	224	434.67**	128.66**	594.72**	2184**	762.10**	814.8**	5227.8**	3915.7**	3714.0**	2137.4**	2480.3**	2413**
- adjusted	224	434.43**	128.66**		2196**			4652.0**	3861.9**	3712.82**	1760.05**	2442.3**	2408**
Blocks within reps (adj.)	28	72.80	1.58	59.63	160.83	1.58	58.45	10452.0	1971.5	1619.3	3740.6	1217.9	1057
Error - effective	196	66.06	1.54		121.89			1814.83	1494.64	902.41	846.73	869.00	551
- RBD design	224	66.16	1.55	68.60	123.32	2.10	76.80	2743.11	1512.12	947.86	1141.56	883.95	585
- intrablock	196	65.21	1.54	69.88	117.36	2.18	79.42	1641.84	1446.49	851.94	770.27	836.24	518

* Significant at p = 0.05 and ** Significant at p = 0.01

Table 3b. Continued....

Source of variation	*df*	Grain yield per plant (g)			Shelling %			Harvest index			Test weight (g)		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	19.9	135290	2361.9	79.1	33.9	4.9	116.0	12.9	986.1	32.2	1784.0	1000.8
Treatments -unadjusted	224	1599.4**	1757.0**	1897.8**	12.95**	9.95**	31.57*	414.34	7.84**	20.53**	37.93**	39.54**	54.96**
- adjusted	224	1361.4**	1729.1**	1897.4**		9.96**	31.78*			20.24**	37.34**	39.54**	
Blocks within reps (adj.)	28	2716.37	884.34	728.52	4.15	3.64	27.46	383.34	2.46	24.55	18.04	8.99	2.52
Error - effective	196	274.77	626.87	415.64		3.55	24.75			18.73	5.93	7.78	
- RBD design	224	877.92	638.07	434.95	4.98	3.55	24.80	429.01	2.70	18.94	7.03	7.81	2.70
- intrablock	196	615.28	602.89	393.01	5.09	3.54	24.42	435.54	2.73	18.14	5.45	7.64	2.73

Source of variation	*df*	Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3	Env. 1	Env. 2	Env. 3
Replications	1	5.80	2.75	0.01	115.52	25.00	28.47	173.01	404.92	5.44	2.17	9.29	0.20
Treatments -unadjusted	224	4.54**	4.38**	4.20**	37.76**	37.28**	38.82**	5.20**	4.45**	5.86**	0.17**	0.14**	0.14**
- adjusted	224	4.60**	4.38**	4.22**	38.56**	37.55**	33.58**	5.03**	4.346**	5.29**	0.176**		0.14**
Blocks within reps (adj.)	28	0.63	0.38	0.56	21.81	1.63	37.54	2.88	2.46	11.57	0.03	0.03	0.33
Error - effective	196	0.43	0.38	0.46	10.50	1.18	7.18	1.36	1.37	2.15	0.03		0.22
- RBD design	224	0.44	0.38	0.46	11.32	1.19	10.38	1.47	1.44	3.15	0.03	0.04	0.22
- intrablock	196	0.41	0.38	0.45	9.82	1.13	6.50	1.27	1.29	1.94	0.03	0.04	0.21

* Significant at p = 0.05 and ** Significant at p = 0.01

Table 4a. Pooled analysis of variance for inbreds

Source of variation	*df*	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)
Environments	2	183.40**	133.77**	2.04	369.29**	4603.15**	7971.77**	33538.08**	18753.25**
Inbreds	99	119.49**	125.44**	40.62**	500.39**	944.85**	3217.61**	6468.50**	4495.83**
Env. * Inbreds	198	1.39	1.69	0.59	3.74	34.01	124.83**	1164.53**	609.49**
Error	300	2.64	3.14	1.43	3.61	53.77	82.96	828.17	382.75
Total	599	41.71	43.55	13.86	170.63	366.15	1201.35	3137.24	2017.63

Source of variation	*df*	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
Environments	2	10424.22**	106.73**	261.71**	196.15**	4.06**	482.51**	194.82**	2.26**
Inbreds	99	3258.97**	74.77**	80.38**	130.05**	15.50**	118.34**	21.01**	1.03**
Env. * Inbreds	198	420.48**	24.63	33.90**	14.64**	0.64**	14.04**	2.41**	0.06
Error	300	284.37	20.42	14.74	11.01	0.46	8.82	1.29	0.06
Total	599	1427.23	41.78	50.81	54.07	5.58	51.71	9.86	0.4

* Significant at p = 0.05 and ** Significant at p = 0.01

Table 4b. Pooled analysis of variance for hybrids

Source of variation	*df*	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)
Environments	2	1424.74**	1050.00**	232.34**	4952.83**	6326.00**	59575.66**	21366.74**	37826.27**
Hybrids	224	39.52**	56.73**	12.53**	369.37**	1372.77**	2631.25**	9100.28**	5057.74**
Env. * Hybrids	448	3.88**	2.06**	3.93**	4.86**	209.37**	712.30**	2878.77**	1987.02**
Error	675	1.26	0.33	1.03	1.58	51.46	73.61	2122.5	1144.51
Total	1349	19.94	23.34	7.47	140.68	614.17	1524.72	4336.62	2449.21

Source of variation	*df*	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
Environments	2	28640.78**	223.47**	2283.61**	351.40**	3.86**	1132.38**	202.52**	0.34**
Hybrids	224	3799.75**	31.25**	251.26**	101.41**	11.40**	72.42**	11.03**	0.52**
Env. * Hybrids	448	1127.24**	21.84**	246.94**	15.52**	0.87**	20.71**	4.25**	0.21**
Error	675	851.38	11.28	151.47	9.99	0.43	7.85	2.87	0.11
Total	1349	1831.2	18.92	154.72	45.06	4.38	41.2	5.76	0.25

* Significant at p = 0.05 and ** Significant at p = 0.01

Accordingly adjusted mean values for the characters in which block effect was found significant were calculated for all the three locations separately and these values were used for further statistical analysis such as pooled diversity, combining ability, heterosis and stability (Appendix I and II). The character wise mean and range values for inbreds and hybrids are given in Table 5.

4.2 ANALYSIS OF GENETIC DIVERGENCE

4.2.1 Morphological diversity

Pooled morphological diversity among 100 inbreds as revealed by Mahalanobis D^2 statistic is presented below.

4.2.1.1 Contribution of characters toward total divergence

The contribution of each character toward total divergence is presented in the Table 6. Out of 16 characters analysed, days to 50 per cent brown husk (18.06 %) has contributed highest for total divergence followed by days to 50 per cent anthesis (16.06 %), anthesis silking interval (11.15 %) and grain rows per cob (7.84 %). The characters such as days to 50 per cent silking (2.71 %), ear weight per plant (3.35 %), cob weight per plant (3.33 %), grain yield per plant (3.39 %), shelling per cent (3.47 %), harvest index (3.33%), test weight (3.58 %), grains per row (3.70 %) and cob length (3.60 %) have contributed least.

4.2.1.2 Clustering of 100 inbreds

Hundred inbreds were grouped into 10 clusters (Figure 1 and Table 7). Maximum number of inbreds were found in cluster I (48) followed by cluster II (25), cluster III (14), cluster VI (5) and cluster VII (3). Whereas, cluster IV, V, VIII, IX and X were solitary.

Table 5. Character wise mean and range values of inbreds and hybrids

Sl. No.	Character	Inbreds			Hybrids		
		Mean	Range		Mean	Range	
1	Days to 50% anthesis	58.49	CIMMYT-47 (48.96)	HKI-164-4 (68.00)	54.75	Z-52-29 × LM 13 (47.67)	V-632-67 × MAI 105 (62.17)
2	Days to 50% silking	59.07	Z-54-2 (49.13)	V-2205 (69.23)	55.79	Z-52-29 × LM 13 (47.50)	V-291-2 × MAI 105 (62.83)
3	Anthesis silking interval	2.29	Z-51-1 (0.03)	CIMMYT-47 (13.39)	2.24	CML-165 × LM 13 (0.17)	MAI-45 × CM 500 (7.50)
4	Days to 50% brown husk	99.64	Z-56-5 (87.60)	MAI-706 (119.71)	100.85	Z-51-1 × LM 13 (90.83)	V-2232 × LM 13 (116.83)
5	Ear height (cm)	56.01	Z-57-27 (28.72)	V-1154 (89.66)	93.58	Z-62-67 × CM 500 (50.00)	V-2205 × CM 500 (139.83)
6	Plant height (cm)	165.59	Z-59-36 (105.88)	V-1522 (217.35)	231.48	Z-62-67 × CM 500 (166.75)	V-1168 × LM 13 (283.17)
7	Ear weight per plant (g)	113.85	SKV-42 (46.17)	MAI-706 (231.12)	206.35	Z-62-67 × CM 500 (117.79)	V-1649 × LM 13 (335.61)
8	Cob weight per plant (g)	89.13	SKV-42 (32.27)	MAI-706 (203.87)	164.54	Z-62-67 × CM 500 (100.12)	V-1649 × LM 13 (254.00)
9	Grain yield per plant (g)	73.51	SKV-42 (26.66)	MAI-706 (177.71)	138.86	Z-62-67 × CM 500 (82.23)	V-1649 × LM 13 (219.07)
10	Shelling %	82.32	MAI-137 (69.35)	Z-62-9 (89.55)	84.37	V-1742 × MAI 105 (71.81)	V-1742 × SKV 50 (88.04)
11	Harvest index	44.17	MAI-137 (30.36)	Z-57-5 (51.48)	48.45	MAI-137 × CM 500 (41.70)	MAI-45 × MAI 105 (114.69)
12	Test weight (g)	24.20	V-2436-1 (14.16)	V-1154 (35.88)	32.87	MAI-115 × CM 500 (20.21)	V-632-67 × LM 13 (43.35)
13	Grain rows per cob	12.98	CIMMYT-5 (8.78)	Z-63-7 (16.21)	13.83	MAI-109 × SKV 50 (11.13)	Z-51-6 × MAI 105 (19.13)
14	Grains per row	25.81	Z-57-27 (16.19)	MAI-706 (38.47)	33.97	Z-63-30 × MAI 105 (24.08)	CIMMYT-5 × CM 500 (41.56)
15	Cob length (cm)	13.59	Z-51-6 (9.42)	MAI-706 (18.25)	16.73	Z-62-67 × CM 500 (13.52)	V-1649 × LM 13 (20.06)
16	Cob girth (cm)	3.79	Z-2436-1 (2.79)	Z-49-20 (4.85)	4.56	Z-56-1 × CM 500 (3.82)	MAI-48 × LM 13 (6.22)

Table 6. Contribution of characters towards total divergence

Sl. No.	Character	Rank	Times ranked I	% Contribution
1	Days to 50% anthesis	2	795	16.06
2	Days to 50% silking	16	134	2.71
3	Anthesis silking interval	3	552	11.15
4	Days to 50% brown husk	1	894	18.06
5	Ear height (cm)	5	330	6.67
6	Plant height (cm)	6	272	5.49
7	Ear weight per plant (g)	13	166	3.35
8	Cob weight per plant (g)	14	165	3.33
9	Grain yield per plant (g)	12	168	3.39
10	Shelling %	11	172	3.47
11	Harvest index	15	165	3.33
12	Test weight (g)	10	177	3.58
13	Grain rows per cob	4	388	7.84
14	Grains per row	8	183	3.70
15	Cob length (cm)	9	178	3.60
16	Cob girth (cm)	7	211	4.26

Figure 1. Clustering of 100 inbreds based on D^2 statistic and Tocher's method

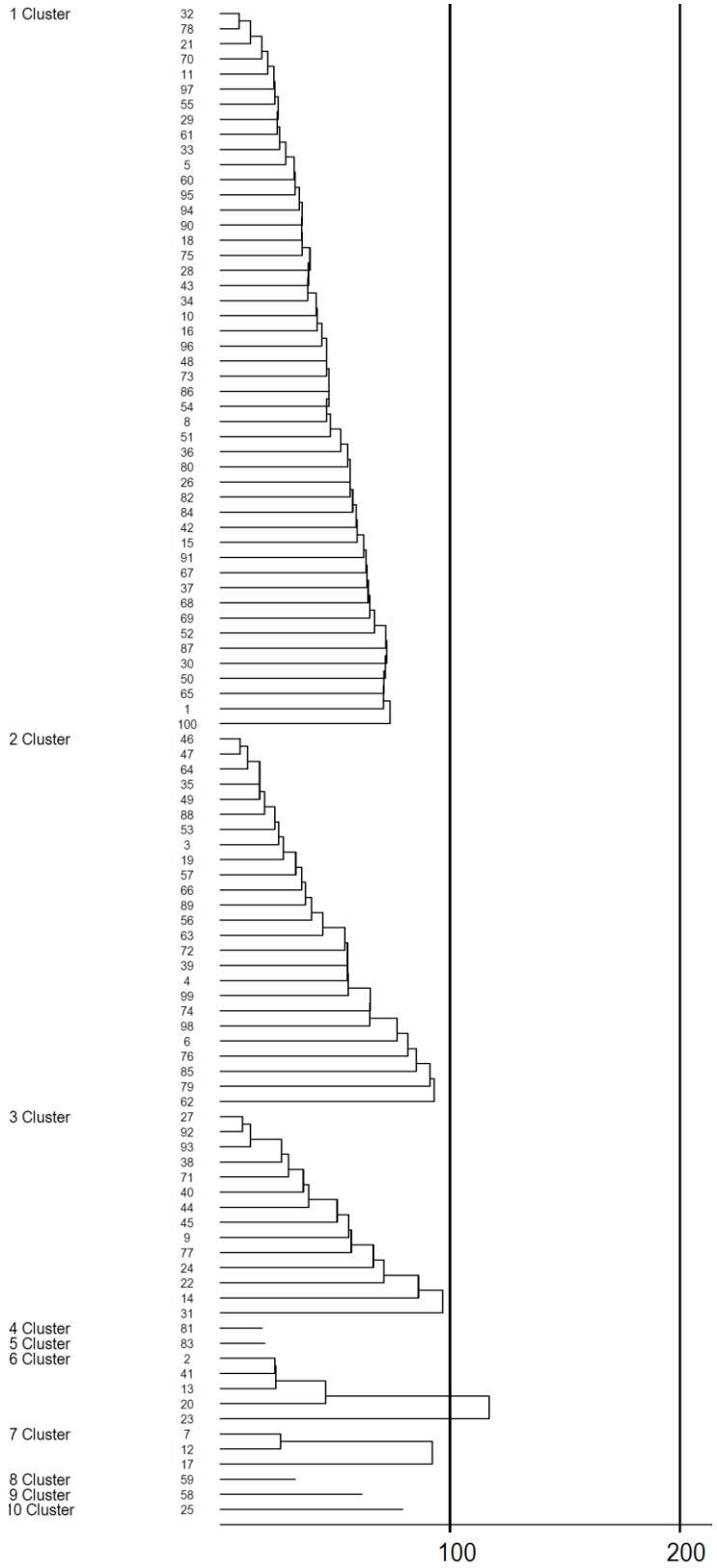


Table 7. Grouping of 100 inbreds based on D^2 statistics and Toacher's method of clustering

Cluster	No. of genotypes	Cluster composition
I	48	CML-304, Z-52-4, V-70-1, V-632-112, V-1410-1, SKV 50, MAI-40, CML-166, S-9951 YQ, CML-335, V-1168, Q-Y-2593-3, Z-63-30, Z-63-18, Z-62-67, V-2516-2, Z-51-6, CML-165, HKI-36 (1+2), CML-358, V-2232, V-2441-4, CM 500, MAI-109, Z-50-3, Z-57-5, MAI-35, V-1742, MAI-137, CML-411, Z-55-10, CM-149, Z-56-5, Z-57-27, HKI-193-2, V-2437-1, Z-62-9, SKV-42, DMR-N-21, SKV-65, SKV-70, MAI-27, Z-59-36, CML-169, MAI-121, SKV-32, V-1005, HKI 193
II	25	MAI-115, MAI-107, SKV-31, CML-359, MAI-112, Z-60-22, MAI-29, V-1150, V-2608-1, MAI-45, SKV-39, Z-62-55, MAI-44, SKV-24, Z-49-20, HKI-1105, V-1154, LM 13, Z-51-1, MAI 105, V-1522, Z-52-29, Z-57-4, Z-54-2, SKV-15
III	14	CM-212, Z-63-16, Z-63-17, EC-598475, V-632-67, HKI-164-4, K-10-11 (1201), LTP-1, V-2205, Z-52-3, CIMMYT-5, CIMMYT-10, V-2436-1, CML-172
IV	1	Z-56-1
V	1	Z-56-8
VI	5	V-1036, HKI-193-1, V-241-2, V-291-2, CIMMYT-47
VII	3	V-1649, V-1712-1, V-2459-2
VIII	1	MAI-706
IX	1	MAI-48
X	1	CM-115

4.2.1.3 Intra and inter cluster distances

Pooled intra and inter cluster distance are presented in Table 8. The maximum intra-cluster distance was recorded in cluster VII (10.05) followed by cluster VI (9.30), cluster III (8.34), cluster II (8.02) and cluster I (7.6).

Maximum inter-cluster distance was evident between the clusters VIII and VI (27.32) followed by VIII and X (27.30). Minimum inter-cluster distance was observed between clusters V and VI (6.67).

4.2.1.4 Cluster mean analysis

The mean values for different clusters along with inter-cluster coefficient of variation for all the characters are given in Table 9. In each cluster, genotypes with lowest and highest values for each character are given in Table 10.

The solitary cluster VIII has recorded highest mean values for several important traits such as ear weight per plant, cob weight per plant, grain yield per plant, shelling per cent, harvest index, grain rows per cob, grains per row, cob length and cob girth.

4.2.2 Molecular diversity

4.2.2.1 Degree of polymorphism

Molecular diversity as assessed by 33 microsatellite markers among 96 inbreds is given in Table 11. Maximum number of alleles were observed for the marker umc2078 (11) followed by nine alleles each for *bnlg107*, *bnlg1200*, *bnlg1347*, *mc0381*, *mmc0041*, *umc1240*, *umc1256*, *umc1409*, *umc1542* and minimum for the markers *bnlg1407*, *bnlg1449*, *umc1553*, *umc1622* and *umc1894* (2).

Table 8. Intra and inter-cluster distances pooled over environments

Cluster	I	II	III	IV	V	VI	VII	VIII	IX	X
I	7.60	13.07	10.63	11.39	9.81	17.16	10.73	20.60	19.32	13.35
II		8.02	18.23	10.68	10.27	21.09	11.20	11.55	11.54	19.23
III			8.34	17.73	15.80	17.14	13.35	26.41	25.06	12.29
IV				0.00	6.67	18.57	13.74	15.67	12.84	17.94
V					0.00	18.24	12.11	16.10	14.01	15.54
VI						9.30	20.17	27.32	25.12	18.04
VII							10.05	17.93	16.54	14.24
VIII								0.00	10.82	27.31
IX									0.00	22.77
X										0.00

Table 9. Cluster means for different quantitative traits pooled over environments

Cluster	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight/ plant (g)	Cob weight/ plant (g)	Grain yield/ plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows /cob	Grains /row	Cob length (cm)	Cob girth (cm)
I	58.16	58.43	1.33	94.96	52.69	160.02	101.35	78.76	65.12	82.43	44.31	22.76	12.78	25.16	13.12	3.69
II	57.40	57.25	1.70	110.82	61.99	178.06	139.89	110.65	91.74	83.20	44.66	27.54	13.24	27.46	14.33	4.09
III	63.62	65.28	2.99	94.51	57.01	161.52	103.64	78.82	63.07	79.61	42.17	24.06	12.89	23.96	13.67	3.61
IV	50.23	49.56	2.01	95.25	50.42	170.75	89.62	67.92	56.22	82.81	47.78	19.40	10.00	24.15	11.07	3.29
V	52.70	50.40	2.27	94.55	42.04	155.49	104.43	74.75	51.74	75.74	40.40	20.89	15.05	22.81	12.51	3.54
VI	51.06	61.44	10.30	95.38	56.72	167.64	107.58	90.18	76.30	84.65	46.48	25.05	13.76	24.83	13.63	3.93
VII	65.20	63.05	2.77	108.16	60.11	167.90	133.44	101.73	84.21	83.51	43.28	20.34	13.06	28.76	14.13	3.70
VIII	52.56	52.70	0.16	119.71	78.23	213.71	231.12	203.88	177.71	87.41	47.10	33.71	15.40	38.47	18.25	4.78
IX	56.64	50.06	6.38	113.23	41.96	149.67	133.58	109.91	89.52	81.45	44.96	25.43	10.88	31.86	16.00	3.88
X	67.96	57.65	10.34	88.14	47.33	133.55	74.83	50.36	39.79	79.45	40.75	15.96	13.77	23.35	10.83	3.11
CV %	**10.82**	**10.05**	**91.55**	**10.36**	**19.64**	**12.61**	**35.69**	**43.64**	**48.32**	**3.91**	**5.77**	**20.93**	**12.66**	**18.04**	**15.98**	**12.26**

Table 10. Clusters with lowest and highest mean values

Sl. No.	Character	Cluster	
		Lowest mean value	Highest mean value
1	Days to 50% anthesis	IV (50.23)	X (67.96)
2	Days to 50% silking	IV (49.56)	III (65.28)
3	Anthesis silking interval	VIII (0.16)	X (10.34)
4	Days to 50% brown husk	X (88.14)	VIII (119.71)
5	Ear height (cm)	IX (41.96)	VIII (78.23)
6	Plant height (cm)	X (133.55)	VIII (213.71)
7	Ear weight per plant (g)	X (74.83)	VIII (231.12)
8	Cob weight per plant (g)	X (50.36)	VIII (203.88)
9	Grain yield per plant (g)	X (39.79)	VIII (177.71)
10	Shelling %	V (75.74)	VIII (87.41)
11	Harvest index	V (40.40)	IV (47.78)
12	Test weight (g)	X (15.96)	VIII (33.71)
13	Grain rows per cob	IV (10.00)	VIII (15.40)
14	Grains per row	V (22.81)	VIII (38.47)
15	Cob length (cm)	X (10.83)	VIII (18.25)
16	Cob girth (cm)	X (3.11)	VIII (4.78)

Table 11. Diversity estimates of 33 SSR markers based on 96 inbreds

Sl. No.	Primer	Allele No.	Gene Diversity	PIC	Major Allele Frequency
1	*bnlg1047*	6	0.7263	0.6941	0.4063
2	*bnlg107*	9	0.8567	0.8507	0.1875
3	*bnlg1073*	4	0.6857	0.6399	0.4271
4	*bnlg1091*	7	0.6870	0.6642	0.5000
5	*bnlg1139*	5	0.7158	0.6749	0.3542
6	*bnlg1165*	8	0.7922	0.7730	0.2813
7	*bnlg1200*	9	0.8356	0.8256	0.2188
8	*bnlg1347*	9	0.8365	0.8277	0.2604
9	*bnlg1407*	2	0.4914	0.3733	0.5417
10	*bnlg1449*	2	0.2609	0.2289	0.8438
11	*bnlg1716*	4	0.6859	0.6315	0.3438
12	*bnlg2077*	4	0.6372	0.5810	0.4792
13	*mmc0381*	9	0.7808	0.7590	0.3125
14	*mmc0041*	9	0.8023	0.7855	0.2813
15	*phi077*	8	0.8343	0.8240	0.2396
16	*phi126*	8	0.8474	0.8394	0.1979
17	*phi402893*	7	0.7841	0.7623	0.3021
18	*umc1240*	9	0.8255	0.8157	0.2917
19	*umc1256*	9	0.7969	0.7786	0.2917
20	*umc1260*	3	0.5989	0.5226	0.4688
21	*umc1409*	9	0.8605	0.8551	0.1667
22	*umc1446*	8	0.7976	0.7789	0.2604
23	*umc1542*	9	0.8740	0.8714	0.1458
24	*umc1553*	2	0.2884	0.2490	0.8229
25	*umc1622*	2	0.4465	0.3494	0.6563
26	*umc1737*	5	0.6657	0.6240	0.4792
27	*umc1883*	8	0.7886	0.7691	0.3229
28	*umc1884*	7	0.7886	0.7677	0.3021
29	*umc1894*	2	0.4173	0.3328	0.6979
30	*umc2007*	7	0.7705	0.7460	0.3021
31	*umc2078*	11	0.8627	0.8589	0.2188
32	*umc2363*	8	0.8126	0.7986	0.2917
33	*umc2375*	4	0.5607	0.4770	0.5208
Mean		**6.45**	**0.7096**	**0.6767**	**0.3763**

PIC – Polymorphic information content

Maximum gene diversity was observed for umc1542 (0.87) followed by *umc2078* and *umc1409* (0.86). Whereas, *bnlg1449* (0.26) and *umc1553* (0.28) have recorded minimum.

Highest polymorphic information content (PIC) value was observed for the primer *umc1542* (0.87) followed by *umc2078*, *umc1409* (0.85) and lowest for the primer *bnlg1449* (0.22).

Maximum allele frequency was noticed in primer *bnlg1449* (0.84) followed by *umc1553* (0.82) and minimum in *umc1542* (0.14).

4.2.2.2 Clustering of 96 inbreds

The UPGMA based dendrogram was obtained from the data deduced from the DNA profiles of the samples analyzed (Figure 2). Ninety-six maize inbreds were clustered by Jaccard's similarity coefficients which ranged from 15 to 53 per cent and at similarity co-efficient of 17.5 per cent, seven main groups were observed. The number of genotypes in each cluster along with corresponding inbreds are given in Table 12. Maximum number of inbreds were observed in cluster III (35) followed by cluster IV (16) and minimum in cluster I and VII (7).

4.2.3 Relationship between morphological and molecular diversity

The correlation between the morphological dissimilarity matrix and the matrices of genetic dissimilarity based on SSR markers was non-significant with correlation coefficient (r) 0.024. *Sca*tter plot based on morphological and molecular similarity between pair of accessions is given as Figure 3.

4.3 ANALYSIS OF COMBINING ABILITY AND HETEROSIS

4.3.1 Pooled analysis of variance for line x tester design

Mean sum of squares (MSS) for 16 characters across three locations are presented in Table 13. Analysis of variance revealed

Figure 2. Dendogram of 96 inbreds based on 33 SSR markers

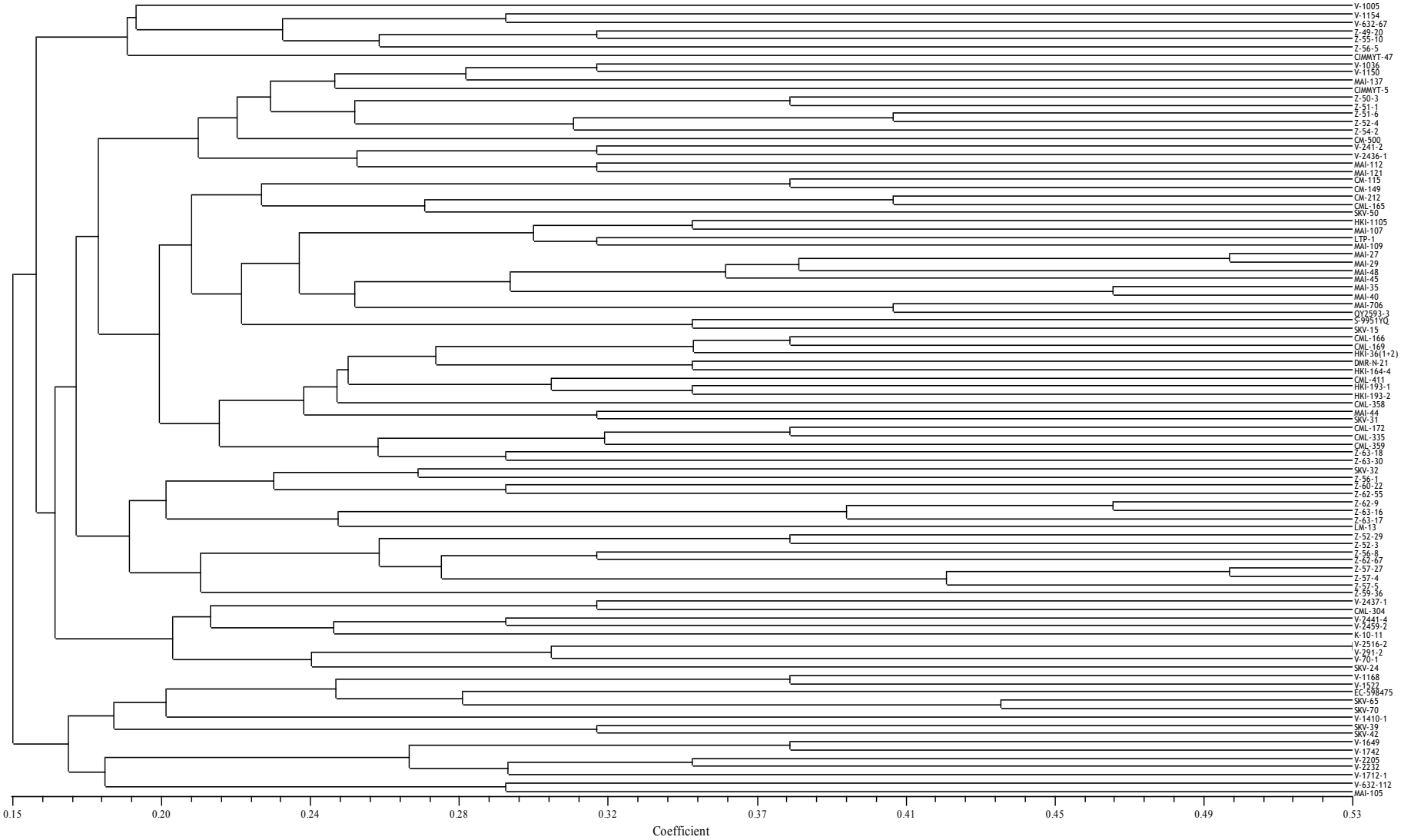


Table 12. Grouping of 96 indreds based on Jaccord's coefficients and clustering by UPGMA algorithm

Cluster	No. of genotypes	Cluster composition
I	7	V-1005, V-1154, V-632-67, Z-49-20, Z-55-10, Z-56-5, CIMMYT-47
II	14	V-1036, V-1150, MAI-137, CIMMYT-5, Z-50-3, Z-51-1, Z-51-6, Z-52-4, Z-54-2, CM 500, V-241-2, V-2436-1, MAI-112, MAI-121
III	35	CM-115, CM-149, CM-212, CML-165, SKV 50, HKI-1105, MAI-107, LTP-1, MAI-109, MAI-27, MAI-29, MAI-48, MAI-45, MAI-35, MAI-40, MAI-706, Q-Y-2593-3, S-9951 YQ, SKV-15, CML-166, CML-169, HKI-36 (1+2), DMR-N-21, HKI-164-4, CML-411, HKI-193-1, HKI-193-2, CML-358, MAI-44, SKV-31, CML-172, CML-335, CML-359, Z-63-18, Z-63-30
IV	16	SKV-32, Z-56-1, Z-60-22, Z-62-55, Z-62-9, Z-63-16, Z-63-17, LM 13, Z-52-29, Z-52-3, Z-56-8, Z-62-67, Z-57-27, Z-57-4, Z-57-5, Z-59-36
V	9	V-2437-1, CML-304, V-2441-4, V-2459-2, K-10-11 (1201), V-2516-2, V-2608-1, V-70-1, SKV-24
VI	8	V-1168, V-1522, EC-598475, SKV-65, SKV-70, V-1410-1, SKV-39, SKV-42
VII	7	V-1649, V-1742, V-2205, V-2232, V-1712-1, V-632-112, MAI 105

Figure 3. Scatter plot based on morphological and molecular similarity coefficients (Mantel's test)

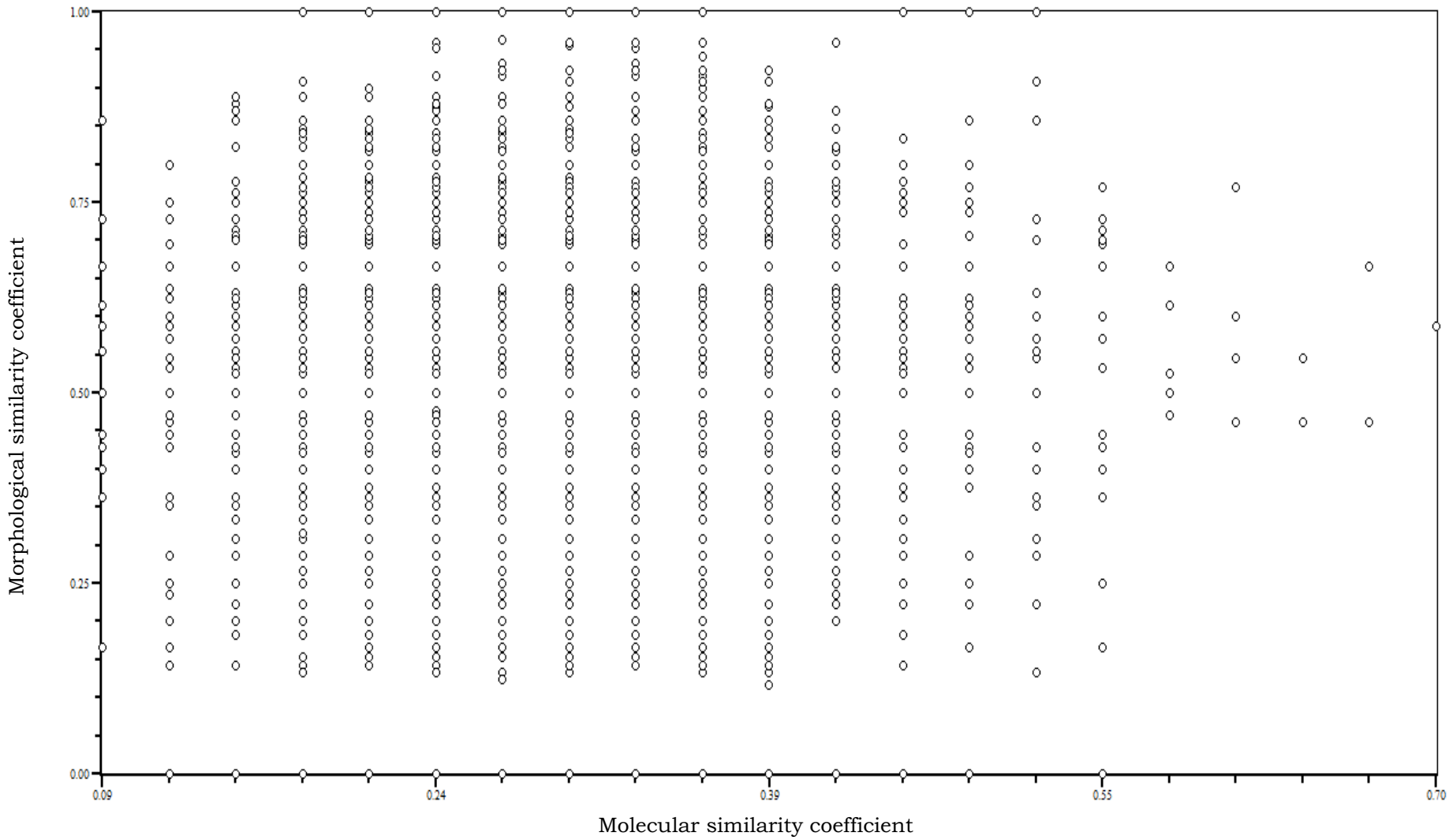


Table 13. Pooled Line x Tester analysis of variance

Source of variation	*df*	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight/ plant (g)	Cob weight/ plant (g)
Replicates	1	0.16	14.80**	75.79**	17.16**	3081.24**	1117.31**	108528.10**	36277.71**
Environments	2	1299.19**	894.27**	166.93**	4651.46**	8531.17**	29434.54**	17045.06**	49463.04**
Rep * Env.	2	8.12**	1.49	47.50**	1.08	1145.17**	1335.93**	74809.08**	72640.95**
Treatments	273	72.62**	84.85**	21.24**	388.34**	2547.91**	6574.77**	15353.86**	9428.42**
Parents	57	124.98**	133.18**	53.30**	522.65**	939.22**	3134.65**	6541.83**	4540.42**
Parents (Line)	53	129.87**	138.85**	56.12**	487.24**	926.66**	2993.73**	6397.29**	4545.21**
Parents(Testers)	3	62.37**	64.77**	8.819**	1278.50**	758.85**	3125.91**	10017.25**	4866.55**
Parents (L vs T)	1	53.53**	37.90**	37.28**	131.83**	2146.38**	10629.59**	3776.47	3308.06*
Parent vs Crosses	1	4507.58**	3444.72**	26.46**	12.00*	337181.9**	1077754.0**	1973783.0**	1320774.0**
Crosses	215	38.11**	56.41**	12.72**	354.48**	1417.96**	2504.57**	8581.09**	4625.02**
Line effect	53	86.93**	98.14**	13.14	599.54**	2600.20**	4688.59**	14938.54**	7579.35**
Tester effect	3	236.27**	350.90**	4.28	1652.77**	19210.43**	26226.43**	212873.20**	110810.00**
Line * Tester effect	159	18.10**	36.95**	12.74**	248.30**	688.18**	1328.98**	2607.38**	1636.76**
Env * Treat	546	4.09**	2.71**	3.54**	5.99**	173.62**	667.51**	1805.14*	1901.12**
Env * Parents	114	1.75	1.97**	0.81	4.41**	27.04	86.73	2097.22*	1608.73*
Env * Parents (L)	106	1.83	1.88**	0.82	4.21**	27.05	87.97	2135.77*	1619.90*
Env * Parents (T)	6	0.79	3.73**	0.49	7.29**	33.95	89.11	674.26	1544.74
Env * PAR (L vs T)	2	0.21	1.43	1.06	5.88	5.42	13.61	323.11	208.67
Env * Parent vs Cross	2	167.92**	191.34**	65.02**	330.62**	197.18*	28413.23**	26479.37**	1708.57
Env * Crosses	430	3.95**	2.03**	3.98**	4.91**	212.38**	692.43**	1878.06*	974.88**
Env * Line effect	106	3.66	2.15	5.24**	5.59	258.71*	662.57	2229.05*	1073.12
Env * Tester effect	6	19.46**	1.87	8.74*	10.00*	405.29	422.27	6891.92**	5979.85**
Env * L * T effect	318	3.75**	1.99**	3.47**	4.58**	193.29**	707.49**	1666.47	847.71
Error	819	1.61	0.98	1.04	2.07	44.77	70.64	1557.68	797.40
Total	**1643**	**15.82**	**16.59**	**5.53**	**73.23**	**517.03**	**1387.63**	**4105.41**	**2434.28**

* significant at p = 0.05 and ** significant at p = 0.01

Table 13. Continued.....

Source of variation	*df*	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows/cob	Grains/ row	Cob length (cm)	Cob girth (cm)
Replicates	1	30885.83**	128.72**	337.3	249.28**	4.34**	18.4	13.58**	0.95**
Environments	2	34478.80**	230.54**	1996.94**	171.30**	3.97**	1385.76**	293.92**	0.37*
Rep * Env.	2	49678.75**	38.58	207.16	1219.90**	0.6	63.45**	264.11**	4.93**
Treatments	273	7058.12**	46.49**	156.40*	180.64**	13.19**	133.27**	21.11**	1.11**
Parents	57	3544.54**	82.29**	74.22	140.19**	17.00**	118.31**	17.94**	1.03**
Parents (Line)	53	3610.81**	82.87**	78.04	132.62**	15.76**	122.21**	18.54**	1.03**
Parents(Testers)	3	3240.14**	46.65*	31.03	211.40**	43.56**	74.91**	8.11**	1.20**
Parents (L vs T)	1	945.36	158.57**	1.64	328.00**	2.79*	41.74*	15.56**	0.97**
Parent vs Crosses	1	992733.70**	1296.51**	5234.51**	18922.04**	217.25**	15007.03**	2377.23**	135.27**
Crosses	215	3405.09**	31.19**	154.56*	104.20**	11.23**	68.06**	11.00**	0.51**
Line effect	53	5590.90**	54.60**	165.61	136.13**	13.15**	132.83**	17.82**	0.80**
Tester effect	3	77964.51**	319.50**	29.27	3390.31**	404.19**	366.87**	196.20**	11.16**
Line * Tester effect	159	1269.70**	17.95*	153.24*	31.55**	3.18**	40.83**	5.22**	0.21**
Env * Treat	546	1662.057**	16.15*	127.16	15.87**	0.78**	19.58**	2.25**	0.10*
Env * Parents	114	1451.293*	31.27**	32.36	14.70**	0.52	14.16**	2.1	0.07
Env * Parents (L)	106	1459.542*	31.96**	33.74	15.54**	0.55*	13.67**	2.09	0.07
Env * Parents (T)	6	1360.055*	22.2	14.14	4.25	0.14	19.29*	2.82	0.03
Env * PAR (L vs T)	2	287.807	21.89	13.95	1.58	0.16	24.80*	0.5	0.03
Env * Parent vs Cross	2	2074.11*	20.6	236.03	239.63**	1.58*	11.17	5.18	1.20**
Env * Crosses	430	711.36*	12.12	151.79*	15.14**	0.85**	21.05**	2.28**	0.11**
Env * Line effect	106	846.99*	14.15	155.49	14.97	1.02*	26.20*	2.32	0.11
Env * Tester effect	6	3481.51**	15.06	56.35	26.04	1.45	39.93	2.87	0.32**
Env * L * T effect	318	613.88	11.39	152.36*	14.99**	0.78**	18.98**	2.26*	0.10*
Error	819	597.88	13.97	126.1	7.02	0.42	8.09	1.86	0.09
Total	**1643**	**1812.06**	**20.46**	**133.99**	**40.63**	**2.67**	**34.46**	**5.87**	**0.27**

* significant at p = 0.05 and ** significant at p = 0.01

significant variance due to environments, treatments (parents + hybrids = 274), parent v/s crosses, crosses and line × tester interaction effect for all the characters. MSS due to parents, lines, testers and environment × treatments interaction were significant for all the characters except harvest index. Significant variance due to parents (L v/s T) was noticed for all the characters except ear weight per plant, grain yield per plant and harvest index. Except anthesis silking interval and harvest index, sum of squares due to line effect and tester effect were significant for all the other characters. MSS due to environment × parents interaction was significant for the characters days to silking, days to brown husk, ear weight, cob weight, grain yield, shelling per cent, test weight and grains per row. Significant variance was also noticed due to environment x lines interaction for all the characters except days to anthesis, anthesis silking interval, ear height, plant height, harvest index, cob length and cob girth. MSS due to environment × testers interaction was significant for the characters days to silking, days to brown husk, grain yield, grains per row. None of the characters have recorded significant sum of squares for environment × parents (line v/s tester) interaction except grains per row. Sum of squares due to environment × parents v/s crosses interaction was significant for all the characters except cob weight, shelling per cent, harvest index, grains per row and cob length. Other than shelling per cent, variance due to environment x crosses interaction was significant for all the characters. Environment x line effect interaction variance was significant for the characters anthesis silking interval, ear height, ear weight, grain yield, grain rows per cob and grains per row. Whereas, sum of squares due to environment × tester effect interaction was significant for the characters days to anthesis, anthesis silking interval, brown husk, ear weight, cob weight, grain yield and cob girth. Except ear weight, cob weight, grain yield, and shelling per cent, variance due to environment x line x tester interaction was significant for all the other characters.

4.3.2 Contribution of lines, testers and their interaction to total hybrid variance

The per cent contribution of lines, testers and their interaction to total hybrid variance is presented in Table 14. The contribution of lines (females) towards total hybrid variance was highest for days to 50 per cent anthesis (56.22%) followed by grains per row (48.11%). Whereas the contribution of testers was highest for the character grain rows per cob (50.18%) followed by test weight (45.40%). On the other hand, the contribution of line x tester interaction was highest for the character anthesis silking interval (74.08%) followed by harvest index (73.32%).

4.3.3 Estimates of gene actions

The GCA and SCA variances and GCA/SCA ratios are presented in Table 15. The GCA/SCA ratio was more than one for the characters ear weight, cob weight, grain yield, test weight, grain rows per cob, cob length and cob girth indicating the predominance of additive gene action. Whereas, GCA/SCA ratio was less than one for the remaining characters indicating the predominance of non-additive gene action.

4.3.4 General combining ability effects

The *gca* effects of 54 lines and four testers for different traits are given in Table 16 and 17, respectively. Best lines and testers for each character with significant *gca* effects in the desirable direction are presented in Table 18.

Earliness is preferable for characters such as anthesis, silking and maturity. Significantly negative *gca* effects for days to anthesis was noticed in 42 per cent of the lines analysed. Among them, Z-52-29, Z-56-1 and CM-149 were best general combiners. However, 40 per cent of the lines exhibited significant negative *gca* effects for days to silking, among them Z-52-29, Z-56-8 and Z-56-1 were good general combiners.

Table 14. Per cent contribution of lines, testers and line × tester interaction towards variation in the hybrids

Sl. No.	Character	Per cent contribution		
		Lines	Testers	Line x Tester interaction
1	Days to 50% anthesis	56.22	8.65	35.13
2	Days to 50% silking	42.88	8.68	48.44
3	Anthesis silking interval	25.45	0.47	74.08
4	Days to 50% brown husk	41.69	6.51	51.80
5	Ear height (cm)	45.20	18.90	35.89
6	Plant height (cm)	46.15	14.61	39.24
7	Ear weight per plant (g)	42.91	34.61	22.47
8	Cob weight per plant (g)	40.40	33.43	26.17
9	Grain yield per plant (g)	40.48	31.95	27.58
10	Shelling %	43.15	14.29	42.56
11	Harvest index	26.41	0.26	73.32
12	Test weight (g)	32.21	45.40	22.39
13	Grain rows per cob	28.85	50.18	20.97
14	Grains per row	48.11	7.52	44.37
15	Cob length (cm)	39.95	24.89	35.16
16	Cob girth (cm)	38.66	30.42	30.92

Table 15. Variance due to general and specific combining ability

Sl. No.	Characters	GCA	SCA	GCA/SCA
1	Days to 50% anthesis	0.7798 **	2.3919 **	0.326
2	Days to 50% silking	1.0779 **	5.8256 **	0.185
3	Anthesis silking interval	0.0435	1.5459 **	0.028
4	Days to 50% brown husk	5.0267 **	40.6194 **	0.124
5	Ear height (cm)	57.9220 **	82.4806 **	0.702
6	Plant height (cm)	82.1471 **	103.5828 **	0.793
7	Ear weight per plant (g)	623.0141 **	156.8191 **	3.973
8	Cob weight per plant (g)	315.3974 **	131.5085 **	2.398
9	Grain yield per plant (g)	223.8945 **	109.3027 **	2.048
10	Shelling %	0.9534 **	1.0926 **	0.873
11	Harvest index	0.0538	0.1477	0.364
12	Test weight (g)	9.9204 **	2.7600 **	3.594
13	Grain rows per cob	1.1784 **	0.4002 **	2.945
14	Grains per row	1.1203 **	3.6424 **	0.308
15	Cob length (cm)	0.5830 **	0.4946 **	1.179
16	Cob girth (cm)	0.0325 **	0.0179 **	1.816

Table 16. Estimates of *gca* effects for lines

Sl. No.	Inbrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
1	V-1154	1.74 **	1.13 **	-0.89 **	12.63 **	9.10 **	15.56 **	43.54 **	32.04 **	27.87 **	0.38	-1.74	0.34	0.64 **	2.48 **	0.15	0.20 **
2	V-1168	1.95 **	1.25 **	-0.3	3.93 **	0.38	4.06 *	8.81	0.52	3.2	1.77 *	-0.6	1.12 *	0.26 *	0.74	-0.81 **	0.14 *
3	V-1522	1.03 **	0.88 **	-0.72 **	8.35 **	5.15 **	9.48 **	32.64 **	18.76 **	17.12 **	0.73	-1.54	2.09 **	-0.61 **	1.64 **	0.08	0.07
4	V-1649	2.37 **	2.59 **	-0.39	4.34 **	-3.48 *	-7.17 **	65.33 **	36.91 **	33.77 **	1.29	-2.47	-0.38	0.48 **	3.66 **	1.55 **	0.04
5	V-1742	-1.79 **	-2.24 **	-0.76 **	-0.32	-11.94 **	-4.12 *	-2.75	3.27	-1.03	-1.1	2.29	0.79	1.19 **	-1.75 **	-0.33	0.12 *
6	V-2205	4.07 **	4.29 **	-0.89 **	6.26 **	26.25 **	16.92 **	15.12	7.23	6.7	0.29	-0.87	1.39 *	-1.18 **	-0.28	0.03	0
7	V-2232	0.16	0.006	-0.14	3.51 **	3.77 **	1.68	25.76 **	26.07 **	24.30 **	1.3	1.94	2.69 **	0.18	0.84	0.74 **	0.11
8	V-1410-1	-0.38	-0.36	-0.64 **	3.76 **	-6.12 **	-16.70 **	18.71 *	2.73	0.76	-0.6	-1.33	1.97 **	0.03	-1.35 *	-0.05	0.20 **
9	V-1712-1	2.45 **	1.96 **	-0.85 **	8.26 **	13.83 **	18.41 **	40.78 **	30.54 **	29.43 **	1.81 *	1.5	-0.06	1.73 **	4.05 **	0.42	0.49 **
10	V-241-2	1.07 **	-0.62 **	-0.85 **	-1.57 **	-0.27	7.64 **	-5.17	4.37	3.81	-0.2	0.19	2.06 **	-0.28 *	-2.36 **	-0.39	0.08
11	V-2437-1	1.95 **	2.38 **	-0.35	6.43 **	-7.04 **	-5.65 **	9.07	4.13	7.87	2.60 **	0.03	-1.20 *	-0.70 **	3.26 **	1.24 **	-0.20 **
12	V-2459-2	0.87 **	2.13 **	0.06	-1.28 **	-2.42	5.02 **	-25.36 **	1.2	-13.29 **	1.93 *	-0.34	-5.10 **	-1.16 **	3.54 **	-0.06	-0.41 **
13	V-2516-2	0.28	-0.24	0.52 *	-2.78 **	4.35 **	2.64	-8.01	-7.24	-4.07	1.26	0.19	-1.60 **	-0.18	2.80 **	0.66 *	-0.24 **
14	V-2608-1	0.16	1.04 **	0.23	-3.03 **	-8.81 **	-0.54	0.95	2.36	1.78	0.09	-0.33	-1.09 *	0.43 **	-0.01	0.94 **	-0.06
15	V-291-2	3.66 **	2.71 **	0.48 *	0.89 **	20.17 **	18.96 **	27.86 **	18.45 **	12.99 **	-1.54 *	-0.5	0.61	1.26 **	-0.31	1.15 **	0.20 **
16	V-70-1	3.03 **	2.42 **	-1.55 **	5.76 **	15.39 **	17.79 **	13.07	10.78	9.76	0.34	-1.49	-0.08	-0.16	3.16 **	0.83 **	-0.02
17	CIMMYT-47	1.07 **	2.25 **	0.31	1.22 **	2.65	-6.77 **	15.86 *	9.43	12.29 *	2.25 **	1.79	-2.22 **	0.047	4.76 **	0.54	0.05
18	CIMMYT-5	0.99 **	-0.22	0.06	-3.53 **	11.85 **	14.25 **	16.54 *	19.15 **	13.12 **	-1.78 *	-0.33	1.99 **	-1.18 **	2.81 **	1.25 **	0.02
19	CM-115	-1.08 **	-1.32 **	0.4	-5.78 **	-10.10 **	-23.85 **	-37.44 **	-24.16 **	-21.55 **	-0.75	1.24	-5.78 **	-0.31 *	-1.57 **	-1.39 **	-0.37 **
20	CM-149	-3.04 **	-2.03 **	0.31	-4.07 **	-7.75 **	-25.02 **	-21.48 **	-9.85	-10.72 *	-1.56 *	0.87	2.18 **	-0.65 **	-2.58 **	-0.29	0.01
21	CML-165	0.95 **	0.79 **	-0.93 **	-1.94 **	7.21 **	10.39 **	-5.89	-5.01	-5.08	-0.65	-1.86	0.46	-0.88 **	-0.64	-0.75 **	-0.1
22	CML-166	0.16	1.08 **	0.4	1.68 **	7.06 **	11.64 **	9.76	8.23	5.86	-0.63	-1.29	-3.57 **	0.43 **	5.07 **	1.30 **	-0.09
23	CML-169	0.87 **	1.63 **	-0.01	3.72 **	2.98 *	-2.04	3.37	6.02	8.6	2.12 **	2.69	-0.46	-0.35 **	2.00 **	0.3	0.01
24	CML-172	1.24 **	2.00 **	0.73 **	5.51 **	18.37 **	36.39 **	33.92 **	25.40 **	18.72 **	-1.52 *	-2.78	2.75 **	-0.16	1.68 **	0.95 **	0.07
25	CML-359	-1.00 **	-0.32	-0.3	0.22	9.73 **	12.31 **	-9.37	-5.12	-2.06	1.4	0.48	-1.21 *	0.49 **	0.57	-0.08	-0.06
26	CML-411	-1.04 **	-0.45 *	0.94 **	5.76 **	10.44 **	11.71 **	22.17 **	18.91 **	19.24 **	1.81 *	0.72	1.83 **	-0.31 *	3.09 **	0.82 **	0.08
27	HKI-193-1	-1.00 **	-2.20 **	-0.18	-0.24	-14.10 **	-0.79	24.72 **	20.59 **	12.36 *	-2.14 **	-1.82	2.77 **	0.18	0.42	0.93 **	0.01
28	HKI-193-2	1.24**	2.38 **	0.44 *	0.72 *	-1.35	-4.21 *	-11.06	-8.52	-7.52	-0.18	-0.82	1.10 *	-0.03	-1.54 **	-0.97 **	-0.04
29	LTP-1	0.78**	0.25	-0.1	-2.53 **	14.10 **	11.60 **	9.25	5.41	6.98	1.44	0.44	-1.34 *	0.28 *	1.48 *	1.55 **	-0.19 **

Sl. No.	Inbrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
30	MAI-115	-1.33 **	0.50 *	1.27 **	-6.15 **	-2.94 *	-11.29 **	-13.79	-11.59 *	-10.01 *	-0.29	0.41	-1.62 **	-0.01	-1.40 *	-0.23	-0.02
31	MAI-107	-0.71 **	-1.16 **	-1.01 **	0.55	-2.6	1.79	-0.98	-2.91	-1.53	0.79	-0.37	3.16 **	0.39 **	-2.33 **	-0.52	0.06
32	MAI-109	-0.63 *	-1.36 **	1.02 **	-3.28 **	-0.48	4.27 *	-17.76 *	-10.15	-10.41 *	-1.31	-0.89	3.52 **	-1.41 **	-0.1	-0.04	-0.12 *
33	MAI-112	-1.50 **	-2.32 **	0.81 **	-6.65 **	-3.37 *	7.56 **	-12.25	-11.06	-6.96	1.37	0.42	0.61	0.34 **	-0.9	0.083	-0.11
34	MAI-121	-1.71 **	-1.24 **	0.31	-4.53 **	-16.85 **	-17.08 **	-27.95 **	-18.73 **	-13.43 **	1.74 *	1.46	-3.29 **	0.31 *	-0.61	-1.45 **	-0.06
35	MAI-137	-0.04	-0.28	1.48 **	-6.20 **	8.23 **	4.54 **	-10.42	-12.68 *	-15.87 **	-3.92 **	-5.10 *	1.95 **	-0.96 **	-3.38 **	-0.94 **	0.15 *
36	MAI-27	-2.75 **	-1.82 **	0.27	-1.45 **	-16.62 **	-34.13 **	-34.38 **	-26.90 **	-23.31 **	-0.63	-1.36	1.10 *	-0.45 **	-4.29 **	-1.20 **	-0.12
37	MAI-29	-1.54 **	-2.36 **	0.94 **	-6.19 **	-10.06 **	-16.29 **	-32.12 **	-22.44 **	-20.89 **	-0.92	-0.21	-0.18	-0.38 **	-1.60 **	-1.06 **	-0.12 *
38	MAI-35	-2.04 **	-0.82 **	1.73 **	-5.32 **	-11.29 **	-8.37 **	-32.46 **	-23.94 **	-19.69 **	0.58	0.69	0.48	-0.46 **	-3.30 **	-0.96 **	-0.08
39	MAI-45	-1.54 **	-1.20 **	0.52 *	-3.78 **	-16.08 **	-11.13 **	-0.01	-6.69	-8.74	-2.04 **	15.19 **	4.30 **	-1.18 **	-1.82 **	-0.39	0.04
40	MAI-48	-1.71 **	-1.82 **	0.27	-6.11 **	-12.00 **	-27.29 **	-36.62 **	-28.84 **	-23.91 **	0.47	-0.34	-1.10 *	-0.36 **	-3.78 **	-1.24 **	0.22 **
41	MAI-706	-0.88 **	-0.24	-0.55 **	2.51 **	-3.69 **	-8.14 **	-12.62	-2.3	2.02	2.51 **	2.88	-0.7	0.26 *	1.59 **	-0.05	-0.09
42	SKV-70	-0.29	-0.82 **	-0.39	-1.40 **	-4.83 **	-5.67 **	-22.34 **	-16.72 **	-14.91**	-0.79	-1.12	-3.04 **	0.38 **	-0.49	-0.44	-0.19 **
43	V-632-112	2.20**	1.79 **	-1.39 **	9.01 **	8.94 **	7.14 **	33.13 **	21.45 **	17.85 **	-0.14	-2.43	1.11 *	-0.18	1.76 **	1.15**	-0.04
44	V-632-67	2.12 **	1.84 **	-0.85 **	7.34 **	8.81 **	4.85 **	26.02 **	19.39 **	13.48 **	-1.58 *	-1.4	3.91 **	0.18	-0.98	-0.23	0.23 **
45	Z-50-3	2.24 **	2.59 **	-0.18	-7.03 **	4.67 **	13.45 **	10.48	7.89	4.2	-1.38	-2.83	0.83	-0.05	-0.42	0.85 **	0.07
46	Z-51-1	1.70 **	2.42 **	-0.14	-0.45	3.98 **	4.58 **	18.71 *	11.96 *	8.03	-1.37	-1.17	0.76	1.11 **	-1.83 **	0.04	0.41 **
47	Z-51-6	-0.63 *	-0.87 **	-0.89 **	2.93 **	5.44 **	8.48 **	20.57 *	15.49 **	10.15 *	-1.62 *	0.11	-2.49 **	2.63 **	-0.18	-0.51	0.26**
48	Z-52-29	-4.71 **	-5.28 **	0.48 *	-6.40 **	-15.02 **	-21.29 **	-25.26 **	-24.14 **	-19.60 **	0.55	0.33	-4.12 **	0.05	0.07	-0.27	-0.15 **
49	Z-56-1	-4.58 **	-4.37 **	0.57 **	-6.69 **	-15.31 **	-13.68 **	-54.16 **	-39.55**	-33.11 **	0.06	2.71	-4.51 **	-0.33 *	-2.52 **	-1.25 **	-0.41 **
50	Z-56-8	-2.92 **	-4.83 **	0.11	-8.24 **	-7.04 **	7.83 **	-32.06 **	-22.72 **	-18.93*	0.09	0.3	-2.08 **	-0.2	-3.37 **	-0.78 **	-0.17 **
51	Z-60-22	-0.42	-1.32 **	-0.82 **	4.38 **	-5.54 **	3.64 *	-14.64	-3.764	0.86	2.53 **	1.94	1.37 *	-0.35 **	0.21	0.08	-0.17 **
52	Z-62-55	-1.29 **	-0.07	1.10 **	-2.19 **	7.54 **	3.69 *	-3.49	-0.67	-1.23	-0.53	-1.2	-1.81 **	0.51 **	-0.29	1.03 **	-0.07
53	Z-62-67	-1.13 **	-1.74 **	0.41 *	-3.65 **	-15.43 **	-26.62 **	-40.19 **	-27.45 **	-24.54 **	-1.27	-0.28	-3.25 **	0.48 **	-2.89**	-1.95 **	0.13 *
54	Z-63-30	1.37 **	1.67 **	-0.14	3.09 **	2.19	-0.37	3.91	4.69	-0.76	-3.15 **	-1.94	2.98 **	0.29 *	-2.81 **	-0.01	0.26 **
Range		-4.714	-5.285	-1.559	-8.238	-16.854	-34.126	-54.164	-39.553	-33.114	-3.92	-5.109	-5.786	-1.419	-4.291	-1.951	-0.419
		4.078	4.298	1.733	12.637	26.25	36.395	65.33	36.908	33.773	2.602	15.194	4.304	2.631	5.078	1.554	0.498
S.Em. ±		0.25	0.2	0.21	0.29	1.37	1.72	8.06	5.76	4.99	0.76	2.29	0.54	0.13	0.58	0.27	0.06
C.D. 5%		0.5	0.39	0.41	0.58	2.68	3.36	15.82	11.31	9.8	1.49	4.5	1.06	0.26	1.14	0.54	0.12
C.D. 1%		0.66	0.52	0.54	0.76	3.53	4.43	20.82	14.89	12.89	1.97	5.92	1.39	0.34	1.5	0.72	0.15

* significant at p = 0.05 and ** significant at p = 0.01

Table 17 Estimates of *gca* effects for testers

Sl. No.	Inbred	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
1	CM 500	-1.23 **	-0.79 **	0.08	-2.65 **	-5.56 **	-8.37 **	-27.59 **	-17.36 **	-15.11 **	-0.39	0.05	-3.06 **	-0.04	-0.12	-0.59 **	-0.14 **
2	SKV 50	0.14 *	0.60 **	-0.03	-1.07 **	-6.87 **	-3.49 **	-12.61 **	-11.51 **	-7.80 **	1.21 **	0.32	-0.84 **	-0.82 **	0.63 **	0.33 **	-0.14 **
3	MAI 105	0.71 **	1.15 **	-0.14 **	2.17 **	2.87 **	-0.79	9.10 **	5.07 **	2.24	-1.12 **	0.02	-0.64 **	1.59 **	-1.44 **	-0.68 **	0.25 **
4	LM 13	0.37 **	-0.95 **	0.1	1.56 **	9.56 **	12.65 **	31.10 **	23.79 **	20.67 **	0.29	-0.4	4.56 **	-0.72 **	0.94 **	0.94 **	0.02
Range		-1.23	-0.95	-0.14	-2.65	-6.87	-8.37	-27.59	-17.36	-15.11	-1.12	-4	-3.06	-0.82	-1.44	-0.68	-0.14
		0.71	1.15	0.1	2.17	9.56	12.65	31.1	23.79	20.67	1.21	0.32	4.56	1.59	0.94	0.94	0.25
S.Em. ±		0.07	0.05	0.05	0.08	0.37	0.47	2.19	1.56	1.35	0.2	0.62	0.14	0.03	0.15	0.07	0.016
C.D. 5%		0.13	0.11	0.11	0.15	0.72	0.91	4.3	3.08	2.66	0.4	1.22	0.28	0.07	0.31	0.14	0.032
C.D. 1%		0.18	0.14	0.14	0.21	0.96	1.21	5.66	4.053	3.51	0.54	1.61	0.38	0.09	0.41	0.19	0.043

* significant at p = 0.05 and ** significant at p = 0.01

Table 18. Best lines and testers with significant *gca* effects in the desirable direction

Sl. No.	Characters	Lines			Tester
1	Days to 50% anthesis	**Z-52-29**	**Z-56-1**	**CM-149**	**CM 500**
		-4.71 **	-4.58 **	-3.04 **	-1.23 **
2	Days to 50% silking	**Z-52-29**	**Z-56-8**	**Z-56-1**	**LM 13**
		-5.28 **	-4.83 **	-4.37 **	-0.95 **
3	Anthesis silking interval	**V-70-1**	**V-632-112**	**MAI-107**	**MAI 105**
		-1.55 **	-1.39 **	-1.01 **	-0.14 **
4	Days to 50% brown husk	**Z-56-8**	**Z-50-3**	**Z-56-1**	**CM 500**
		-8.24 **	-7.03 **	-6.69 **	-2.56 **
5	Ear height (cm)	**CML-172**	**V-291-2**	**V-2205**	**LM 13**
		18.37 **	20.17 **	26.25 **	9.56 **
6	Plant height (cm)	**V-1712-1**	**V-291-2**	**CML-172**	**LM 13**
		18.41 **	18.96 **	36.39 **	12.65 **
7	Ear weight per plant (g)	**V-1712-1**	**V-1154**	**V-1649**	**LM 13**
		40.78 **	43.54 **	65.33 **	31.1 **
8	Cob weight per plant (g)	**V-1712-1**	**V-1154**	**V-1649**	**LM 13**
		30.54 **	32.04 **	36.91 **	23.79 **
9	Grain yield per plant (g)	**V-1154**	**V-1712-1**	**V-1649**	**LM 13**
		27.87 **	29.43 **	33.77 **	20.69 **
10	Shelling %	**MAI-706**	**Z-60-22**	**V-2437-1**	**SKV 50**
		2.51 **	2.53 **	2.60 **	1.21 **
11	Harvest index	**MAI-45**			
		15.19 **			
12	Test weight (g)	**MAI-109**	**V-632-67**	**MAI-45**	**LM13**
		3.52 **	3.91 **	4.30 **	4.65 **
13	Grain rows per cob	**V-291-2**	**V-1712-1**	**Z-51-6**	**MAI 105**
		1.26 **	1.73 **	2.63 **	1.59 **
14	Grains per row	**V-1712-1**	**CIMMYT-47**	**CML-166**	**LM 13**
		4.05 **	4.76 **	5.07 **	0.94 **
15	Cob length (cm)	**CML-166**	**LTP-1**	**V-1649**	**LM 13**
		1.30 **	1.55 **	1.55 **	0.94 **
16	Cob girth (cm)	**Z-63-30**	**Z-51-1**	**V-1712-1**	**MAI 105**
		0.26 **	0.41 **	0.49 **	0.25 **

* significant at p = 0.05 and ** significant at p = 0.01

Significant negative *gca* for days to brown husk was noticed in 48 per cent of the lines analysed. Among them, Z-56-8, Z-50-3 and Z-56-1 were good general combiners. Among the testers, CM 500 was the only good general combiner for early anthesis, silking and brown husk.

Negative *gca* effects are also preferable for anthesis silking interval and in only 27 per cent of the lines, significantly negative *gca* observed. V-70-1, V-632-112 and MAI-107 were good general combiners among the lines and MAI 105 among the testers.

Grain yield is positively correlated with ear height and plant height and hence positive *gca* effects are preferable (Patil *et al.*, 1972 and Rupak *et al.,* 1979). CML-172, V-291-2 and V-2205 were good general combiners among the lines and 42 per cent of the lines showed significant *gca* effects in desirable direction for ear height. Among the 54 lines analysed, 50 per cent of the lines showed positive significant *gca* effects for plant height. Among them, V-1712-1, V-291-2 and CML-172 were good lines. Among the testers, LM 13 was good general combiner for both ear and plant height.

Significantly positive *gca* for grain yield was observed only in 25 per cent of the lines among which, V-1154, V-1712-1 and V-1649 were good general combiner lines, whereas LM 13 was good among the testers.

Higher shelling per cent is desirable, but only 18.5 per cent of the lines showed positive significance. MAI-706, Z-60-22 and V-2437-1 were best general combiner lines for shelling per cent. Increased proportion of economic yield out of the total biological yield is always preferable in the crops grown for grain purpose. The range of *gca* effects was very less for this character and only one line exhibited significantly positive *gca* effect *i.e.,* MAI-45 and none of the testers were good general combiners for both shelling per cent and harvest index.

Fairly good proportion *i.e.,* 39 per cent of the lines were good general combiners for test weight. Among them, MAI-109, V-632-67 and MAI-45 were good lines and LM 13 was good testers.

All the cob characters such as grain rows per cob, grains per row, cob length and width are positively correlated with grain yield and hence positive *gca* effects are expected. Higher proportion of significantly positive effects were noticed for grain rows per cob and grains per row *i.e.,* 37 and 31 per cent, respectively. Whereas, lower proportion *i.e.,* 24 per cent was evident for both cob length and width. V-291-2, V-1712-1 and Z-51-6 were good general combiners for grain row per cob, V-1712-1, CIMMYT-47 and CML-166 were good for grains per row, CML-166, LTP-1 and V-1649 were good for cob length and Z-63-30, Z-51-1and V-1712-1 were good for cob girth. Among the testers, MAI 105 was the best general combiner for both grain rows per cob and cob girth. For the characters grains per row and cob girth, tester LM 13 was good general combiner.

The overall *gca* status of lines and testers are given in Table 19 and 20 respectively. Fifty per cent of the lines were assigned high (H) overall *gca* status and line V-1712-1 secured highest rank and was the best overall general combiner followed by V-1154 and CIMMYT-5. Among the testers, LM-13 was the best general combiner.

4.3.5 Specific combining ability effects

The *sca* effects of 216 crosses for different traits are given in Table 21. Best crosses with significant *sca* effects in the desirable direction are provided in Table 22.

Earliness is preferable for characters such as anthesis, silking and maturity. Significantly negative *sca* effects were noticed for days to

Table 19. Overall general combining ability status of lines

Sl. No.	Line	Rank	*gca* status	Sl. No.	Line	Rank	*gca* status
1	V-1154	220	H	28	HKI-193-2	351	L
2	V-1168	321	L	29	LTP-1	250	H
3	V-1522	275	H	30	MAI-115	323	L
4	V-1649	268	H	31	MAI-107	266	H
5	V-1742	272	H	32	MAI-109	308	L
6	V-2205	312	L	33	MAI-112	256	H
7	V-2232	254	H	34	MAI-121	350	L
8	V-1410-1	304	L	35	MAI-137	334	L
9	V-1712-1	206	H	36	MAI-27	392	L
10	V-241-2	292	H	37	MAI-29	345	L
11	V-2437-1	349	L	38	MAI-35	374	L
12	V-2459-2	365	L	39	MAI-45	318	L
13	V-2516-2	309	L	40	MAI-48	372	L
14	V-2608-1	293	H	41	MAI-706	315	L
15	V-291-2	247	H	42	SKV-70	344	L
16	V-70-1	275	H	43	V-632-112	259	H
17	CIMMYT-47	309	L	44	V-632-67	268	H
18	CIMMYT-5	229	H	45	Z-50-3	280	H
19	CM-115	391	L	46	Z-51-1	292	H
20	CM-149	314	L	47	Z-51-6	243	H
21	CML-165	289	H	48	Z-52-29	328	L
22	CML-166	256	H	49	Z-56-1	386	L
23	CML-169	314	L	50	Z-56-8	300	H
24	CML-172	232	H	51	Z-60-22	315	L
25	CML-359	262	H	52	Z-62-55	277	H
26	CML-411	237	H	53	Z-62-67	391	L
27	HKI-193-1	258	H	54	Z-63-30	318	L

Final norm: 283 H: High L: Low

Table 20. Overall general combining ability status of testers

Sl. No.	Line	Rank	*gca* status
1	CM 500	43	L
2	SKV 50	42	L
3	MAI 105	39	L
4	LM 13	25	H

Final norm: 37 H: High L: Low

Table 21. Estimates of *sca* effects for hybrids

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
1	V-1154 × CM 500	1.10 *	1.59 **	0.38	2.23 **	6.06 *	-5.43	9.11	12.47	11	0.26	1.64	-1.86	-0.19	2.12	0.09	0.07
2	V-1154 × SKV 50	-0.6	-0.14	-0.34	-0.51	4.37	-8.05 *	5.16	0.22	0.19	0.01	0.03	-0.76	0.19	0.73	-0.05	0.06
3	V-1154 × MAI 105	-0.17	-0.52	-0.4	-2.42 **	2.71	-2.25	3.79	-3.34	-2.88	0.09	-3.02	2.44 *	0.31	-1	-0.62	0.09
4	V-1154 × LM 13	-0.33	-0.92 *	0.36	0.69	-13.14 **	15.73 **	-18.05	-9.34	-8.32	-0.35	1.35	0.17	-0.3	-1.85	0.58	-0.22
5	V-1168 × CM 500	1.39 **	-1.03 *	-0.54	1.61 **	2.71	-12.59 **	17.68	15.97	11.41	-1	-0.73	1.43	1.52 **	-0.45	-0.89	0.32 **
6	V-1168 × SKV 50	-0.98	-2.60 **	-0.42	-1.96 **	-4.73	0.45	10.81	-1.8	-1.5	0.22	0.79	-1.25	0.04	1.71	0.18	0.06
7	V-1168 × MAI 105	-0.88	2.35 **	2.18 **	-9.71 **	-3.81	-23.75 **	-40.34 *	-29.15*	-23.95 *	0.43	-0.16	-0.5	-0.44	-3.62 **	-0.92	-0.24 *
8	V-1168 × LM 13	0.46	1.29 **	-1.23 **	10.07 **	5.83 *	35.89 **	11.85	14.98	14.04	0.35	0.09	0.32	-1.12 **	2.36 *	1.63**	-0.14
9	V-1522 × CM 500	-0.85	-1.66 **	-0.95 *	2.86 **	-4.73	0.91	19.23	14.68	10.25	-1.01	-0.71	0.31	0.14	0.85	-0.15	0.29 *
10	V-1522 × SKV 50	0.44	-1.23 **	-0.34	-3.05 **	12.49 **	10.28 **	-9.26	-3.31	-2.46	-0.02	0.85	-1.39	1.65 **	-2.93 *	0.05	-0.04
11	V-1522 × MAI 105	-1.29 *	0.39	1.60 **	-4.46 **	-9.50 **	-4.25	-17.06	-14.99	-9.54	1.69	0.47	-1.22	-0.89 **	2.87 *	0.26	-0.15
12	V-1522 × LM 13	1.70 **	2.49 **	-0.31	4.65 **	1.73	-6.94 *	7.09	3.62	1.76	-0.66	-0.62	2.30 *	-0.90 **	-0.79	-0.16	-0.1
13	V-1649 × CM 500	0.98	1.63 **	-0.12	-0.48	-5.60 *	-7.28 *	-58.94 **	-34.79 **	-27.60 **	1.64	-1.33	1.31	0.84 **	-2.55 *	-2.04 **	-0.04
14	V-1649 × SKV 50	0.27	-1.60 **	-0.01	9.12 **	13.20 **	22.93 **	8.06	3.29	1.81	-0.81	0.05	-1.33	0.02	-0.33	-0.3	0.08
15	V-1649 × MAI 105	-0.13	-0.15	0.94 *	6.71 **	-1.96	-3.69	15.93	0.86	-1.69	-1.33	-2.07	-0.77	-0.19	2.27	1.46 **	0.02
16	V-1649 × LM 13	-1.12 *	0.12	-0.81	-15.35 **	-5.64 *	-11.96 **	34.95 *	30.65 **	27.47 **	0.51	3.35	0.79	-0.67 *	0.61	0.88	-0.05
17	V-1742 × CM 500	0.98	-1.03 *	-0.91*	4.19 **	7.94 **	0.01	-4.56	-1.02	5.64	2.84	2.1	-2.98 **	0.59 *	0.89	0.15	-0.2
18	V-1742 × SKV 50	-0.39	-0.44	0.04	-7.38 **	7.99 **	18.64 **	27.65	15.21	21.00 *	3.61 *	2.07	-0.17	-0.36	3.75 **	0.94	0.01
19	V-1742 × MAI 105	-1.46 **	0.35	1.65 **	-9.96 **	-7.92 **	-17.73 **	-29.23	-19.16	-39.61 **	-10.28 **	-7.54	0.77	0.43	-3.72 **	-0.79	0.17
20	V-1742 × LM 13	0.87	1.12 **	-0.77	13.15 **	-8.02 **	-0.92	6.14	4.98	12.98	3.82 *	3.38	2.38 *	-0.65 *	-0.93	-0.3	0.03
21	V-2205 × CM 500	2.60 **	3.09 **	0.88 *	-3.72 **	25.75 **	7.14 *	-1.98	-3.17	-2.96	-0.05	-1.19	1.04	0.17	-1.55	-0.3	0.16
22	V-2205 × SKV 50	1.39 **	-0.31	-0.84 *	-3.79 **	-18.02 **	-12.48 **	-6.75	-6.54	-7.87	-1.38	-0.85	1.99	-0.64 *	-1.21	-0.42	-0.16
23	V-2205 × MAI 105	-1.83 **	-2.53 **	-0.4	4.29 **	-3.19	-3.28	20.64	14.76	15.42	1.47	1.22	-1.16	0.08	6.37 **	1.91 **	0.01
24	V-2205 × LM 13	-2.16 **	-0.25	0.36	3.23 **	-4.54	8.62 *	-11.91	-5.06	-4.59	-0.05	0.81	-1.88	0.4	-3.62 **	-1.18 *	0
25	V-2232 × CM 500	-0.14	-3.28 **	-0.2	-8.64 **	-0.94	-8.88 **	7.19	0.2	2.62	1.68	0.62	-0.77	1.21 **	1.47	-0.2	-0.01
26	V-2232 × SKV 50	-1.85 **	-0.02	1.41 **	-10.71 **	-4.38	-0.59	-48.88 **	-32.38 **	-28.51 **	-0.63	-0.68	-1.78	-0.74 **	-0.28	0.51	-0.29 *
27	V-2232 × MAI 105	0.58	1.93 **	0.19	8.21 **	-10.46 **	-11.71 **	14.54	9.11	6.28	-0.71	2.38	2.24 *	-0.29	-1.54	-0.44	0.24 *
28	V-2232 × LM 13	1.41 **	1.373 **	-1.39 **	11.15**	15.77 **	21.18 **	27.15	23.06 *	19.61 *	-0.34	-2.33	0.31	-0.17	0.35	0.13	0.05
29	V-1410-1 × CM 500	-3.43 **	-5.07 **	-0.2	-9.22 **	-9.79 **	-19.57 **	-33.49 *	-25.58 *	-21.22 *	-0.46	-1.21	-0.74	0.42	-3.68 **	-1.18 *	-0.01
30	V-1410-1 × SKV 50	0.86	1.69 **	0.58	-7.13 **	2.69	7.81 *	-16.42	-16.17	-11.5	1.16	0.92	-2.18 *	-0.59 *	-0.54	-0.38	-0.12

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
31	V-1410-1 × MAI 105	0.79	0.80 *	-0.15	7.29 **	-3.23	-4.15	26.99	20.21	23.16 *	3.07 *	2.62	0.53	0.72 **	0.29	0.88	0.1
32	V-1410-1 × LM 13	1.79 **	2.58 **	-0.23	9.07 **	10.33 **	15.91 **	22.92	21.55	9.57	-3.77 *	-2.33	2.39 *	-0.55 *	3.93 **	0.68	0.03
33	V-1712-1 × CM 500	-2.60 **	-2.91 **	-0.33	-11.72 **	-2.67	5.3	8.35	12.72	12.51	1.11	1.89	1.02	0.06	1.85	0.37	0.02
34	V-1712-1 × SKV 50	1.35 **	2.19 **	0.79	6.20 **	-11.61 **	-0.65	9.8	6.2	3.39	-1.11	-1.42	-0.7	0.11	-0.8	0.45	0.1
35	V-1712-1 × MAI 105	-1.21 *	-1.19 **	-0.1	2.79 **	10.98 **	-1.61	8.57	1.26	3.82	1.36	0.94	-0.62	0.36	0.56	-0.9	0.06
36	V-1712-1 × LM 13	2.46 **	1.91 **	-0.35	2.73 **	3.29	-3.05	-26.73	-20.18	-19.71 *	-1.35	-1.41	0.3	-0.52	-1.61	0.07	-0.18
37	V-241-2 × CM 500	-2.89 **	-3.82 **	0.01	-3.22 **	-5.48 *	-14.59 **	-21.73	-23.00 *	-19.67 *	-0.19	-1.89	-1.05	0.07	-3.31 **	-1.23 *	0.01
38	V-241-2 × SKV 50	0.56	0.27	-0.22	9.53 **	-2.17	28.95 **	24.55	12.09	11.32	0.83	0.98	1.21	0.32	2.17	0.75	0.04
39	V-241-2 × MAI 105	0.33	1.55 **	-0.27	1.62 **	-1.67	-16.25 **	-11.74	-7.93	-8.06	-0.6	-1.2	-0.37	-0.96 **	0.81	0.41	-0.17
40	V-241-2 × LM 13	1.99 **	1.99 **	0.48	-7.93 **	9.31 **	1.89	8.92	18.84	16.42	-0.04	2.11	0.21	0.56 *	0.33	0.07	0.13
41	V-2437-1 × CM 500	0.4	0.01	-0.33	-3.89 **	-3.37	-4.22	-2.79	-2.65	-2.56	0.06	-0.4	0.99	-0.24	-0.82	0.05	0.01
42	V-2437-1 × SKV 50	0.02	0.11	0.79	-0.63	-13.39 **	-10.50 **	9.35	6.5	4.43	-0.56	-0.4	-1.34	0.41	-0.24	-0.32	0
43	V-2437-1 × MAI 105	-0.88	-2.44 **	-1.10 **	0.62	8.68 **	12.12 **	2.87	1.55	1.95	0.25	-0.6	-1.12	-0.28	1.67	0.77	0.03
44	V-2437-1 × LM 13	0.46	2.332 **	0.65	3.90 **	8.08 **	2.6	-9.43	-5.41	-3.82	0.25	1.4	1.46	0.11	-0.61	-0.5	-0.03
45	V-2459-2 × CM 500	-1.51 **	-2.24 **	0.26	-1.18 *	-11.24 **	-17.72 **	4.34	1.1	1.1	0.39	0.44	0.41	0.29	-0.1	-0.56	0.12
46	V-2459-2 × SKV 50	-1.39 **	-0.97 *	0.87 *	1.57 **	4.56	-5.92	20.62	13.23	9.88	-0.79	0.68	1.77	0.01	0.54	-0.03	0.06
47	V-2459-2 × MAI 105	1.03 *	0.80 *	-0.02	-1.67 **	-4.52	24.04 **	-2.26	2.53	3.02	0.19	-0.56	-1.99	-0.48	3.41 **	1.238 *	-0.14
48	V-2459-2 × LM 13	1.87 **	2.41 **	-1.10 **	1.27 *	11.21 **	-0.4	-22.71	-16.86	-13.99	0.21	-0.57	-0.19	0.18	-3.84 **	-0.65	-0.04
49	V-2516-2 × CM 500	-0.1	-1.37 **	-0.87 *	2.65 **	-7.68 **	-9.26 **	-15.78	-3.81	-2.22	1.07	1.1	-0.43	-0.23	-3.29**	-1.43 *	0.02
50	V-2516-2 × SKV 50	-0.64	-1.27 **	-2.25 **	4.91 **	21.54 **	-1.71	11.74	12.07	8.71	-0.92	0.64	1.46	-0.38	2.68 *	1.78 **	-0.05
51	V-2516-2 × MAI 105	-0.38	3.51 **	2.02 **	-1.50 *	-3.96	15.25 **	-16.66	-17.25	-14.84	-0.41	-3.21	-1.64	0.67 *	-0.53	-1.97 **	0.03
52	V-2516-2 × LM 13	1.12 *	-0.88 *	1.10 **	-6.06 **	-9.89 **	-4.27	20.69	9	8.36	0.27	1.47	0.61	-0.07	1.13	1.62 **	0
53	V-2608-1 × CM 500	-1.31 *	0.34	1.58 **	-1.43 *	-13.68 **	-13.74 **	-18.24	-15.48	-10.5	1.65	3.91	-2.63 *	-0.11	-2.43 *	-0.53	-0.02
54	V-2608-1 × SKV 50	-0.52	-3.56 **	-1.29 **	-2.84 **	-2.96	25.22 **	16.15	8.94	8.22	0.17	0.58	0.97	-0.2	0.59	0.52	0.05
55	V-2608-1 × MAI 105	0.08	0.55	0.98 *	9.41 **	9.29 **	-6.82 *	16.23	13.51	6.38	-2.66	-3.82	2.90 **	-0.08	1.26	0.8	-0.07
56	V-2608-1 × LM 13	1.74 **	2.66 **	-1.27 **	-5.14 **	7.35 **	-4.67	-14.15	-6.98	-4.1	0.84	-0.67	-1.23	0.38	0.59	-0.79	0.04
57	V-291-2 × CM 500	0.86	-2.16 **	-0.5	1.48 *	1.09	-3.49	-16	-9.77	-6.95	0.82	0.16	1.01	-1.01 **	-0.58	1.13 *	-0.13
58	V-291-2 × SKV 50	-1.52 **	0.44	-0.38	7.07 **	-3.44	2.89	0.72	2.21	6.79	2.74	2.99	0.77	-0.69 **	2.28	-0.39	0.05
59	V-291-2 × MAI 105	0.25	3.22 **	1.06 *	2.66 **	9.23 **	3.35	17.91	4.28	-4.09	-4.43 **	-4.59	-0.91	1.76 **	-3.41 **	-0.65	0.21
60	V-291-2 × LM 13	0.42	-1.50 **	-0.19	-11.22 **	-6.87 *	-2.75	-2.63	3.27	4.26	0.87	1.44	-0.87	-0.05	1.71	-0.09	-0.13
61	V-70-1 × CM 500	-0.02	-0.87 *	0.05	-1.56 **	4.77	10.26 **	14.89	7.31	4.61	-0.8	-0.62	1.21	0.29	2.24	0.96	0.06
62	V-70-1 × SKV 50	1.27 *	1.06 **	-0.01	-0.97	-19.58	-26.61 **	-7.39	-2.65	-0.96	0.81	0.48	-0.45	-0.26	0.75	0.25	0

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
63	V-70-1 × MAI 105	1.70 **	0.51	-0.4	-3.21 **	3.42	-4.23	-17.34	-13.04	-10.87	-0.04	-0.21	-1.59	0.39	-2.08	-0.94	-0.07
64	V-70-1 × LM 13	-2.96 **	-0.71	0.36	5.73 **	11.39 **	20.58 **	9.85	8.38	7.22	0.03	0.35	0.84	-0.42	-0.91	-0.27	0.01
65	CIMMYT-47 × CM 500	2.94 **	0.3	-1.83 **	7.65 **	-1.31	13.82 **	20.55	16.79	15.25	1	1.15	3.04 **	0.14	1.62	0.92	0.02
66	CIMMYT-47 × SKV 50	0.23	0.89 *	0.95 *	-3.26 **	2.08	-5.55	-30.92	-24.63 *	-24.19 *	-2.24	-2.16	-3.84 **	0.46	-0.77	-1.01	-0.01
67	CIMMYT-47 × MAI 105	0	0.35	1.06 *	5.33 **	5.25	-0.67	-4.63	-0.64	0.43	0.66	0.66	-0.47	0.24	-1.38	0.14	0.09
68	CIMMYT-47 × LM 13	-3.16 **	-1.54 **	-0.19	-9.72 **	-6.01	-7.61 *	15	8.49	8.52	0.58	0.35	1.27	-0.84 **	0.53	-0.06	-0.1
69	CIMMYT-5 × CM 500	1.19 *	1.42 **	-1.91 **	-0.27	-4.35	-10.11 **	16.51	18.7	14.45	-0.69	0.8	-3.69 **	0.17	5.04 **	1.67 **	-0.1
70	CIMMYT-5 × SKV 50	-0.19	3.02 **	1.20 **	9.99 **	-15.37	-11.56 **	-6.98	0.31	-0.23	-0.38	0.69	3.48 **	0.22	-3.41 **	-0.81	0.11
71	CIMMYT-5 × MAI 105	-0.92	-0.86 *	-1.52 **	-4.58 **	12.70 **	17.06 **	-14.43	-19.18	-15.41	0.3	-0.09	-2.13 *	-0.19	-0.09	-0.54	-0.05
72	CIMMYT-5 × LM 13	-0.08	-3.58 **	2.23 **	-5.14 **	7.022 *	4.62	4.9	0.17	1.19	0.77	-1.4	2.35 *	-0.2	-1.54	-0.32	0.04
73	CM-115 × CM 500	-1.55 **	-1.45 **	-0.91 *	2.31 **	0.77	10.24 **	-5.42	0.95	1.55	0.45	0.59	-3.79 **	0.24	-2.67 *	-0.24	-0.11
74	CM-115 × SKV 50	0.39	1.65 **	0.03	1.24 *	3.83	-7.21*	4.86	-0.41	-0.15	0.17	-0.74	2.44 *	0.29	1.85	-0.02	-0.04
75	CM-115 × MAI 105	0.16	1.43 **	0.14	0.83	1.41	2.66	7.67	1.97	3.1	0.71	-0.7	1.72	-0.46	1.13	-0.24	0.09
76	CM-115 × LM 13	0.99	-1.63 **	0.73	-4.39 **	-6.01 *	-5.69	-7.11	-2.51	-4.5	-1.33	0.85	-0.37	-0.07	-0.3	0.51	0.06
77	CM-149 × CM 500	0.39	2.26 **	1.50 **	0.77	-2.99	3.65	-5.72	-4.63	-2	1.19	3.6	0.33	-0.95 **	-0.93	-0.25	-0.05
78	CM-149 × SKV 50	0.68	-1.48 **	-0.55	-1.13	9.47 **	-17.96 **	20.05	16.84	13.35	-0.48	0.33	1.61	0.02	1.4	0.65	0.01
79	CM-149 × MAI 105	-2.21 **	-3.69 **	-1.10 **	5.12 **	13.97 **	26.74 **	23.32	16.49	12.7	-0.86	-3.82	2.65 *	0.41	-1.11	0.15	0.13
80	CM-149 × LM 13	1.12 *	2.91 **	0.15	-4.76 **	-20.45 **	-12.44 **	-37.65 *	-28.71 *	-24.04 *	0.16	-0.12	-4.59 **	0.52 *	0.63	-0.55	-0.09
81	CML-165 × CM 500	1.39 **	0.76	-0.08	0.65	10.96 **	0.07	-3.03	-2.17	-1.01	0.66	2.12	0.32	0.27	0.86	0.28	0.04
82	CML-165 × SKV 50	-1.14 *	0.35	1.53 **	4.90 **	-3.64	9.28 **	16.06	8.63	6.14	-0.57	-0.46	-0.14	0.19	0.98	0.08	-0.01
83	CML-165 × MAI 105	0.28	-1.19 **	-0.18	0.66	-0.06	2.66	-5.4	-1.24	0.27	0.79	-0.22	-1.55	-0.03	-0.06	-0.12	-0.02
84	CML-165 × LM 13	-0.54	0.08	-1.27 **	-6.22 **	-7.24 **	-12.02 **	-7.63	-5.21	-5.41	-0.88	-1.45	1.37	-0.44	-1.78	-0.24	-0.01
85	CML-166 × CM 500	2.52 **	0.01	-1.41 **	-5.80 **	-8.39 **	2.07	-10.13	-12.37	-10.63	-0.35	1.14	0.85	-0.18	1.73	0.23	-0.02
86	CML-166 × SKV 50	-0.35	0.94 *	1.03 *	-8.04 **	6.08 *	-7.46 *	5.42	2.03	3.13	0.78	0.82	1.8	0.27	1.56	0.28	0.15
87	CML-166 × MAI 105	1.41 **	-1.11 **	-1.02 *	5.37 **	2.33	-8.00 *	4.47	8.41	9.85	1.35	0.3	-0.47	-0.87 **	-0.83	-0.34	-0.01
88	CML-166 × LM 13	-3.58 **	0.16	1.39 **	8.48 **	-0.01	13.39 **	0.23	1.92	-2.35	-1.78	-2.26	-2.18 *	0.77 **	-2.45 *	-0.18	-0.12
89	CML-169 × CM 500	0.98	2.76 **	2.17 **	-1.18 *	1.43	6.84 *	-13.77	-9.53	-6.99	0.94	-0.17	-0.83	0.67 *	-4.52 **	-0.7	-0.03
90	CML-169 × SKV 50	-0.23	-1.31 **	-1.21 **	-9.09 **	6.33 *	0.8	19.5	12.34	8.07	-1.56	0.38	-1.05	1.92 **	-0.68	-1.49 **	0.37 **
91	CML-169 × MAI 105	-1.79 **	-4.69 **	-1.43 **	2.49 **	-8.83 **	-7.56 *	-1.63	-1.51	2.81	2.39	-0.23	1.46	-2.49 **	3.81 **	1.74 **	-0.29 *
92	CML-169 × LM 13	1.04 *	3.24 **	0.48	7.77 **	1.06	-0.08	-4.09	-1.29	-3.88	-1.76	0.02	0.43	-0.1	1.39	0.45	-0.05
93	CML-172 × CM 500	1.27 *	-0.62	-1.91 **	0.02	15.37 **	-5.09	-1.44	0.58	-1.31	-1.11	0.49	0.11	-0.04	2.40 *	0.43	0.11
94	CML-172 × SKV 50	0.56	2.98 **	1.86 **	6.11 **	-6.23 *	12.70 **	7.36	10.82	9.02	-0.27	-0.46	-0.1	-0.13	1.7	0.97	0.14

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
95	CML-172 × MAI 105	-1.34 **	0.43	1.31 **	7.37 **	-3.89	0.32	20.61	17.14	18.09	2.2	2.13	-0.57	-0.01	2.09	0.23	-0.14
96	CML-172 × LM 13	-0.5	-2.79 **	-1.27 **	-13.51 **	-5.24	-7.94 *	-26.54	-28.54 *	-25.80 **	-0.82	-2.17	0.56	0.18	-6.19 **	-1.62 **	-0.11
97	CML-359 × CM 500	2.19 **	1.38 **	-0.7	3.48 **	23.02 **	26.07 **	15.17	12.84	8.36	-1.52	0.5	-0.01	-0.24	4.98 **	1.68 **	0.01
98	CML-359 × SKV 50	0.48	-2.02 **	-1.25 **	-8.09 **	-10.33 **	-2.79	-2.6	-3.88	-5.37	-1.2	-0.27	1.84	-0.33	-1.42	-0.37	-0.07
99	CML-359 × MAI 105	-2.08 **	0.26	3.02 **	1.49 *	-7.25 **	-12.25 **	9.36	5.96	9.19	2.39	0.25	-1.82	0.79 **	-0.9	-0.62	0.16
100	CML-359 × LM 13	-0.58	0.37	-1.06 *	3.11 **	-5.43 *	-11.02 **	-21.93	-14.92	-12.18	0.33	-0.48	-0.01	-0.22	-2.66 *	-0.69	-0.1
101	CML-411 × CM 500	2.23 **	-2.99 **	-0.28	2.27 **	17.81 **	8.67 *	0.34	1.67	4.03	1.79	1.76	-4.41 **	0.77 **	0.45	-0.22	-0.02
102	CML-411 × SKV 50	-0.31	0.27	-0.34	-11.79 **	-10.37 **	-3.44	-4.01	-5.68	-5.93	-0.77	-0.75	3.67 **	-0.57 *	-0.11	0.67	-0.04
103	CML-411 × MAI 105	0.45	3.05 **	1.77 **	0.79	-13.70 **	-9.81 **	-16.9	-7.9	-6.41	0.12	0.49	-0.19	-0.79 **	-0.04	-0.85	-0.11
104	CML-411 × LM 13	-2.37 **	-0.33	-1.14 **	8.73 **	6.27 *	4.58	20.57	11.91	8.31	-1.14	-1.49	0.92	0.59 *	-0.3	0.4	0.17
105	HKI-193-1 × CM 500	-0.14	-0.91 *	-0.82 *	2.94 **	-0.56	-7.98 *	-19.05	-10.9	-4.45	2	0.71	-0.17	-0.46	-1.77	0.54	-0.08
106	HKI-193-1 × SKV 50	-0.18	0.69	-0.71	6.53 **	-8.41 **	-15.69 **	-4.74	-2.16	2.43	1.49	1.96	-1.15	0.32	-1.32	-0.5	-0.01
107	HKI-193-1 × MAI 105	0.74	2.47 **	0.56	-0.37	0.83	10.76 **	-1.39	-6.15	-18.04	-5.15 **	-3.39	0.26	0.38	0.56	-0.41	0.07
108	HKI-193-1 × LM 13	-0.42	-2.25 **	0.98 *	-9.09 **	8.14 **	12.91 **	25.19	19.29	20.05 *	1.66	0.72	1.06	-0.24	2.52 *	0.37	0.02
109	HKI-193-2 × CM 500	-0.05	-2.99 **	-2.28 **	-4.85 **	-18.72 **	-19.11**	-6.3	-3.35	-2.51	0.06	1.52	0.81	-0.44	-0.7	-0.49	-0.04
110	HKI-193-2 × SKV 50	-1.27 *	2.94 **	4.32 **	-4.42 **	21.49 **	17.26 **	-16.71	-11.48	-9.54	0.17	0.98	-2.63 *	0.34	0.37	-0.69	-0.08
111	HKI-193-2 × MAI 105	-0.34	-2.94 **	-1.72 **	1.49 *	-6.58 *	-6.44	14.78	10.43	9.21	0.33	-1.16	-0.21	-0.21	-0.18	0.71	0.09
112	HKI-193-2 × LM 13	1.66 **	2.99 **	-0.31	7.77 **	3.81	8.28 *	8.23	4.4	2.84	-0.56	-1.35	2.03	0.31	0.51	0.47	0.04
113	LTP-1 × CM 500	2.39 **	0.79 *	-1.07 **	7.56 **	-8.10 **	-8.55 *	10.76	3.13	3.46	0.84	-0.23	0.56	0.17	0.8	-0.62	0.17
114	LTP-1 × SKV 50	0.85	3.23 **	1.53 **	7.99 **	13.03 **	23.91 **	9.08	9.61	6.98	-0.74	0.19	-1.64	-0.18	1.26	0.84	-0.01
115	LTP-1 × MAI 105	0.95	-1.82 **	-0.02	-7.75 **	0.54	-2.37	-3.34	0.78	3.2	1.35	1.53	-0.52	0.21	2.09	0.43	-0.15
116	LTP-1 × LM 13	-4.21 **	-2.21 **	-0.43	-7.80 **	-5.47 *	-12.98 **	-16.51	-13.54	-13.64	-1.45	-1.49	1.6	-0.2	-4.15 **	-0.66	-0.02
117	MAI-11 5 × CM 500	-0.97	-0.12	0.71	1.52 **	-13.39 **	-13.48 **	-7.16	-7.45	-7.28	-0.62	0.99	2.21 *	-0.06	-0.21	-0.07	-0.03
118	MAI-115 × SKV 50	0.31	-1.35 **	-1.67 **	-0.71	6.16 *	2.47	-9.9	-4.21	-3.52	0.4	1.12	1.37	0.12	-1.21	-1.05	0.06
119	MAI-116 × MAI 105	0.91	3.09 **	2.27 **	3.04 **	-9.66 **	-8.15 *	-11.43	-7.7	-6.4	-0.35	-1.46	-1.63	0.31	-3.75 **	-0.96	-0.04
120	MAI-117 × LM 13	-0.25	-1.62 **	-1.31 **	-3.84 **	16.89 **	19.16 **	28.5	19.41	17.22	0.58	-0.65	-1.95	-0.37	5.17 **	2.08 **	0.02
121	MAI-107 × CM 500	-0.76	0.21	0.5	-5.01 **	12.60 **	7.92 *	17.64	12.09	13.27	1.89	2.75	-0.5	1.92 **	-0.28	0.32	0.44 **
122	MAI-107 × SKV 50	-0.14	-1.35 **	0.12	-7.09 **	-2.91	-10.77 **	-34.22 *	-22.22	-18.93	0.15	-0.18	-2.59 *	-0.3	-1.85	-1.50 **	-0.22
123	MAI-107 × MAI 105	0.12	-0.57	-0.77	2.66 **	-6.75 *	15.51 **	21.78	12.72	8.85	-1.32	-3.61	3.81**	-0.44	0.41	0.78	-0.05
124	MAI-107 × LM 13	0.79	1.71 **	0.14	9.43**	-2.93	-12.67 **	-5.2	-2.58	-3.18	-0.72	1.04	-0.72	-1.18 **	1.72	0.41	-0.18
125	MAI-109 × CM 500	0.14	3.76 **	0.63	1.31 *	9.31 **	0.61	9.12	5.5	0.65	-2.67	-2.04	0.61	-0.06	1.75	0.87	0.05
126	MAI-109 × SKV 50	1.11 *	0.19	-1.92 **	1.07	-5.96 *	-15.67 **	1.45	1.28	-0.05	-0.66	-1.35	-1.37	-0.41	-0.37	-0.07	0.04

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
127	MAI-109 × MAI 105	-0.79	0.97 *	-0.97 *	1.66 **	-7.04 *	-12.21 **	-6.03	-4.17	-1.03	1.53	1.86	0.34	0.18	-2.69 *	-0.25	-0.11
128	MAI-109 × LM 13	-0.45	-4.92 **	2.27 **	-4.05 **	3.68	27.26 **	-4.54	-2.61	0.43	1.8	1.53	0.42	0.3	1.31	-0.54	0.01
129	MAI-112 × CM 500	-0.81	1.38 **	0.01	3.02 **	-7.37 **	-11.09 **	-14.34	-9.45	-8.33	0.18	2.2	-0.85	0.44	-2.65 *	0.07	-0.02
130	MAI-112 × SKV 50	-1.68 **	-0.85 *	-1.05 *	1.11	-10.23 **	-2.04	-11.17	-9.91	-10.51	-1	-2.27	0.14	-0.45	2.80 *	0.03	-0.16
131	MAI-112 × MAI 105	0.91	2.09 **	-0.94 *	-3.12 **	14.77 **	30.49 **	24.8	25.47 *	19.813 *	-1	-1.05	1.94	0.21	1.59	0.56	0.21
132	MAI-112 × LM 13	1.58 **	-2.62 **	1.98 **	-1.01	2.83	-17.35**	0.71	-6.11	-0.96	1.82	1.12	-1.24	-0.2	-1.75	-0.67	-0.03
133	MAI-121 × CM 500	-1.26 *	0.79 *	1.01 *	-0.6	1.27	17.13 **	24.91	12.24	10.77	0.46	0.54	-0.49	-0.13	4.53 **	1.63 **	-0.02
134	MAI-121 × SKV 50	-0.31	-1.93 **	-1.88 **	-1	-5	-14.90 **	-7.62	-4.97	-4.63	0.02	1.69	0.61	-0.35	-3.50 **	-0.49	-0.04
135	MAI-121 × MAI 105	-0.54	1.01 *	1.23 **	-4.58 **	8.24 **	7.72 *	3.88	2.87	2.85	-0.05	-3.26	0.68	0.51	-1.22	-0.23	0.13
136	MAI-121 × LM 13	2.12 **	0.12	-0.35	6.19 **	-4.51	-9.96 **	-21.18	-10.15	-8.98	-0.42	1.03	-0.8	-0.04	0.19	-0.92	-0.07
137	MAI-137 × CM 500	-2.76 **	2.51 **	2.83 **	-0.76	8.10 **	5.92	-19.82	-17.36	-17.95	-3.57 *	-1.61	-3.25 **	-0.44	-4.35 **	-0.85	-0.12
138	MAI-137 × SKV 50	0.52	1.44 **	-1.38 **	-2.17 **	-5	-1.94	-3.68	-0.98	1.93	1.65	0.54	0.99	0.27	2.853 *	0.62	0.07
139	MAI-137 × MAI 105	1.45 **	-0.77	-2.43 **	4.91 **	5.58 *	0.35	9.17	6.46	4.69	0.08	-1.14	1.03	-0.21	-0.4	-0.2	0.07
140	MAI-137 × LM 13	0.79	-3.16 **	0.98 *	-1.97 **	-8.68 **	-4.33	14.34	11.87	11.31	1.85	2.2	1.24	0.38	1.91	0.42	-0.02
141	MAI-27 × CM 500	-0.89	1.04 **	1.38 **	-2.68 **	11.04 **	5.26	-14.87	-17.05	-15.32	-0.93	0.05	0.32	0.17	-0.48	-0.42	0
142	MAI-27 × SKV 50	-0.6	-0.18	0.16	-4.59 **	1.6	3.47	-18.38	-6.7	-7.05	-0.78	0.9	-2.08	0.02	-4.11 **	-0.04	0.02
143	MAI-27 × MAI 105	0.49	-3.40 **	-1.39 **	-2.16 **	-16.14 **	-25.15 **	8.61	3.98	5.33	1.19	-1.9	1.62	-0.13	1.2	-0.09	-0.01
144	MAI-27 × LM 13	0.99	2.54 **	-0.14	9.44 **	3.5	16.41 **	24.63	19.77	17.03	0.52	0.96	0.14	-0.07	3.39 **	0.56	-0.02
145	MAI-29 × CM 500	-0.43	2.09 **	-0.28	1.90 **	1.14	9.92 **	-6.16	-7.84	-3.93	1.49	0.31	-4.53 **	0.31	-0.67	0.36	-0.27 *
146	MAI-29 × SKV 50	0.52	0.52	-1.34 **	4.49 **	-2.04	-9.44 **	2.99	1.2	3.88	1.9	0.99	3.78 **	-0.25	-0.49	-0.69	0.16
147	MAI-29 × MAI 105	-0.37	1.63 **	-0.73	-4.25 **	2.95	1.68	4.16	5.58	0.44	-2.61	-2.49	3.08 **	-0.92 **	0.62	0.74	0.05
148	MAI-29 × LM 13	0.29	-4.25 **	2.35 **	-2.14 **	-2.06	-2.17	-1	1.06	-0.39	-0.79	1.19	-2.34 *	0.86 **	0.55	-0.42	0.06
149	MAI-35 × CM 500	-1.43 **	0.05	0.42	0.35	2.54	-3.57	21.2	9.09	9.03	1.23	0.51	0.26	0.12	0.44	0.6	0.05
150	MAI-35 × SKV 50	-0.14	-6.02 **	-0.79	-0.21	3.1	7.89 *	-15.07	-10.29	-8.73	0.17	0.27	-1.42	-0.3	-2.46 *	-1.05	-0.09
151	MAI-35 × MAI 105	-0.54	-0.90 *	-1.35 **	-3.79 **	2.18	9.60 **	12.14	12.89	10.1	-0.91	-2.2	1.77	-1.24 **	5.17 **	1.45 **	-0.1
152	MAI-35 × LM 13	2.124 **	6.87 **	1.73 **	3.65 **	-7.83 **	-13.92 **	-18.27	-11.69	-10.41	-0.49	1.41	-0.61	1.41 **	-3.14 **	-1.01	0.13
153	MAI-45 × CM 500	-1.60 **	3.92 **	4.63 **	-0.01	-18.91 **	-2.23	-20.58	-9.09	-10.22	-2.13	-16.28 **	-0.76	-0.09	-0.89	-1.33 *	-0.05
154	MAI-45 × SKV 50	2.18 **	-0.98 *	-1.42 **	1.24 *	-7.52 **	-8.60 *	-11.41	-5.04	-4.22	-0.01	-18.07 **	-0.17	-0.05	-1.6	0.22	-0.09
155	MAI-45 × MAI 105	-0.71	-1.53 **	-1.81 **	4.99 **	21.81 **	9.76 **	16.05	7.96	9.56	1.91	51.11 **	2.24 *	0.67 *	-1.28	-0.25	0.27 *
156	MAI-45 × LM 13	0.12	-1.42 **	-1.39 **	-6.22 **	4.62	1.08	15.94	6.17	4.88	0.23	-16.75 **	-1.32	-0.53 *	3.75 **	1.36 *	-0.14
157	MAI-48 × CM 500	-1.76 **	0.05	0.88 *	0.15	-2.66	8.09 *	-10.25	-9.97	-7.31	1.19	1.79	2.73 *	-0.77 **	-4.01 **	-0.86	-0.41 **
158	MAI-48 × SKV 50	0.85	2.65 **	0.82 *	-1.42 *	-10.27 **	-22.94 **	-22.31	-18.12	-16.59	-0.76	-1.22	-2.53 *	0.07	-1.13	-0.5	-0.50 **

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
159	MAI-48 × MAI 105	0.28	-1.07 **	-1.72 **	3.33 **	0.64	-4.15	14.29	10.85	10.3	0.31	-1.51	-0.15	-0.54 *	2.55 *	1.09 *	-0.51 **
160	MAI-48 × LM 13	0.62	-1.63 **	0.02	-2.05 **	12.29 **	18.99 **	18.27	17.23	13.59	-0.74	0.94	-0.06	1.24 **	2.59 *	0.26	1.42 **
161	MAI-706 × CM 500	0.06	1.13 **	1.54 **	-6.47 **	2.1	1.19	1.85	-0.43	-0.82	-0.04	-0.04	0.31	0.32	2.09	0.42	0
162	MAI-706 × SKV 50	-1.64 **	-3.10 **	-0.67	-3.21 **	-1.66	5.74	-9.78	-8.99	-8.56	-0.23	0.97	-1.23	0.04	-2.25	-1.180 *	0.04
163	MAI-706 × MAI 105	-0.37	-0.48	0.44	5.87 **	-2.66	-0.79	18.13	19.44	19.42	1.34	-0.82	1.38	0.29	2.29 *	1.08	-0.05
164	MAI-706 × LM 13	1.95 **	2.46 **	-1.31 **	3.81 **	2.23	-6.14	-10.2	-10.01	-10.04	-1.08	-0.11	-0.45	-0.65 *	-2.13	-0.33	0.01
165	SKV-70 × CM 500	0.48	-1.12 **	-0.62	-2.22 **	-2.49	8.72 *	9.57	3.17	-0.51	-2.47	-2.6	-0.34	-0.13	1.07	0	0.02
166	SKV-70 × SKV 50	-1.06 *	0.31	0.16	0.7	1.22	-16.40 **	4.53	7.3	8.99	2.36	2	1.21	0.26	1.25	0.3	-0.1
167	SKV-70 × MAI 105	-1.62 **	-0.74	-0.06	-5.87 **	-4.93	-4.85	-25.66	-17.66	-14.57	-0.25	-1.24	-0.96	-0.69 **	-2.69 *	-0.83	-0.06
168	SKV-70 × LM 13	2.21 **	1.54 **	0.52	7.40 **	6.21 *	12.53 **	11.55	7.18	6.09	0.36	1.84	0.08	0.56 *	0.37	0.54	0.14
169	V-632-112 × CM 500	1.48 **	1.26 **	0.04	6.19 **	15.31 **	16.74 **	20.84	23.66 *	20.11 *	0.22	1.5	0	0.37	3.81 **	0.13	0.06
170	V-632-112 × SKV 50	0.77	0.52	0.16	-4.38 **	-8.62 **	-6.29	-5.1	-10.02	-9.05	-0.42	-0.65	0.2	0.16	-2.49 *	-0.42	-0.01
171	V-632-112 × MAI 105	-1.29 *	-2.19 **	-0.56	-4.79 **	-2.54	-4.67	-4.6	-10.14	-8.4	0.02	-2.95	0.35	-0.52 *	-1.56	-0.23	0.02
172	V-632-112 × LM 13	-0.95	0.41	0.35	2.98 **	-4.14	-5.77	-11.13	-3.51	-2.66	0.18	2.1	-0.55	0	0.25	0.53	-0.07
173	V-632-67 × CM 500	-3.60 **	-3.12 **	2.50 **	-2.64 **	2.02	8.61 *	-3.24	-2.98	-0.41	1.14	-0.04	-2.38 *	0.67 *	1.54	-0.28	0.02
174	V-632-67 × SKV 50	-0.64	-1.68 **	-0.88 *	4.61 **	-4.91	-3.42	21.67	15.11	11.08	-1.04	-1.29	-0.03	-0.48	1.07	1.22 *	0.03
175	V-632-67 × MAI 105	4.62 **	3.93 **	-0.6	-7.46 **	-6.50 *	-10.96 **	-32.89 *	-20.25	-15.4	0.63	0.33	0.4	-0.89 **	-1.63	-0.65	-0.11
176	V-632-67 × LM 13	-0.37	0.87 *	-1.02 *	5.48 **	9.39 **	5.76	14.46	8.12	4.72	-0.73	1	2.02	0.69 **	-0.98	-0.29	0.07
177	Z-50-3 × CM 500	0.94	0.63	-0.33	3.23 **	-6.41 *	-7.07	28.62	20.48	16.23	-0.41	0.37	1.28	0.70 **	-0.88	0.52	0.1
178	Z-50-3 × SKV 50	1.06 *	-1.43 **	-0.88 *	2.15 **	6.22 *	-10.35 **	-23.65	-20.83	-17.6	-0.29	0.13	-2.02	-0.57 *	-1.94	-1.07	-0.12
179	Z-50-3 × MAI 105	0.66	0.67	0.56	-2.58 **	0.47	9.85 **	3.49	4.28	4.35	0.38	-1.68	-0.98	0.34	1.89	0.03	0.07
180	Z-50-3 × LM 13	-2.66 **	0.12	0.64	-2.80 **	-0.29	7.58 *	-8.45	-3.93	-2.98	0.33	1.18	1.71	-0.47	0.93	0.52	-0.05
181	Z-51-1 × CM 500	-0.02	-0.36	-0.7	-2.85 **	-13.56 **	-8.69 *	-32.37 *	-25.96 *	-22.8 *	-0.6	-1.28	1.39	-0.13	-2.22	-1.82 **	-0.06
182	Z-51-1 × SKV 50	-0.23	0.23	0.74	7.24 **	0.83	-3.9	8.17	5.32	6.04	0.67	1.08	0.54	-0.28	0.46	0.87	0.06
183	Z-51-1 × MAI 105	0.7	1.51 **	1.35 **	6.49 **	5.41 *	12.97 **	3.33	2.84	2.45	-0.07	-1	-2.78 *	0.38	-1.97	0.67	0.1
184	Z-51-1 × LM 13	-0.46	-1.37 **	-1.39 **	-10.89 **	7.31 **	-0.37	20.86	17.79	14.39	0	1.2	0.86	0.03	3.72 **	0.29	-0.09
185	Z-51-6 × CM 500	3.32 **	2.09 **	-1.28 **	9.27 **	10.98 **	12.32 **	37.95 *	29.91 **	21.49 *	-1.64	0.48	4.03 **	-0.31	2.43 *	0.89	0.12
186	Z-51-6 × SKV 50	1.61 **	0.19	-0.67	7.20 **	-10.46 **	-1.46	16.48	12.66	11.28	0.11	0.87	-0.33	0.60 *	1.42	0.21	0.13
187	Z-51-6 × MAI 105	1.37 **	1.47 **	0.77	-4.21 **	8.20 **	3.57	-18.95	-19.57	-12.77	1.84	-0.65	-2.43 *	1.12 **	-0.34	-0.51	0.01
188	Z-51-6 × LM 13	-6.29 **	-3.75 **	1.18 **	-12.26 **	-8.72 **	-14.44 **	-35.48 *	-23.01 *	-19.99 *	-0.31	-0.7	-1.27	-1.42 **	-3.51 **	-0.59	-0.25 *
189	Z-52-29 × CM 500	0.73	2.17 **	-0.32	2.10 **	5.85 *	24.59 **	29.39	31.32 **	25.70 *	-0.42	1.79	2.35 *	-0.78 **	4.76 **	1.56 **	0.04
190	Z-52-29 × SKV 50	1.35 **	0.77	-1.54 **	1.20 *	19.58 **	22.89 **	10.68	17.34	16.2	1.21	1.71	5.46 **	-0.08	-2.98 *	-0.12	0.03

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
191	Z-52-29 × MAI 105	0.62	-4.11 **	1.23 **	-0.71	0.41	2.1	3.49	6.79	4.84	-0.82	-0.71	0.24	-0.3	-0.39	0	-0.04
192	Z-52-29 × LM 13	-2.71 **	1.16 **	0.64	-2.59 **	-25.85 **	-49.58 **	-43.57 **	-55.46 **	-46.74 **	0.03	-2.78	-8.05 **	1.15 **	-1.39	-1.44 **	-0.03
193	Z-56-1 × CM 500	1.10 *	2.92 **	1.08 **	0.9	2.56	9.57 **	8.28	7.36	4.93	-0.97	-0.55	2.89 **	-0.94 **	-2.52 *	1.18 *	-0.17
194	Z-56-1 × SKV 50	1.23 *	3.85 **	1.53 **	3.15 **	20.78 **	36.20 **	18.6	19.61	15.48	-0.45	0.35	3.82 **	-0.62 *	0.32	-0.56	0.21
195	Z-56-1 × MAI 105	-0.67	-4.52 **	-0.85 *	-2.75 **	-2.45	-9.75 **	9.52	13.43	14.88	2.4	2.29	1.52	0.95 **	1.25	0.45	0.23
196	Z-56-1 × LM 13	-1.66 **	-2.25 **	-1.77 **	-1.30 *	-20.89 **	-36.02 **	-36.44 *	-40.41 **	-35.30 **	-0.98	-2.09	-8.23 **	0.61 *	0.96	-1.08	-0.27 *
197	Z-56-8 × CM 500	0.44	0.38	-1.20 **	1.77 **	-3.62	-17.86 **	-18.04	-21.9	-18.14	0.4	-1.28	-4.32 **	-0.87 **	-1.44	-0.61	-0.26 *
198	Z-56-8 × SKV 50	0.06	-0.68	-0.75	1.36 *	3.51	4.85	-3.06	-0.51	-2.66	-1.41	-0.97	-0.6	0.97 **	-2.446 *	-0.45	0.17
199	Z-56-8 × MAI 105	-2.17 **	0.42	0.02	-0.54	-11.23 **	4.3	-7.39	-0.59	0.85	0.7	0.11	-0.78	0.23	-0.02	-0.11	-0.06
200	Z-56-8 × LM 13	1.66 **	-0.12	1.93 **	-2.59	11.33 **	8.70 *	28.49	23.01 *	19.95 *	0.3	2.15	5.69 **	-0.32	3.89 **	1.17 *	0.17
201	Z-60-22 × CM 500	-1.72 **	-2.45 **	-0.95 *	-0.01	1.54	18.49 **	13.75	7.38	5.87	0.03	-1.52	2.60 *	-0.99 **	1.09	0.48	-0.11
202	Z-60-22 × SKV 50	-0.6	1.48 **	1.16 **	-5.42 **	-1.56	-5.54	-6.09	-5.94	-7.59	-1.39	-0.54	-0.99	0.19	0.94	0.74	-0.05
203	Z-60-22 × MAI 105	1.16 *	-0.57	0.11	4.49 **	4.52	-3.25	7.71	12.51	12.76	0.99	1.1	-2.99 **	1.17 **	0.87	-0.09	0.21
204	Z-60-22 × LM 13	1.16 *	1.54 **	-0.31	0.94	-4.49	-9.69 **	-15.37	-13.94	-11.04	0.37	0.96	1.38	-0.37	-2.90 *	-1.12 *	-0.05
205	Z-62-55 × CM 500	0.81	-1.03 *	-2.99 **	9.40 **	7.37 **	1.53	38.26 *	29.25 *	23.45 *	-0.58	1.29	4.25 **	-1.05 **	2.40 *	0.6	0.25 *
206	Z-62-55 × SKV 50	-0.06	3.89 **	3.45 **	-0.34	4.1	4.32	-16.02	-13.36	-10.59	0.57	2.05	-2.27 *	-0.08	0.43	0.34	-0.12
207	Z-62-55 × MAI 105	1.87 **	3.01 *	0.56	-2.41 **	-12.48 **	1.28	-26.31	-20.08	-18.41	-1.29	-4.09	-2.76 *	1.24 **	-3.47 **	-1.40 *	-0.09
208	Z-62-55 × LM 13	-2.62 **	-5.87 **	-1.02 *	-6.64 **	1	-7.14 *	4.08	4.2	5.55	1.3	0.74	0.79	-0.1	0.63	0.47	-0.05
209	Z-62-67 × CM 500	-0.68	3.63 **	2.71 **	0.35	-22.39 **	-28.82 **	-18.65	-17.71	-15.24	-0.52	-2.33	0.01	-1.42 **	-1.71	-0.63	-0.08
210	Z-62-67 × SKV 50	0.93	-1.43 **	-0.67	-2.04 **	7.16 **	0.8	7.7	6.64	6.41	0.87	1.62	-2.04	-0.11	2.01	0.92	-0.05
211	Z-62-67 × MAI 105	-0.79	-1.32 **	-1.56 **	-5.29 **	15.08 **	17.18 **	1.99	5.16	3.4	-0.65	-0.33	2.37 *	0.54 *	0.35	0.1	0
212	Z-62-67 × LM 13	0.54	-0.87 *	-0.47	6.98 **	0.14	10.83 **	8.95	5.9	5.43	0.3	1.04	-0.34	0.99 **	-0.64	-0.4	0.13
213	Z-63-30 × CM 500	-2.02 **	-3.78 **	-0.83 *	-3.72 **	-11.01 **	8.67 *	-1.62	-1.1	-6.76	-3.89 *	-2.77	0.78	-0.84 **	-1.57	-0.22	-0.11
214	Z-63-30 × SKV 50	-3.23 **	-0.85 *	2.45 **	6.70 **	7.37 **	2.05	32.85 *	26.18 *	22.36 *	0.63	2.04	0.44	-0.06	5.01 **	1.59 **	0.17
215	Z-63-30 × MAI 105	2.87 **	1.59 **	-1.43 **	-11.87 **	1.29	-10.56 **	-54.67 **	-40.81 **	-31.45 **	1.34	-1.17	-2.51 *	-0.34	-5.48 **	-1.95 **	-0.1
216	Z-63-30 × LM 13	2.37 **	3.04 **	-0.18	8.90 **	2.35	-0.17	23.44	15.73	15.84	1.93	1.89	1.29	1.24 **	2.04	0.58	0.04
Range		-6.292	-6.019	-2.995	-15.349	-25.853	-49.587	-58.939	-55.466	-46.749	-10.281	-18.077	-8.239	-2.492	-6.197	-2.038	-0.514
		4.621	6.873	4.63	13.151	25.752	36.204	38.264	31.328	27.476	3.825	51.115	5.695	1.924	6.375	2.085	1.428
S.Em. ±		0.51	0.4	0.41	0.58	2.73	3.43	16.11	11.52	9.98	1.53	4.58	1.08	0.27	1.16	0.56	0.12
C.D.5%		1.01	0.79	0.81	1.15	5.36	6.73	31.63	22.63	19.6	3	9	2.12	0.52	2.28	1.1	0.24
C.D.1%		1.336	1.04	1.07	1.51	7.05	8.86	41.62	29.78	25.78	3.94	11.84	2.79	0.69	3	1.44	0.32

* significant at p = 0.05 and ** significant at p = 0.01

Table 22. Best crosses with significant *sca* effects in the desirable direction

Sl. No.	Character	Crosses		
1	Days to 50% anthesis	**Z-51-6 × LM 13**	**LTP-1 × LM 13**	**V-632-67 × CM 500**
		-6.29 **	-4.21 **	-3.60 **
2	Days to 50% silking	**MAI-35 × SKV 50**	**Z-62-55 × LM 13**	**V-1410-1 × CM 500**
		-6.02 **	-5.87 **	-5.07 **
3	Anthesis silking interval	**Z-62-55 × CM 500**	**MAI-137 × MAI 105**	**HKI-193-2 × CM 500**
		-2.99 **	-2.43 **	-2.28 **
4	Days to 50% brown husk	**V-1649 × LM 13**	**CML-172 × LM 13**	**Z-51-6 × LM 13**
		-15.35 **	-13.51 **	-12.26 **
5	Ear height (cm)	**MAI-45 × MAI 105**	**CML-359 × CM 500**	**V-2205 × CM 500**
		21.81 **	23.02 **	25.75 **
6	Plant height (cm)	**MAI-112 × MAI 105**	**V-1168 × LM 13**	**Z-56-1 × SKV 50**
		30.49 **	35.89 **	36.20 **
7	Ear weight per plant (g)	**V-1649 × LM 13**	**Z-51-6 × CM 500**	**Z-62-55 × CM 500**
		34.95 *	37.95 *	38.26 *
8	Cob weight per plant (g)	**Z-51-6 × CM 500**	**V-1649 × LM 13**	**Z-52-29 × CM 500**
		29.91 **	30.65 **	31.32 **
9	Grain yield per plant (g)	**Z-62-55 × CM 500**	**Z-52-29 × CM 500**	**V-1649 × LM 13**
		23.45 *	25.70 *	27.47 **
10	Shelling %	**V-1410-1 × MAI 105**	**V-1742 × SKV 50**	**V-1742 × LM 13**
		3.07 *	3.61 *	3.82 *
11	Harvest index	**MAI-45 × MAI 105**		
		51.11 **		
12	Test weight (g)	**Z-62-55 × CM 500**	**Z-52-29 × SKV 50**	**Z-56-8 × LM 13**
		4.25 **	5.46 **	5.69 **
13	Grain rows per cob	**V-291-2 × MAI 105**	**CML-169 × SKV 50**	**MAI-107 × CM 500**
		1.76 **	1.92 **	1.92 **
14	Grains per row	**MAI-35 × MAI 105**	**MAI-117 × LM 13**	**V-2205 × MAI 105**
		5.17 **	5.17 **	6.37 **
15	Cob length (cm)	**V-2516-2 × SKV 50**	**V-2205 × MAI 105**	**MAI-117 × LM 13**
		1.78 **	1.91 **	2.08 **
16	Cob girth (cm)	**CML-169 × SKV 50**	**MAI-107 × CM 500**	**MAI-48 × LM 13**
		0.37 **	0.44 **	1.42 **

* significant at p = 0.05 and ** significant at p = 0.01

anthesis, silking and brown husk in a proportion of 21, 36 and 41 per cent of the crosses, respectively. The good specific combiners were, Z-51-6 × LM 13, LTP-1 × LM 13 and V-632-67 × CM 500 for days to anthesis, MAI-35 × SKV 50, Z-62-55 × LM 13 and V-1410-1 × CM 500 for days to silking and V-1649 × LM 13, CML-172 × LM 13 and Z-51-6 × LM 13 for days to brown husk.

Around 29 per cent of the crosses were good specific combiners for anthesis silking interval, among which Z-62-55 × CM 500, MAI-137 × MAI 105 and HKI-193-2 × CM 500 were best.

Higher ear and plant height are preferable and hence positive *sca* effects are expected for these traits. A proportion of 28 and 29 per cent of the crosses showed significantly positive *sca* effects for ear and plant height respectively. The crosses V-2205 × CM 500, CML-359 × CM 500 and MAI-45 × MAI 105 were good specific combiners for ear height, whereas Z-56-1 × SKV 50, V-1168 × LM 13 and MAI-112 × MAI 105 were good for plant height.

A very low proportion *i.e.,* 5.5 per cent of the crosses were good specific combiners for grain yield. The crosses V-1649 × LM 13, Z-52-29 × CM 500 and Z-62-55 × CM 500 were good specific combiners for grain yield.

In hardly three *i.e.,* V-1742 × LM 13, V-1742 × SKV 50 and V-1410-1 × MAI 105 and only one *i.e.,* MAI-45 × MAI 105 out of 216 crosses, significantly positive *sca* effects were observed for shelling per cent and harvest index, respectively.

Around 12.5 per cent of the crosses were good specific combiners for test weight in the positive direction. Among them, Z-56-8 × LM 13, Z-52-29 × SKV 50 and Z-62-55 × CM 500 were good.

Significantly positive *sca* effects were observed for grain rows per cob, grains per row, cob length and girth in a proportion of 17, 13, 9 and 4 per cent of the crosses, respectively. The best specific combiners were, MAI-107 × CM 500, CML-169 × SKV 50 and V-291-2 × MAI 105 for grain rows per cob, V-2205 × MAI 105, MAI-117 × LM 13 and MAI-35 × MAI 105 for grains per row, MAI-117 × LM 13, V-2205 × MAI 105 and V-2516-2 × SKV 50 for cob length and MAI-48 × LM 13, MAI-107 × CM 500 and CML-169 × SKV 50 for cob girth.

The overall *sca* status of crosses are given in Table 23. Around 50 per cent of the crosses were assigned high overall *sca* status and the cross MAI-117 × LM 13 was the best overall specific combiner followed by Z-62-67 × MAI 105 and Z-62-55 × LM 13.

4.3.6 Mid-parent and standard heterosis

The percentage of heterosis over mid-parent and five checks is presented in Appendix III. Extreme crosses with significant negative and positive mid-parent as well as standard heterosis are given in Table 24.

Highest proportion *i.e.,* more than 90 per cent of the hybrids have exhibited significant mid-parent heterosis in the desirable direction for the characters such as days to anthesis, ear height, plant height, grain yield and grains per row. An intermediate proportion *i.e.,* 70-85 per cent was observed for the characters such as days to silking, test weight, cob length and girth. Whereas, lower proportion *i.e.,* less than 45 per cent was noticed for the characters anthesis silking interval, days to maturity and shelling per cent. Lowest proportion of significant mid-parent heterosis was observed for harvest index *i.e.,* only one out of 216 cross.

Almost equal negative mid-parent heterosis *i.e.,* 18-21 per cent was observed for the maturity characters such as days to anthesis, silking and brown husk. Whereas, negative heterosis was much higher for

Table 23. Overall specific combining ability status of crosses

Sl. No.	Lines		Testers							
			CM-500		SKV-50		MAI-105		LM-13	
			(L)		(L)		(L)		(H)	
			Rank	*sca* status	Rank	*sca* status	Rank	*sca* status	Rank	*sca* status
1	V-1154	(H)	612	L	577	L	535	H	564	H
2	V-1168	(L)	585	L	501	H	682	L	598	L
3	V-1522	(H)	536	H	432	H	584	L	714	L
4	V-1649	(H)	641	L	514	H	625	L	503	H
5	V-1742	(H)	576	L	408	H	629	L	691	L
6	V-2205	(L)	583	L	645	L	481	H	589	L
7	V-2232	(H)	417	H	533	H	749	L	550	H
8	V-1410-1	(L)	501	H	537	H	612	L	637	L
9	V-1712-1	(H)	390	H	727	L	534	H	673	L
10	V-241-2	(H)	498	H	593	L	685	L	534	H
11	V-2437-1	(L)	525	H	639	L	439	H	630	L
12	V-2459-2	(L)	598	L	555	H	487	H	620	L
13	V-2516-2	(L)	620	L	448	H	636	L	542	H
14	V-2608-1	(H)	688	L	384	H	615	L	550	H
15	V-291-2	(H)	555	H	630	L	631	L	462	H
16	V-70-1	(H)	530	H	709	L	563	H	493	H
17	CIMMYT-47	(L)	582	L	574	L	630	L	445	H
18	CIMMYT-5	(H)	540	H	821	L	384	H	467	H
19	CM-115	(L)	537	H	594	L	585	L	489	H
20	CM-149	(L)	663	L	559	H	380	H	720	L
21	CML-165	(H)	551	H	621	L	546	H	525	H
22	CML-166	(H)	535	H	511	H	640	L	579	L
23	CML-169	(L)	682	L	400	H	489	H	711	L
24	CML-172	(H)	469	H	697	L	646	L	465	H
25	CML-359	(H)	504	H	457	H	631	L	620	L
26	CML-411	(H)	506	H	502	H	756	L	573	L
27	HKI-193-1	(H)	594	L	704	L	593	L	383	H
28	HKI-193-2	(L)	507	H	536	H	476	H	719	L
29	LTP-1	(H)	702	L	641	L	453	H	480	H
30	MAI-115	(L)	664	L	483	H	780	L	306	H
31	MAI-107	(H)	419	H	529	H	544	H	762	L
32	MAI-109	(L)	614	L	566	H	636	L	433	H
33	MAI-112	(H)	672	L	549	H	452	H	626	L
34	MAI-121	(L)	493	H	537	H	517	H	685	L
35	MAI-137	(L)	657	L	523	H	574	L	528	H
36	MAI-27	(L)	538	H	546	H	561	H	652	L
37	MAI-29	(L)	625	L	572	L	562	H	508	H
38	MAI-35	(L)	552	H	483	H	467	H	805	L
39	MAI-45	(L)	739	L	591	L	433	H	416	H
40	MAI-48	(L)	577	L	730	L	541	H	382	H
41	MAI-706	(L)	544	H	455	H	620	L	665	L
42	SKV-70	(L)	516	H	616	L	512	H	663	L
43	V-632-112	(H)	547	H	553	H	461	H	594	L
44	V-632-67	(H)	470	H	557	H	691	L	566	H
45	Z-50-3	(H)	598	L	572	L	525	H	501	H
46	Z-51-1	(H)	627	L	633	L	654	L	388	H
47	Z-51-6	(H)	598	L	691	L	523	H	526	H
48	Z-52-29	(L)	523	H	418	H	512	H	695	L
49	Z-56-1	(L)	639	L	580	L	463	H	618	L
50	Z-56-8	(H)	658	L	550	H	576	L	503	H
51	Z-60-22	(L)	452	H	547	H	608	L	636	L
52	Z-62-55	(H)	539	H	694	L	700	L	378	H
53	Z-62-67	(L)	846	L	511	H	337	H	576	L
54	Z-63-30	(L)	484	H	566	H	632	L	723	L

Final norm: 567 H: High overall *sca* status L: Low overall *sca* status

(H): High overall *gca* status (L): Low overall *gca* status

Table 24. Hybrids with significant mid-parent and standard heterosis in the desirable direction

Heterosis over	Significant out of 216					
	Neg.	Pos.	Total			
				Days to 50% anthesis		
Mid-parent	204	8	212	Z-51-6 × LM 13	LTP-1 × LM 13	CM-115 × CM 500
				-21.36 **	-19.79 **	-18.23 **
Hema	41	99	140	Z-52-29 × LM 13	Z-51-6 × LM 13	Z-56-1 × LM 13
				-11.46 **	-10.53 **	-9.29 **
Nityashree	70	57	127	Z-52-29 × LM 13	Z-51-6 × LM 13	Z-56-1 × LM 13
				-13.33 **	-12.42 **	-11.21 **
Decalb 8101	104	22	126	Z-52-29 × LM 13	Z-51-6 × LM 13	Z-56-1 × LM 13
				-15.13 **	-14.24 **	-13.06 **
900M Gold	0	213	213	-	-	-
				-	-	-
PHI 3501	54	77	131	Z-52-29 × LM 13	Z-51-6 × LM 13	Z-56-1 × LM 13
				-12.54 **	-11.62 **	-10.40 **
				Days to 50% silking		
Mid-parent	186	6	192	CIMMYT-5 × LM 13	MAI-109 × LM 13	MAI-29 × LM 13
				-19.90 **	-19.17 **	-18.93 **
Hema	33	140	173	Z-52-29 × MAI 105	Z-56-1 × MAI 105	MAI-29 × LM 13
				-11.76 **	-10.84 **	-10.53 **
Nityashree	76	73	149	Z-52-29 × MAI 105	Z-56-1 × MAI 105	MAI-29 × LM 13
				-15.18 **	-14.29 **	-13.99 **
Decalb 8101	134	35	169	Z-52-29 × MAI 105	Z-56-1 × MAI 105	MAI-29 × LM 13
				-17.87 **	-17.00 **	-16.71 **
900M Gold	10	187	197	**Z-52-29 × MAI 105**	**Z-56-1 × MAI 105**	**MAI-29 × LM 13**
				-6.86 **	-5.88 **	-5.56 **
PHI 3501	143	32	175	Z-52-29 × MAI 105	Z-56-1 × MAI 105	MAI-29 × LM 13
				-18.34 **	-17.48 **	-17.19 **
				Anthesis silking interval		
Mid-parent	66	96	162	CML-165 × LM 13	CIMMYT-47 × CM 500	Z-51-6 × CM 500
				-93.94 **	-88.37 **	-86.67 *
Hema	0	124	124	-	-	-
				-	-	-
Nityashree	0	96	96	-	-	-
				-	-	-
Decalb 8101	26	58	84	V-70-1 × MAI 105	CML-165 × LM 13	V-632-112 × MAI 105
				-90.91 **	-90.91 **	-90.91 **
900M Gold	93	31	124	V-70-1 × MAI 105	CML-165 × LM 13	V-632-112 × MAI 105
				-94.12 **	-94.12 **	-94.12 **
PHI 3501	177	14	191	V-70-1 × MAI 105	CML-165 × LM 13	V-632-112 × MAI 105
				-95.45 **	-95.45 **	-95.45 **
				Days to 50% brown husk		
Mid-parent	101	91	192	Z-51-1 × LM 13	MAI-117 × LM 13	V-1649 × LM 13
				-20.84 **	-19.39 **	-19.32 **
Hema	172	26	198	Z-51-1 × LM 13	MAI-137 × CM 500	V-1649 × LM 13
				-17.92 **	-17.77 **	-17.62 **
Nityashree	22	125	147	Z-51-1 × LM 13	MAI-137 × CM 500	V-1649 × LM 13
				-3.54 **	-3.36 **	-3.19 **
Decalb 8101	210	0	210	Z-51-1 × LM 13	MAI-137 × CM 500	V-1649 × LM 13
				-22.14 **	-22.00 **	-21.86 **
900M Gold	2	142	144	**Z-51-1 × LM 13**	**MAI-137 × CM 500**	–
				-1.98 *	-1.80 *	
PHI 3501	25	124	149	Z-51-1 × LM 13	MAI-137 × CM 500	V-1649 × LM 13
				-3.71 **	-3.53 **	-3.36 **

Heterosis over	Significant out of 216			Ear height (cm)		
	Neg.	Pos.	Total			
Mid-parent	1	211	212	V-2205 × CM 500	V-2516-2 × SKV 50	CIMMYT-5 × MAI 105
				101.57 **	105.09 **	136.21 **
Hema	97	51	148	V-291-2 × MAI 105	V-70-1 × LM 13	V-2205 × CM 500
				28.56 **	32.74 **	43.05 **
Nityashree	64	76	140	V-291-2 × MAI 105	V-70-1 × LM 13	V-2205 × CM 500
				37.22 **	41.67 **	52.68 **
Decalb 8101	117	51	168	**V-291-2 × MAI 105**	**V-70-1 × LM 13**	**V-2205 × CM 500**
				22.80 **	26.79 **	36.64 **
900M Gold	85	57	142	V-291-2 × MAI 105	V-70-1 × LM 13	V-2205 × CM 500
				30.90 **	35.16 **	45.66 **
PHI 3501	108	44	152	V-291-2 × MAI 105	V-70-1 × LM 13	V-2205 × CM 500
				26.40 **	30.51 **	40.65 **
				Plant height (cm)		
Mid-parent	2	210	212	V-2459-2 × MAI 105	CML-165 × SKV 50	CIMMYT-5 × MAI 105
				61.30 **	64.24 **	73.22 **
Hema	38	101	139	CML-172 × SKV 50	V-70-1 × LM 13	V-1168 × LM 13
				24.07 **	26.51 **	27.22 **
Nityashree	83	47	130	CML-172 × SKV 50	V-70-1 × LM 13	V-1168 × LM 13
				17.23 **	19.53 **	20.20 **
Decalb 8101	181	9	190	CML-172 × SKV 50	V-70-1 × LM 13	V-1168 × LM 13
				7.32 **	9.42 **	10.04 **
900M Gold	216	0	216	-	-	-
				-	-	-
PHI 3501	122	27	149	CML-172 × SKV 50	V-70-1 × LM 13	V-1168 × LM 13
				13.84 **	16.08 **	16.73 **
				Ear weight per plant (g)		
Mid-parent	0	187	187	LTP-1 × SKV 50	V-1742 × SKV 50	CIMMYT-5 × SKV 50
				170.99 **	172.55 **	172.81 **
Hema	75	8	83	V-1649 × MAI 105	V-1649 × LM 13	CML-411 × SKV 50
				27.80 **	45.59 **	
Nityashree	77	6	83	V-2232 × LM 13	V-1649 × MAI 105	V-1649 × LM 13
				24.27 *	27.01 **	44.69 **
Decalb 8101	207	0	207	-	-	-
				-	-	-
900M Gold	177	1	178	V-2232 × LM 13	V-1649 × MAI 105	V-1649 × LM 13
				2.08	4.33	18.86 *
PHI 3501	187	0	187	V-2232 × LM 13	V-1649 × MAI 105	V-1649 × LM 13
				-1.25	0.92	14.97
				Cob weight per plant (g)		
Mid-parent	0	191	191	V-1742 × SKV 50	MAI-137 × SKV 50	CIMMYT-5 × SKV 50
				165.45 **	167.52 **	181.52 **
Hema	75	6	81	HKI-193-1 × LM 13	V-2232 × LM 13	V-1649 × LM 13
				24.44 **	29.53 **	39.66 **
Nityashree	106	2	108	-	V-2232 × LM 13	V-1649 × LM 13
				-	20.81 *	30.26 **
Decalb 8101	211	0	211	-	-	-
				-	-	-
900M Gold	196	0	196	-	-	-
				-	-	-
PHI 3501	190	0	190	-	-	-
				-	-	-

Heterosis over	Significant out of 216			Grain yield per plant (g)		
	Neg.	Pos.	Total			
Mid-parent	0	193	193	V-1742 × SKV 50 188.94 **	CIMMYT-5 × SKV 50 195.91 **	MAI-137 × SKV 50 198.83 **
Hema	61	7	68	V-2232 × LM 13 34.59 **	V-1649 × LM 13 46.16 **	V-70-1 × CM 500 56.16 **
Nityashree	112	2	114	- -	V-2232 × LM 13 21.28 *	V-1649 × LM 13 31.70 **
Decalb 8101	213	0	213	- -	- -	- -
900M Gold	206	0	206	- -	- -	- -
PHI 3501	194	0	194	- -	- -	- -
				Shelling %		
Mid-parent	2	94	96	MAI-137 × SKV 50 11.42 **	V-2437-1 × SKV 50 11.88 **	V-2437-1 × CM 500 13.69 **
Hema	5	27	32	MAI-112 × LM 13 6.52 *	MAI-706 × SKV 50 6.53 *	V-1742 × SKV 50 6.81 **
Nityashree	14	0	14	- -	- -	- -
Decalb 8101	44	0	44	- -	- -	- -
900M Gold	68	0	68	- -	- -	- -
PHI 3501	52	0	52	- -	- -	- -
				Harvest index		
Mid-parent	0	1	1	- -	- -	MAI-45 × MAI 105 166.20 **
Hema	0	1	1	- -	- -	MAI-45 × MAI 105 145.42 **
Nityashree	0	1	1	- -	- -	MAI-45 × MAI 105 132.48 **
Decalb 8101	0	1	1	- -	- -	**MAI-45 × MAI 105** 114.37 **
900M Gold	0	1	1	- -	- -	MAI-45 × MAI 105 125.45 **
PHI 3501	1	189	190	V-1742 × LM 13 119.73 **	MAI-45 × MAI 105 134.70 **	CML-165 × MAI 105 142.23 **
				Test weight (g)		
Mid-parent	1	189	190	V-1742 × LM 13 54.26 **	V-2516-2 × SKV 50 54.53 **	LTP-1 × CM 500 54.58 **
Hema	58	45	103	V-1410-1 × LM 13 25.16 **	V-1522 × LM 13 25.26 **	V-632-67 × LM 13 29.85 **
Nityashree	51	50	101	V-1410-1 × LM 13 27.04 **	V-1522 × LM 13 27.14 **	V-632-67 × LM 13 31.80 **
Decalb 8101	111	25	136	**V-1410-1 × LM 13** 17.91 **	**V-1522 × LM 13** 18.00 **	**V-632-67 × LM 13** 22.33 **
900M Gold	34	65	99	V-1410-1 × LM 13 31.18 **	V-1522 × LM 13 31.29 **	V-632-67 × LM 13 36.10 **
PHI 3501	38	60	98	V-1410-1 × LM 13 30.39 **	V-1522 × LM 13 30.50 **	V-632-67 × LM 13 35.28 **

Heterosis over	Significant out of 216			Grain rows per cob		
	Neg.	Pos.	Total			
Mid-parent	10	151	161	Z-56-1 × LM 13	MAI-48 × LM 13	V-1522 × SKV 50
				31.15 **	31.45 **	34.62 **
Hema	180	6	186	**V-1712-1 × MAI 105**	**V-291-2 × MAI 105**	**Z-51-6 × MAI 105**
				9.62 **	15.48 **	20.08 **
Nityashree	122	31	153	V-1712-1 × MAI 105	V-291-2 × MAI 105	Z-51-6 × MAI 105
				19.63 **	26.03 **	31.05 **
Decalb 8101	173	7	180	V-1712-1 × MAI 105	V-291-2 × MAI 105	Z-51-6 × MAI 105
				11.49 **	17.45 **	22.13 **
900M Gold	117	34	151	V-1712-1 × MAI 105	V-291-2 × MAI 105	Z-51-6 × MAI 105
				20.74 **	27.19 **	32.26 **
PHI 3501	180	6	186	**V-1712-1 × MAI 105**	**V-291-2 × MAI 105**	**Z-51-6 × MAI 105**
				9.62 **	15.48 **	20.08 **
				Grains per row		
Mid-parent	1	194	195	MAI-137 × SKV 50	CIMMYT-5 × SKV 50	CIMMYT-5 × CM 500
				73.10 **	73.41 **	74.56 **
Hema	25	67	92	CML-166 × CM 500	CML-166 × SKV 50	CIMMYT-5 × CM 500
				24.07 **	25.91 **	27.30 **
Nityashree	19	75	94	CML-166 × CM 500	CML-166 × SKV 50	CIMMYT-5 × CM 500
				25.91 **	27.77 **	29.19 **
Decalb 8101	184	0	184	-	-	-
				-	-	-
900M Gold	139	0	139	-	-	-
				-	-	-
PHI 3501	216	0	216	-	-	-
				-	-	-
				Cob length (cm)		
Mid-parent	1	170	171	MAI-137 × SKV 50	LTP-1 × SKV 50	Z-51-6 × SKV 50
				41.74 **	44.88 **	49.30 **
Hema	20	46	66	MAI-117 × LM 13	V-2516-2 × LM 13	V-1649 × LM 13
				18.97 **	21.68 **	22.52 **
Nityashree	79	6	85	MAI-117 × LM 13	V-2516-2 × LM 13	V-1649 × LM 13
				10.21 *	12.71 **	13.50 **
Decalb 8101	116	2	118	-	**V-2516-2 × LM 13**	**V-1649 × LM 13**
				-	8.48 *	9.23 *
900M Gold	76	7	83	MAI-117 × LM 13	V-2516-2 × LM 13	V-1649 × LM 13
				10.98 *	13.51 **	14.30 **
PHI 3501	96	2	98	-	V-2516-2 × LM 13	V-1649 × LM 13
				-	10.11 *	10.87 *
				Cob girth (cm)		
Mid-parent	0	193	193	CML-169 × SKV 50	CIMMYT-5 × SKV 50	MAI-48 × LM 13
				34.30 **	34.75 **	59.45 **
Hema	154	2	156	-	V-1712-1 × MAI 105	MAI-48 × LM 13
				-	6.96 *	24.23 **
Nityashree	100	4	104	Z-51-1 × MAI 105	V-1712-1 × MAI 105	MAI-48 × LM 13
				9.43 **	10.60 **	28.47 **
Decalb 8101	161	1	162	-	-	**MAI-48 × LM 13**
				-	-	23.13 **
900M Gold	138	3	141	Z-51-1 × MAI 105	V-1712-1 × MAI 105	MAI-48 × LM 13
				7.11 *	8.25 *	25.74 **
PHI 3501	135	3	138	Z-51-1 × MAI 105	V-1712-1 × MAI 105	MAI-48 × LM 13
				7.33 *	8.47 *	26.00 **

* significant at p = 0.05 and ** significant at p = 0.01

Note: Bold indicates best check and hybrids for the character under consideration

anthesis silking interval (93 %). The highest mid-parent heterosis in the positive direction for ear height was 136 per cent and for plant height it was 73 per cent. The highest positive mid-parent heterosis for grain yield *i.e.,* 188-198 per cent was noticed for the crosses MAI-137 × SKV 50, CIMMYT-5 × SKV 50 and V-1742 × SKV 50. For shelling per cent the highest value was13.5 per cent and only one cross out of 216 has shown such positive mid-parent heterosis for harvest index (166 %). The highest positive mid-parent heterosis values of 55, 35, 75, 49 and 59 per cent were noticed for the characters such as test weight, grain rows per cob, grains per row, cob length and girth, respectively.

Among the checks used, 900M Gold was found superior for the characters such as days to anthesis, days to silking, days to brown husk, plant height and sheling per cent. None of the hybrids exhibited significant negative standard heterosis over this check for bays to anthesis and positive standard heterosis for plant height and shelling per cent. But 10 hybrids exhibited significantly negative heterosis for days to silking and only two hybrids for days to brown husk (Table 24 and Appendix III).

Decalb 8101 was the best check for the characters such as ear height, grain yield, harvest index, test weight, cob length and girth. Out of 216 hybrids, 51 exhibited significant increase over check for ear height, two for cob length and only one hybrid each for Harvest index and cob length over this check.

Significant positive standard heterosis was absent in any of the hybrids for grain yield over Decalb 8101, 900M Gold and PHI 3501. Whereas, seven hybrids exhibited significant increase over Hema and only two over Nityashree.

Hema was the best check for having lowest anthesis silking interval and none of the hybrids exhibited significantly negative standard heterosis over this check. PHI 3501 was the best check for the characters grain rows per cob and grains per row and significant increase over this check was noticed in six hybrids for grain rows per cob and none for grains per row.

The overall heterotic status of crosses are provided in Table 25. Around 50 per cent of the crosses were found superior with respect to their overall heterotic status and the cross CIMMYT-5 × LM 13 manifested best overall heterotic status followed by LTP-1 × SKV 50 and CIMMYT-5 × SKV 50.

4.4 ANALYSIS OF FUNCTIONAL RELATIONSHIPS

Functional relationships between different estimates are presented in Table 26. The linear functional relationship between mid-parent heterosis, *sca* effects and *per se* performance on parental distance as measured by D^2 statistic were non-significant. Non-significant linear relationship was also evident between mid-parent heterosis and *sca* effects on Jaccard's dissimilarity coefficient. Whereas, *per se* performance of the hybrids regressed significantly towards Jaccard's dissimilarity coefficient with regression coefficient 85.89 and coefficient of determination (R^2) 2.60 per cent (Figure 4).

The regression of *per se* performance of the hybrids on mid-parent value was significant with coefficient 0.55 and coefficient of determination (R^2) 13.05 per cent (Figure 5). The linear relationship of mid-parent heterosis on *sca* effects was also found significant with regression coefficient 1.25 and coefficient of determination (R^2) 17.2 per cent (Figure 6).

Table 25. Overall heterotic status of crosses

Sl. No.	Lines		Testers							
			CM-500		SKV-50		MAI-105		LM-13	
			(L)		(L)		(L)		(H)	
			Rank	Heterotic status	Rank	Heterotic status	Rank	Heterotic status	Rank	Heterotic status
1	V-1154	(H)	2296	L	1689	L	2097	L	1934	L
2	V-1168	(L)	2089	L	1492	L	2166	L	1546	L
3	V-1522	(H)	1600	L	1045	H	1725	L	1393	H
4	V-1649	(H)	1935	L	766	H	1247	H	868	H
5	V-1742	(H)	1664	L	595	H	1533	L	1185	H
6	V-2205	(L)	1690	L	1078	H	885	H	981	H
7	V-2232	(H)	2040	L	2041	L	2202	L	1678	L
8	V-1410-1	(L)	1959	L	1297	H	1403	H	1100	H
9	V-1712-1	(H)	1165	H	1035	H	1085	H	1267	H
10	V-241-2	(H)	2058	L	942	H	1807	L	1018	H
11	V-2437-1	(L)	1701	L	952	H	991	H	976	H
12	V-2459-2	(L)	1929	L	794	H	1631	L	1493	L
13	V-2516-2	(L)	1800	L	732	H	1611	L	967	H
14	V-2608-1	(H)	2164	L	933	H	1644	L	1554	L
15	V-291-2	(H)	2073	L	1279	H	1734	L	1331	H
16	V-70-1	(H)	1445	H	1168	H	1580	L	838	H
17	CIMMYT-47	(L)	1577	L	1340	H	1584	L	1144	H
18	CIMMYT-5	(H)	977	H	584	H	768	H	351	H
19	CM-115	(L)	1931	L	901	H	1465	L	1167	H
20	CM-149	(L)	1981	L	943	H	1061	H	1633	L
21	CML-165	(H)	1690	L	799	H	1390	H	1019	H
22	CML-166	(H)	1682	L	639	H	1263	H	946	H
23	CML-169	(L)	1930	L	829	H	1287	H	1224	H
24	CML-172	(H)	1579	L	968	H	1197	H	1287	H
25	CML-359	(H)	1831	L	1292	H	1673	L	1638	L
26	CML-411	(H)	1450	L	661	H	1529	L	689	H
27	HKI-193-1	(H)	2071	L	1291	H	1604	L	857	H
28	HKI-193-2	(L)	1974	L	914	H	1251	H	1036	H
29	LTP-1	(H)	1320	H	581	H	784	H	797	H
30	MAI-115	(L)	2149	L	1554	L	2085	L	1115	H
31	MAI-107	(H)	1696	L	1808	L	1636	L	1732	L
32	MAI-109	(L)	1781	L	1067	H	1580	L	806	H
33	MAI-112	(H)	2083	L	1290	H	1290	H	1485	L
34	MAI-121	(L)	1704	L	1320	H	1597	L	1697	L
35	MAI-137	(L)	1765	L	671	H	1071	H	606	H
36	MAI-27	(L)	2180	L	1668	L	1965	L	1468	L
37	MAI-29	(L)	2236	L	1418	H	1697	L	1482	L
38	MAI-35	(L)	1866	L	1241	H	1358	H	1704	L
39	MAI-45	(L)	2173	L	1470	L	1381	H	1128	H
40	MAI-48	(L)	2025	L	2103	L	1965	L	1338	H
41	MAI-706	(L)	2380	L	2293	L	2301	L	2437	L
42	SKV-70	(L)	2381	L	1648	L	2093	L	1730	L
43	V-632-112	(H)	1704	L	1374	H	1634	L	1367	H
44	V-632-67	(H)	1279	H	766	H	1744	L	913	H
45	Z-50-3	(H)	1770	L	1451	L	1505	L	1077	H
46	Z-51-1	(H)	2193	L	1240	H	1746	L	1103	H
47	Z-51-6	(H)	1086	H	834	H	1096	H	978	H
48	Z-52-29	(L)	1777	L	985	H	1749	L	1802	L
49	Z-56-1	(L)	2166	L	913	H	1461	L	1796	L
50	Z-56-8	(H)	2190	L	1032	H	1585	L	736	H
51	Z-60-22	(L)	1799	L	1313	H	1642	L	1766	L
52	Z-62-55	(H)	1918	L	1532	L	1966	L	1260	H
53	Z-62-67	(L)	2183	L	1239	H	1567	L	1382	H
54	Z-63-30	(L)	1875	L	704	H	1958	L	1102	H

Final norm: 1455 H: High overall heterotic status L: Low overall heterotic status
(H): High overall *gca* status (L): Low overall *gca* status

Table 26. Functional relationships between different estimates

Regression of	Linear regression equation	R^2 %
Mid-parent heterosis on D^2 value	y = 75.90** - 0.0037 x	0.10
Sca effect on D^2 value	y = -0.144 + 0.0018 x	0.01
Per se performance on D^2 value	y = 136.24** + 0.0117 x	0.31
Mid-parent heterosis on Jaccard's dissimilarity coefficient	y = 85.65 - 11.9095 x	0.02
Sca effect on Jaccard's dissimilarity coefficient	y = 13.34 - 15.8383 x	0.33
Per se performance on Jaccard's dissimilarity coefficient	y = 64.76* + 85.8926** x	2.60
Per se performance on mid-parent value	y = 93.05** + 0.5525** x	13.05
Mid-parent heterosis on *sca* effects	y = 75.62** + 1.2554** x	17.20

* significant at p = 0.05 and ** significant at p = 0.01

Figure 4. *Per se* performance on Jaccard's dissimilarity coefficient

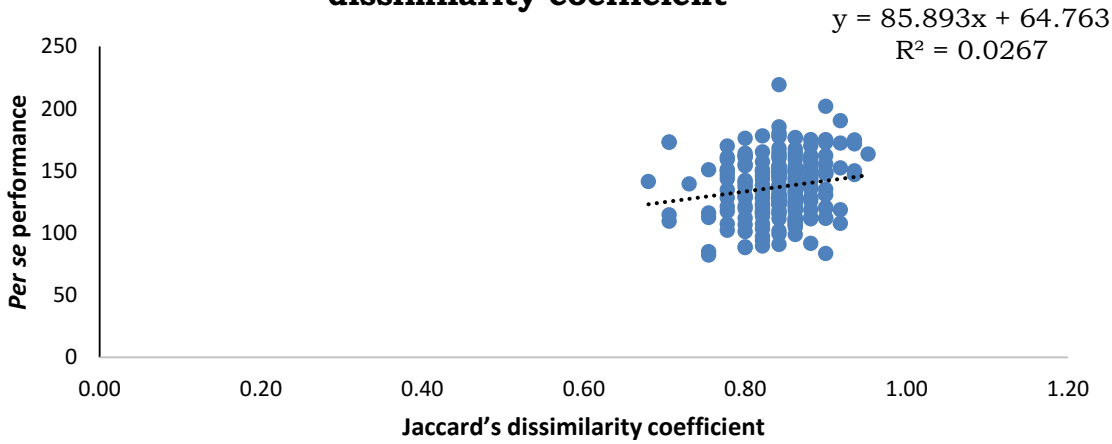
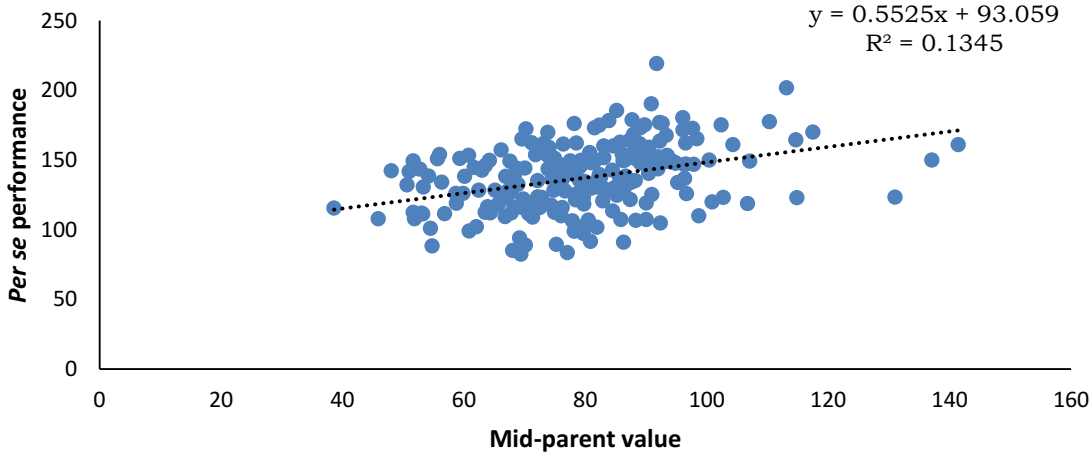
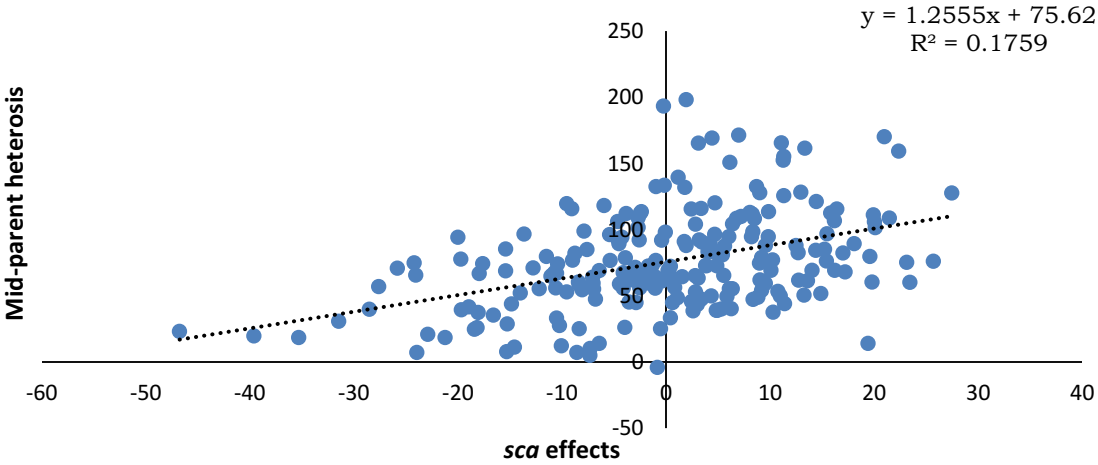


Figure 5. *Per se* performance on mid-parent value



Fugure 6. Mid-parent heterosis on *sca* effects



4.5 STABILITY ANALYSIS

4.5.1 Analysis of variance for stability

Analysis of variance revealed significance of mean sum of squares due to hybrids, environments, hybrids × environments interaction and environments (linear) for all the characters (Table 27). Variance due to environments and (hybrid × environment) interaction were highly significant for all characters except ear weight, shelling per cent, test weight, grain rows per cob and cob length. For the characters days to anthesis, days to silking, days to brown husk, ear height, plant height, cob weight, grain yield, harvest index and cob girth, the variance due to interaction of hybrids and environment (linear) was significant. Further, it could be observed that variance due to pooled deviation was significant for all the characters except cob weight, grain yield, harvest index and cob girth.

4.5.2 Environmental indices

Estimates of environmental indices are presented in Table 28. E_1 (Farmer's field, Yatnahalli village) was favourable for the expression of characters such as anthesis silking interval, ear height, shelling per cent, harvest index, test weight, grain rows per cob. Whereas, for the characters such as cob weight, grain yield, grains per row and cob length, E_2 (Bhavikere) was suitable. E_3 (Mandya) was best for the characters such as days to anthesis, days to silking, days to brown husk, plant height, ear weight and cob girth.

4.5.3 Stability parameters

The estimates of stability parameters *viz.,* mean, regression coefficient (b_i) and deviation from regression (S^2_{di}) for all the 225 hybrids are presented in Appendix IV. Mean performance of top 20 high yielding hybrids and checks across environments is presented in Table 29 and

Table 27. Analysis of variance for stability (Eberhart and Russell, 1966)

Source of variation	*df*	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)
Hybrids	224	19.76**	28.36**	6.26 **	184.68 **	686.38 **	1315.62 **	4550.12 **	2528.86 **
Environments	2	712.36**	525.00**	116.17**	2476.41 **	3163.00 **	29787.83 **	10683.46 **	18913.03 **
Hyb.* Env.	448	1.939**	1.03 **	1.97*	2.43 **	104.68 **	356.14 **	1939.37*	1493.51*
Env.+ (Hyb.* Env.)	450	5.097 **	3.36**	2.47 **	13.42 **	118.27**	486.95 **	982.68	575.37**
Environments (Lin.)	1	1424.73**	1050.00**	232.34**	4952.82 **	6326.00 **	59575.66 **	21366.92 **	37826.06**
Hyb.* Env.(Lin.)	224	2.46 **	1.31 **	2.13	3.344 **	151.39 **	609.91 **	796.39	564.911 *
Pooled Deviation	225	1.40 **	0.74 **	1.79**	1.50 **	57.71 **	101.92 **	1077.54 *	420.23
Pooled Error	672	0.6	0.17	0.38	0.8	22.81	33.8	867.18	435.14
Total	674	9.97	11.67	3.73	70.34	307.08	762.36	2168.3	1224.61

Source of variation	*df*	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
Hybrids	224	1899.87 **	15.62 **	75.63**	50.70 **	5.69 **	36.20 **	5.51 **	0.26**
Environments	2	14320.41 **	111.72 **	1142.03 **	175.70 **	1.92 *	566.18 **	101.24 **	0.17 **
Hyb.* Env.	448	1363.62**	15.92**	173.47 **	17.76**	1.44**	10.36**	2.12**	0.15 **
Env.+ (Hyb.* Env.)	450	425.64 *	6.39	78.22**	8.5	0.44	12.82 **	1.57	0.25 **
Environments (Lin.)	1	28640.81 **	223.44 **	2284.06 **	351.40 **	3.85 **	1132.36 **	202.49 **	0.34 **
Hyb.* Env.(Lin.)	224	694.7*	3.08	112.84 **	5.59	0.39	11	0.86	0.08 **
Pooled Deviation	225	331.06	8.72 **	33.94	9.88 **	0.48 **	9.66 **	1.38 **	0.02
Pooled Error	672	325.16	5.58	75.29	2.92	0.21	3.82	1.01	0.05
Total	674	915.6	9.46	77.36	22.53	2.19	20.6	2.88	0.12

* significant at p = 0.05 and ** significant at p = 0.01

Table 28. Environmental Index for different characters

Sl. No.	Characters	E_1 Yatnahalli	E_2 Bhavikere	E_3 Mandya
1	Days to 50% anthesis	0.05	1.76	-1.80
2	Days to 50% silking	-0.33	1.67	-1.33
3	Anthesis silking interval	-0.75	0.06	0.69
4	Days to 50% brown husk	-0.46	3.52	-3.06
5	Ear height (cm)	-3.93	3.53	0.40
6	Plant height (cm)	13.25	-5.81	-7.44
7	Ear weight per plant (g)	-7.96	3.95	4.01
8	Cob weight per plant (g)	3.41	6.98	-10.38
9	Grain yield per plant (g)	4.31	4.90	-9.21
10	Shelling %	0.79	-0.57	-0.22
11	Harvest index	2.35	-2.14	-0.21
12	Test weight (g)	0.84	-0.92	0.08
13	Grain rows per cob	0.09	-0.09	0.00
14	Grains per row	-0.15	1.66	-1.51
15	Cob length (cm)	-0.43	0.77	-0.35
16	Cob girth (cm)	-0.02	-0.01	0.03

their stability parameters are given in Table 30. The distribution of these hybrids into different classes of stability *viz.,* hybrids well adapted to all environments, poorly adapted to all environments, specifically adapted to favourable environments and specifically adapted to unfavourable environment for each character is given in Table 31a, 31b, 31c and 31d, respectively. The test hybrids HEMA, V-2232 × MAI 105, V-1649 × MAI 105, CIMMYT-5 × LM 13, V-1712-1 × MAI 105, Z-63-30 × LM 13, V-632-112 × LM 13, V-1168 × LM 13, V-291-2 × LM 13, V-632-67 × LM 13, CML-172 × MAI 105, V-1154 × LM 13, V-241-2 × LM 13, CIMMYT-47 × LM 13, Z-51-1 × LM 13, HKI-193-1 × LM 13,PHI 3501, V-2232 × LM 13, 900M GOLD, Decalb 8101 and V-1649 × LM 13 were good hybrids for grain yield and stability.

Table 29. Mean performance of top 20 high yielding hybrids and checks across environments

Sl. No.	Hybrid	Days to 50% anthesis	Days to 50% silking	Anthesis silking interval	Days to 50% brown husk	Ear height (cm)	Plant height (cm)	Ear weight per plant (g)	Cob weight per plant (g)	Grain yield per plant (g)	Shelling %	Harvest index	Test weight (g)	Grain rows per cob	Grains per row	Cob length (cm)	Cob girth (cm)
1	V-1649 × LM 13	56.33	57.50	1.17	91.17	93.83	224.08	335.61	254.00	219.07	86.41	48.83	37.83	12.87	39.04	20.06	4.56
2	V-2232 × LM 13	56.67	56.17	0.83	116.83	122.50	266.08	288.24	235.58	201.73	85.57	47.57	40.43	13.07	35.96	18.50	4.73
3	HKI-193-1 × LM 13	53.67	50.33	3.17	92.83	97.00	255.33	285.24	226.33	190.23	84.13	46.85	41.25	13.00	37.71	18.94	4.60
4	CML-411 × LM 13	51.67	54.00	2.17	116.67	119.67	259.50	278.08	217.27	185.37	85.29	47.19	40.18	13.33	37.56	18.85	4.83
5	Z-51-1 × LM 13	56.33	55.83	0.83	90.83	114.25	247.42	274.91	216.20	180.25	83.24	47.97	39.05	14.20	36.66	17.96	4.88
6	CIMMYT-47 × LM 13	53.00	55.50	2.50	93.67	99.58	228.83	266.19	204.37	178.63	87.42	50.10	36.47	12.27	40.06	18.11	4.52
7	V-241-2 × LM 13	58.17	56.17	2.00	92.67	112.00	252.75	239.08	209.65	178.05	84.37	50.26	39.69	13.33	32.73	17.31	4.78
8	V-1154 × LM 13	56.50	55.00	1.83	115.50	98.92	274.50	260.82	209.15	177.37	84.64	47.56	37.93	13.40	35.40	18.36	4.55
9	V-1522 × LM 13	57.83	58.17	1.33	115.17	109.83	245.75	275.06	208.83	176.70	84.69	45.80	41.82	11.53	35.62	17.55	4.55
10	CML-172 × MAI 105	55.33	59.33	4.17	115.67	110.75	266.50	267.87	210.27	176.20	83.88	47.72	34.40	15.20	36.15	17.18	4.73
11	V-632-67 × LM 13	56.83	57.50	0.50	115.00	121.17	253.83	275.82	213.97	176.03	82.30	47.55	43.35	13.93	32.80	17.10	4.87
12	V-291-2 × LM 13	59.17	56.00	2.67	91.83	116.25	259.42	260.56	208.17	175.07	83.94	48.90	37.17	14.27	36.16	18.69	4.64
13	V-1168 × LM 13	57.50	57.33	0.83	116.17	109.17	283.17	255.98	201.95	175.06	86.73	47.43	38.87	12.20	37.87	18.45	4.58
14	V-70-1 × LM 13	55.17	56.50	1.17	113.67	129.75	281.58	258.25	205.60	174.80	85.03	46.81	38.18	12.47	37.02	18.20	4.56
15	V-632-112 × LM 13	56.33	57.00	1.33	114.17	107.75	244.58	257.33	204.38	173.01	84.64	47.62	37.99	12.87	36.77	19.31	4.46
16	Z-63-30 × LM 13	58.83	59.50	2.00	114.17	107.50	242.67	262.69	206.87	172.90	83.38	47.89	41.70	14.60	33.99	18.19	4.87
17	V-1712-1 × MAI 105	56.67	57.67	1.17	113.83	121.08	246.58	262.61	199.53	172.63	86.37	50.82	31.53	17.47	36.99	15.54	5.36
18	CIMMYT-5 × LM 13	56.00	51.00	4.67	93.50	121.83	262.08	256.78	205.77	172.13	83.61	46.22	41.77	11.67	36.04	18.56	4.63
19	V-1649 × MAI 105	57.67	59.33	2.67	113.83	90.83	218.92	294.59	205.49	171.47	83.16	43.84	31.05	15.67	38.31	19.02	4.85
20	V-2232 × MAI 105	56.17	58.83	2.17	114.50	89.58	219.75	253.64	202.90	169.97	83.79	52.70	37.14	15.27	31.68	16.31	5.15
	Checks																
1	Hema	53.83	53.83	0.67	110.67	97.75	222.58	230.52	181.88	149.88	82.43	46.73	33.39	15.93	32.64	16.37	5.01
2	Nityashree	55.00	56.00	1.17	94.17	91.58	235.58	231.95	195.00	166.33	85.31	49.33	32.89	14.60	32.17	17.67	4.84
3	Decalb 8101	56.17	57.83	1.83	116.67	102.33	257.33	313.35	247.66	215.69	87.18	53.50	35.44	15.67	40.77	18.36	5.05
4	900M GOLD	48.00	51.00	2.83	92.67	96.00	293.25	282.36	231.90	203.35	87.76	50.87	31.85	14.47	38.56	17.55	4.95
5	PHI 3501	54.50	58.17	3.67	94.33	99.42	242.58	291.91	224.02	195.67	87.40	48.87	32.05	15.93	45.28	18.09	4.94
Mean		54.75	55.79	2.24	100.85	93.58	231.48	206.35	164.54	138.86	84.37	48.45	32.87	13.83	33.97	16.73	4.56
Range		47.67	47.50	0.17	90.83	50.00	166.75	117.79	100.12	82.23	71.81	41.70	20.21	11.13	24.08	13.52	3.82
		62.17	62.83	7.50	116.83	139.83	293.25	335.61	254.00	219.07	88.04	52.70	43.35	19.13	45.28	20.06	6.22
S Em. ±		1.13	0.82	1.14	1.27	8.35	15.40	25.02	18.13	15.56	1.98	6.99	2.27	0.53	2.62	0.86	0.18
C.D. 5%		3.16	2.30	3.18	3.53	23.21	42.82	69.55	50.41	43.27	5.52	19.45	6.32	1.49	7.30	2.40	0.52
C.D. 1%		3.58	2.77	3.46	4.23	25.36	46.94	82.00	59.31	50.66	7.36	21.56	7.67	1.78	8.66	2.96	0.61

Table 30. Estimates of mean and stability parameters for top 20 high yielding hybrids and checks

Sl. No.	Hybrid	Grain yield per plant (g)			Days to 50% anthesis			Days to 50% silking			Anthesis silking interval		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
1	V-1649 × LM 13	219.07	6.06	886.48	56.33	1.28	1.21	57.50	1.50	3.33 **	1.17	0.03	-0.35
2	V-2232 × LM 13	201.73	5.18	-265.02	56.67	0.27	0.06	56.17	0.07	0.47 *	0.83	0.36	-0.48
3	HKI-193-1 × LM 13	190.23	2.45	114.36	53.67	0.13	1.43	50.33	0.89	1.27 **	3.17	2.42	-0.37
4	CML-411 × LM 13	185.37	2.92	2223.54 *	51.67	0.42	-0.58	54.00	1.39	0.28	2.17	-0.19	4.61 **
5	Z-51-1 × LM 13	180.25	-2.13	-157.77	56.33	0.69	0.49	55.83	0.36	-0.10	0.83	0.75	0.07
6	CIMMYT-47 × LM 13	178.63	0.81	-163.55	53.00	2.40	2.25 *	55.50	1.82*	-0.15	2.50	3.08	0.19
7	V-241-2 × LM 13	178.05	3.87	-181.05	58.17	1.97	-0.54	56.17	0.93	0.47 *	2.00	-1.21	5.96 **
8	V-1154 × LM 13	177.37	2.84	296.99	56.50	1.26	-0.16	55.00	1.39	1.27 **	1.83	1.75	-0.51
9	V-1522 × LM 13	176.70	2.90*	-425.00	57.83	0.28	-0.45	58.17	1.14	2.40 **	1.33	0.06	0.15
10	CML-172 × MAI 105	176.20	1.09	-417.89	55.33	0.85	-0.04	59.33	1.43	0.47 *	4.17	0.42	0.47
11	V-632-67 × LM 13	176.03	0.89	402.44	56.83	1.68	-0.38	57.50	1.50*	0.10	0.50	0.30	-0.11
12	V-291-2 × LM 13	175.07	1.97	-414.03	59.17	-0.02	3.53 *	56.00	0.75	0.70 *	2.67	2.11	-0.45
13	V-1168 × LM 13	175.06	1.90	-330.76	57.50	0.56*	-0.63	57.33	1.54	-0.01	0.83	-0.64	0.23
14	V-70-1 × LM 13	174.80	1.90	1274.42 *	55.17	0.85	-0.50	56.50	1.18	2.85 **	1.17	-1.36	-0.26
15	V-632-112 × LM 13	173.01	2.75	-268.19	56.33	1.12	-0.41	57.00	0.54	-0.01	1.33	1.66	0.80
16	Z-63-30 × LM 13	172.90	0.06	-406.66	58.83	0.55	2.14 *	59.50	1.93	0.47 *	2.00	0.00*	-0.52
17	V-1712-1 × MAI 105	172.63	-1.76	276.72	56.67	1.41	-0.52	57.67	1.25	0.70 *	1.17	0.64	0.23
18	CIMMYT-5 × LM 13	172.13	2.24	-416.28	56.00	0.38	17.94**	51.00	0.64	2.40 **	4.67	1.50	1.81 *
19	V-1649 × MAI 105	171.47	3.01	722.82	57.67	-0.02	3.53 *	59.33	1.75	0.70 *	2.67	-1.66	0.80
20	V-2232 × MAI 105	169.97	-0.50	-370.43	56.17	1.26	-0.55	58.83	1.43	0.97 **	2.17	0.42	0.47
	Checks												
1	HEMA	149.88	0.09	-414.88	53.83	0.97	0.53	53.83	1.21	1.61 **	0.67	-1.05*	-0.50
2	NITYASHREE	166.33	-2.57*	-425.65	55.00	0.71	-0.30	56.00	0.21	0.12	1.17	0.64	0.23
3	Decalb 8101	215.69	0.41	-407.92	56.17	1.27	0.27	57.83	1.75	0.70 *	1.83	0.75	0.07
4	900M GOLD	203.35	2.09	-182.39	48.00	1.27	-0.34	51.00	0.21	0.12	2.83	1.97	2.66 *
5	PHI 3501	195.67	0.86	-387.04	54.50	1.70	0.64	58.17	0.82	-0.15	3.67	2.33	2.05 *

* significant at p = 0.05 and ** significant at p = 0.01

Sl. No.	Hybrid	Days to 50% brown husk			Ear height (cm)			Plant height (cm)			Ear weight per plant (g)		
		Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di
1	V-1649 × LM 13	91.17	0.74	-0.10	93.83	0.12	-2.95	224.08	1.86	95.41	335.61	3.82	6443.21 **
2	V-2232 × LM 13	116.83	1.57	0.42	122.50	0.00*	-25.73	266.08	1.60	-13.19	288.24	0.86	5646.21 *
3	HKI-193-1 × LM 13	92.83	1.48	1.98	97.00	2.02	116.42 *	255.33	0.55	-5.40	285.24	4.92	-681.30
4	CML-411 × LM 13	116.67	0.77	-0.64	119.67	3.58	-22.76	259.50	0.47	121.21 *	278.08	-6.26	-874.79
5	Z-51-1 × LM 13	90.83	0.85	5.65 **	114.25	0.87	68.71	247.42	0.88	-35.15	274.91	2.62	4734.42 *
6	CIMMYT-47 × LM 13	93.67	0.92	-0.70	99.58	-1.31	39.34	228.83	0.84*	-36.80	266.19	0.21	-181.24
7	V-241-2 × LM 13	92.67	0.29	-0.46	112.00	2.02	116.42 *	252.75	1.29	-29.33	239.08	0.15	-347.80
8	V-1154 × LM 13	115.50	1.20	-0.33	98.92	-0.17	31.51	274.50	5.03	200.03 *	260.82	-2.49	-1048.78
9	V-1522 × LM 13	115.17	1.22	-0.77	109.83	-1.27	-10.48	245.75	1.15	-36.61	275.06	0.49	-828.84
10	CML-172 × MAI 105	115.67	1.64	1.01	110.75	-0.38	-25.19	266.50	0.71	236.81 **	267.87	0.71	-1059.30
11	V-632-67 × LM 13	115.00	0.96	0.56	121.17	3.43	124.40 *	253.83	-0.23	-28.23	275.82	6.46*	-1061.14
12	V-291-2 × LM 13	91.83	0.67	-0.45	116.25	-1.80	-19.86	259.42	2.10	-7.22	260.56	1.42	-1055.83
13	V-1168 × LM 13	116.17	1.13	-0.60	109.17	-1.59	84.36 *	283.17	7.14*	-23.41	255.98	2.80	-911.29
14	V-70-1 × LM 13	113.67	0.89	0.05	129.75	1.41	66.60	281.58	0.29	6.49	258.25	6.02	343.39
15	V-632-112 × LM 13	114.17	0.89	0.05	107.75	1.77	359.46 **	244.58	0.64	79.26	257.33	-0.92	-563.56
16	Z-63-30 × LM 13	114.17	0.56	3.05 *	107.50	3.04	-23.24	242.67	-0.01*	-36.67	262.69	3.16	-31.78
17	V-1712-1 × MAI 105	113.83	0.70	-0.40	121.08	1.74	-20.95	246.58	0.52*	-36.72	262.61	2.18	7220.61 **
18	CIMMYT-5 × LM 13	93.50	1.08	-0.41	121.83	2.13	-17.61	262.08	1.35	-36.35	256.78	0.27	-766.46
19	V-1649 × MAI 105	113.83	0.64	0.85	90.83	0.31	-24.34	218.92	0.88	80.93	294.59	-10.48	-764.05
20	V-2232 × MAI 105	114.50	1.74	-0.65	89.58	-0.68	-20.76	219.75	1.62	-21.03	253.64	1.97	-17.60
	Checks												
1	HEMA	110.67	0.89	3.89 *	97.75	0.27	67.65	222.58	1.50	-34.39	230.52	2.13	-1060.24
2	NITYASHREE	94.17	0.95	1.67	91.58	1.26	-19.14	235.58	0.85	110.69 *	231.95	0.84	860.43
3	Decalb 8101	116.67	1.16	-0.19	102.33	0.22	-16.87	257.33	2.08*	-35.81	313.35	1.74	-862.24
4	900M GOLD	92.67	0.83	-0.72	96.00	0.39	-5.51	293.25	4.02	1154.41 **	282.36	-2.81	-804.98
5	PHI 3501	94.33	1.48	1.22	99.42	0.01	246.80 **	242.58	1.75	124.15 *	291.91	3.34	-780.07

* significant at p = 0.05 and ** significant at p = 0.01

Sl. No.	Hybrid	Cob weight per plant (g)			Shelling %			Harvest index			Test weight (g)		
		Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di
1	V-1649 × LM 13	254.00	6.72	489.89	86.41	1.02	-5.03	48.83	0.60	-31.85	37.83	0.78	24.38 *
2	V-2232 × LM 13	235.58	5.17	-497.01	85.57	1.75	-4.59	47.57	0.99	-75.01	40.43	-1.54	33.04 **
3	HKI-193-1 × LM 13	226.33	3.03	134.74	84.13	1.49	-5.02	46.85	0.90	-74.99	41.25	-1.25	1.73
4	CML-411 × LM 13	217.27	2.06	2942.50 *	85.29	1.97	-4.77	47.19	0.92	-66.44	40.18	1.48	-4.17
5	Z-51-1 × LM 13	216.20	-2.07	-435.50	83.24	1.26	-1.60	47.97	0.72	-72.74	39.05	5.80	34.48 **
6	CIMMYT-47 × LM 13	204.37	0.88	-301.02	87.42	1.27	-1.85	50.10	0.54	-53.22	36.47	-0.65	4.34
7	V-241-2 × LM 13	209.65	3.27	-34.74	84.37	1.62	4.83	50.26	2.15	-59.85	39.69	-2.75	37.19 **
8	V-1154 × LM 13	209.15	2.55	503.94	84.64	1.64	-5.59	47.56	0.75	-75.41	37.93	1.19	22.50 *
9	V-1522 × LM 13	208.83	3.13	-553.00	84.69	0.15	-4.68	45.80	-0.63	-49.53	41.82	0.46	-2.05
10	CML-172 × MAI 105	210.27	1.43	-556.53	83.88	0.50	-2.03	47.72	1.03	-70.93	34.40	1.68	-4.82
11	V-632-67 × LM 13	213.97	1.68	727.93	82.30	1.18	-3.39	47.55	1.60	-75.63	43.35	0.54	10.10
12	V-291-2 × LM 13	208.17	1.62	-562.05	83.94	1.63	0.65	48.90	1.26	-74.52	37.17	0.19	-2.89
13	V-1168 × LM 13	201.95	2.19	-436.26	86.73	1.80	-4.52	47.43	-0.08	-67.82	38.87	5.29	2.96
14	V-70-1 × LM 13	205.60	2.50	1341.10	85.03	-0.05*	-5.64	46.81	-0.28	-65.52	38.18	-1.26	-1.43
15	V-632-112 × LM 13	204.38	2.69	-299.74	84.64	1.47	-5.32	47.62	0.96	-70.62	37.99	-1.45	17.89 *
16	Z-63-30 × LM 13	206.87	0.14	-567.83	83.38	-0.85	-5.55	47.89	0.55	-74.14	41.70	3.98	14.26
17	V-1712-1 × MAI 105	199.53	-1.77	-99.17	86.37	2.18	-0.75	50.82	2.02	-74.26	31.53	4.91	27.61 *
18	CIMMYT-5 × LM 13	205.77	2.40*	-571.93	83.61	3.05	-4.57	46.22	0.46	-72.86	41.77	1.73	-4.77
19	V-1649 × MAI 105	205.49	1.85	933.12	83.16	3.18	9.80	43.84	-0.42	-73.65	31.05	1.94	-4.51
20	V-2232 × MAI 105	202.90	-0.42	-543.76	83.79	0.91	-4.43	52.70	1.57	-5.45	37.14	2.76	4.84
	Checks												
1	HEMA	181.88	0.28	-519.24	82.43	1.56	-4.80	46.73	1.16	-72.42	33.39	-1.55	0.46
2	NITYASHREE	195.00	-2.48	-551.23	85.31	-0.34	-5.21	49.33	0.14	-75.44	32.89	3.04	4.71
3	Decalb 8101	247.66	0.87	-517.29	87.18	0.94	-1.83	53.50	2.27	-61.35	35.44	-3.16	9.90
4	900M GOLD	231.90	1.84	-51.42	87.76	-0.38*	-5.64	50.87	-0.22	-64.54	31.85	0.95	47.06 **
5	PHI 3501	224.02	1.26	-461.69	87.40	1.85	-2.46	48.87	1.58	-71.32	32.05	-0.80	-4.34

* significant at p = 0.05 and ** significant at p = 0.01

Sl. No.	Hybrid	Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di
1	V-1649 × LM 13	12.87	11.96	0.56	39.04	0.21	-3.53	20.06	0.14*	-1.44	4.56	1.03	-0.06
2	V-2232 × LM 13	13.07	3.23	-0.21	35.96	0.72	-2.91	18.50	0.50	-1.04	4.73	2.79	-0.03
3	HKI-193-1 × LM 13	13.00	5.38	-0.15	37.71	0.46	-3.89	18.94	0.96	-1.34	4.60	2.70	-0.06
4	CML-411 × LM 13	13.33	3.29	0.10	37.56	-0.59	53.94 **	18.85	-0.89	-0.99	4.83	1.52	-0.06
5	Z-51-1 × LM 13	14.20	1.10	-0.16	36.66	0.22	-3.90	17.96	1.37	-1.31	4.88	3.41	-0.04
6	CIMMYT-47 × LM 13	12.27	0.05	0.21	40.06	0.99	-3.84	18.11	0.02	-0.66	4.52	3.63	-0.06
7	V-241-2 × LM 13	13.33	6.51	-0.12	32.73	0.38	-1.28	17.31	1.93	-0.86	4.78	-2.83	-0.06
8	V-1154 × LM 13	13.40	-5.34	0.33	35.40	0.49	31.43 **	18.36	-0.26	-1.41	4.55	1.31	-0.05
9	V-1522 × LM 13	11.53	-3.23	-0.21	35.62	-0.73	-0.06	17.55	-0.07	-1.43	4.55	0.63	-0.06
10	CML-172 × MAI 105	15.20	-6.52	0.01	36.15	0.47	-3.65	17.18	0.89	-0.28	4.73	0.38	-0.05
11	V-632-67 × LM 13	13.93	0.03	-0.11	32.80	0.92	-3.55	17.10	1.05	1.56	4.87	5.45	-0.05
12	V-291-2 × LM 13	14.27	2.17	-0.19	36.16	1.41	-3.91	18.69	1.10	-0.68	4.64	5.42	-0.05
13	V-1168 × LM 13	12.20	-3.22	-0.16	37.87	1.50	-3.87	18.45	1.49	-1.39	4.58	-0.81	-0.04
14	V-70-1 × LM 13	12.47	3.16	0.91 *	37.02	-0.42	15.46 *	18.20	0.73	-1.40	4.56	4.31	-0.03
15	V-632-112 × LM 13	12.87	3.20	0.11	36.77	0.95	-3.34	19.31	1.82	-0.93	4.46	-1.39	-0.06
16	Z-63-30 × LM 13	14.60	-10.84	0.01	33.99	3.17	-2.85	18.19	0.78	-0.80	4.87	4.16	-0.05
17	V-1712-1 × MAI 105	17.47	5.43	-0.06	36.99	-0.32*	-3.92	15.54	-0.22	-1.02	5.36	6.42	-0.01
18	CIMMYT-5 × LM 13	11.67	7.60	-0.06	36.04	0.17	-3.89	18.56	1.14	-1.11	4.63	2.06	-0.01
19	V-1649 × MAI 105	15.67	5.43	-0.06	38.31	2.21	-1.79	19.02	1.63	-0.01	4.85	-2.27	-0.03
20	V-2232 × MAI 105	15.27	-4.39	0.44	31.68	-1.24	-0.66	16.31	-0.28	-1.42	5.15	2.19	-0.05
	Checks												
1	HEMA	15.93	7.45	1.73 **	32.64	0.38	-3.06	16.37	0.87	-0.77	5.01	0.76	-0.06
2	NITYASHREE	14.60	1.14	0.32	32.17	-0.36	1.78	17.67	0.21*	-1.44	4.84	8.85	-0.04
3	Decalb 8101	15.67	4.26	0.46	40.77	0.55	2.01	18.36	0.06	-1.38	5.05	2.24*	-0.06
4	900M GOLD	14.47	2.25	1.08 *	38.56	0.36	11.20	17.55	-0.32	-0.98	4.95	-0.81	-0.01
5	PHI 3501	15.93	-1.04	0.11	45.28	-0.47	11.33 *	18.09	1.53	-1.20	4.94	1.64	-0.06

* significant at p = 0.05 and ** significant at p = 0.01

Table 31a. Hybrids well adapted to all environments (s^2_{di} = 0, b_i = 1 and P_i > 0)

Sl. No.	Character	Hybrids
1	Days to 50% anthesis	NITYASHREE, V-70-1 × LM 13, CML-172 × MAI 105, V-2232 × MAI 105, Decalb 8101, Z-51-1 × LM 13, V-632-112 × LM 13, V-1649 × LM 13. V-1154 × LM 13, V-2232 × LM 13, V-1712-1 × MAI 105, V-632-67 × LM 13, V-1522 × LM 13, V-241-2 × LM 13
2	Days to 50% silking	Z-51-1 × LM 13, NITYASHREE, V-632-112 × LM 13, V-1168 × LM 13, PHI 3501
3	Anthesis silking interval	V-632-112 × LM 13, V-1154 × LM 13, Decalb 8101, V-2232 × MAI 105, CIMMYT-47 × LM 13, V-291-2 × LM 13, V-1649 × MAI 105, HKI-193-1 × LM 13, CML-172 × MAI 105
4	Days to 50% brown husk	V-70-1 × LM 13, V-1712-1 × MAI 105, V-1649 × MAI 105, V-632-112 × LM 13, V-2232 × MAI 105, V-632-67 × LM 13, V-1522 × LM 13, V-1154 × LM 13, CML-172 × MAI 105, V-1168 × LM 13, CML-411 × LM 13, Decalb 8101, V-2232 × LM 13
5	Ear height (cm)	V-1649 × LM 13, 900M GOLD, HEMA, V-1154 × LM 13, CIMMYT-47 × LM 13, Decalb 8101, Z-63-30 × LM 13, V-1522 × LM 13, CML-172 × MAI 105, Z-51-1 × LM 13, V-291-2 × LM 13, CML-411 × LM 13, V-1712-1 × MAI 105, CIMMYT-5 × LM 13, V-2232 × LM 13, V-70-1 × LM 13
6	Plant height (cm)	V-632-112 × LM 13, V-1522 × LM 13, Z-51-1 × LM 13, V-241-2 × LM 13, V-632-67 × LM 13, HKI-193-1 × LM 13, V-291-2 × LM 13, CIMMYT-5 × LM 13, V-2232 × LM 13, V-70-1 × LM 13, V-1168 × LM 13
7	Ear weight per plant (g)	HEMA, NITYASHREE, V-241-2 × LM 13, V-2232 × MAI 105, V-1168 × LM 13, CIMMYT-5 × LM 13, V-632-112 × LM 13, V-70-1 × LM 13, V-291-2 × LM 13, V-1154 × LM 13, Z-63-30 × LM 13, CIMMYT-47 × LM 13, CML-172 × MAI 105, V-1522 × LM 13, CML-411 × LM 13, 900M GOLD, HKI-193-1 × LM 13, PHI 3501, V-1649 × MAI 105, Decalb 8101
8	Cob weight per plant (g)	HEMA, NITYASHREE, V-1712-1 × MAI 105, V-1168 × LM 13, V-2232 × MAI 105, CIMMYT-47 × LM 13, V-632-112 × LM 13, V-1649 × MAI 105, V-70-1 × LM 13, Z-63-30 × LM 13, V-291-2 × LM 13, V-1522 × LM 13, V-1154 × LM 13, V-241-2 × LM 13, CML-172 × MAI 105, V-632-67 × LM 13, Z-51-1 × LM 13, PHI 3501, HKI-193-1 × LM 13, 900M GOLD, Decalb 8101

Sl. No.	Character	Hybrids
9	Grain yield per plant (g)	HEMA, V-2232 × MAI 105, V-1649 × MAI 105, CIMMYT-5 × LM 13, V-1712-1 × MAI 105, Z-63-30 × LM 13, V-632-112 × LM 13, V-1168 × LM 13, V-291-2 × LM 13, V-632-67 × LM 13, CML-172 × MAI 105, V-1154 × LM 13, V-241-2 × LM 13, CIMMYT-47 × LM 13, Z-51-1 × LM 13, HKI-193-1 × LM 13,PHI 3501, V-2232 × LM 13, 900M GOLD, Decalb 8101, V-1649 × LM 13
10	Shelling %	V-241-2 × LM 13, V-1154 × LM 13,, V-632-112 × LM 13, V-1522 × LM 13, CML-411 × LM 13, NITYASHREE, V-2232 × LM 13, V-1712-1 × MAI 105, V-1649 × LM 13, V-1168 × LM 13, Decalb 8101, PHI 3501, CIMMYT-47 × LM 13
11	Harvest index	V-1649 × LM 13, PHI 3501, V-291-2 × LM 13, NITYASHREE, CIMMYT-47 × LM 13, V-241-2 × LM 13, V-1712-1 × MAI 105, 900M GOLD, V-2232 × MAI 105, Decalb 8101
12	Test weight (g)	NITYASHREE, HEMA, CML-172 × MAI 105, Decalb 8101, CIMMYT-47 × LM 13, V-2232 × MAI 105, V-291-2 × LM 13, V-70-1 × LM 13, V-1168 × LM 13, CML-411 × LM 13, HKI-193-1 × LM 13, Z-63-30 × LM 13, CIMMYT-5 × LM 13, V-1522 × LM 13, V-632-67 × LM 13
13	Grain rows per cob	V-632-67 × LM 13, Z-51-1 × LM 13, V-291-2 × LM 13, Z-63-30 × LM 13, NITYASHREE, CML-172 × MAI 105, V-2232 × MAI 105, V-1649 × MAI 105, Decalb 8101, PHI 3501, V-1712-1 × MAI 105
14	Grains per row	Z-63-30 × LM 13, V-1522 × LM 13, V-2232 × LM 13, CIMMYT-5 × LM 13, CML-172 × MAI 105, V-291-2 × LM 13, Z-51-1 × LM 13, V-632-112 × LM 13, HKI-193-1 × LM 13, V-1168 × LM 13, V-1649 × MAI 105, 900M GOLD, V-1649 × LM 13, CIMMYT-47 × LM 13, Decalb 8101
15	Cob length (cm)	V-632-67 × LM 13, CML-172 × MAI 105, V-241-2 × LM 13, 900M GOLD, V-1522 × LM 13, Z-51-1 × LM 13, PHI 3501, CIMMYT-47 × LM 13, Z-63-30 × LM 13, V-70-1 × LM 13, V-1154 × LM 13, Decalb 8101, V-1168 × LM 13, V-2232 × LM 13, CIMMYT-5 × LM 13, V-291-2 × LM 13, CML-411 × LM 13, HKI-193-1 × LM 13, V-1649 × MAI 105, V-632-112 × LM 13
16	Cob girth (cm)	V-1154 × LM 13, V-1649 × LM 13, V-70-1 × LM 13, V-1168 × LM 13, HKI-193-1 × LM 13, CIMMYT-5 × LM 13, V-291-2 × LM 13, V-2232 × LM 13, CML-172 × MAI 105, V-241-2 × LM 13, CML-411 × LM 13, NITYASHREE, V-1649 × MAI 105, Z-63-30 × LM 13, V-632-67 × LM 13, Z-51-1 × LM 13, PHI 3501, 900M GOLD, HEMA, Decalb 8101, V-2232 × MAI 105, V-1712-1 × MAI 105

Table 31b. Hybrids poorly adapted to all environments (s^2_{di} = 0, b_i = 1 and P_i < 0)

Sl. No.	Character	Hybrids
1	Days to 50% anthesis	900M GOLD, CML-411 × LM 13, HKI-193-1 × LM 13, HEMA, PHI 3501
2	Days to 50% silking	900M GOLD, CML-411 × LM 13
3	Anthesis silking interval	V-632-67 × LM 13, V-2232 × LM 13, Z-51-1 × LM 13, V-1168 × LM 13, V-1649 × LM 13, V-70-1 × LM 13, V-1712-1 × MAI 105, NITYASHREE, V-1522 × LM 13
4	Days to 50% brown husk	V-1649 × LM 13, V-291-2 × LM 13, V-241-2 × LM 13, 900M GOLD, HKI-193-1 × LM 13, CIMMYT-5 × LM 13, CIMMYT-47 × LM 13, NITYASHREE, PHI 3501
5	Ear height (cm)	V-2232 × MAI 105, V-1649 × MAI 105, NITYASHREE
6	Plant height (cm)	V-1649 × MAI 105, V-2232 × MAI 105, HEMA, V-1649 × LM 13
7	Ear weight per plant (g)	nil
8	Cob weight per plant (g)	nil
9	Grain yield per plant (g)	nil
10	Shelling %	V-632-67 × LM 13, HEMA, V-1649 × MAI 105, Z-51-1 × LM 13, Z-63-30 × LM 13, CIMMYT-5 × LM 13, V-2232 × MAI 105, CML-172 × MAI 105, V-291-2 × LM 13, HKI-193-1 × LM 13
11	Harvest index	V-1649 × MAI 105, V-1522 × LM 13, CIMMYT-5 × LM 13, HEMA, V-70-1 × LM 13, HKI-193-1 × LM 13, CML-411 × LM 13, V-1168 × LM 13, V-632-67 × LM 13, V-1154 × LM 13, V-2232 × LM 13, V-632-112 × LM 13, CML-172 × MAI 105, Z-63-30 × LM 13, Z-51-1 × LM 13
12	Test weight (g)	V-1649 × MAI 105, PHI 3501
13	Grain rows per cob	V-1522 × LM 13, CIMMYT-5 × LM 13, V-1168 × LM 13, CIMMYT-47 × LM 13, V-1649 × LM 13, V-632-112 × LM 13, HKI-193-1 × LM 13, V-2232 × LM 13, CML-411 × LM 13, V-241-2 × LM 13, V-1154 × LM 13
14	Grains per row	V-2232 × MAI 105, NITYASHREE, HEMA, V-241-2 × LM 13, V-632-67 × LM 13
15	Cob length (cm)	V-1712-1 × MAI 105, V-2232 × MAI 105, HEMA
16	Cob girth (cm)	V-632-112 × LM 13, CIMMYT-47 × LM 13, V-1522 × LM 13

Table 31c. Hybrids specifically adapted to favourable environments (s^2_{di} = 0, b_i > 1 and P_i > 0)

Sl. No.	Character	Hybrids
1	Days to 50% anthesis	nil
2	Days to 50% silking	V-632-67 × LM 13
3	Anthesis silking interval	nil
4	Days to 50% brown husk	nil
5	Ear height (cm)	nil
6	Plant height (cm)	Decalb 8101
7	Ear weight per plant (g)	V-632-67 × LM 13
8	Cob weight per plant (g)	CIMMYT-5 × LM 13
9	Grain yield per plant (g)	V-1522 × LM 13
10	Shelling %	nil
11	Harvest index	nil
12	Test weight (g)	nil
13	Grain rows per cob	nil
14	Grains per row	nil
15	Cob length (cm)	nil
16	Cob girth (cm)	nil

Table 31d. Hybrids specifically adapted to unfavourable environments (s^2_{di} = 0, b_i < 1 and P_i > 0)

Sl. No.	Character	Hybrids
1	Days to 50% anthesis	nil
2	Days to 50% silking	nil
3	Anthesis silking interval	Z-63-30 × LM 13
4	Days to 50% brown husk	nil
5	Ear height (cm)	nil
6	Plant height (cm)	Z-63-30 × LM 13, V-1712-1 × MAI 105
7	Ear weight per plant (g)	nil
8	Cob weight per plant (g)	nil
9	Grain yield per plant (g)	NITYASHREE
10	Shelling %	V-70-1 × LM 13, 900M GOLD
11	Harvest index	nil
12	Test weight (g)	nil
13	Grain rows per cob	nil
14	Grains per row	V-1712-1 × MAI 105
15	Cob length (cm)	NITYASHREE, V-1649 × LM 13
16	Cob girth (cm)	nil

Discussion

V. DISCUSSION

Maize is a treasured resource which provides food, fodder, industrial raw materials and also an important study reserve providing intellectual growth in science and humanities. The species is extremely adaptable being grown from Northern Europe and Northern Asia to Southern parts of South America at all latitudes and altitudes. Maize culture binds together societies by providing food, knowledge, economic opportunities, intellectual growth and spiritual nourishment. "Maize is not only a food staple but also a social safety net, a survival strategy and a cultural icon" which exemplifies co-dependence between humans and crop species (Carlsen, 2004). The conduct and impact of plant breeding and agriculture transcend national boundaries and generations.

One of the major realizations in plant breeding is the exploitation of heterosis through commercialization of hybrids in cross-pollinated, often-cross-pollinated and even in self-pollinated crops. The main aim of any maize breeding programme is to exploit heterosis to the best possible extent and to identify a stable hybrid which performs best across the varied environmental circumstances. Such a goal can be achieved by precise choice of the parents and such a choice depends on several influences such as parental diversity, combining ability and stability.

A cross involving diverse parents is more likely to produce highly heterozygous as well as heterotic offsprings and hence genetic divergence among the parents is important (Arunachalam *et al.,* 1984). Once the divergent parents are identified, a successful plant breeding programme depends on the choice of best combination of parents for hybridization. But, such a choice is relatively hard in case of complex traits like yield as they are polygenic and influenced by extraneous factors to different degrees. However, this is one of the most costly and time consuming

stages in hybrid breeding programme. Thus, it is inevitable to identify relatively fewer numbers of parents which are more likely to result in high frequency of heterotic hybrids and such a choice is crucial.

A successfully developed new hybrid should have stable performance and broad adaption over a range of environments in addition to its proven potentiality in respect of yield. If sufficient care is not taken to select for both yield and stability of performance, one may end-up with a high yielding genotype which is suitable for a narrow range of environments (Allard and Bradshaw, 1964).

Keeping all these aspects in consideration, the present investigation was conducted to analyse the degree of genetic divergence at morpho-molecular levels, to identify best general and specific combiners, to assess the relationships between parental diversity, heterosis, *sca* effects, and *per se* performance and to identify hybrids with wide adaptability. Results of the present investigation are discussed under the following heads.

5.1 Genetic divergence

5.2 Combining ability and heterosis

5.3 Genotype × environment interactions

5.1 GENETIC DIVERGENCE

5.1.1 Morphological diversity

The knowledge of genetic diversity among the genotypes is essential for selecting parents for hybridization programme, especially in a cross pollinated crop like maize. Genetic diversity considered to be an important tool for realizing heterotic response in F_1 and a broad spectrum of variability in segregating generations.

Mahalanobis D^2 statistic is a sensitive tool for assessing genetic divergence for quantitative traits and is widely being used by many geneticists and breeders for selecting divergent parents based on their distances for effecting crosses. Using this genetic distance, it is possible to group the inbreds into different clusters.

5.1.1.1 Analysis of variance

Significance of mean difference for all the traits is one of the prerequisite for D^2 stastistic. This can be accomplished in two ways: (a) by simple ANOVA (univariate analysis of variance) for each trait separately or (b) Wilk's statistic for aggregate traits (multivariate analysis of dispersion, Rao, 1952). Since relatively large number of inbreds *i.e.,* 100 were to be tested and soil heterogeneity was more pronounced, the block accommodating a complete replicate might not be sufficiently homogeneous and the precision of the inbred comparison would suffer. Thus, the principle of reduction in error variation through local control was maintained by grouping the plots into compact homogeneous blocks of a moderate size, by accommodating only a portion of the total number of inbreds to be compared in each block. Hence, in the present investigation, instead of Randomized Complete Block Design (RCBD), an incomplete partially balanced Simple Lattice Design (10 x 10) was used at each location. Adjusted mean values free from block effects were calculated and used for further analysis (Appendix I). Pooled univariate analysis of variance among 100 inbred lines indicated significant differences among the inbreds for all the 16 characters (Table 4_a), which justifies the usage of the selected inbreds for diversity analysis. It was also observed that, the Simple Lattice Design was more efficient over RCBD for several characters in each location, which defends the usage of Simple Lattice Design in place of RCBD.

5.1.1.2 Analysis of D^2 values

The D^2 values ranged from 8.26 to 932 indicating the degree of divergence among 100 inbreds of maize to be high (Rao, 1952). The highest D^2 distance was witnessed between the inbreds CIMMYT-5 and MAI-706 (932.9), MAI-706 and V-632-67 (841.0), CIMMYT-10 and MAI-706 (789.9), and CM-212 and MAI-706 (782.13). These inbreds are recommendable for future hybridization programs.

The average D^2 values of each inbred indicates the divergence of that particular inbred from rest of the inbreds included in the analysis. The inbred CIMMYT-47(454.09) was on an average maximum divergent followed by MAI-706 (399.36), V-291-2 (374.01), MAI-48 (353.77) and V-241-2 (348.53) from rest of the inbreds included in the analysis. These inbreds can be used as testers for assessing combining ability in future crossing programs. Whereas the inbreds DMR-N-21 (96.24), CML-165 (95.99), MAI-109 (94.20), CML-411 (93.94) and Q-Y-2593-3 (90.85) were on an average least divergent from rest of the inbreds and their divergence can be further assessed in totally a different inbred collection.

5.1.1.3 Per cent contribution of character towards total divergence

Literature abounds with reports on the usage of rank method of D^2 to get total rank and calculating per cent contribution. This method has been criticized for lack of any weightage assigned to different ranks and also for the fact that ranking is done on uncorrelated variables (y_s) which might not be applicable to original correlated means (x_s). But, it can be easily determined by coefficient of variation at individual as well as at inter-cluster level (Sharma, 1988). However, both the methods for assessing the contribution of individual characters for total divergence have been discussed. Out of 16 characters analysed, days to 50 per cent brown husk has contributed highest for total divergence followed by days to 50 per cent anthesis, anthesis silking interval and grain rows per cob

(Table 6). It is evident that the contribution of simply inherited traits which are least affected by extraneous factors was highest for divergence than the characters with complex inheritance and highly affected by extraneous factors (Marker and Krupakar, 2009; Ganesan *et al.*, 2010).

Forces of differentiation at genotypic and inter-cluster levels are demonstrated by coefficient of variation values. Thus, at genotypic level, anthesis silking interval (112.60%), grain yield (30.56%), cob weight (30.56%) and ear weigh (28.66%) were important, and at inter cluster level also, the same characters *i.e.,* anthesis silking interval (91.55%), grain yield (48.32%), cob weight (43.64%) and ear weigh (35.67%) were potential contributors to differentiation in this inbred collection (Table 9). These characters should be given importance for selecting diverse parents for breeding programmes in maize.

5.1.1.4 Cluster analysis

All the hundred inbreds could be meaningfully grouped into 10 clusters, five of them having solitary inbreds each, which indicates the presence of sufficient variability among the genotypes (Table 7 and Figure 1). Out of the hundred inbreds analyzed, forty-eight were accommodated in cluster I followed by cluster II (25), cluster III (14), cluster VI (5) and cluster VII (3). The genotypes within the clusters exhibited narrow range of genetic diversity, which indicates their higher resemblance between each other than the genotypes in different clusters.

Among the four testers selected for hybridization, CM 500 and SKV 50 were included in cluster I and MAI 105 and LM 13 in cluster II. The effect of type of testers on the effective management of available genetic variation in the lines and to maximize response to selection for combining ability has been a matter of debate for about half a century. An inbred tester is the obvious choice when a line is to be identified as a

parent in a specific single cross. The best combination of testers for L x T analysis would be the ones which classifies correctly the relative performance of lines and discriminates among them and maximizes the genetic gain. In our study, out of the four inbreds used as testers, two possible comparisons CM 500 - SKV 50 and MAI 105 – LM 13 were less divergent. However, sufficient diversity at morphological level was noticed at least in other four possible comparisons such as CM 500 – MAI 105, CM 500 – LM 13, SKV 50 – MAI 105 and SKV 50 – LM 13. This defends the usage of these testers for assessing combining ability of lines.

5.1.1.5 Intra and inter cluster distances

The intra cluster distance ranged from 7.6 (cluster I) to 10.05 (cluster VII) which indicates the marginal differences in the genetic architecture of the accessions in cluster I as compared to cluster VII (Table 8).

Higher estimate of inter cluster distance between clusters VIII and VI and clusters VIII and X indicated wide genetic diversity between these groups. Thus, genotypes with high index for specific characters that fall into different clusters could be intercrossed to achieve maximum hybrid vigor and high frequency of desirable segregants. Lower estimate of inter cluster distance was noticed between clusters V and VI, which indicated the close relationship and likelihood between the genotypes of these clusters.

Hybridization between divergent groups may lead to higher magnitude of heterosis for the characters concerned. However, many earlier studies are of the opinion that crosses between too divergent groups of parents are less successful in achieving required magnitude of heterosis (Arunachalam *et al.,* 1984). On the other hand, the crosses between genotypes exhibiting a narrow range of variability as revealed by

short inter cluster distances may not be worthwhile to get desired extent of heterosis. This is probably because of parents with similarity may possess common alleles governing the characters and may not help in complementation in the hybrid combination. Similarly, parents exhibiting greater divergence may fail to nick well. This is specially being observed in distant crosses (interspecific) for yield related traits. However, many studies have confirmed the fact that parents with moderate divergence exhibits higher frequency of heterotic hybrids (Arunachalam *et al.,* 1984 and Singh *et al.*, 1984).

It is worth mentioning that, the parents of best hybrids for grain yield were observed in different clusters. The best tester LM 13 was included in cluster II whereas, the female counterparts V-1649 in cluster VII, V-2232, HKI-193 and CML-411 in cluster I (Table 7 and Figure 1). But the inter cluster distance between the clusters II and VII was 11.55 and clusters II and I was 13.07 which are intermediate in comparison to the range 6.67 - 27.32. These findings are in support of the fact that parents with moderate divergence are preferable over extremities for higher frequency of heterotic hybrids.

5.1.1.6 Cluster means

Even though, mean values obtained from different clusters for a given character are statistically incomparable to get relative idea of diversity among the clusters, it is helpful for grouping the clusters according to their average performance for a particular character. A critical analysis of cluster means for different traits indicated that, the contrasting genotypes for days to 50 per cent anthesis were grouped in cluster IV and X; for days to 50 per cent silking in cluster IV and III; for anthesis silking interval, days to 50 per cent brown husk, plant height, ear weight, cob weight, grain yield, test weight, cob length and cob girth in clusters VIII and X; for ear height in IX and VII; shelling per cent,

grains per row in clusters V and VIII; harvest index in cluster V and IV (Table 9).

However, it is always desirable to look for genotypes having more than one desirable trait and belongs to different clusters. The inbred MAI-706 being solitary in cluster VIII recorded highest mean values for several important traits such as ear weight per plant, cob weight per plant, grain yield per plant, shelling per cent, harvest index, grain rows per cob, grains per row, cob length and cob girth and lowest mean anthesis silking interval and hence stands contrasting for members of several other clusters with respect to several characters. Hence, this inbred could be used as a contrasting parent with other suitable inbreds for developing superior hybrids.

Hence, it is worth to mention that in calculating cluster means, the superiority of a particular genotype with respect to a given character gets diluted by other genotypes that are related and grouped in the same cluster, which are inferior or intermediary for that character under consideration. Hence, apart from selecting genotypes from the clusters which have high inter-cluster distance for hybridization, one can also think of selecting parents based on extent of genetic divergence with respect to a particular character of interest.

5.1.1.7 Relationship between morphological diversity and mid-parent heterosis, *sca* effects, and *per se* performance

The linear functional relationship between mid-parent heterosis, *sca* effects and *per se* performance on parental distance as measured by D^2 statistic were non-significant (Table 26). The characters considered for measuring morphological diversity between the parental inbreds may not be sufficient enough to represent the actual diversity between the inbreds and also the actual relationship between these estimates may be

more complicated than that can be explained by a simple linear regression. Rodrigo *et al.* (2012) reported negative correlations between D^2 values and heterosis. However, significant positive correlation between genetic distance with F_1 *per se* performance, mid-parent heterosis and *sca* effects was reported by Legesse *et al.* (2009) and Dan *et al.* (2011), but with low magnitude to be of predictive value.

5.1.2 Molecular diversity

Plant breeding is essentially a technology which is being continuously upgraded with the advent of novel tools and techniques starting from Mendel's genetics followed by Fisher's biometrics, Blakslee's polyploidy, Stadler's mutation, Sanford's biolistic transformation, William's random polymorphic DNA technology and so on. Plant breeders have been adopting useful developments in science for achieving the primary processes of enhancing variation and increasing the efficiency of selection. Similarly, marker assisted diversity analysis and selection is now being explored and tested in several crop plants for potential utilities in crop improvement (Henry, 1997).

Genetic diversity is a pre requisite for selection and can be detected at genomic level by several ways. Though a range of plant morphological traits are currently available and are being used for distinguishing genotypes, all of them suffer from a common disadvantage of environmental influence on their expression. Developmental specificity of morphological traits as well as isozymes hinders their usage in detecting polymorphism between closely related plant species and the genome coverage of such markers is also limited. Hence, molecular level of investigations are helpful in revealing the real genome differences among the genotypes. DNA based molecular markers clearly assists the direct comparison of the genetic material of the genotypes by avoiding the extraneous influence on the gene expression.

DNA markers have been used in genetic improvement programmes to study genetic diversity and to select parents with divergent backgrounds for hybridization programme. Microsatellite markers have the proven potentiality in several crop species (Dida *et al.*, 2008; Sinha and Pande, 2010; Naga *et al.*, 2012) and also results of such analysis in maize have indicated the power of this marker system in characterizing the germplasm (Enoki *et al.*, 2002; Vaz *et al.*, 2004; Xia *et al.*, 2004; Le *et al.*, 2005; Beyene *et al.*, 2006; Zamarud *et al.*, 2007; Qilun *et al.*, 2007; Yu *et al.,* 2007; Zheng *et al.*, 2008; Karanja *et al.*, 2009; Kai *et al.*, 2009; Veronica *et al.*, 2009; Astha and Singh, 2010; Sharma *et al.*, 2010; Marcelo *et al.,* 2010; Ming *et al.*, 2011; Ashish *et al.,* 2012; Samanthi *et al.,* 2012).

Microsatellites or Simple Sequence Repeats (SSR) are set repeated sequences found within eukaryotic genomes. These consist of sequences of repetitions, comprising basic short motifs generally between two to six base-pairs. Polymorphisms associated with a specific locus are due to the variation in length of the microsatellite, which in turn depends on the number of repetitions of the basic motif. Variations in the number of tandemly repeated units are mainly due to strand slippage during DNA replication where the repeats allow matching via excision or addition of repeats. As slippage in replication is more likely than point mutations, microsatellite loci tend to be hyper-variable. Microsatellite assays shows extensive inter-individual length polymorphisms during PCR analysis of unique loci using discriminatory primers sets. Microsatellites are highly popular genetic markers as they possess co-dominant inheritance, high abundance, allelic diversity, ease of assessing SSR size variation through PCR with pairs of flanking primers and high reproducibility (Mondini *et al.*, 2009). SSR loci are the primary choice for assessment of genetic diversity and assigning inbreds to different heterotic groups (Enoki *et al.*, 2002).

In this study, 33 SSR markers distributed on different chromosomes were selected for analysing the diversity at genome level among 96 inbreds. A total of 213 alleles were detected with a range of 2-11 and mean of 6.45 alleles per locus (Table 11). The marker *umc2078* sampled highest no of alleles *i.e.,* 11 followed by *bnlg107*, *bnlg1200*, *bnlg1347*, *mc0381*, *mmc0041*, *umc1240*, *umc1256*, *umc1409* and *umc1542* with nine alleles each, indicating highest polymorphism at these loci. The minimum number of alleles (2) sampled for the markers *bnlg1407*, *bnlg1449*, *umc1553*, *umc1622* and *umc1894* indicating low level of polymorphism. The investigation revealed lower allelic richness in the selected accessions in comparison with similar studies in maize. Qi-Lun *et al.* (2008) detected 6.4 SSR alleles per locus (across 45 loci) in a study of 124 maize landraces, while Dubreuil *et al.* (2006) reported an average of 7.8 alleles per locus in 275 European and American maize accessions using 24 SSR markers. Liu *et al.* (2003) obtained a high mean of 21.7 alleles per locus in an analysis of 260 diverse maize inbred lines using 94 SSR markers.

The concept of polymorphism is used to define genetic variation in a population, which has been extensively studied in recent years by several established scientific disciplines such as genetics, ecology, zoology and microbiology (Mukherjee *et al.,* 2010; Muneer *et al.,* 2011; Rajkumar *et al.,* 2011). For the practical design of molecular genetic studies, few questions must be considered. How difficult will it be to find usefully polymorphic loci? How many markers are needed? How polymorphic must each marker be? These questions can be answered by measuring the information content of the markers. There are two measures for the quality or informativeness of genetic marker *i.e.,* expected heterozygosity/gene diversity and polymorphic information content (PIC). Since its first application by Botstein *et al.* (1980), PIC has

become the most widely applied formula for genetic studies to measure the information content of molecular markers.

Polymorphic information content (PIC) refers to the value of marker for detecting polymorphism within a population depending on the number of detectable alleles and the distribution of their frequencies. Thus, it provides an estimate of the discriminating power of the marker. Such a maximum discriminating power was observed for the marker *umc1542* (0.87) followed by *umc2078* (0.85) and *umc1409* (0.85). High mean PIC value (0.67) and presence of a large set of SSR loci with PIC values more than 0.75 reinforced the informativeness and utility of the SSR markers used in this study (Table 10).

The highest gene diversity/expected heterozygosity was noticed in the marker *umc1542* (0.87) followed by *umc2078* and *umc1409* (0.86) and hence it may be concluded that the probability of two randomly chosen alleles are different was highest for these loci (Weir, 1996).

Another important index of diversity in any population is 'Major allele frequency' which is the frequency at which the most common allele occurs in a given population. Maize in its present form is highly dependent on humans for its survival and perpetuation. Selections exerted by the farmers, breeders and nature has led to the increase in the frequency as well as fixation of favourable alleles at various loci. The frequency of the most common allele at different loci ranged from 0.14 (*umc1542*) to 0.84 (*bnlg1449*) with a mean of 0.37. In the present study, we have noticed two highly frequent or 'major' SSR alleles (*bnlg1449* and *umc1553*) with individual frequencies more than 0.8. These observations suggests that these genomic regions are not selectively neutral and which also deserve further verification.

5.1.2.1 Similarity co-efficients

The pair-wise genetic distance among the accessions were estimated based on the SSR dataset using Jaccard's similarity co-efficient, followed by cluster analysis using UPGMA algorithm. Based on Jaccard coefficients, a genetic similarity matrix was constructed to assess the genetic relatedness among 96 inbreds. This similarity matrix was used to determine the level of relatedness among the maize accessions. Maximum dissimilarity coefficient of 0.95 was observed between V-1036 and V-1522, CML-172 and Z-50-3 and MAI-44 and Z-50-3 followed by 0.94 between CML-359 and SKV-39, CML-411 and SKV-39, S-9951 YQ and SKV-39, CM-149 and V-632-112, CM-212 and V-632-112, CML-166 and V-632-112, MAI-109 and V-632-112, V-70-1 and V-632-67 and V-1742 and Z-49-20, which indicated highest divergence between these pair of inbreds and also these inbred combinations are recommended for further testing in future hybrid breeding.

At Jaccard's similarity co-efficient of 17.5 per cent, 96 inbreds were clearly grouped into seven clusters (Table 12 and Figure 2). The cluster III (35) accommodated highest number of entries followed by cluster IV (16). The inbreds used as testers were located in different clusters *i.e.,* CM 500 in cluster II, SKV 50 in cluster III, MAI 105 in cluster VII and LM 13 in cluster IV, indicating sufficient divergence between selected testers at molecular level for the sampled loci and hence selection of testers is justified. It was also evident that the parents of best yielding hybrids were clustered separately *i.e.,* female parents (lines) V-1649, V-2232 in cluster VII ; CML-411, HKI-193-1 in cluster III as against the male parent (tester) LM 13 in cluster IV. These results are in support of the fact that, diverse parents are more likely to contribute high yielding offsprings (Murthy and Pavate, 1962; Moll *et al.*, 1965) and Arunachalam *et al.,* 1984).

5.1.2.2 Relationship between molecular diversity and mid-parent heterosis, *sca* effects and *per se* performance

The linear functional relationship of Jaccard's dissimilarity coefficient on mid-parent heterosis and *sca* effects was non-significant (Table 26). The 33 SSR loci considered for analysing molecular diversity between the parental inbreds may not be sufficient enough to represent the actual diversity and also the actual relationship between these estimates may be more complicated than that can be explained by a simple linear regression. Whereas, *per se* performance of the hybrids regressed significantly towards Jaccard's dissimilarity coefficient with regression coefficient 85.89 *i.e.,* an average increase of 85.89 units in *per se* performance of hybrid was expected for unit increase in molecular divergence as measured by jaccord's dissimilarity coefficient. However, only 2.6 per cent of variation in *per se* performance was explained by molecular divergence as indicated by coefficient of determination (R^2) (Figure 4). Significantly positive correlation of molecular divergence with F_1 *per se* performance, mid-parent heterosis and *sca* effects was reported by Choukan *et al.*, 2006; Betran *et al.,* 2003; Legesse *et al.,* 2003; Reif *et al.,* 2003; Xu *et al.,* 2004; Daniela *et al.,* 2006 and De Souza *et al.*, 2007. However, Elisa *et al.* (2008) reported non-significant relationships between these estimates.

5.1.3 Relationship between morphological and molecular diversity

The relationship between phenotypic and molecular diversity was studied through the comparison of distance matrices obtained from morphological traits and SSR markers (Figure 3). The phenotypic and molecular datasets were uncorrelated, which indicated high dissimilarity between the two datasets generated based on 16 morphological traits and 33 SSR loci. Hence, these maize accessions appears to be more sensitive for environmental influence, as suggested by the higher

disagreement between phenotypic and SSR distances and also indicated that the observed phenotypic variation was not under the control of the genetic factors under consideration at molecular level. Tucak *et al.* (2008) and Hagidimitrion *et al.* (2005) also reported non-significant correlation between the morphological and molecular data sets. However, Beyene *et al.* (2006), Sharma *et al.* (2010) reported a significantly positive correlation between phenotypic and SSR-based distances. Whereas, Karanja *et al.* (2009) have reported a significantly negative correlation between molecular and morphological dissimilarities.

5.1.4 Exploring possible limits of parental divergence for heterosis

Genetic divergence, as one of the criteria for selecting parents is in general considerations of plant breeding as a way to generate crosses which segregate into genotypes transgressing the performance of the better parent (Murthy and Pavate, 1962 and Timothy, 1963). However, transgression or F_1 heterosis does not always occur when divergent lines are crossed (Cress, 1966). Genetic background for heterosis or transgression has been studied for characters governed by a single gene with two or multiple alleles (Falconer, 1964). It has been shown that, not only pure dominance and its interactions, but additive x additive epistasis can also cause heterosis (Arunachalam, 1977). It was shown earlier that, very high or very low parental divergence has failed to result in heterosis (Srivastava and Arunachalam, 1977). It is well understood that genetic diversity is necessary for significant levels of heterosis but is not sufficient enough to guarantee it (Cress, 1966). Establishing the possible limits to parental divergence within which there are reasonably higher chances of the occurrence of heterosis is still a challenging task that needs to be addressed.

5.1.4.1 Exploring possible limits to morphological parental divergence for realising heterosis

In the present study, pair-wise genetic divergence as measured by Mahalanobis D^2 statistic among 216 combinations of parents (54 lines and 4 testers) was estimated. Based on the mean and standard deviation of D^2 Statistic (Table 32), parental divergence was classified into four classes such as Divergent class 1 (DC_1), Divergent class 2 (DC_2), Divergent class 3 (DC_3) and Divergent class 4 (DC_4) (Table 33).Divergence classes DC_1 and DC_4 represent two extreme divergent classes *i e.,* lowest and highest genetic divergence between the parents. On the other hand, DC_2 and DC_3 classes represent intermediate parental divergence.

Table 32. Mean, standard deviation and range of divergence values

Statistic	Mean	Standard deviation	Range
Mahalonobis D^2	8.06	4.66	2.72 - 22.02

Table 33. Parental divergence classes based on D^2 statistic

DC_1	DC_2	DC_3	DC_4
$D < 4.66$	$4.66 < D < 8.06$	$8.06 < D < 11.46$	$11.46 < D$

Table 34. Distribution of heterotic crosses in different divergent classes based on the D^2 statistic for grain yield

Sl. No.	Divergent class	Crosses in the category	Heterotic crosses in the category	Conditional probability that heterotic cross belongs to the category
1	DC_1	12	12	0.062
2	DC_2	123	110	0.562
3	DC_3	55	47	0.242
4	DC_4	26	25	0.128

A perusal of Table 34 clearly indicated variable number of crosses falling under each divergence class. However, higher number of crosses were observed under the divergence classes DC_2 and DC_3 and more than 80 per cent of them were found to exhibit higher heterosis. To take into account equal number of crosses, the conditional probabilities were estimated. Given a cross with high heterosis, the probability that it belongs to a specific divergent class was worked out. The results clearly indicated that the unique superiority of DC_2 and DC_3 classes representing intermediate parental divergence for the occurrence of crosses with high heterosis. The probability of realizing crosses with high heterosis was too small in DC_1 followed by DC_4 representing extreme divergent class for grain yield.

Thus, it could be concluded that phenotype based parental divergence should neither be too small nor very large for realizing higher frequencies of heterotic crosses for grain yield. The present study also revealed the existence of limits to phenotypic parental divergence for the occurrence of heterosis. It is worthwhile to involve parents with intermediate divergence than extreme divergence for recovering higher frequencies of heterotic hybrids. The concept that there are limits to parental divergence for optimum expression of heterosis was also set by past studies on crosses between divergent geographic races by Moll *et al.* (1965) in maize, Srivastava and Arunachalam (1977) in Triticale, Arunachalam *et al.* (1984) in groundnut, Lalitha reddy *et al.* (2000) in sesame and Rao *et al.* (2004) in sunflower.

5.1.4.2 Exploring possible limits to molecular parental divergence for realising heterosis

Similar to the procedure described earlier, pair-wise genetic divergence as measured by Jaccord's dissimilarity among 216 combinations of parents (54 lines and 4 testers) was estimated. Based on

the mean and standard deviation of Jaccard's distances (Table 35), parental divergence was classified into four classes such as DC_1, DC_2, DC_3 and DC_4 (Table 36).

Table 35. Mean, standard deviation and range of Jaccard's distances

Statistic	Mean	Standard deviation	Range
Jaccord's distance	0.8425	0.045	0.68 - 0.952

Table 36. Parental divergence classes based on Jaccord's distances

DC_1	DC_2	DC_3	DC_4
$D < 0.79$	$0.79 < D < 0.84$	$0.84 < D < 0.88$	$0.88 < D$

Table 37. Distribution of heterotic crosses in different divergent classes based on the Jaccord's distance

Sl. no.	Divergent class	Crosses in the category	Heterotic crosses in the category	Conditional probability that heterotic cross belongs to the category
1	DC_1	24	21	0.108
2	DC_2	96	85	0.438
3	DC_3	70	64	0.329
4	DC_4	26	24	0.124

The highest number of heterotic crosses fell under divergence classes DC_2 and DC_3 compared to DC_1 and DC_4 (Tables 37) suggested that the crosses derived from parents with intermediate genetic diversity between them were more often heterotic than those derived from parents with extreme level of genetic divergence for grain yield. The result clearly showed the unique superiority of DC_2 and DC_3 representing intermediate parental divergence for the occurrence of heterosis for grain yield. Thus,

the present study revealed the existence of limits to molecular based parental divergence for the occurrence of heterosis. It is worthwhile to involve parents with intermediate divergence than involving the parents with extreme divergence to recover higher frequency of heterotic hybrids.

It is well known fact that the estimates of genetic divergence, heterosis, *sca* effects and *per se* performance are largely influenced by environments and hence, in the present investigation, the analysis was conducted across a range of environments for selecting diverse parents as well as for establishing the relationships between different estimates. Apart from this, the functional relationships established between morphological diversity, mid-parent heterosis, *sca* effects and *per se* performance were based on relatively more number of data points *i.e.,* 216 generated across three locations. This resulted in better approximation of estimates and hence, the results so obtained were more precise and reliable.

5.2 COMBINING ABILITY AND HETEROSIS

The actual value of an inbred line for hybrid breeding lies in its worth in hybrid combinations with other inbreds. Visual selection as well as that based on test-cross performance during inbreeding helps to eliminate many inbreds which are poor candidates for use in hybrid development. But even then, a great majority of surviving lines do not end up in highly productive hybrids. One of the earliest estimates made by Kiesselbach (1951) demonstrated that out of 1,00,000 inbred lines of maize available at that time , only about 60 were actually used in the development of hybrids. The evaluation of inbreds in all possible combinations would be a wastage of resource and call for some shortcuts to eliminate less promising inbreds. The assessment of combining ability from *per se* performance of inbreds appears to be the simplest approach but so far has not been reported to be effective in any crop plant and

hence, it's not always true that *per se* performance of parent is a good indicator of its potential in hybrid combinations. The concept of combining ability is especially useful in connection with 'testing' procedures which involve the study and comparison of the performance of homozygous inbreds in hybrid combinations.

5.2.1 Pooled analysis of variance for line x tester design

Estimates of combining ability are known to be greatly influenced by environment. The results of combining ability analysis based on single environment do not take into account genotype by environment interaction and the results so obtained may be highly biased. Therefore, the results of combining ability based on several environments would be more useful which take into account the stability of gene action. Elitriby *et al.* (1981) proposed a model to understand the real picture of the interaction of gene action with different environments. Hence, the combining ability was assessed based on multi location data and also the error variances of both parents as well as hybrids over environments were found homogeneous and hence the data was pooled (Table 13).

Pooled analysis of variance disclosed the significant differences among the locations E_1 (Yatnahalli, zone 8), E_2 (Bhavikere, zone 7) and E_3 (Mandya (zone 6) for all the 16 characters. MSS due to genotypes were significant for all the characters, which revealed sufficient differences among the genotypes under consideration and interaction of these genotypes with environments was significant for all the characters except harvest index, which indicated the differential behavior of parents and hybrids with different environments.

Parents, lines and testers were significantly different for all the characters except harvest index, indicating significant differences among the parents, lines and testers across the locations. Whereas, differential

performance of parents under different environments was noticed for all the characters except days to anthesis, anthesis silking interval, ear height, plant height, harvest index, grain rows per cob, cob length and cob girth. When lines were considered separately, differential performance under different environments was observed for all the characters except days to anthesis, anthesis silking interval, ear height, plant height, harvest index, cob length and cob girth. Testers performed differentially with environments for the characters days to silking, days to brown husk, grain yield and grains per row.

Significant variance due to parents (L *v/s* T) was noticed for all the characters except ear weight, grain yield and harvest index indicating significant difference between line and tester mean across the locations revealing the divergence of testers from lines which satisfies the choice of testers. Whereas significant variance due to environment x parents (line *v/s* tester) interaction was noticed for only one character *i.e.,* grains per row, which revealed the difference between line mean and tester mean in different environments.

Considerable amount of average heterosis was reflected in the hybrids across locations as indicated by the significant single degree of freedom comparison between parents and crosses (parent v/s crosses) for all the characters except anthesis silking interval and harvest index. Variance due to environment x parents *v/s* crosses interaction was significant for all the characters except cob weight, shelling per cent, harvest index, grains per row and cob length, which indicated the differential average heterosis with respect to different locations.

Varying performance of crosses across the locations was noticed because of significant variance for all the characters except anthesis silking interval and harvest index. Other than the character shelling per

cent, varying performance of crosses with respect to different environments was noticed for all the remaining characters.

Line effects and tester effects were significant for all the characters except anthesis silking interval and harvest index, which revealed significant difference between the contributions of lines and testers separately for the variation in the hybrids. Variance due to environment x line effect interaction was significant for the characters anthesis silking interval, ear height, ear weight, grain yield, grain rows per cob and grains per row. Whereas, significant variance due to environment x tester effect interaction was noticed for the characters days to anthesis, anthesis silking interval, days to brown husk, ear weight, cob weight, grain yield and cob girth signifying differential line and tester effects for varying environments.

Mean sum of squares due to line x tester interaction effect were significant for all the characters indicating the differential superiority of specific cross combinations over the others across the locations. Whereas, differential line x tester interaction effects with respect to varying environmental conditions was noticed for all the characters except ear weight, cob weight, grain yield, shelling per cent as indicated by significant variance due to environment x (line x tester effect).

The contribution of lines (females) towards total hybrid variance was found to be highest for the character days to 50 per cent anthesis (56.22%) followed by grains per row (48.11%). Whereas the contribution of testers was found to be highest for the character grain rows per cob (50.18%) followed by test weight (45.40%). This indicated the predominance of additive gene action for these traits. On the other hand, the contribution of female x male interaction was highest for the characters anthesis silking interval (74.08%) followed by harvest index

(73.32%), which indicated the predominance of non-additive gene action (Table 14).

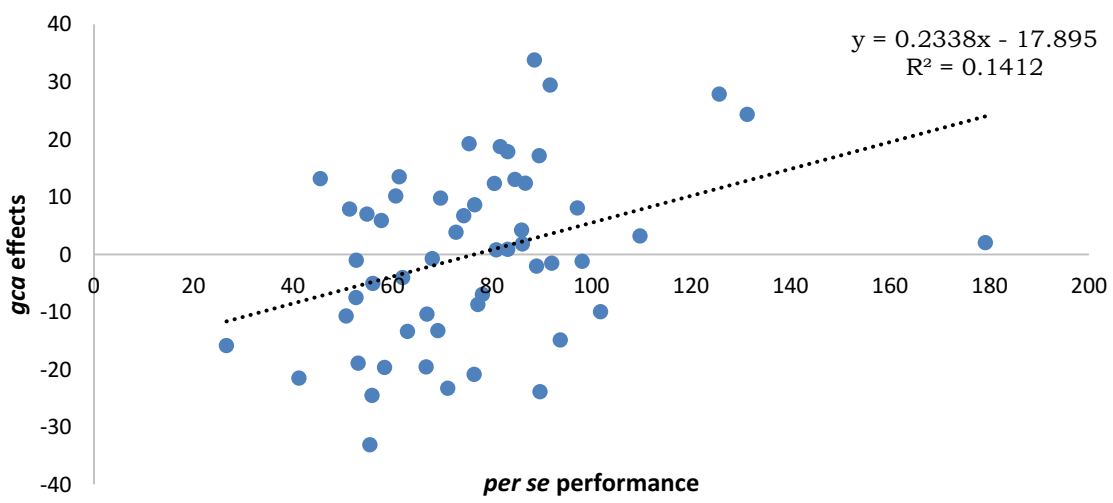
5.2.2 Estimates of gene actions

The relative contribution of general and specific combining ability towards improvement would, however, be determined by the magnitude of additive and non-additive genetic variation. Estimates of variance due to *gca* and *sca* effects (Table 15) clearly revealed the predominance of GCA variance for seven quantitative characters *viz.,* ear weight, cob weight, grain yield, test weight, grain rows per cob, cob length and cob girth. Hence, the contribution of additive genetic variance for the improvement of these traits is much higher than non-additive variance. Several researchers have also indicated additive effects in the inheritance of different traits in maize (Zehui *et al.,* 2000; Vacaro *et al.,* 2002; Bayisa *et al.,* 2008). Whereas, predominance of SCA variance was noticed for the remaining characters such as days to anthesis, days to silking, days to brown husk, anthesis silking interval, ear height, plant height, shelling per cent, harvest index and grains per row, which suggests the role of non-additive gene action in the expression of these traits and hence, transgressive breeding may not be useful for these traits and heterosis breeding is better choice. In contrari, Abuali *et al.* (2012) reported higher SCA for cob weight, grain yield, test weight, cob length and higher GCA for harvest index and grains per row. Higher SCA variance for grain yield, grain rows per cob, cob length and cob girth was also reported by Wali *et al.* (2010).

It is worth mentioning that the relationship between mean performance and general combining ability of inbred lines is a function of the relative magnitude of additive genetic variance. Even though, a significant positive functional relationship with regression coefficient 0.23 was noticed between the general combining ability effects and mean

per se performance of inbreds at p = 0.005, the proportion of variation in *gca* effects as explained by *per se* performance was low *i.e.,* 14 per cent (Figure 7). Hence, the whole variation in the population is not solely by additive genetic type and selection of lines based on their *per se* performance alone would not be effective for improvement of cross performance (Simmonds, 1991; Dillon and Singh, 1975 and Kempthorne, 1957). The correlation between mean performance and general combining ability is expected to reduce by the presence of non-additive variance. In such situations, selection has to be performed both for GCA and SCA through their relative contributions towards improvement, which is decided by the proportion of additive and non-additive variance in the base population. As an instance, the ratio of additive and non-additive variance for grain yield was 67:33 *i.e.,* about 67 per cent of improvement through selection among crosses of inbred lines would be expected from general combining ability and remaining 33 per cent from specific combining ability.

Figure 7. *gca* effects on *per se* performance of inbreds



5.2.3 General combining ability effects

The term "general combining ability" is used to designate the average performance of a line in hybrid combinations. It is specific for the

set of lines, testers and testing environment. Therefore, *gca* becomes meaningless unless its value is considered in relation to at least one other line, the tester population and the environment are specified. The breeding value expressed as deviation from the population mean is nothing but the *gca* effect, has proved to be very useful tool in identifying the potential parents for hybrid cultivar development. If significant *gca* effect corresponds with matching *per se* performance, then it may be concluded that additive gene action is in operation for such traits.

Grain yield is a complex quantitative character, which is influenced by other ancillary and component characters, which may tend to counter balance each other giving in effect, homeostasis for yield. Hence, all changes in the components would not be expressed as changes in yield but any changes in yield would be accompanied by changes in one or more components. Johnson (1973) reported that genetic variability for grain yield in single ear attributed to additive and non-additive genetic variance expressed through yield components. Because of influence from various ancillary characters and environmental factors, comprehensive study is very difficult and it is the focal point about which plant breeding experiments are centered around.

Only 14 out of 54 lines were good general combiners for grain yield among them, V-1649 (33.77) was best with highest *gca* effect in the positive direction. Apart from this, it was good general combiner for several other important yield attributing traits such as grain rows per cob, grains per row and cob length. The next best line for grain yield was V-1712-1 (29.43) with good *gca* effects for other characters like anthesis silking interval, ear height, plant height, shelling per cent, grain rows per cob, grains per row and cob girth. V-1154 (27.87) was also a good general combiner for grain yield along with anthesis silking interval, ear height, plant height, grain rows per cob, grains per row and cob girth.

Among the testers, LM 13 (20.67) was the only one best general combiner for grain yield with good *gca* for other traits such as days to silking, ear height, plant height, test weight, grains per row and cob length (Table 16 and 17).

It is worth reminding that, a two-factor factorial design line x tester has been used in the present experiment to estimate combining ability of lines in crosses with a selected set of four testers, the *gca* of lines so estimated should be compared with care. Because, the sum of *gca* effects of both lines and testers has to be zero, the inclusion of even few strong combiners renders others to be poor combiners which, in fact, is only a statistical artefact. It's simply a matter of relative performance where one outstanding is bound to push the mediocres to the status of weak. Hence, in general, it may be concluded that, all the best combiners mentioned under each character are just relatively best under the specified evaluated environments.

Since none of the parents were good general combiners for all the traits, overall *gca* status were determined as per the method suggested by Arunachalam and Bandopadyaya (1979) and modified by Rao *et al.* (2004). The component characters are correlated either positively or negatively with grain yield, it is worthwhile to consider the *gca* effect in the positive direction for some characters and negative for others. The problem of ascertaining the status of a parent with respect to *gca* over a number of component characters assumes importance in this context. Since the emphasis in our study was on a relative assessment of overall parental potential, the overall *gca* status of inbreds based on 16 traits were determined. Fifty per cent of the lines were assigned high (H) overall *gca* status among which, V-1712-1, V-1154, CIMMYT-5, CML-172, CML-411 and Z-51-6 were found best. Among the testers, LM-13 was the only one overall high general combiner (Table 19). These parents are believed

to transmit the genes with additive effects in the desirable direction for the traits considered for estimating overall *gca* status.

5.2.4 Specific combining ability effects

The relative performance of the specific cross combination was studied by *sca* values which were again expressed in terms of effects and variances. The term "specific combining ability" is used to designate those cases in which certain combinations do relatively better or worse than would be expected on the basis of the average performance of the lines involved. Variance due to *sca* arises from the differences in *sca* effects of crosses and corresponds to non-additive genetic variance.

A very low proportion *i.e.,* only 12 out of 216 crosses were good specific combiners for grain yield, among which, V-1649 × LM 13 (27.47) was best with highest *sca* effects for grain yield along with good *sca* effects in the desirable direction for other yield attributing characters such as days to anthesis and anthesis silking interval. Z-52-29 × CM 500 (25.70) was also a good specific combiner for grain yield with slightly lesser *sca* effect in comparison with V-1649 × LM 13 (27.47), but it has recorded significant *sca* effects in the desirable direction for more number of traits such as anthesis silking interval, ear height, plant height, test weight, grains per row and cob length. The next best specific combiner for grain yield was Z-62-55 × CM 500 (23.45) along with good *sca* for other traits such as days to silking, anthesis silking interval, ear height, test weight, grains per row and cob girth (Table 21).

Similar to the case of *gca* effects, none of the crosses were good specific combiners for all the traits under consideration and hence, determining overall *sca* status turn out to be inevitable. Around 50 per cent of the crosses were assigned high overall *sca* status, among which

MAI-117 × LM 13, Z-62-67 × MAI 105, Z-62-55 × LM 13, CM-149 × MAI 105 and MAI-48 × LM 13 were best with highest overall rank (Table 23).

5.2.5 Mid-parent and standard heterosis

The impulse of progress in crop improvement through plant breeding was propelled by a better understanding and an appropriate exploitation of heterosis, the gain in vigour on crossing two inbreds. Heterosis is generally expressed in relation to mid-parent. *i.e.,* the average of the two inbreds.

The extent of heterosis in F_1 over the two parents as well as mid-parent value gives an indication of the type of gene action as also of the degree of dominance. The significance of heterosis over mid- parent means the presence of additive as well as non-additive gene action, where as its non-significance indicates additive gene action. Thus, heterosis just gives an indication of the gene action which of course has to be confirmed from the methods that actually estimate it.

Highest proportion of significant mid-parent heterosis in the desirable direction (>90% of the hybrids) was observed for the characters such as days to anthesis, ear height, plant height, grain yield and grains per row. An intermediate proportion (70-85%) was observed for the characters such as days to silking, test weight, cob length and girth. Whereas, still lower proportion (<45%) was noticed for the characters anthesis silking interval, days to maturity and shelling per cent. This revealed the presence of both additive as well as non-additive gene actions in these F_1s for the expression of the corresponding traits. Lowest proportion of significant mid-parent heterosis was observed for harvest index *i.e.,* only one out of 216 cross, which indicated the predominance of only additive gene action in majority of the crosses for this trait (Table 24 and Appendix III).

But choosing hybrids for cultivation on the basis of their heterotic performance in relation to their parental performance, may not be economically viable. Therefore, in practice, the magnitude of the heterotic effect of hybrid must be determined in relation to the best check. Five such checks *viz.,* Hema, Nityashree (UAS Bangalore hybrids), Decalb 8101, 900M Gold and PHI 3501 (popular company hybrids) were used in the present investigation for analyzing standard heterosis, which provides a dependable bench mark for identifying the most superior hybrids for commercial exploitation.

None of the hybrids have recorded significantly positive standard heterosis for grain yield over the best private company checks Decalb 8101, 900M Gold and PHI 3501. Whereas, seven hybrids *viz.*, V-1649 × LM-13 (46.16), V-2232 × LM-13 (34.59), V-241-2 × LM-13 (18.79), CIMMYT-47 × LM-13 (19.18), CML-411 × LM-13 (23.67), HKI-193-1 × LM-13 (26.92) and Z-51-1 × LM-13 (20.26) have exhibited significantly positive standard heterosis over the university hybrid Hema and only two out of them *viz.*, V-1649 × LM-13 (31.70) and V-2232 × LM-13 (21.28) over another university hybrid Nityashree (Table 24 and Appendix III).

Among these hybrids, V-1649 × LM-13 was best hybrid with highest standard heterosis for grain yield over both Hema and Nityashree along with good standard heterosis in the desirable direction for four other characters *viz.,* days to brown husk and grains per row over Hema and Nityashree; test weight over Hema, Nityashree, 900M Gold and PHI 3501; cob length over all the checks. The next best hybrid with significant standard heterosis over both Hema and Nityashree was V-2232 × LM-13 with desirable standard heterosis for six other characters *viz.,* anthesis silking interval over 900M Gold and PHI 3501; ear height and test weight over all the checks; plant height over Hema, Nityashree and PHI 3501; grains per row over Hema and Nityashree.

As noticed in case of *gca* and *sca* effects, none of the crosses were heterotic for all the traits in the desirable direction under consideration and hence, overall heterotic status of a cross was estimated. Around 50 per cent of the crosses were found superior with respect to their overall heterotic status, among which CIMMYT-5 × LM 13, LTP-1 × SKV 50, CIMMYT-5 × SKV 50, V-1742 × SKV 50, MAI-137 × LM 13 and CML-166 × SKV 50 were best with highest overall rank (Table 25).

5.2.6 Parent - progeny resemblance

The resemblance between relatives is one of the basic genetic phenomenon displayed by metric characters and the degree of resemblance is the property of character that can be determined by relatively simple measurements made on the population. The degree of relationship provides the means of estimating the amount of additive genetic variance and it is the proportionate amount of additive variance (*i.e.,* the heritability) that chiefly determines the best breeding method to be used for improvement. Hence, an understanding of the cause of resemblance between relatives is therefore fundamental to the practical study of metric characters and to its application in plant improvement.

The regression of *per se* performance of the hybrids on mid-parent value was significant with regression coefficient 0.55 *i.e.,* on an average 0.55 units increase in *per se* performance of the hybrids for grain yield is expected for every unit increase in mid-parent value. Coefficient of determination (R^2) indicates that, 13.05 per cent of the variation in *per se* performance can be explained by mid-parent value (Table 26 and Figure 5).

The heritability is another important property of the character and is expressed as the proportion of the total variance that is attributable to differences of breeding values and also this is what determines the

degree of resemblance between relatives. But the most important function of heritability in the genetic study of metric characters is its predictive role, expressing the reliability of the phenotypic value as a guide to the breeding value. A narrow sense heritability of 55 per cent was noticed and hence it may be concluded that only 55 per cent of the total phenotypic variation is of additive genetic type.

5.2.7 Relationship between overall *gca*, *sca* and heterotic status

All the parental inbreds were classified under HH, HL and LL groups where, for example, HL would mean that one parent was high (H) and the other low (L) in their overall *gca* status. Thus 27, 108 and 81 crosses were assigned to the classes HH, HL and LL respectively, out of which 18, 49 and 46 were of high overall *sca* status (Table 38) and 21, 52 and 29 were of overall high heterotic status (Table 39).

It was noticed that a proportion 18/27 crosses were of high *sca* status in HH, 49/108 in HL and 46/81 in LL, which indicates that, the chance of obtaining a cross with high overall *sca* status was highest for HH (0.66) followed by LL (0.56) and HL (0.45). Similarly, a proportion 21/27 crosses were of high heterotic status in HH, 52/108 in HL and 29/81 in LL, indicating highest chance of getting a high overall heterotic cross in HH (0.78) followed by HL (0.48) and LL (0.36).

The number of crosses under the parental *gca* groups HH, HL and LL were unequal because of the inclusion of H and L parents with unequal frequency, the simple proportion of heterotic crosses observed in each group could not, in the circumstance, reflect the true picture and hence we are interested in answering the question that, given a heterotic cross, what are the chances for it to be found in HH, HL or HL classes? The answer is of direct relevance to formulating a repeatable breeding strategy since then one would be able to place more weightage on making

crosses of the type HH, HL or LL, where the chances of high *sca*/heterosis were found to be high (Arunachalam and Bandopadyaya 1979).

Table 38. Distribution of crosses with overall high *sca* status in relation to parental overall *gca* status

Parental *gca* class	Number of crosses under each category	Number of crosses with high overall *sca* status	Conditional probability of a given cross belonging to high *sca* status
H × H	27	18	0.159
H × L or L × H	108	49	0.433
L × L	81	46	0.407

Table 39. Distribution of crosses with overall high heterotic status in relation to parental overall *gca* status

Parental *gca* class	Number of crosses under each category	Number of crosses with high overall heterotic status	Conditional probability of a given cross belonging to high heterotic status
H × H	27	21	0.205
H × L or L × H	108	52	0.509
L × L	81	29	0.284

There were in all 113 crosses with high overall *sca* status of which 18 were found in HH, 49 in HL and 46 in LL, implying that the chances for a cross with high *sca* status to be found in HL were high followed by LL. Similarly, out of 102 overall high heterotic crosses, 21 were found in HH, 52 in HL and 29 in LL, suggesting that the chances for a heterotic cross to be found in HL were high.

The unique superiority of HL crosses was brought out by this study and the predominance of non-additive gene action in determining

the *sca* and heterosis was evident. Hence, given a heterotic cross, the probability of finding it to be a HL combination was high and it is worthwhile to start with HL type of crosses for realizing better *sca* and heterosis. The findings are in agreement with the earlier studies of similar nature (Fejer and Jui, 1979; Arunachalam and Srivastsva, 1980; Arunachalam and Reddy, 1980). The concept of obtaining heterosis by mating divergent genotypes is not new and literature is abundant where the superiority of hybridizing contrasting genotypes designated as H and L has been amply demonstrated. By hybridizing cultivated *Triticum aestivum* with the wild species *Aegilops bimaizeis*, highly successful variety derivatives were obtained. By utilizing exotic temperate dwarf and Indian tropical tall, several best hybrids and varieties were evolved in sorghum (Rao, 1972; Rao and Rana, 1978). The lines with contrasting attributes generated by disruptive and stabilizing selection produced potential derivatives in 'brown sarson' (Arunachalam and Katiyar, 1978).

5.2.8 Relationship between *sca* effects and heterosis for grain yield

A significantly positive linear relationship between mid-parent heterosis and *sca* effects was noticed with regression coefficient 1.25 *i.e.,* on an average 1.25 units increase in mid-parent heterosis for grain yield was expected for every unit increase in *sca* effects (Table 26). This indicates the role of genes with dominance effects and epistasis of additive x dominance and dominance x dominance kinds. Significant intercept of 75.6 units was also noticed, which revealed that, even in the absence of significant *sca* effects a minimum of 75.6 units of heterosis can be observed *i.e.,* even in the absence of *sca* effects, heterosis can be realized on the strength of additive effects and additive type of interactions only (Arunachalam, 1977). Coefficient of determination (R^2) indicated that, 17.2 per cent of the variation in mid-parent heterosis can be explained by *sca* effects (Figure 6).

5.3 GENOTYPE × ENVIRONMENT INTERACTIONS

The phenotypic performance of any genotype is not necessarily the same under diverse agro ecological conditions, that all genotypes may not approach the same level of phenotypic expression under all circumstances and that some genotypes may fare well in some environments and not so well in others, are all indicative of the phenomenon genotype (*g*) × environment (*e*) interaction. Thus, *g* × *e* interaction continues to be a challenge for plant breeders and production agronomists who perform performance trials across diverse environments and hence, stability assessment is considered important in cultivar development. The phenotype is not independent of environment and it is easier to manage genotypes than the environment, which indicates that the assessment of *g* × *e* interaction must be a fateful proposition in detecting genotypic differences for phenotypic stability.

Keeping this in view, several models have been proposed for determining stability of performance. One among them, which is widely used by plant breeders and production agronomists was employed in the present investigation *i.e.,* Eberhart and Russel (1966) model, to identify stable hybrids across three locations namely Mandya (Zone 6), Bhavikere (Zone 7) and Yatnahalli (Zone 8) for yield and its attributes.

5.3.1 Pooled analysis of variance

The sum of squares due to environments and variety × environments are partitioned into Environments (linear), Varieties x Environments (linear) and Deviations from the regression model. This model provides a means of partitioning the genotype × environment interaction of each variety into two parts: (1) the variation due to the response of the variety to varying environmental indexes (sum of squares due to regression); and (2) the unexplainable deviations from the regression on the environmental index. The error variance over

environments were found homogeneous and hence data was pooled for stability analysis.

Analysis of variance for stability indicated highly significant differences among the hybrids for all characters indicating the presence of substantial variation in the mean performance of hybrids over environments for all the characters under consideration (Table 27).

Highly significant mean sum of squares due to environment for all the characters revealed sufficient variation in environmental means over test hybrids, which also defends the locations chosen for stability analysis. Significant environment (linear) variance for all the characters revealed that the variation among the environments was linear. A linear environmental variance would signify unit change in environmental index for each unit change in the environmental conditions. Since, I_j is dependent on g_i's, significant environment (linear) implies ostensibly that change in I_j is linearly commensurate with unit change in g_{ij}.

Variances due to interaction between hybrids and environments were significant for all the characters, which is suggestive of differential performance of hybrids under different environments. The variance due to $g \times e$ (linear) was significant for the characters *viz.,* days to anthesis, days to silking, days to brown husk, ear height, plant height, cob weight, grain yield, harvest index and cob girth, implying thereby differential yield performance of hybrids under diverse environments but with considerably varying reaction norms, *i.e.,* the linear sensitivity of different genotypes was significantly variable.

Besides, significant pooled deviation for the characters *viz.,* days to anthesis, days to silking, anthesis silking interval, days to brown husk, ear height, plant height, ear weight, shelling per cent, test weight, grain rows per cob, grains per row and cob length suggested that performance

of different hybrids fluctuated significantly from their respective linear path in response to environments.

5.3.2 Mean performance of hybrids in different locations

A perusal of Table 28 clearly indicated that E_1 (Farmer's field, Yatnahalli village, zone 8) was most congenial than E_2 (Bhavikere, zone 7) and E_3 (Mandya, zone 6) for the expression of the characters such as anthesis silking interval, ear height, shelling per cent, harvest index, test weight and grain rows per cob. E_2 was favourable environment compared to E_1 and E_3 for the characters cob weight, grain yield, grains per row and cob length. The characters such as early anthesis, early silking, early maturity, plant height, ear weight and cob girth were best expressed in E_3.

5.3.3 Stability parameters and stable hybrids

The term 'stable hybrid' often has been used to mean a variety that performs relatively the same over a wide range of environments. This means that a 'stable hybrid' by this definition performs relatively better under adverse conditions and not so well in favourable environments. Analysis of several sets of data in the past has indicated that hybrids with regression coefficient less than 1.0 ($b_i < 1$) usually have mean yields below grand mean. However, under favourable conditions, breeders usually prefer a variety that performs above average in all the environments.

Eberhart and Russel (1966) suggested the joint consideration of both linear (b_i) and non-linear (S^2_{di}) components of $g \times e$ interaction for judging the performance stability of hybrids. They considered three parameters: (i) mean performance (μ), (ii) Regression co-efficient (b_i), mean of the hybrids regressed upon environmental index *i.e.*, a predictable response of hybrids for varying environments and (iii)

deviation from regression (S^2_{di}), a measure of unpredictable $g \times e$ interaction.

The hybrids which possess high or low mean (depending on the character) performance with unit regression co-efficient ($b_i = 1$) and least pooled deviation (S^2_{di}) from regression line is considered stable. S^2_{di} is also considered as a measure of stability in the interpretation of the results of the present investigation. Once the hybrid was found stable based on non-significant S^2_{di}, then the type of response was determined based on the regression co-efficient and the mean values.

Among the characters analyzed, the highest proportion of hybrids with unpredictable performance *i.e.,* 16 out of 25 hybrids (20 top yielding hybrids and five checks) was observed for days to silking followed by eight hybrids in case of test weight, seven hybrids in case of plant and ear height as indicated by their unexplainable significant pooled deviations from their linear response on the environmental index. Whereas, performance was predictable for all 25 hybrids with respect to characters shelling per cent, harvest index, cob length and girth followed by 23 hybrids for grain yield and 22 hybrids for days to brown husk and grain rows per cob (Table 30).

All the 21 out of 23 hybrids in which the yield performance was found predictable, were well adapted to all the environments as indicated by their unit regression coefficient and above average mean performance *i.e.,* an average performance across environments was expected for all these hybrids for grain yield. Among the remaining two unpredictable hybrids, V-1522 × LM 13 was specifically adapted to favourable environments as indicated by the regression coefficient exceeding unity *i.e.,* the yield performance of this hybrid is expected to equal or exceed average performance only under favourable environmental conditions and hence, under intensive agriculture and unlimited inputs, maximum

yield can be expected from this hybrid. Whereas, the other hybrid Nityashree was specifically adapted to unfavourable environments which was evident form its regression coefficient less than unity and hence the yield performance of this hybrid is expected to equal or exceed average performance only under unfavourable environmental conditions *i.e.,* under marginal and resource poor situations, this hybrid is expected to perform better.

The unpredictable yield response was noticed in only two hybrids CML-411 × LM 13 and V-70-1 × LM 13 as indicated by their significant unpredictable pooled deviations from expected linear response, which indicates their high sensitivity to environmental fluctuations.

None of the hybrids were predictable for all 16 characters analysed. But it was observed that, the hybrids V-1522 × LM 13, V-632-67 × LM 13, V-2232 × MAI 105, NITYASHREE and Decalb 8101 were predictable for highest number of characters (15) followed by HKI-193-1 × LM 13, CML-172 × MAI 105, V-291-2 × LM 13, V-1168 × LM 13, V-632-112 × LM 13 and V-1649 × MAI 105, which were predictable for 14 characters.

Among the hybrids which were predictable for 15 characters, Decalb 8101 was the best hybrid with stable performance ($s^2_{di} = 0$, $b_i = 1$ and $P_i > 0$) for 14 the characters *viz.,* days to anthesis, anthesis silking interval, days to brown husk, ear height, ear weight, cob weight, grain yield, shelling per cent, harvest index, test weight, grain rows per cob, grains per row, cob length and girth. This hybrid was also specifically adapted to favourable environments for only one character plant height, which was evident by the regression coefficient exceeding unity *i.e.,* plant height for this hybrid is expected to equal or exceed the average plant height only under favourable conditions. The response of the hybrid was

unpredictable for only one character *i.e.,* days to silking as indicated by significant pooled deviations.

The next best stable hybrids across the characters were V-1522 × LM 13, V-632-67 × LM 13 and V-2232 × MAI 105 with well adaptability for all the environments for at least nine characters. Even though the hybrid NITYASHREE was predictable for highest number of characters (15), it is not preferable because of the fact that, it was specifically adapted to unfavourable environments with respect to two important characters grain yield and cob length (Table 30).

The mean performance of selected top 20 high grain yielding hybrids and checks was always higher than the population mean and hence, none of the hybrids were poorly adapted to all the environments ($s^2_{di} = 0$, $b_i = 1$ and $P_i < 0$) for grain yield (Table 31b).

None of the hybrids were specifically adapted to favourable environments ($s^2_{di} = 0$, $b_i > 1$ and $P_i > 0$) for the characters such as days to anthesis, anthesis silking interval, days to brown husk, ear height, shelling percent, harvest index, test weight, grain rows per cob, grains per row, cob length and girth (Table 31c). For the characters such as days to anthesis, silking, days to brown husk, ear height, ear weight, cob weight, harvest index, test weight, grain rows per cob and cob girth, none of the hybrids were noticed to be specifically adapted to unfavourable environments ($s^2_{di} = 0$, $b_i < 1$ and $P_i > 0$) (Table 31d).

Dynamic or agronomic concept of stability (Becker and Leon, 1988) was used in this investigation and according to which, the hybrids HEMA, V-2232 × MAI 105, V-1649 × MAI 105, CIMMYT-5 × LM 13, V-1712-1 × MAI 105, Z-63-30 × LM 13, V-632-112 × LM 13, V-1168 × LM 13, V-291-2 × LM 13, V-632-67 × LM 13, CML-172 × MAI 105, V-1154 × LM 13, V-241-2 × LM 13, CIMMYT-47 × LM 13, Z-51-1 × LM 13, HKI-

193-1 × LM 13,PHI 3501, V-2232 × LM 13, 900M GOLD, Decalb 8101 and V-1649 × LM 13 were found best for grain yield as well as stability because of the fact that, their yield response to environments was parallel to the mean yield response of all the 225 hybrids evaluated in the trial with least deviations from the general response. Apart from this, the grain yield performance of these hybrids was largely predictable for any specified environment (Finlay and Wilkinson, 1963; Eberhart and Russell, 1966; Tai, 1971; Shukla, 1972).

Future line of work

- Based on diversity analysis, the inbred combinations such as CIMMYT-5 × MAI-706, MAI-706 × V-632-67, CIMMYT-10 × MAI-706, CM-212 × MAI-706, V-1036 × V-1522, CML-172 × Z-50-3, MAI-44 × Z-50-3, CML-359 × SKV-39, CML-411 × SKV-39, S-9951 YQ × SKV-39, CM-149 × V-632-112, CM-212 × V-632-112, CML-166 × V-632-112, MAI-109 × V-632-112, V-70-1 × V-632-67 and V-1742 × Z-49-20 are recommendable for future hybridization programs.

- More number of markers evenly spaced on all the 10 chromosomes should be used for addressing the convergence between morphological and molecular diversity.

- The adaptation of the top high yielding stable hybrids such as V-2232 × MAI-105, V-1649 × MAI-105, CIMMYT-5 × LM 13, V-1712-1 × MAI 105, Z-63-30 × LM-13, V-632-112 × LM-13, V-1168 × LM-13, V-291-2 × LM-13, V-632-67 × LM-13, CML-172 × MAI-105, V-1154 × LM-13, V-241-2 × LM-13, CIMMYT-47 × LM-13, Z-51-1 × LM-13, HKI-193-1 × LM-13, V-2232 × LM-13 and V-1649 × LM-13 needs to be further verified across several other locations.

Summary

VI. SUMMARY

An investigation was conducted at experimental plots of ZARS, Mandya (E_3), ZARS, Bhavikere (E_2) and Farmer's field, Yatnahalli village (E_1) to analyze the degree of genetic divergence at morphological as well as molecular levels, to identify best general and specific combiners, to assess the relationship between parental diversity, heterosis, *sca* effects, and *per se* performance and to identify hybrids with wide adaptability.

One hundred inbreds maintained at All India Coordinated Maize Improvement Project, ZARS, V.C. Farm, Mandya, 216 hybrids produced by crossing 54 inbreds with 4 testers in Line x Tester mating design and nine commercial check hybrids were evaluated in a simple lattice design with two replications across three locations for 16 morphological characters. The adjusted mean values were subjected for pooled diversity, combining ability and stability analysis. Whereas, ninety six inbreds were genotyped using 33 SSR markers for molecular diversity analysis.

Analysis of variance revealed significant differences among 100 inbreds and 225 hybrids for all the 16 characters in each location as well as across locations.

One hundred inbreds were grouped into 10 clusters and among them cluster I accommodated maximum number of inbreds (48) followed by cluster II (25) and cluster IV, V, VIII, IX and X were solitary. The character days to brown husk contributed highest for total divergence followed by days to anthesis, anthesis silking interval and grain rows per cob. The inbred MAI-706 being solitary in cluster VIII has recorded best mean values in the desirable direction for several important traits.

The linear functional relationships between mid-parent heterosis, *sca* effects and *per se* performance on parental distance as measured by D^2 statistic were non-significant.

Molecular diversity analysis revealed a total of 213 alleles with a range of 2-11 and mean of 6.45 alleles per locus. The marker *umc2078* has sampled highest number of alleles followed by *bnlg107*, *bnlg1200*, *bnlg1347*, *mc0381*, *mmc0041*, *umc1240*, *umc1256*, *umc1409* and *umc1542*. The maximum discriminating power was observed for the marker *umc1542* followed by *umc2078* and *umc1409*. Maximum dissimilarity coefficient 0.95 was observed between the inbreds V-1036 and V-1522, CML-172 and Z-50-3 and MAI-44 and Z-50-3. At Jaccard's similarity co-efficient of 17.5 per cent, 96 inbreds were clearly grouped into seven clusters among them cluster III accommodated highest number of entries followed by cluster IV.

The linear functional relationship of Jaccard's dissimilarity coefficient on mid-parent heterosis and *sca* effects was non-significant. Whereas, *per se* performance of the hybrids regressed significantly towards Jaccard's dissimilarity coefficient with regression coefficient 85.89 and coefficient of determination (R^2) 2.6 per cent.

The correlation between morphological dissimilarity matrix and the matrices of genetic dissimilarity based on SSR markers was non-significant with correlation coefficient (r) 0.024.

The present study revealed the existence of limits to morphological as well as molecular based parental divergence for the occurrence of heterosis and it is recommendable to involve parents with intermediate divergence than involving the parents with extreme divergence to recover higher frequency of heterotic hybrids.

Pooled analysis of variance for combining ability revealed significant variance due to environment, treatments, parent v/s crosses, crosses and line x tester interaction effect for all the characters. MSS due to parents, parents (lines), parents (testers), were significant for all the characters except harvest index. Variance due to parents (L v/s T) was significant for all the characters except ear weight per plant, grain yield per plant and harvest index. Other than anthesis silking interval and harvest index, variance due to line effect and tester effect were significant for all the characters. Interaction of all these factors with environment was found significant for several characters.

Estimates of GCA and SCA variance clearly revealed the predominance of additive genetic variance for seven quantitative characters *viz.,* ear weight, cob weight, grain yield, test weight, grain rows per cob, cob length and cob girth. Whereas, non-additive genetic variance was predominant for the remaining characters *viz.,* days to anthesis, days to silking, days to brown husk, anthesis silking interval, ear height, plant height, shelling per cent, harvest index and grain rows per cob. The ratio of additive and non-additive variance for grain yield was 67:33 *i.e.,* about 67 per cent of improvement through selection among crosses of inbreds would be expected from general combining ability and remaining 33 per cent from specific combining ability.

Combining ability analysis revealed that no single line or tester exhibited significant *gca* effects in the desired direction for all the characters. Nevertheless, the tester LM-13 and lines V-1712-1, V-1154 and CIMMYT-5 were identified as best overall general combiners.

None of the crosses exhibited significant *sca* effect in the desired direction for all the traits. However, the crosses MAI-117 × LM 13, Z-62-67 × MAI 105 and Z-62-55 × LM 13 were identified as best overall specific combiners.

Different hybrids expressed significant standard heterosis in desirable direction for different characters. The crosses CIMMYT-5 × LM 13, LTP-1 × SKV 50 and CIMMYT-5 × SKV 50 manifested significant standard heterosis in the desirable direction for highest number of characters.

Analysis of relationship between *sca* effects and heterotic status of crosses with respect to the overall parental *gca* status indicated that, given a heterotic cross, the probability of finding it to be a HL combination was high and it is worthwhile to start with HL type of crosses for realizing better frequency of high *sca* and heterosis.

A significantly positive linear relationship between mid-parent heterosis and *sca* effects was noticed with regression coefficient 1.25 and coefficient of determination (R^2) 17.2 per cent, which indicated the role of genes with dominance and epistasis of additive x dominance and dominance x dominance kinds in determining progeny superiority over the parents.

Pooled analysis of variance for stability revealed significance of variances due to hybrids, environments, environments (linear) and hybrids × environments for all the characters. Interaction of hybrids × environment (linear) was significant for the characters days to 50 per cent anthesis, silking, brown husk, ear height, plant height, cob weight, grain yield, harvest index and cob girth. Further, it could be observed that the variance due to pooled deviation was significant for all the characters except cob weight per plant, grain yield per plant, harvest index and cob girth indicating that, the variation in the performance of hybrids is entirely unpredictable.

The test hybrids V-2232 × MAI 105, V-1649 × MAI 105, CIMMYT-5 × LM 13, V-1712-1 × MAI 105, Z-63-30 × LM 13, V-632-112 × LM 13, V-

1168 × LM 13, V-291-2 × LM 13, V-632-67 × LM 13, CML-172 × MAI 105, V-1154 × LM 13, V-241-2 × LM 13, CIMMYT-47 × LM 13, Z-51-1 × LM 13, HKI-193-1 × LM 13,PHI 3501, V-2232 × LM 13 and V-1649 × LM 13 were identified as best for grain yield as well as stability as they recorded high mean, unit regression co-efficient (b_i = 1) and nonsignificant deviations (S^2d_i = 0) from linearity.

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Appendices

Appendix I. Mean performance of inbreds for three locations

Sl. No.	Inbred	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
1	V-1005	56.00	**56.33**	**56.28**	56.20	57.00	57.25	**56.91**	57.05	**0.88**	**1.00**	**0.70**	0.86	101.50	**103.26**	**100.41**	101.72	**36.04**	**50.92**	**38.13**	41.70
2	V-1036	52.00	**51.24**	**50.52**	51.25	60.50	59.75	**60.13**	60.13	**8.35**	**8.50**	**9.27**	8.71	91.00	**91.26**	**89.68**	90.65	**41.45**	**49.46**	**42.23**	44.38
3	V-1150	60.00	**59.96**	**59.79**	59.92	60.50	60.50	**60.42**	60.47	**0.63**	**0.51**	**0.59**	0.57	111.50	**114.52**	**110.94**	112.32	**46.70**	**61.61**	**53.19**	53.83
4	V-1154	58.00	**56.77**	**55.45**	56.74	57.50	56.25	**54.99**	56.25	**0.72**	**0.50**	**0.34**	0.52	117.50	**118.77**	**114.96**	117.08	**89.46**	**93.30**	**86.22**	89.66
5	V-1168	62.00	**61.72**	**61.20**	61.64	61.50	61.25	**60.95**	61.23	**0.63**	**0.51**	**0.41**	0.51	91.50	**90.23**	**89.98**	90.57	**67.99**	**68.70**	**66.00**	67.56
6	V-1522	63.00	**62.21**	**61.59**	62.26	64.50	63.75	**62.97**	63.74	**1.55**	**1.50**	**1.63**	1.56	111.50	**115.25**	**109.91**	112.22	**71.30**	**73.46**	**67.35**	70.71
7	V-1649	67.00	**65.97**	**64.95**	65.97	67.50	66.50	**65.37**	66.46	**0.55**	**0.49**	**0.61**	0.55	111.00	**114.00**	**108.31**	111.10	**63.90**	**61.13**	**61.18**	62.07
8	V-1742	55.50	**53.81**	**51.98**	53.76	56.50	54.75	**54.06**	55.10	**0.85**	**1.01**	**2.05**	1.30	92.50	**95.25**	**90.09**	92.61	**42.19**	**55.13**	**47.66**	48.33
9	V-2205	69.00	**67.74**	**66.32**	67.68	70.50	69.25	**67.93**	69.23	**1.70**	**1.50**	**1.66**	1.62	102.50	**103.76**	**99.46**	101.91	**62.73**	**79.43**	**70.65**	70.94
10	V-2232	57.00	**56.51**	**56.06**	56.53	57.50	57.00	**56.10**	56.87	**0.23**	**0.50**	**0.93**	0.55	94.00	**97.51**	**92.12**	94.54	**72.20**	**78.72**	**70.70**	73.87
11	V-1410-1	61.00	**61.40**	**61.39**	61.26	60.50	60.75	**60.90**	60.72	**0.28**	**0.50**	**0.82**	0.53	95.50	**95.78**	**95.85**	95.71	**55.31**	**57.35**	**53.94**	55.53
12	V-1712-1	66.00	**66.15**	**66.24**	66.13	66.50	66.50	**66.59**	66.53	**0.33**	**0.50**	**0.41**	0.41	112.00	**113.03**	**111.11**	112.05	**65.00**	**71.55**	**66.96**	67.84
13	V-241-2	50.00	**51.71**	**48.49**	50.07	61.50	63.25	**58.66**	61.14	**11.67**	**11.50**	**9.93**	11.04	94.00	**99.23**	**90.68**	94.64	**43.90**	**57.39**	**48.40**	49.90
14	V-2436-1	58.00	**57.29**	**56.67**	57.32	62.00	61.25	**60.54**	61.26	**4.35**	**4.01**	**3.96**	4.11	91.50	**91.25**	**89.50**	90.75	**55.06**	**65.49**	**55.86**	58.80
15	V-2437-1	63.00	**61.37**	**59.88**	61.42	61.50	60.00	**58.50**	60.00	**1.38**	**1.50**	**1.39**	1.42	89.50	**88.98**	**85.52**	88.00	**44.17**	**47.37**	**41.87**	44.47
16	V-2441-4	57.00	**56.12**	**54.94**	56.02	56.00	55.00	**54.98**	55.33	**1.20**	**0.99**	**0.14**	0.78	92.00	**94.04**	**90.96**	92.33	**52.70**	**65.22**	**56.52**	58.14
17	V-2459-2	66.00	**63.36**	**61.10**	63.48	57.50	55.00	**56.01**	56.17	**8.48**	**8.50**	**5.02**	7.33	101.50	**101.49**	**100.99**	101.32	**40.46**	**59.86**	**50.96**	50.43
18	V-2516-2	61.00	**60.37**	**59.34**	60.24	63.50	62.75	**60.38**	62.21	**2.65**	**2.50**	**1.98**	2.38	98.50	**100.77**	**95.86**	98.38	**43.70**	**68.31**	**51.12**	54.38
19	V-2608-1	57.50	**57.60**	**57.38**	57.49	60.50	60.50	**60.50**	60.50	**2.90**	**3.01**	**2.89**	2.94	112.00	**112.53**	**110.52**	111.68	**64.90**	**79.18**	**69.31**	71.13
20	V-291-2	53.00	**52.02**	**51.22**	52.08	64.00	63.00	**62.00**	63.00	**10.50**	**11.00**	**11.22**	10.91	94.00	**95.00**	**92.51**	93.84	**93.98**	**87.25**	**87.20**	89.48
21	V-70-1	67.00	**65.76**	**64.38**	65.71	67.50	66.25	**65.09**	66.28	**0.23**	**0.50**	**0.38**	0.37	100.00	**101.27**	**98.63**	99.97	**71.20**	**76.28**	**71.60**	73.03
22	CIMMYT-10	61.00	**59.74**	**58.60**	59.78	67.00	65.75	**64.51**	65.75	**5.65**	**6.01**	**6.02**	5.89	92.50	**94.23**	**90.49**	92.40	**65.70**	**66.14**	**63.71**	65.18
23	CIMMYT-47	50.00	**49.01**	**47.88**	48.96	63.50	62.50	**61.51**	62.50	**13.05**	**13.50**	**13.61**	13.39	107.50	**109.99**	**105.53**	107.67	**48.39**	**54.58**	**49.04**	50.67
24	CIMMYT-5	64.00	**62.73**	**61.46**	62.73	67.50	66.25	**64.99**	66.25	**3.77**	**3.50**	**3.66**	3.64	89.50	**88.73**	**87.45**	88.56	**30.21**	**48.20**	**40.01**	39.47
25	CM-115	69.00	**68.00**	**66.89**	67.96	58.00	57.00	**57.95**	57.65	**11.10**	**11.00**	**8.91**	10.34	89.00	**87.49**	**87.92**	88.14	**44.95**	**51.24**	**45.81**	47.33
26	CM-149	59.00	**55.84**	**52.28**	55.71	54.00	50.75	**52.41**	52.39	**4.63**	**5.00**	**0.20**	3.28	91.50	**88.77**	**88.91**	89.73	**46.81**	**58.29**	**50.26**	51.78
27	CM-212	64.00	**63.17**	**62.38**	63.18	67.00	66.25	**63.00**	65.42	**3.13**	**3.00**	**2.39**	2.84	91.50	**94.24**	**87.02**	90.92	**35.58**	**45.86**	**39.62**	40.35
28	CML-165	62.00	**60.77**	**59.45**	60.74	59.50	58.25	**56.99**	58.25	**2.55**	**2.50**	**2.34**	2.46	96.00	**97.75**	**93.46**	95.74	**43.02**	**45.85**	**44.60**	44.49
29	CML-166	62.00	**60.23**	**58.50**	60.24	62.50	60.75	**59.88**	61.04	**0.38**	**0.50**	**1.32**	0.73	97.00	**94.24**	**92.39**	94.54	**51.39**	**54.21**	**52.61**	52.74
30	CML-169	61.00	**59.87**	**58.95**	59.94	61.50	60.50	**59.49**	60.50	**0.43**	**0.50**	**0.34**	0.42	105.50	**108.47**	**102.96**	105.64	**43.70**	**65.82**	**48.47**	52.67
31	CML-172	64.00	**62.79**	**61.50**	62.76	67.00	65.75	**64.49**	65.75	**3.20**	**3.01**	**3.09**	3.10	107.50	**106.75**	**106.05**	106.77	**65.60**	**82.29**	**68.73**	72.21
32	CML-304	62.00	**62.03**	**61.96**	62.00	62.00	62.00	**61.99**	62.00	**0.55**	**0.00**	**0.16**	0.24	97.00	**99.51**	**96.45**	97.65	**66.51**	**75.56**	**72.13**	71.40
33	CML-335	62.00	**60.64**	**59.55**	60.73	63.50	62.25	**61.05**	62.27	**1.67**	**1.50**	**1.50**	1.56	92.00	**95.73**	**91.54**	93.09	**41.30**	**53.39**	**43.76**	46.15
34	CML-358	56.50	**56.29**	**56.09**	56.29	58.50	58.25	**55.97**	57.57	**2.13**	**2.00**	**2.13**	2.08	94.00	**93.76**	**90.91**	92.89	**46.35**	**68.87**	**51.48**	55.57
35	CML-359	61.00	**60.29**	**59.42**	60.24	60.00	59.25	**58.47**	59.24	**0.75**	**1.01**	**1.07**	0.94	111.50	**114.25**	**110.44**	112.07	**65.01**	**80.69**	**69.93**	71.88
36	CML-411	60.00	**59.04**	**57.98**	59.00	61.50	60.50	**59.49**	60.50	**1.40**	**1.50**	**1.50**	1.47	103.50	**103.00**	**102.97**	103.16	**44.00**	**57.44**	**49.55**	50.33

Sl. No.	Inbred	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
37	DMR-N-21	59.00	**58.06**	**56.88**	57.98	58.50	57.50	**56.51**	57.50	**0.85**	**0.50**	**0.61**	0.65	102.00	**103.02**	**101.03**	102.02	**46.17**	**59.97**	**51.04**	52.40
38	EC-598475	66.00	**64.64**	**63.50**	64.71	66.50	65.25	**63.99**	65.25	**0.48**	**0.50**	**0.59**	0.52	94.50	**95.72**	**91.05**	93.76	**60.91**	**51.54**	**52.23**	54.89
39	HKI-1105	59.00	**58.46**	**57.98**	58.48	62.00	61.50	**60.99**	61.50	**3.13**	**3.01**	**3.00**	3.04	116.00	**115.98**	**114.47**	115.48	**83.31**	**79.27**	**81.55**	81.37
40	HKI-164-4	69.00	**67.90**	**67.10**	68.00	64.50	63.50	**62.51**	63.50	**4.45**	**4.50**	**4.52**	4.49	92.50	**94.97**	**90.99**	92.82	**39.82**	**59.09**	**51.22**	50.05
41	HKI-193-1	54.00	**52.94**	**51.90**	52.95	61.50	60.50	**59.36**	60.45	**7.43**	**7.50**	**7.45**	7.46	91.50	**89.98**	**88.83**	90.10	**45.63**	**52.88**	**49.04**	49.18
42	HKI-193-2	56.00	**56.42**	**57.00**	56.47	60.50	61.00	**56.38**	59.29	**4.28**	**4.50**	**5.32**	4.70	90.50	**94.49**	**86.39**	90.46	**43.34**	**57.95**	**48.38**	49.89
43	HKI-36 (1+2)	58.00	**57.26**	**56.28**	57.18	59.50	58.75	**57.80**	58.68	**1.75**	**1.50**	**1.54**	1.59	95.50	**94.76**	**93.30**	94.52	**44.38**	**59.22**	**49.67**	51.09
44	K-10-11	64.00	**65.33**	**66.83**	65.38	61.00	62.25	**65.20**	62.82	**3.05**	**2.99**	**1.34**	2.46	89.50	**90.27**	**93.75**	91.17	**66.30**	**72.52**	**69.61**	69.47
45	LTP-1	69.00	**66.51**	**64.10**	66.53	67.00	64.50	**62.58**	64.69	**2.13**	**2.00**	**1.29**	1.80	94.00	**91.52**	**89.62**	91.71	**72.20**	**80.28**	**78.99**	77.16
46	MAI-115	61.00	**59.93**	**59.07**	60.00	60.50	59.50	**58.49**	59.50	**0.50**	**0.51**	**0.54**	0.51	113.50	**114.97**	**112.99**	113.82	**49.31**	**60.24**	**52.77**	54.11
47	MAI-107	58.00	**57.99**	**58.12**	58.04	57.50	57.50	**58.07**	57.69	**0.33**	**0.50**	**0.04**	0.29	112.50	**114.48**	**113.55**	113.51	**59.56**	**71.78**	**62.49**	64.61
48	MAI-109	59.00	**58.07**	**56.92**	58.00	60.00	59.00	**57.97**	58.99	**0.93**	**1.00**	**1.07**	1.00	99.50	**100.50**	**98.44**	99.48	**44.39**	**49.67**	**46.32**	46.79
49	MAI-112	58.00	**57.88**	**57.39**	57.76	58.50	58.25	**57.45**	58.07	**0.33**	**0.51**	**0.09**	0.31	107.00	**108.78**	**106.92**	107.57	**66.60**	**71.14**	**67.06**	68.27
50	MAI-121	55.50	**54.61**	**53.40**	54.50	58.50	57.50	**56.36**	57.45	**2.93**	**2.99**	**2.95**	2.95	101.00	**103.03**	**98.33**	100.79	**41.34**	**53.17**	**43.05**	45.86
51	MAI-137	58.00	**56.80**	**55.68**	56.83	58.50	57.25	**56.05**	57.27	**0.35**	**0.50**	**0.18**	0.34	90.00	**91.76**	**86.54**	89.44	**50.92**	**52.65**	**53.33**	52.30
52	MAI-27	58.00	**55.31**	**52.55**	55.29	54.00	51.25	**49.01**	51.42	**3.95**	**4.01**	**3.61**	3.85	92.50	**94.26**	**88.54**	91.77	**34.55**	**54.54**	**45.73**	44.94
53	MAI-29	56.00	**56.53**	**56.94**	56.49	58.00	58.50	**56.47**	57.66	**1.90**	**2.01**	**0.50**	1.47	105.50	**109.00**	**104.43**	106.31	**49.98**	**52.56**	**52.52**	51.68
54	MAI-35	56.00	**54.25**	**52.48**	54.24	57.50	55.75	**53.97**	55.74	**1.65**	**1.50**	**1.66**	1.60	91.50	**90.74**	**87.94**	90.06	**32.15**	**47.76**	**43.07**	40.99
55	MAI-40	60.00	**58.76**	**57.65**	58.80	61.00	59.75	**58.62**	59.79	**0.93**	**1.00**	**1.02**	0.98	91.00	**91.27**	**87.67**	89.98	**46.59**	**73.38**	**57.55**	59.17
56	MAI-44	55.50	**54.13**	**53.07**	54.24	56.50	55.25	**54.07**	55.27	**1.03**	**1.00**	**1.07**	1.03	115.00	**114.23**	**113.06**	114.09	**32.45**	**57.19**	**43.10**	44.24
57	MAI-45	59.00	**56.09**	**53.00**	56.03	56.00	53.00	**54.38**	54.46	**3.13**	**3.00**	**4.32**	3.48	108.00	**108.02**	**105.89**	107.30	**34.99**	**39.66**	**38.61**	37.76
58	MAI-48	59.50	**56.51**	**53.90**	56.64	53.00	50.00	**47.17**	50.06	**6.08**	**6.49**	**6.57**	6.38	116.00	**113.51**	**110.17**	113.23	**43.24**	**41.51**	**41.13**	41.96
59	MAI-706	53.00	**52.63**	**52.06**	52.56	53.00	52.50	**52.60**	52.70	**0.05**	**0.00**	**0.43**	0.16	120.00	**120.52**	**118.62**	119.71	**76.61**	**77.76**	**80.32**	78.23
60	Q-Y-2593-3	60.00	**59.27**	**58.52**	59.26	59.50	58.75	**58.04**	58.76	**0.43**	**0.50**	**0.29**	0.40	99.00	**96.75**	**96.07**	97.27	**57.90**	**67.29**	**59.82**	61.67
61	S-9951 YQ	61.00	**60.15**	**59.32**	60.16	60.50	59.75	**58.99**	59.75	**0.77**	**0.49**	**0.39**	0.55	90.00	**91.72**	**89.48**	90.40	**56.61**	**66.87**	**55.86**	59.78
62	SKV-15	51.00	**50.45**	**50.00**	50.48	51.00	50.50	**50.49**	50.66	**0.05**	**0.01**	**0.59**	0.22	94.00	**97.99**	**94.05**	95.35	**45.55**	**58.47**	**50.48**	51.50
63	SKV-24	55.00	**53.67**	**52.57**	53.75	57.50	56.25	**55.01**	56.25	**2.45**	**2.50**	**2.55**	2.50	117.50	**119.24**	**114.50**	117.08	**57.01**	**71.95**	**66.32**	65.09
64	SKV-31	60.00	**58.96**	**58.12**	59.03	58.50	57.50	**56.48**	57.49	**1.40**	**1.51**	**1.84**	1.58	113.00	**113.98**	**110.46**	112.48	**55.11**	**62.97**	**55.37**	57.81
65	SKV-32	56.50	**55.76**	**55.17**	55.81	55.00	54.25	**53.05**	54.10	**1.82**	**1.49**	**2.02**	1.78	99.00	**97.76**	**97.04**	97.93	**50.47**	**61.21**	**56.55**	56.08
66	SKV-39	53.50	**53.18**	**53.00**	53.23	53.50	53.25	**54.07**	53.61	**0.13**	**0.00**	**1.13**	0.42	109.50	**108.24**	**110.12**	109.29	**56.49**	**55.56**	**55.37**	55.81
67	SKV-42	54.00	**53.17**	**52.40**	53.19	56.50	55.75	**54.36**	55.54	**2.55**	**2.50**	**1.95**	2.33	89.00	**92.24**	**87.33**	89.52	**46.64**	**41.68**	**42.04**	43.45
68	SKV-65	52.00	**52.13**	**52.11**	52.08	52.00	52.00	**53.48**	52.49	**2.03**	**2.00**	**1.39**	1.81	91.00	**92.04**	**93.00**	92.01	**54.41**	**68.11**	**60.03**	60.85
69	SKV-70	56.00	**54.42**	**53.05**	54.49	52.50	51.00	**52.55**	52.02	**3.77**	**3.50**	**0.50**	2.59	93.00	**94.99**	**92.54**	93.51	**50.45**	**50.96**	**51.14**	50.85
70	V-632-112	60.00	**60.39**	**60.82**	60.40	60.50	61.00	**61.85**	61.12	**0.58**	**0.50**	**1.13**	0.73	90.50	**92.47**	**93.40**	92.12	**63.51**	**76.04**	**67.51**	69.02
71	V-632-67	62.00	**62.14**	**62.20**	62.11	65.50	65.75	**65.95**	65.73	**2.80**	**3.50**	**3.41**	3.24	89.50	**90.23**	**88.48**	89.40	**60.89**	**74.29**	**63.88**	66.35
72	Z-49-20	57.50	**56.49**	**55.49**	56.49	58.00	57.00	**56.16**	57.05	**0.58**	**0.50**	**0.43**	0.50	120.00	**120.01**	**117.68**	119.23	**59.69**	**85.33**	**71.09**	72.04
73	Z-50-3	62.00	**60.73**	**59.57**	60.77	62.00	60.75	**59.51**	60.75	**0.08**	**0.00**	**0.05**	0.04	104.00	**102.24**	**102.00**	102.75	**48.89**	**55.41**	**48.82**	51.04
74	Z-51-1	64.00	**63.24**	**62.54**	63.26	64.00	63.25	**62.45**	63.23	**0.05**	**0.01**	**0.04**	0.03	113.50	**117.26**	**112.91**	114.55	**58.62**	**70.12**	**61.03**	63.25

Sl. No.	Inbred	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
75	Z-51-6	59.00	**59.94**	**60.92**	59.95	61.00	62.00	**61.91**	61.64	**1.58**	**2.00**	**1.05**	1.54	98.00	**101.98**	**98.91**	99.63	**44.94**	**62.48**	**56.04**	54.48
76	Z-52-29	53.50	**50.72**	**48.33**	50.85	50.00	47.25	**51.20**	49.48	**3.40**	**3.51**	**2.84**	3.25	101.00	**97.23**	**101.75**	99.99	**46.31**	**52.00**	**50.23**	49.51
77	Z-52-3	67.00	**65.81**	**64.51**	65.77	69.50	68.25	**67.04**	68.26	**2.70**	**2.51**	**2.77**	2.66	106.00	**106.76**	**104.54**	105.77	**34.12**	**57.24**	**54.46**	48.61
78	Z-52-4	64.00	**62.73**	**61.48**	62.73	64.00	62.75	**61.56**	62.77	**0.08**	**0.00**	**0.05**	0.04	99.50	**98.74**	**96.09**	98.11	**75.69**	**68.57**	**71.91**	72.06
79	Z-54-2	50.00	**49.30**	**48.61**	49.30	49.50	48.75	**49.14**	49.13	**0.67**	**0.50**	**0.68**	0.62	100.00	**102.26**	**100.17**	100.81	**40.35**	**55.75**	**46.80**	47.63
80	Z-55-10	56.00	**54.38**	**52.83**	54.40	56.50	54.75	**52.70**	54.65	**0.55**	**0.50**	**0.84**	0.63	91.00	**93.77**	**88.25**	91.01	**33.41**	**35.66**	**34.54**	34.54
81	Z-56-1	50.50	**50.40**	**49.79**	50.23	49.00	48.75	**50.92**	49.56	**1.43**	**1.50**	**3.09**	2.00	94.00	**95.80**	**95.94**	95.25	**47.16**	**52.92**	**51.19**	50.42
82	Z-56-5	55.50	**53.62**	**52.17**	53.76	55.50	53.75	**53.59**	54.28	**1.08**	**1.00**	**1.55**	1.21	88.50	**87.73**	**86.56**	87.60	**38.72**	**39.07**	**36.75**	38.18
83	Z-56-8	54.00	**52.70**	**51.39**	52.70	51.00	49.75	**50.45**	50.40	**2.90**	**3.00**	**0.91**	2.27	94.50	**95.74**	**93.42**	94.55	**35.53**	**48.69**	**41.89**	42.04
84	Z-57-27	59.00	**58.48**	**58.11**	58.53	61.00	60.50	**59.64**	60.38	**1.93**	**2.00**	**1.68**	1.87	89.50	**90.99**	**88.17**	89.55	**26.29**	**32.11**	**27.74**	28.72
85	Z-57-4	65.00	**61.98**	**58.87**	61.95	56.50	53.50	**56.01**	55.34	**8.45**	**8.50**	**5.98**	7.65	106.50	**107.00**	**106.49**	106.66	**55.40**	**54.34**	**52.82**	54.19
86	Z-57-5	57.50	**56.62**	**55.90**	56.67	56.50	55.75	**53.35**	55.20	**0.93**	**1.00**	**2.52**	1.48	95.00	**95.73**	**90.30**	93.68	**65.30**	**71.67**	**63.97**	66.98
87	Z-59-36	57.00	**55.09**	**52.88**	54.99	56.00	54.00	**52.97**	54.32	**0.78**	**1.00**	**0.39**	0.72	93.00	**94.02**	**89.47**	92.16	**30.21**	**42.09**	**36.17**	36.15
88	Z-60-22	59.00	**57.88**	**57.07**	57.99	56.00	55.00	**54.01**	55.00	**3.13**	**3.00**	**3.05**	3.06	110.00	**107.48**	**106.50**	107.99	**52.06**	**75.39**	**74.82**	67.42
89	Z-62-55	57.00	**55.46**	**54.17**	55.54	55.50	54.00	**52.55**	54.02	**1.53**	**1.50**	**1.52**	1.51	113.00	**114.50**	**110.04**	112.51	**54.66**	**64.96**	**58.95**	59.53
90	Z-62-67	61.00	**60.06**	**58.95**	60.00	63.50	62.50	**61.37**	62.46	**2.97**	**2.51**	**2.61**	2.70	95.50	**98.01**	**94.31**	95.94	**50.81**	**59.44**	**53.18**	54.48
91	Z-62-9	59.00	**58.89**	**58.33**	58.74	59.00	58.75	**57.98**	58.58	**0.47**	**0.00**	**0.38**	0.28	100.00	**101.77**	**99.49**	100.42	**36.95**	**36.70**	**36.09**	36.58
92	Z-63-16	64.00	**63.33**	**62.32**	63.22	66.50	65.75	**64.35**	65.53	**2.65**	**2.50**	**2.13**	2.42	92.50	**93.27**	**89.90**	91.89	**35.70**	**49.49**	**41.01**	42.07
93	Z-63-17	63.00	**61.55**	**59.77**	61.44	66.00	64.50	**62.90**	64.47	**3.22**	**3.00**	**2.93**	3.05	96.00	**95.99**	**93.92**	95.30	**35.86**	**49.38**	**42.58**	42.60
94	Z-63-18	61.00	**59.71**	**58.52**	59.75	63.50	62.25	**59.03**	61.59	**2.48**	**2.50**	**1.34**	2.10	93.50	**95.75**	**89.51**	92.92	**37.33**	**40.71**	**41.15**	39.73
95	Z-63-30	63.00	**61.96**	**61.21**	62.06	63.00	62.00	**61.12**	62.04	**0.15**	**0.00**	**0.07**	0.07	100.00	**101.00**	**98.61**	99.87	**58.95**	**62.66**	**60.81**	60.81
96	CM 500	58.00	**56.35**	**54.57**	56.31	59.00	57.25	**55.01**	57.09	**1.08**	**1.01**	**0.55**	0.88	89.00	**91.75**	**86.00**	88.92	**69.11**	**73.43**	**62.95**	68.49
97	SKV 50	59.00	**58.73**	**58.50**	58.74	59.00	58.75	**58.96**	58.90	**0.10**	**0.00**	**0.36**	0.15	90.50	**94.25**	**90.96**	91.90	**46.70**	**65.24**	**55.32**	55.75
98	MAI 105	64.00	**63.25**	**62.82**	63.35	65.50	64.75	**64.05**	64.77	**1.65**	**1.50**	**1.64**	1.60	115.50	**118.74**	**115.02**	116.42	**58.30**	**70.16**	**62.23**	63.56
99	LM 13	63.00	**62.24**	**61.38**	62.21	60.50	59.75	**62.47**	60.91	**2.63**	**2.50**	**3.61**	2.91	114.00	**113.73**	**116.47**	114.73	**79.10**	**88.88**	**81.67**	83.22
100	HKI 193	63.00	**62.23**	**61.90**	62.38	61.50	60.75	**60.17**	60.81	**1.05**	**1.49**	**1.57**	1.37	105.00	**108.25**	**104.67**	105.97	**34.46**	**53.24**	**44.38**	44.03
Mean		59.44	58.50	57.52	58.49	59.92	58.99	58.29	59.07	2.35	2.35	2.18	2.29	99.83	100.89	98.19	99.64	51.73	61.20	55.10	56.01
Range		50.00	49.01	47.88	48.96	49.00	47.25	47.17	49.13	0.05	0.00	0.04	0.03	88.50	87.49	85.52	87.60	26.29	32.11	27.74	28.72
		69.00	68.00	67.10	68.00	70.50	69.25	67.93	69.23	13.05	13.50	13.61	13.39	120.00	120.52	118.62	119.71	93.98	93.30	87.20	89.66
S. Em. ±		0.97	0.88	1.28	0.48	0.89	1.09	1.48	0.53	0.87	1.61	1.37	0.32	1.02	1.13	1.60	0.79	3.58	4.07	4.18	2.42
C. D. 5%		2.74	2.48	3.63	1.33	2.53	3.08	4.18	1.48	2.46	4.56	3.87	0.88	2.87	3.21	4.53	2.21	10.12	11.50	11.82	6.74
C. D. 1%		3.64	3.30	4.83	1.76	3.37	4.10	5.56	1.95	3.27	6.07	5.15	1.16	3.82	4.26	6.03	2.91	13.46	15.29	15.72	8.89

Note: Figures in bold indicates adjusted mean values

Sl. no.	Inbred	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
1	V-1005	**127.80**	**139.94**	133.90	133.88	**85.94**	101.40	70.22	85.85	**73.57**	**88.77**	64.31	75.55	**66.10**	**79.82**	55.99	67.30	**89.85**	90.15	87.15	89.05
2	V-1036	**150.63**	**136.08**	148.80	145.17	**79.10**	90.30	65.67	78.36	**68.20**	**75.63**	57.68	67.17	**60.20**	**68.13**	51.03	59.79	**88.51**	88.61	87.68	88.27
3	V-1150	**185.75**	**193.40**	188.70	189.28	**151.30**	147.70	134.01	144.34	**123.60**	**112.81**	94.72	110.38	**99.60**	**90.03**	77.81	89.14	**80.36**	78.85	82.03	80.41
4	V-1154	**218.65**	**217.31**	212.00	215.99	**255.50**	227.70	152.25	211.82	**192.10**	**181.21**	94.66	155.99	**157.10**	**145.24**	77.66	126.67	**82.48**	79.52	81.34	81.11
5	V-1168	**170.38**	**189.77**	182.20	180.78	**172.40**	159.20	166.72	166.11	**137.10**	**129.96**	116.09	127.72	**121.70**	**113.06**	100.47	111.75	**89.08**	86.62	86.37	87.35
6	V-1522	**214.28**	**222.87**	214.90	217.35	**155.40**	219.40	123.17	165.99	**118.90**	**117.50**	80.73	105.71	**102.30**	**100.98**	67.30	90.19	**86.31**	85.55	83.19	85.02
7	V-1649	**163.90**	**164.69**	164.20	164.26	**189.10**	155.50	111.97	152.19	**127.00**	**130.22**	77.89	111.70	**107.20**	**97.39**	66.44	90.34	**85.03**	75.62	85.49	82.04
8	V-1742	**162.20**	**171.81**	166.90	166.97	**63.90**	133.17	58.41	85.16	**50.95**	**89.13**	53.42	64.50	**44.75**	**73.19**	42.14	53.36	**88.54**	83.15	79.19	83.63
9	V-2205	**166.75**	**183.28**	178.00	176.01	**96.50**	183.80	79.20	119.83	**68.00**	**145.73**	70.73	94.82	**49.34**	**122.43**	58.22	76.66	**68.97**	83.22	82.50	78.23
10	V-2232	**185.71**	**212.06**	199.50	199.09	**165.13**	197.80	169.39	177.44	**134.10**	**174.62**	153.12	153.95	**112.85**	**147.64**	128.96	129.82	**84.00**	84.08	83.59	83.89
11	V-1410-1	**150.72**	**148.35**	150.00	149.69	**108.00**	158.40	119.90	128.77	**81.90**	**121.69**	87.65	97.08	**66.70**	**99.26**	73.83	79.93	**81.05**	81.44	84.30	82.26
12	V-1712-1	**193.25**	**193.85**	192.80	193.30	**129.30**	155.00	130.06	138.12	**88.13**	**124.09**	118.49	110.24	**74.23**	**100.86**	100.35	91.81	**85.69**	80.84	84.61	83.71
13	V-241-2	**160.73**	**180.12**	169.00	169.95	**100.50**	123.30	67.53	97.11	**84.70**	**102.88**	66.23	84.60	**73.60**	**86.31**	55.20	71.70	**86.56**	83.67	83.14	84.46
14	V-2436-1	**149.51**	**154.37**	151.40	151.76	**85.38**	79.50	79.59	81.49	**53.33**	**67.75**	63.93	61.67	**43.53**	**54.07**	49.43	49.01	**81.53**	79.89	76.95	79.45
15	V-2437-1	**131.09**	**161.55**	147.70	146.78	**90.00**	111.30	80.55	93.95	**70.00**	**89.26**	44.11	67.79	**59.30**	**73.17**	28.83	53.77	**84.75**	82.06	61.93	76.25
16	V-2441-4	**164.91**	**177.32**	175.30	172.51	**84.20**	110.50	102.82	99.17	**73.80**	**99.25**	80.60	84.55	**63.90**	**83.67**	68.39	71.99	**86.26**	84.37	85.52	85.38
17	V-2459-2	**128.16**	**161.19**	149.10	146.15	**91.80**	144.70	93.50	110.00	**70.10**	**109.38**	70.24	83.24	**60.00**	**89.78**	61.64	70.47	**85.65**	81.50	87.12	84.75
18	V-2516-2	**136.00**	**170.34**	151.90	152.75	**117.20**	82.70	76.84	92.25	**87.20**	**65.98**	71.76	74.98	**70.50**	**55.96**	61.78	62.75	**80.72**	85.43	86.57	84.24
19	V-2608-1	**173.58**	**197.94**	186.60	186.04	**164.23**	165.90	81.55	137.22	**113.28**	**134.87**	68.71	105.62	**96.53**	**113.66**	54.98	88.39	**84.49**	84.09	79.33	82.64
20	V-291-2	**213.76**	**210.59**	211.70	212.02	**152.20**	118.60	95.47	122.09	**121.80**	**97.65**	88.44	102.63	**99.00**	**77.52**	73.17	83.23	**81.60**	79.76	82.55	81.30
21	V-70-1	**186.21**	**184.95**	185.00	185.39	**103.10**	122.10	84.44	103.21	**80.80**	**98.39**	77.99	85.73	**66.50**	**82.56**	65.46	71.51	**82.14**	83.48	82.63	82.75
22	CIMMYT-10	**180.45**	**175.31**	175.20	176.99	**131.40**	69.00	90.12	96.84	**101.00**	**51.02**	84.24	78.75	**81.00**	**41.74**	64.64	62.46	**81.18**	84.14	75.48	80.27
23	CIMMYT-47	**136.06**	**139.04**	136.80	137.30	**119.95**	106.20	138.41	121.52	**89.18**	**86.36**	104.94	93.49	**76.68**	**74.40**	90.49	80.52	**86.13**	85.86	86.52	86.17
24	CIMMYT-5	**108.52**	**138.80**	135.30	127.54	**67.75**	74.50	75.82	72.69	**50.45**	**60.32**	60.15	56.97	**41.00**	**45.83**	48.74	45.19	**80.47**	77.41	80.82	79.56
25	CM-115	**128.34**	**138.30**	134.00	133.54	**96.90**	82.80	44.78	74.83	**51.95**	**62.39**	36.73	50.36	**41.85**	**48.13**	29.39	39.79	**79.80**	75.99	82.57	79.45
26	CM-149	**133.52**	**153.84**	142.20	143.19	**62.70**	99.40	53.02	71.71	**54.30**	**93.03**	41.68	63.01	**44.50**	**71.82**	29.72	48.68	**81.37**	78.67	73.67	77.90
27	CM-212	**145.14**	**156.87**	153.20	151.73	**71.57**	77.00	148.95	99.17	**62.24**	**67.13**	133.06	87.47	**52.77**	**54.76**	112.38	73.30	**83.38**	81.25	84.14	82.92
28	CML-165	**123.78**	**149.79**	138.80	137.46	**86.00**	91.90	90.85	89.58	**58.33**	**78.65**	73.19	70.05	**46.88**	**64.12**	60.49	57.16	**80.77**	81.86	82.12	81.58
29	CML-166	**183.14**	**168.72**	172.50	174.79	**131.55**	95.00	86.05	104.20	**69.90**	**74.85**	70.28	71.68	**57.60**	**60.42**	52.09	56.70	**82.10**	80.13	74.83	79.02
30	CML-169	**123.16**	**158.63**	139.30	140.36	**90.77**	123.50	120.05	111.44	**65.80**	**105.95**	99.11	90.29	**58.14**	**89.33**	85.71	77.72	**89.75**	85.50	86.49	87.25
31	CML-172	**197.08**	**231.57**	215.60	214.75	**132.20**	153.20	125.70	137.03	**97.37**	**118.73**	97.39	104.49	**68.04**	**93.42**	82.02	81.16	**69.73**	78.71	83.98	77.47
32	CML-304	**196.28**	**198.31**	200.10	198.23	**94.40**	121.50	93.07	102.99	**66.60**	**92.15**	48.00	68.92	**52.10**	**78.47**	40.24	56.94	**78.50**	83.98	84.18	82.22
33	CML-335	**125.14**	**157.34**	137.70	140.06	**72.50**	67.80	69.59	69.96	**47.60**	**57.90**	54.46	53.32	**39.70**	**46.58**	48.87	45.05	**82.76**	81.10	89.29	84.38
34	CML-358	**175.75**	**185.98**	184.80	182.18	**90.80**	126.38	82.47	99.88	**73.10**	**95.85**	86.10	85.02	**57.70**	**72.43**	69.30	66.48	**78.99**	75.09	80.23	78.10
35	CML-359	**174.01**	**208.97**	191.00	191.33	**135.75**	125.80	97.10	119.55	**98.00**	**107.33**	95.48	100.27	**86.63**	**93.02**	84.78	88.14	**89.23**	86.76	88.81	88.26
36	CML-411	**154.40**	**163.04**	158.60	158.68	**137.00**	118.80	85.67	113.82	**110.40**	**92.92**	69.74	91.02	**92.90**	**75.78**	56.23	74.97	**85.18**	81.82	81.18	82.72
37	DMR-N-21	**155.84**	**166.70**	162.90	161.81	**76.80**	125.30	94.21	98.77	**62.60**	**102.61**	78.84	81.35	**53.70**	**89.14**	68.07	70.30	**85.62**	86.21	87.07	86.30
38	EC-598475	**171.53**	**141.52**	159.45	157.50	**209.75**	64.50	59.85	111.37	**98.00**	**46.54**	56.10	66.88	**83.00**	**37.90**	45.48	55.46	**84.29**	79.68	81.12	81.69

Sl. no.	Inbred	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
39	HKI-1105	**214.09**	**202.35**	210.80	209.08	**185.40**	203.00	145.65	178.02	**148.80**	**206.11**	101.94	152.28	**113.90**	**135.36**	81.80	110.35	**77.76**	64.44	80.43	74.21
40	HKI-164-4	**140.42**	**173.24**	163.90	159.19	**61.70**	92.80	86.81	80.44	**54.80**	**83.48**	74.24	70.84	**43.50**	**63.78**	56.51	54.59	**79.90**	76.56	74.80	77.09
41	HKI-193-1	**175.46**	**174.35**	171.50	173.77	**112.00**	139.40	105.05	118.82	**97.70**	**121.15**	90.21	103.02	**82.20**	**101.57**	74.95	86.24	**82.26**	83.90	83.05	83.07
42	HKI-193-2	**147.55**	**150.71**	147.60	148.62	**83.20**	76.65	63.93	74.59	**65.10**	**60.38**	61.24	62.24	**53.17**	**51.19**	50.38	51.58	**80.99**	84.81	82.59	82.80
43	HKI-36 (1+2)	**139.25**	**168.46**	156.40	154.70	**149.63**	97.70	87.40	111.58	**60.63**	**85.72**	65.20	70.51	**49.25**	**70.04**	53.89	57.72	**81.19**	81.22	82.34	81.58
44	K-10-11	**157.28**	**161.55**	166.00	161.61	**130.90**	117.60	95.08	114.53	**103.00**	**84.44**	72.10	86.51	**89.20**	**75.38**	60.10	74.89	**85.65**	87.84	82.91	85.47
45	LTP-1	**163.06**	**181.35**	176.90	173.77	**61.80**	123.70	49.76	78.42	**49.50**	**101.69**	43.44	64.88	**40.20**	**85.76**	34.17	53.38	**79.62**	83.53	79.58	80.91
46	MAI-115	**139.90**	**166.84**	157.00	154.58	**170.87**	151.10	113.50	145.16	**100.90**	**131.07**	110.77	114.25	**88.10**	**114.65**	97.32	100.02	**86.33**	87.31	87.90	87.18
47	MAI-107	**158.60**	**185.66**	173.40	172.55	**120.00**	136.70	130.26	128.99	**99.60**	**113.76**	102.80	105.39	**86.30**	**98.11**	89.69	91.37	**86.23**	86.67	87.37	86.75
48	MAI-109	**163.36**	**157.19**	158.70	159.75	**84.80**	105.30	98.57	96.22	**72.30**	**87.55**	80.93	80.26	**60.40**	**70.91**	67.03	66.11	**83.55**	80.43	83.05	82.34
49	MAI-112	**170.92**	**175.40**	169.40	171.91	**175.07**	121.60	96.46	131.04	**77.37**	**105.21**	90.70	91.09	**63.84**	**88.49**	78.19	76.84	**83.42**	84.75	86.61	84.92
50	MAI-121	**141.69**	**163.87**	155.40	153.65	**63.80**	117.60	87.80	89.73	**51.90**	**99.41**	72.44	74.58	**43.80**	**83.54**	60.43	62.59	**84.39**	84.78	83.20	84.12
51	MAI-137	**132.20**	**135.47**	130.90	132.86	**74.47**	89.20	50.88	71.51	**43.60**	**46.06**	26.01	38.56	**35.50**	**26.94**	17.97	26.80	**81.58**	58.45	68.02	69.35
52	MAI-27	**126.03**	**170.41**	157.00	151.15	**99.20**	122.40	80.96	100.85	**71.84**	**103.95**	71.01	82.26	**60.64**	**87.23**	60.80	69.56	**84.85**	84.03	85.16	84.68
53	MAI-29	**152.60**	**168.64**	157.50	159.58	**101.30**	123.20	104.37	109.62	**83.50**	**92.38**	88.63	88.17	**73.30**	**77.22**	76.34	75.62	**87.90**	83.77	86.01	85.89
54	MAI-35	**137.17**	**165.81**	155.10	152.69	**128.80**	96.20	71.48	98.83	**56.60**	**71.71**	79.44	69.25	**47.50**	**58.35**	65.91	57.25	**84.18**	81.69	83.42	83.09
55	MAI-40	**155.49**	**204.85**	182.80	181.04	**114.30**	115.40	128.65	119.45	**79.47**	**91.19**	102.94	91.20	**66.10**	**75.76**	85.33	75.73	**83.77**	82.64	83.16	83.19
56	MAI-44	**137.51**	**180.97**	168.00	162.16	**117.90**	183.10	141.85	147.62	**99.10**	**147.50**	126.33	124.31	**83.80**	**123.19**	107.54	104.84	**85.76**	83.16	85.32	84.75
57	MAI-45	**132.21**	**143.09**	138.40	137.90	**113.28**	100.40	133.68	115.78	**85.30**	**77.00**	121.37	94.56	**69.60**	**60.85**	97.76	76.07	**81.67**	78.44	80.68	80.26
58	MAI-48	**144.98**	**152.02**	152.00	149.67	**122.80**	148.40	129.53	133.58	**107.70**	**125.98**	96.04	109.91	**87.80**	**104.00**	76.76	89.52	**82.11**	82.97	79.26	81.45
59	MAI-706	**208.93**	**216.60**	215.60	213.71	**253.10**	215.30	224.95	231.12	**214.00**	**188.42**	209.21	203.87	**186.20**	**162.39**	184.53	177.71	**87.78**	86.30	88.14	87.41
60	Q-Y-2593-3	**168.12**	**164.95**	165.10	166.06	**99.00**	98.00	80.22	92.41	**78.80**	**83.37**	63.24	75.14	**64.27**	**67.16**	57.35	62.92	**79.85**	81.45	90.55	83.95
61	S-9951 YQ	**164.02**	**178.90**	173.20	172.04	**136.03**	168.80	83.33	129.39	**107.98**	**131.36**	67.74	102.36	**90.05**	**106.75**	56.79	84.53	**82.79**	81.21	83.61	82.53
62	SKV-15	**158.35**	**176.97**	168.00	167.78	**100.80**	140.70	37.37	92.96	**78.90**	**85.57**	42.10	68.86	**63.10**	**69.34**	35.61	56.02	**81.33**	82.40	84.23	82.66
63	SKV-24	**184.10**	**195.71**	188.40	189.40	**136.20**	170.80	139.55	148.85	**123.60**	**140.78**	113.81	126.06	**105.10**	**119.59**	94.32	106.34	**85.85**	84.55	82.98	84.46
64	SKV-31	**150.94**	**167.15**	158.60	158.89	**129.80**	158.70	127.41	138.64	**110.40**	**138.51**	107.35	118.75	**93.40**	**116.96**	88.83	99.73	**84.69**	84.27	82.32	83.76
65	SKV-32	**150.54**	**168.62**	162.70	160.62	**99.10**	91.50	85.41	92.00	**83.40**	**78.68**	72.88	78.32	**68.80**	**65.80**	60.71	65.10	**82.34**	84.49	82.94	83.25
66	SKV-39	**184.26**	**173.27**	174.90	177.48	**130.40**	139.80	115.86	128.69	**90.30**	**114.06**	108.28	104.21	**75.50**	**93.88**	92.65	87.35	**84.11**	82.89	85.65	84.22
67	SKV-42	**185.32**	**134.37**	162.60	160.76	**51.40**	56.40	30.70	46.17	**37.50**	**36.53**	22.79	32.27	**32.60**	**28.66**	18.70	26.66	**86.32**	77.93	81.93	82.06
68	SKV-65	**181.72**	**197.62**	191.60	190.31	**190.30**	128.40	87.52	135.41	**126.40**	**104.88**	73.30	101.53	**98.34**	**86.71**	56.22	80.42	**78.13**	81.17	77.92	79.07
69	SKV-70	**171.32**	**180.47**	179.50	177.09	**152.90**	151.70	99.69	134.76	**111.90**	**122.73**	83.66	106.10	**98.90**	**106.46**	73.77	93.05	**88.25**	86.65	87.87	87.59
70	V-632-112	**167.26**	**180.67**	174.20	174.04	**176.10**	125.90	118.53	140.18	**132.50**	**82.72**	80.08	98.43	**113.10**	**68.25**	67.26	82.87	**84.48**	82.66	84.03	83.72
71	V-632-67	**169.61**	**182.34**	175.20	175.72	**128.60**	125.80	88.82	114.41	**93.20**	**87.60**	70.12	83.64	**70.80**	**65.98**	53.66	63.48	**76.29**	75.63	75.11	75.67
72	Z-49-20	**179.65**	**209.68**	193.90	194.41	**180.55**	255.00	196.81	210.79	**141.80**	**202.93**	152.96	165.90	**117.23**	**164.13**	126.51	135.96	**83.26**	80.40	82.40	82.02
73	Z-50-3	**159.08**	**158.07**	158.50	158.55	**124.30**	122.50	94.60	113.80	**103.00**	**100.15**	100.19	101.11	**86.30**	**84.82**	86.07	85.73	**84.15**	84.23	86.51	84.96
74	Z-51-1	**160.01**	**170.64**	165.90	165.52	**137.70**	150.70	175.98	154.79	**110.50**	**119.15**	131.40	120.35	**91.20**	**93.71**	107.68	97.53	**82.60**	78.68	82.03	81.10
75	Z-51-6	**143.48**	**175.85**	167.40	162.24	**75.80**	110.50	111.86	99.39	**62.30**	**91.07**	77.76	77.04	**51.70**	**72.37**	63.66	62.58	**83.36**	78.79	81.67	81.27
76	Z-52-29	**158.27**	**176.47**	169.40	168.05	**137.83**	113.20	73.04	108.02	**105.68**	**88.16**	57.20	83.68	**84.45**	**68.16**	44.80	65.80	**80.19**	76.79	78.29	78.42

Sl. no.	Inbred	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
77	Z-52-3	**145.08**	**171.61**	161.90	159.53	**148.10**	176.80	96.68	140.53	**80.33**	**129.85**	70.81	93.66	**65.67**	**107.03**	58.04	76.91	**81.42**	82.52	82.55	82.16
78	Z-52-4	**206.02**	**195.56**	196.60	199.40	**126.17**	97.20	140.88	121.42	**67.74**	**76.99**	96.74	80.49	**54.34**	**61.91**	82.67	66.30	**78.92**	80.40	85.01	81.44
79	Z-54-2	**169.27**	**186.37**	178.70	178.11	**98.07**	114.30	71.94	94.77	**75.20**	**95.16**	72.68	81.01	**62.67**	**77.74**	61.93	67.45	**82.46**	81.55	86.14	83.38
80	Z-55-10	**128.82**	**137.20**	133.10	133.04	**80.80**	59.43	64.70	68.31	**47.00**	**50.74**	55.70	51.15	**39.90**	**43.82**	43.93	42.55	**84.30**	85.34	78.81	82.81
81	Z-56-1	**159.82**	**179.33**	173.10	170.75	**104.70**	109.40	54.76	89.62	**69.30**	**91.49**	42.97	67.92	**57.40**	**75.61**	35.66	56.22	**83.20**	82.54	82.69	82.81
82	Z-56-5	**145.65**	**138.55**	140.40	141.54	**99.00**	75.30	46.09	73.46	**65.75**	**44.06**	32.64	47.48	**54.75**	**35.87**	25.55	38.72	**83.77**	82.44	77.43	81.21
83	Z-56-8	**153.92**	**157.16**	155.40	155.49	**168.50**	102.20	42.58	104.43	**93.25**	**85.51**	45.50	74.75	**44.75**	**70.82**	39.66	51.74	**57.25**	82.06	87.91	75.74
84	Z-57-27	**120.02**	**133.57**	128.80	127.46	**99.50**	80.40	49.59	76.50	**51.00**	**61.55**	41.13	51.22	**42.00**	**49.42**	33.58	41.67	**82.50**	79.36	83.14	81.67
85	Z-57-4	**170.92**	**175.42**	172.40	172.91	**117.50**	121.00	83.38	107.29	**98.60**	**101.02**	72.66	90.76	**86.30**	**86.57**	63.11	78.66	**88.10**	85.87	86.01	86.66
86	Z-57-5	**163.77**	**176.95**	170.10	170.28	**96.50**	59.57	85.75	80.60	**84.10**	**53.42**	72.60	70.04	**75.30**	**44.84**	61.90	60.68	**89.33**	84.01	85.93	86.42
87	Z-59-36	**88.89**	**120.24**	108.50	105.88	**62.70**	101.60	68.95	77.75	**48.80**	**82.33**	52.08	61.07	**39.80**	**65.92**	43.71	49.81	**81.45**	81.81	82.86	82.04
88	Z-60-22	**159.06**	**185.47**	179.30	174.61	**106.20**	125.40	107.90	113.17	**90.90**	**104.40**	94.61	96.64	**78.00**	**88.49**	82.32	82.93	**84.36**	84.03	87.36	85.25
89	Z-62-55	**147.89**	**170.02**	151.60	156.50	**149.17**	153.40	123.71	142.09	**118.47**	**126.90**	97.78	114.38	**97.17**	**107.68**	87.01	97.29	**81.80**	84.29	88.56	84.88
90	Z-62-67	**160.83**	**176.81**	176.90	171.51	**122.67**	82.00	90.83	98.50	**69.42**	**69.35**	72.74	70.50	**58.79**	**55.03**	59.17	57.66	**85.25**	79.62	81.26	82.04
91	Z-62-9	**114.30**	**121.49**	116.60	117.46	**84.90**	108.50	86.32	93.24	**71.30**	**91.46**	68.21	76.99	**64.60**	**80.13**	61.38	68.70	**90.52**	88.23	89.90	89.55
92	Z-63-16	**139.60**	**139.53**	141.10	140.08	**93.07**	112.75	95.29	100.37	**62.14**	**91.23**	78.36	77.24	**47.04**	**68.37**	64.42	59.94	**76.13**	74.72	82.54	77.80
93	Z-63-17	**129.65**	**142.05**	133.70	135.13	**76.40**	108.90	126.41	103.90	**58.10**	**91.77**	76.83	75.57	**44.60**	**62.54**	62.46	56.53	**76.22**	69.77	81.68	75.89
94	Z-63-18	**128.16**	**131.94**	129.70	129.93	**78.05**	101.80	65.52	81.79	**52.85**	**86.67**	60.07	66.53	**43.75**	**66.30**	50.58	53.54	**82.61**	75.65	84.72	80.99
95	Z-63-30	**151.04**	**156.37**	147.80	151.74	**132.30**	121.20	138.90	130.80	**80.25**	**101.10**	86.13	89.16	**58.25**	**74.78**	67.12	66.72	**73.43**	73.58	78.36	75.12
96	CM 500	**212.09**	**217.22**	211.10	213.47	**149.60**	130.90	116.00	132.17	**122.40**	**109.40**	95.88	109.23	**92.80**	**79.74**	75.84	82.79	**74.86**	73.60	79.02	75.83
97	SKV 50	**148.82**	**177.72**	163.80	163.45	**80.80**	91.40	63.70	78.63	**66.40**	**79.92**	52.97	66.43	**57.40**	**56.97**	42.55	52.31	**87.13**	74.59	80.04	80.58
98	MAI 105	**167.88**	**184.21**	175.00	175.69	**148.78**	172.20	190.31	170.43	**108.78**	**134.66**	151.21	131.55	**87.10**	**102.98**	123.41	104.50	**80.90**	76.63	81.15	79.56
99	LM 13	**201.27**	**209.36**	202.40	204.34	**155.30**	158.50	140.90	151.57	**120.80**	**117.86**	109.95	116.21	**101.10**	**98.91**	88.91	96.31	**82.12**	84.21	80.47	82.27
100	HKI 193	**167.72**	**181.18**	175.60	174.84	**92.23**	138.40	102.53	111.05	**75.53**	**119.00**	83.71	92.74	**63.68**	**97.89**	68.89	76.82	**84.35**	82.80	81.42	82.85
Mean		159.01	171.60	166.14	165.59	118.30	123.98	99.26	113.85	86.75	99.79	80.87	89.13	71.75	81.45	67.33	73.51	82.74	81.47	82.74	82.32
Range		88.89	120.24	108.50	105.88	51.40	56.40	30.70	46.17	37.50	36.53	22.79	32.27	32.60	26.94	17.97	26.66	57.25	58.45	61.93	69.35
		218.65	231.57	215.60	217.35	255.50	255.00	224.95	231.12	214.00	206.11	209.21	203.87	186.20	164.13	184.53	177.71	90.52	90.15	90.55	89.55
S. Em. ±		3.26	7.99	5.87	4.63	23.13	18.80	16.89	14.00	12.08	14.60	12.89	10.01	10.02	13.04	11.17	8.30	3.48	3.16	2.88	2.07
C. D. 5%		9.22	22.59	16.59	12.92	65.41	53.16	47.79	39.04	34.17	41.30	36.45	27.90	28.35	36.89	31.60	23.16	9.85	8.94	8.14	5.78
C. D. 1%		12.27	30.04	22.07	17.04	86.99	70.71	63.56	51.49	45.45	54.93	48.47	36.80	37.70	49.06	42.03	30.54	13.10	11.90	10.82	7.62

Note: Figures in bold indicates adjusted mean values

Sl. no.	Inbred	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
1	V-1005	57.89	**48.11**	47.60	51.20	**21.69**	**22.50**	**17.66**	20.62	**13.38**	13.60	**13.58**	13.52	**26.58**	**30.80**	**25.58**	27.65	12.85	17.17	**13.71**	14.58	**3.25**	**3.69**	**3.02**	3.32
2	V-1036	48.40	**47.48**	49.38	48.42	**28.63**	**35.04**	**25.82**	29.83	**13.81**	12.00	**13.80**	13.20	**18.21**	**16.30**	**15.91**	16.81	11.42	12.27	**10.09**	11.26	**3.72**	**3.98**	**3.62**	3.77
3	V-1150	42.09	**40.75**	36.90	39.91	**25.06**	**30.19**	**28.77**	28.01	**11.82**	12.00	**12.81**	12.21	**29.43**	**30.58**	**26.28**	28.76	15.20	15.50	**13.83**	14.84	**4.04**	**4.11**	**4.17**	4.11
4	V-1154	35.91	**41.27**	37.57	38.25	**38.17**	**43.48**	**25.98**	35.88	**14.85**	13.40	**14.41**	14.22	**32.09**	**33.69**	**21.21**	29.00	16.12	17.58	**12.15**	15.28	**4.98**	**4.78**	**4.60**	4.79
5	V-1168	48.29	**44.72**	45.25	46.09	**23.69**	**24.35**	**26.86**	24.97	**13.64**	13.80	**14.38**	13.94	**30.76**	**34.09**	**33.46**	32.77	13.11	14.83	**13.24**	13.73	**4.02**	**4.38**	**4.75**	4.39
6	V-1522	47.09	**33.95**	45.17	42.07	**25.09**	**29.20**	**21.22**	25.17	**10.81**	10.20	**10.21**	10.41	**25.35**	**28.67**	**25.76**	26.59	13.67	16.72	**17.24**	15.87	**3.53**	**3.86**	**3.97**	3.79
7	V-1649	40.05	**41.05**	45.26	42.12	**18.72**	**17.29**	**20.15**	18.72	**14.03**	14.00	**14.21**	14.08	**30.68**	**33.75**	**27.05**	30.49	15.85	16.12	**15.71**	15.89	**3.50**	**3.61**	**3.64**	3.58
8	V-1742	52.71	**38.89**	46.42	46.01	**18.66**	**17.68**	**18.13**	18.16	**13.13**	14.40	**13.62**	13.72	**21.72**	**28.14**	**24.08**	24.65	10.66	14.79	**13.44**	12.96	**3.48**	**4.01**	**3.43**	3.64
9	V-2205	33.28	**42.87**	45.40	40.52	**31.31**	**30.54**	**29.81**	30.56	**9.95**	10.20	**10.21**	10.12	**16.85**	**24.46**	**19.77**	20.36	10.56	12.70	**11.55**	11.60	**3.20**	**3.78**	**3.53**	3.50
10	V-2232	40.48	**45.88**	44.76	43.71	**29.69**	**30.50**	**35.77**	31.99	**12.81**	12.40	**12.59**	12.60	**33.21**	**37.55**	**34.79**	35.18	15.43	18.12	**17.94**	17.16	**4.25**	**4.44**	**4.32**	4.33
11	V-1410-1	39.79	**41.29**	45.03	42.04	**23.89**	**28.06**	**26.92**	26.29	**12.87**	12.00	**13.18**	12.68	**21.78**	**28.30**	**24.24**	24.77	12.84	15.10	**14.32**	14.09	**3.82**	**4.31**	**4.13**	4.09
12	V-1712-1	39.18	**42.12**	46.49	42.60	**27.06**	**27.06**	**25.22**	26.45	**14.40**	14.40	**14.64**	14.48	**21.86**	**28.05**	**29.77**	26.56	11.81	14.00	**14.52**	13.44	**4.26**	**4.38**	**4.57**	4.41
13	V-241-2	53.76	**44.45**	47.06	48.42	**20.74**	**25.03**	**22.52**	22.76	**13.79**	13.80	**13.96**	13.85	**24.85**	**29.07**	**21.63**	25.18	13.51	14.75	**10.13**	12.80	**3.99**	**4.13**	**3.70**	3.94
14	V-2436-1	37.02	**44.87**	43.24	41.71	**14.03**	**14.47**	**13.97**	14.16	**12.07**	13.80	**12.22**	12.70	**31.17**	**33.09**	**35.83**	33.36	15.25	18.02	**18.73**	17.33	**2.58**	**2.92**	**2.88**	2.79
15	V-2437-1	42.55	**42.88**	27.10	37.51	**17.32**	**16.90**	**17.62**	17.28	**10.60**	10.60	**10.62**	10.61	**32.74**	**37.84**	**28.67**	33.08	13.84	15.63	**12.82**	14.10	**3.27**	**3.23**	**3.18**	3.22
16	V-2441-4	53.15	**46.61**	47.59	49.12	**16.69**	**20.09**	**19.97**	18.92	**15.01**	15.20	**16.01**	15.41	**26.25**	**31.70**	**26.52**	28.16	12.86	14.40	**12.16**	13.14	**3.70**	**3.80**	**3.75**	3.75
17	V-2459-2	49.07	**41.19**	45.15	45.13	**13.97**	**16.19**	**17.44**	15.87	**10.29**	10.60	**11.01**	10.63	**28.24**	**25.87**	**33.55**	29.22	12.16	14.17	**12.83**	13.05	**3.04**	**3.14**	**3.15**	3.11
18	V-2516-2	40.96	**44.53**	48.28	44.59	**18.09**	**17.18**	**15.73**	17.00	**13.71**	13.00	**14.41**	13.71	**36.17**	**34.06**	**34.06**	34.76	15.50	17.00	**14.36**	15.62	**3.50**	**3.30**	**3.15**	3.32
19	V-2608-1	46.68	**43.72**	39.95	43.45	**25.40**	**22.69**	**28.69**	25.59	**13.18**	12.40	**12.02**	12.53	**27.70**	**31.08**	**25.64**	28.14	15.20	17.60	**12.46**	15.09	**3.64**	**3.78**	**3.27**	3.56
20	V-291-2	44.22	**42.88**	44.82	43.97	**25.29**	**24.15**	**26.05**	25.16	**14.66**	15.40	**15.60**	15.22	**26.86**	**26.85**	**22.24**	25.31	16.55	16.42	**13.85**	15.61	**4.34**	**4.37**	**4.10**	4.27
21	V-70-1	35.07	**43.90**	44.88	41.28	**24.69**	**27.91**	**24.91**	25.84	**11.81**	11.80	**11.00**	11.53	**25.38**	**29.36**	**27.53**	27.42	14.19	15.42	**13.84**	14.48	**3.70**	**3.80**	**3.51**	3.67
22	CIMMYT-10	45.84	**42.08**	41.84	43.25	**24.66**	**25.06**	**30.90**	26.87	**13.57**	14.20	**13.21**	13.66	**26.09**	**17.30**	**16.89**	20.09	15.96	15.83	**13.84**	15.21	**4.18**	**4.18**	**3.79**	4.05
23	CIMMYT-47	40.41	**44.78**	46.15	43.78	**21.94**	**20.32**	**24.07**	22.11	**14.35**	13.40	**14.60**	14.12	**25.42**	**30.19**	**25.69**	27.10	14.18	13.58	**13.99**	13.92	**4.05**	**3.78**	**4.09**	3.97
24	CIMMYT-5	45.64	**42.01**	44.52	44.05	**24.86**	**25.59**	**27.74**	26.06	**8.56**	8.80	**8.99**	8.78	**18.95**	**17.74**	**17.33**	18.01	13.36	12.58	**11.32**	12.42	**3.18**	**3.37**	**3.25**	3.27
25	CM-115	42.51	**40.72**	39.01	40.75	**14.40**	**18.10**	**15.39**	15.96	**13.74**	13.80	**13.78**	13.77	**23.17**	**26.47**	**20.42**	23.35	10.65	12.75	**9.09**	10.83	**3.03**	**3.35**	**2.96**	3.11
26	CM-149	51.52	**45.62**	41.33	46.16	**24.86**	**31.62**	**26.20**	27.56	**13.13**	13.40	**13.78**	13.44	**19.12**	**22.05**	**13.92**	18.36	11.59	13.63	**11.85**	12.36	**3.54**	**4.04**	**3.89**	3.82
27	CM-212	53.49	**45.65**	47.52	48.89	**21.14**	**19.68**	**22.06**	20.96	**13.60**	15.40	**15.02**	14.67	**20.32**	**22.95**	**23.10**	22.12	9.84	11.58	**12.10**	11.17	**3.81**	**3.91**	**4.15**	3.96
28	CML-165	43.46	**44.96**	44.69	44.37	**22.09**	**26.15**	**22.30**	23.51	**11.01**	10.80	**12.01**	11.27	**24.85**	**27.01**	**23.54**	25.13	11.64	12.33	**11.27**	11.75	**3.37**	**3.60**	**3.64**	3.54
29	CML-166	41.59	**42.67**	40.90	41.72	**11.69**	**16.79**	**17.97**	15.48	**13.98**	14.10	**15.40**	14.49	**28.74**	**30.50**	**25.31**	28.18	13.28	14.63	**14.07**	13.99	**3.39**	**3.61**	**3.50**	3.50
30	CML-169	55.33	**45.74**	46.93	49.33	**17.26**	**21.40**	**23.84**	20.83	**12.48**	11.80	**12.21**	12.16	**30.44**	**33.82**	**31.21**	31.82	12.34	15.08	**14.48**	13.97	**3.48**	**3.70**	**3.84**	3.67
31	CML-172	35.55	**40.81**	45.30	40.55	**24.69**	**23.97**	**29.69**	26.11	**14.01**	13.80	**13.21**	13.67	**25.25**	**30.34**	**27.53**	27.71	13.27	15.25	**13.12**	13.88	**3.62**	**4.03**	**3.85**	3.83
32	CML-304	31.91	**42.61**	37.57	37.36	**21.94**	**24.66**	**23.89**	23.50	**10.05**	11.20	**11.59**	10.95	**25.81**	**28.66**	**26.66**	27.04	16.65	16.33	**16.62**	16.53	**3.01**	**3.25**	**3.20**	3.15
33	CML-335	45.13	**45.49**	49.21	46.61	**12.83**	**19.56**	**19.38**	17.26	**13.18**	13.80	**13.81**	13.59	**21.48**	**23.14**	**24.45**	23.03	10.89	15.58	**14.36**	13.61	**3.07**	**3.45**	**3.53**	3.35
34	CML-358	40.23	**39.54**	45.43	41.73	**21.06**	**23.87**	**27.14**	24.02	**10.62**	11.60	**10.81**	11.01	**24.93**	**29.63**	**20.43**	25.00	12.76	16.63	**15.21**	14.87	**3.70**	**4.02**	**3.90**	3.87
35	CML-359	51.74	**46.28**	48.49	48.84	**20.31**	**21.97**	**20.86**	21.05	**14.06**	14.00	**14.81**	14.29	**32.93**	**32.59**	**34.50**	33.34	13.28	15.92	**14.86**	14.68	**3.64**	**3.90**	**3.65**	3.73
36	CML-411	42.68	**41.95**	42.03	42.22	**33.03**	**27.37**	**26.63**	29.01	**10.61**	10.40	**10.62**	10.54	**30.11**	**32.38**	**18.54**	27.01	13.99	15.92	**12.47**	14.13	**4.00**	**4.07**	**3.80**	3.96
37	DMR-N-21	49.54	**45.20**	47.05	47.26	**17.03**	**23.28**	**19.81**	20.04	**13.47**	12.60	**14.00**	13.36	**23.67**	**34.25**	**25.36**	27.76	10.34	14.00	**11.47**	11.94	**3.68**	**3.73**	**3.67**	3.69
38	EC-598475	41.98	**32.97**	40.08	38.34	**25.34**	**30.66**	**26.04**	27.35	**14.07**	12.60	**12.61**	13.09	**23.42**	**20.34**	**20.52**	21.43	13.25	15.00	**13.13**	13.79	**3.57**	**3.49**	**3.36**	3.47

Sl. no.	Inbred	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
39	HKI-1105	47.29	**35.60**	42.48	41.79	**27.97**	**32.03**	**28.65**	29.55	**14.76**	13.80	**13.02**	13.86	**29.51**	**36.03**	**26.54**	30.69	13.87	17.58	**14.64**	15.37	**4.40**	**4.54**	**4.04**	4.33
40	HKI-164-4	49.84	**44.70**	44.95	46.50	**23.09**	**24.25**	**28.73**	25.35	**13.35**	14.00	**13.21**	13.52	**16.70**	**24.32**	**19.32**	20.12	9.92	13.42	**12.80**	12.05	**3.49**	**4.01**	**3.69**	3.73
41	HKI-193-1	50.93	**45.56**	46.88	47.79	**25.97**	**26.04**	**24.10**	25.37	**11.99**	12.60	**12.59**	12.39	**28.72**	**30.69**	**29.84**	29.75	14.08	15.17	**14.47**	14.57	**3.56**	**3.96**	**3.61**	3.71
42	HKI-193-2	38.21	**45.09**	46.05	43.12	**22.89**	**20.97**	**24.62**	22.83	**12.07**	11.80	**11.80**	11.89	**22.08**	**18.88**	**20.97**	20.64	10.60	10.83	**11.32**	10.92	**3.74**	**3.26**	**3.38**	3.46
43	HKI-36	31.25	**45.81**	42.03	39.70	**18.00**	**23.00**	**20.80**	20.60	**10.32**	10.00	**11.22**	10.52	**28.52**	**28.88**	**22.50**	26.63	15.77	17.08	**12.16**	15.00	**3.13**	**3.24**	**3.30**	3.22
44	K-10-11	45.78	**41.34**	45.66	44.26	**30.97**	**23.44**	**20.25**	24.88	**11.63**	11.60	**12.62**	11.95	**29.10**	**29.78**	**28.62**	29.17	13.47	15.02	**13.16**	13.88	**3.90**	**3.73**	**3.54**	3.72
45	LTP-1	44.04	**44.36**	45.04	44.48	**12.06**	**19.41**	**14.62**	15.36	**10.21**	10.60	**12.80**	11.20	**27.19**	**27.86**	**26.91**	27.32	12.86	15.58	**12.85**	13.76	**2.64**	**3.12**	**2.86**	2.87
46	MAI-115	52.61	**46.57**	48.27	49.15	**22.52**	**27.07**	**32.17**	27.25	**14.20**	14.40	**13.60**	14.07	**26.66**	**26.22**	**26.37**	26.41	13.26	15.17	**13.71**	14.05	**3.98**	**4.46**	**4.13**	4.19
47	MAI-107	54.52	**45.38**	47.35	49.08	**31.34**	**29.71**	**31.67**	30.91	**13.49**	13.20	**15.20**	13.96	**27.22**	**24.79**	**20.99**	24.33	13.50	14.83	**13.25**	13.86	**4.27**	**4.43**	**4.45**	4.38
48	MAI-109	49.73	**43.40**	46.09	46.41	**23.40**	**24.22**	**25.46**	24.36	**9.95**	10.20	**10.21**	10.12	**24.00**	**27.32**	**27.50**	26.27	12.28	14.42	**14.02**	13.57	**3.38**	**3.54**	**3.42**	3.45
49	MAI-112	37.13	**45.82**	47.63	43.52	**25.06**	**26.24**	**25.20**	25.50	**13.80**	13.60	**14.38**	13.92	**23.03**	**26.99**	**23.92**	24.64	12.72	14.47	**13.15**	13.45	**4.06**	**4.11**	**3.95**	4.04
50	MAI-121	46.92	**44.83**	46.13	45.96	**13.40**	**20.94**	**20.69**	18.34	**15.95**	14.20	**13.79**	14.65	**24.00**	**29.62**	**25.51**	26.38	9.30	12.88	**10.97**	11.05	**3.53**	**4.01**	**3.65**	3.73
51	MAI-137	33.65	**25.74**	31.69	30.36	**20.66**	**27.97**	**23.69**	24.11	**11.93**	12.20	**11.80**	11.97	**17.89**	**22.03**	**15.12**	18.35	9.68	13.08	**8.88**	10.55	**3.53**	**3.96**	**3.68**	3.72
52	MAI-27	49.38	**45.29**	47.62	47.43	**27.83**	**29.12**	**26.77**	27.91	**11.29**	11.60	**11.81**	11.57	**22.79**	**23.99**	**22.05**	22.94	11.73	15.00	**12.12**	12.95	**3.72**	**3.96**	**3.64**	3.77
53	MAI-29	47.34	**41.82**	46.52	45.22	**26.94**	**26.65**	**23.59**	25.73	**13.43**	13.80	**13.57**	13.60	**24.15**	**23.87**	**27.41**	25.14	11.64	12.42	**12.10**	12.05	**4.01**	**4.18**	**3.81**	4.00
54	MAI-35	43.12	**41.49**	47.53	44.04	**22.09**	**28.75**	**33.46**	28.10	**13.31**	12.60	**13.79**	13.23	**14.47**	**16.81**	**17.40**	16.23	8.97	12.68	**11.27**	10.97	**3.87**	**4.01**	**3.70**	3.86
55	MAI-40	45.38	**43.17**	44.84	44.46	**22.06**	**22.41**	**24.76**	23.08	**12.19**	12.20	**12.23**	12.20	**23.53**	**26.11**	**26.19**	25.28	12.05	16.03	**14.41**	14.16	**3.88**	**4.18**	**4.10**	4.05
56	MAI-44	52.62	**43.25**	45.89	47.25	**30.06**	**29.04**	**31.89**	30.33	**12.15**	11.60	**11.81**	11.85	**27.33**	**37.10**	**30.01**	31.48	15.39	19.63	**15.68**	16.90	**3.94**	**4.06**	**4.04**	4.01
57	MAI-45	46.15	**41.05**	44.25	43.82	**26.69**	**27.66**	**29.96**	28.10	**13.24**	12.60	**13.80**	13.21	**24.59**	**24.75**	**25.31**	24.88	12.58	13.25	**14.72**	13.52	**4.07**	**4.15**	**4.28**	4.17
58	MAI-48	47.61	**44.34**	42.93	44.96	**25.17**	**25.41**	**25.72**	25.43	**10.63**	11.40	**10.60**	10.87	**29.26**	**34.16**	**32.16**	31.86	14.17	16.85	**16.98**	16.00	**3.84**	**4.08**	**3.72**	3.88
59	MAI-706	47.12	**46.32**	47.87	47.10	**33.31**	**33.83**	**33.99**	33.71	**16.62**	15.00	**14.59**	15.40	**37.89**	**38.68**	**38.83**	38.47	17.18	19.33	**18.25**	18.25	**4.85**	**4.66**	**4.83**	4.78
60	Q-Y-2593-3	43.08	**43.94**	49.79	45.60	**22.97**	**25.00**	**22.41**	23.46	**12.19**	12.40	**13.83**	12.81	**23.56**	**21.79**	**21.39**	22.25	11.22	11.58	**12.53**	11.78	**3.65**	**3.59**	**3.61**	3.62
61	S-9951 YQ	51.73	**41.92**	46.45	46.70	**23.86**	**29.97**	**21.36**	25.06	**14.96**	16.00	**15.58**	15.51	**27.29**	**28.31**	**22.08**	25.89	14.82	19.63	**10.88**	15.11	**3.96**	**4.25**	**3.68**	3.96
62	SKV-15	45.00	**36.92**	44.76	42.23	**20.37**	**23.63**	**23.93**	22.64	**14.08**	12.00	**12.61**	12.90	**21.51**	**24.60**	**14.86**	20.32	11.62	12.53	**9.35**	11.17	**3.80**	**3.91**	**3.45**	3.72
63	SKV-24	50.48	**44.22**	45.61	46.77	**29.31**	**29.47**	**28.70**	29.16	**12.62**	12.20	**12.19**	12.34	**29.06**	**34.24**	**32.94**	32.08	14.36	17.08	**15.68**	15.71	**4.02**	**4.06**	**3.84**	3.97
64	SKV-31	50.08	**45.77**	45.80	47.22	**27.94**	**29.03**	**25.14**	27.37	**11.43**	12.40	**12.19**	12.01	**31.81**	**36.45**	**32.41**	33.56	17.21	19.25	**17.63**	18.03	**3.97**	**4.21**	**3.66**	3.95
65	SKV-32	48.77	**45.50**	46.33	46.87	**20.06**	**19.91**	**21.04**	20.34	**15.72**	15.80	**16.18**	15.90	**23.62**	**24.32**	**20.75**	22.90	12.12	12.30	**11.41**	11.94	**4.08**	**3.94**	**3.91**	3.97
66	SKV-39	43.51	**43.36**	45.90	44.26	**23.32**	**23.68**	**26.19**	24.40	**13.20**	12.40	**12.62**	12.74	**25.74**	**28.13**	**26.97**	26.95	12.46	12.75	**11.76**	12.32	**4.18**	**4.08**	**4.27**	4.17
67	SKV-42	42.53	**40.13**	46.39	43.02	**14.09**	**19.68**	**14.36**	16.04	**10.14**	10.20	**9.99**	10.11	**19.88**	**23.37**	**15.71**	19.65	9.95	11.17	**7.60**	9.57	**3.08**	**3.38**	**3.06**	3.17
68	SKV-65	42.18	**43.60**	37.73	41.17	**28.26**	**26.66**	**29.19**	28.04	**13.67**	13.40	**13.44**	13.50	**26.45**	**26.87**	**18.89**	24.07	14.44	14.13	**11.91**	13.50	**4.39**	**4.22**	**4.13**	4.25
69	SKV-70	52.19	**44.34**	47.88	48.14	**26.60**	**26.68**	**23.73**	25.67	**12.89**	12.80	**13.01**	12.90	**31.52**	**30.45**	**26.65**	29.54	13.82	14.30	**12.31**	13.48	**4.02**	**4.11**	**3.74**	3.96
70	V-632-112	42.07	**37.87**	41.43	40.46	**28.94**	**26.16**	**26.43**	27.18	**13.78**	13.40	**12.80**	13.33	**30.48**	**22.25**	**24.52**	25.75	15.45	14.04	**13.93**	14.47	**4.27**	**3.97**	**3.46**	3.90
71	V-632-67	33.25	**37.77**	39.71	36.91	**26.57**	**25.56**	**20.61**	24.25	**12.71**	12.00	**12.78**	12.50	**22.57**	**27.56**	**21.66**	23.93	13.42	15.58	**13.39**	14.13	**3.59**	**3.96**	**3.39**	3.65
72	Z-49-20	47.05	**41.77**	41.47	43.43	**31.11**	**33.04**	**31.13**	31.76	**14.94**	15.60	**15.16**	15.23	**28.82**	**34.73**	**28.47**	30.67	12.67	15.53	**14.56**	14.26	**4.55**	**5.20**	**4.81**	4.85
73	Z-50-3	42.20	**44.53**	56.54	47.76	**24.03**	**24.29**	**22.29**	23.54	**12.15**	12.40	**12.79**	12.45	**31.52**	**32.75**	**30.14**	31.47	16.48	16.25	**15.68**	16.14	**3.71**	**3.83**	**3.90**	3.81
74	Z-51-1	42.18	**41.48**	43.95	42.54	**26.23**	**25.75**	**31.97**	27.98	**16.43**	15.40	**15.62**	15.82	**26.07**	**23.96**	**29.27**	26.44	12.85	14.53	**15.02**	14.13	**4.68**	**4.83**	**4.91**	4.81
75	Z-51-6	51.32	**42.73**	44.92	46.32	**20.17**	**21.35**	**23.98**	21.83	**14.23**	14.60	**14.63**	14.48	**19.09**	**23.67**	**19.65**	20.80	8.60	10.88	**8.79**	9.42	**3.92**	**3.93**	**4.00**	3.95
76	Z-52-29	48.78	**40.80**	43.52	44.37	**24.94**	**25.35**	**21.21**	23.83	**12.63**	13.00	**11.62**	12.41	**29.15**	**25.67**	**22.66**	25.82	13.73	14.17	**11.75**	13.22	**4.01**	**4.05**	**3.55**	3.87

Sl. no.	Inbred	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
77	Z-52-3	37.97	**40.38**	44.15	40.83	**24.69**	**32.62**	**30.26**	29.19	**13.61**	13.40	**13.36**	13.46	**21.42**	**24.74**	**23.97**	23.37	12.75	16.05	**12.88**	13.89	**3.63**	**4.05**	**3.65**	3.77
78	Z-52-4	27.22	**42.51**	44.47	38.07	**14.40**	**18.03**	**25.11**	19.18	**12.35**	12.60	**13.62**	12.86	**30.00**	**26.11**	**28.12**	28.07	15.52	14.28	**14.36**	14.72	**3.24**	**3.41**	**3.59**	3.41
79	Z-54-2	45.91	**44.35**	48.94	46.40	**17.11**	**20.97**	**20.31**	19.46	**12.76**	12.40	**13.38**	12.85	**32.19**	**29.36**	**22.38**	27.98	13.76	13.63	**11.72**	13.04	**3.37**	**3.81**	**3.55**	3.58
80	Z-55-10	50.04	**47.56**	46.11	47.90	**19.09**	**20.33**	**21.39**	20.27	**13.14**	16.00	**15.62**	14.92	**15.71**	**22.18**	**20.15**	19.35	10.24	12.20	**11.83**	11.42	**3.09**	**3.53**	**3.38**	3.33
81	Z-56-1	50.60	**44.56**	48.19	47.78	**20.06**	**22.06**	**16.08**	19.40	**10.19**	9.80	**10.01**	10.00	**23.37**	**27.98**	**21.11**	24.15	10.69	12.17	**10.34**	11.07	**3.48**	**3.63**	**2.77**	3.29
82	Z-56-5	48.39	**31.86**	35.30	38.51	**20.11**	**20.40**	**14.18**	18.23	**11.34**	10.80	**12.38**	11.51	**28.95**	**22.75**	**21.32**	24.34	12.95	11.83	**10.57**	11.79	**3.08**	**3.09**	**2.60**	2.92
83	Z-56-8	27.24	**44.70**	49.27	40.40	**19.40**	**21.32**	**21.95**	20.89	**14.18**	15.80	**15.18**	15.05	**21.37**	**27.93**	**19.12**	22.81	11.63	14.75	**11.15**	12.51	**3.49**	**3.89**	**3.23**	3.53
84	Z-57-27	36.93	**42.07**	47.58	42.19	**22.40**	**21.29**	**20.97**	21.55	**13.55**	14.40	**13.98**	13.98	**13.50**	**20.00**	**15.08**	16.19	9.08	11.00	**8.69**	9.59	**3.37**	**3.73**	**3.58**	3.56
85	Z-57-4	53.81	**45.10**	47.45	48.78	**31.09**	**30.59**	**32.33**	31.33	**14.15**	14.20	**13.17**	13.84	**23.70**	**26.67**	**16.57**	22.31	11.50	12.00	**10.37**	11.29	**4.18**	**4.34**	**3.87**	4.13
86	Z-57-5	58.38	**47.89**	48.16	51.48	**17.60**	**19.90**	**29.20**	22.23	**12.02**	11.40	**12.22**	11.88	**24.62**	**24.92**	**22.56**	24.03	12.17	13.37	**11.57**	12.37	**3.24**	**3.06**	**3.42**	3.24
87	Z-59-36	42.39	**42.60**	45.62	43.54	**18.89**	**23.62**	**22.18**	21.56	**9.67**	10.00	**10.18**	9.95	**20.78**	**23.18**	**19.84**	21.27	9.29	11.15	**9.74**	10.06	**3.16**	**3.42**	**3.33**	3.30
88	Z-60-22	55.28	**44.91**	48.16	49.45	**22.06**	**21.54**	**27.78**	23.79	**12.01**	12.80	**13.39**	12.73	**29.02**	**28.68**	**24.41**	27.37	13.87	14.67	**13.50**	14.01	**3.47**	**3.62**	**3.98**	3.69
89	Z-62-55	39.10	**44.22**	47.99	43.77	**27.26**	**30.70**	**24.05**	27.34	**13.67**	13.60	**13.98**	13.75	**32.28**	**26.87**	**29.95**	29.70	16.84	17.05	**16.08**	16.65	**3.88**	**4.17**	**3.66**	3.90
90	Z-62-67	47.91	**44.43**	45.77	46.04	**16.77**	**17.62**	**17.69**	17.36	**15.50**	14.80	**15.81**	15.37	**21.61**	**29.41**	**23.35**	24.79	12.06	13.83	**13.21**	13.03	**4.22**	**4.36**	**3.77**	4.12
91	Z-62-9	57.01	**46.28**	48.14	50.48	**23.06**	**30.40**	**28.04**	27.17	**12.49**	12.20	**14.58**	13.09	**22.15**	**21.43**	**21.59**	21.72	10.96	11.33	**10.25**	10.85	**3.73**	**3.94**	**3.93**	3.86
92	Z-63-16	33.16	**40.97**	47.16	40.43	**20.29**	**21.88**	**22.36**	21.51	**14.09**	15.00	**15.80**	14.96	**22.85**	**26.29**	**22.35**	23.83	13.16	15.67	**13.26**	14.03	**3.69**	**4.23**	**3.73**	3.88
93	Z-63-17	38.98	**39.86**	40.15	39.66	**20.17**	**23.00**	**29.30**	24.16	**16.45**	16.00	**16.18**	16.21	**23.59**	**25.54**	**24.83**	24.65	13.31	15.73	**13.48**	14.17	**3.88**	**4.17**	**4.12**	4.05
94	Z-63-18	35.99	**43.02**	48.32	42.44	**19.06**	**27.25**	**24.42**	23.58	**14.04**	13.80	**14.38**	14.07	**19.57**	**21.11**	**18.23**	19.64	10.53	14.22	**10.88**	11.88	**3.84**	**4.12**	**3.68**	3.88
95	Z-63-30	37.22	**41.39**	43.28	40.63	**24.00**	**28.20**	**31.53**	27.91	**13.50**	14.20	**14.40**	14.03	**20.89**	**25.63**	**20.33**	22.28	13.15	15.88	**14.36**	14.47	**3.74**	**4.04**	**4.14**	3.97
96	CM 500	43.87	**40.86**	44.05	42.93	**20.94**	**22.86**	**23.76**	22.52	**13.98**	13.60	**13.39**	13.66	**29.98**	**30.91**	**27.61**	29.50	14.87	16.75	**15.35**	15.66	**4.36**	**4.25**	**4.14**	4.25
97	SKV 50	53.14	**42.28**	45.80	47.07	**25.03**	**26.59**	**24.12**	25.24	**10.36**	10.20	**10.61**	10.39	**22.91**	**21.42**	**18.62**	20.98	13.07	14.58	**11.48**	13.04	**3.59**	**3.52**	**3.36**	3.49
98	MAI 105	41.91	**40.12**	44.89	42.31	**31.00**	**29.75**	**31.89**	30.88	**16.10**	16.00	**15.62**	15.91	**21.05**	**22.39**	**29.61**	24.35	12.19	15.33	**15.11**	14.21	**4.47**	**4.64**	**4.43**	4.51
99	LM 13	42.24	**41.10**	44.83	42.72	**34.43**	**37.71**	**34.54**	35.56	**10.19**	10.20	**10.58**	10.32	**26.03**	**24.37**	**26.48**	25.62	15.18	14.83	**15.52**	15.18	**3.76**	**4.25**	**3.84**	3.95
100	HKI 193	51.72	**52.03**	45.75	49.83	**21.94**	**24.47**	**22.80**	23.07	**11.75**	12.20	**12.20**	12.05	**27.59**	**30.26**	**27.49**	28.45	12.50	14.63	**12.98**	13.37	**3.34**	**3.71**	**3.53**	3.52
Mean		44.80	42.85	44.87	44.17	23.08	24.97	24.54	24.20	12.90	12.89	13.14	12.98	25.44	27.51	24.46	25.81	12.97	14.72	13.06	13.59	3.73	3.91	3.73	3.79
Range		27.22	25.74	27.10	30.36	11.69	14.47	13.97	14.16	8.56	8.80	8.99	8.78	13.50	16.30	13.92	16.19	8.60	10.83	7.60	9.42	2.58	2.92	2.60	2.79
		58.38	52.03	56.54	51.48	38.17	43.48	35.77	35.88	16.62	16.00	16.18	16.21	37.89	38.68	38.83	38.47	17.21	19.63	18.73	18.25	4.98	5.20	4.91	4.85
S. Em. ±		3.46	2.19	2.36	2.38	1.94	1.97	2.50	1.52	0.49	0.44	0.51	0.33	1.93	2.30	1.98	1.53	0.92	0.87	0.40	0.63	0.16	0.17	0.16	0.10
C. D. 5%		9.79	6.20	6.66	6.62	5.48	5.57	7.08	4.25	1.38	1.23	1.44	0.91	5.45	6.50	5.61	4.27	2.61	2.46	1.13	1.76	0.46	0.48	0.44	0.28
C. D. 1%		13.02	8.24	8.86	8.74	7.28	7.41	9.42	5.60	1.84	1.64	1.92	1.20	7.25	8.64	7.47	5.63	3.47	3.27	1.50	2.33	0.62	0.64	0.59	0.37

Note: Figures in bold indicates adjusted mean values

Appendix II. Mean performance of Hybrids for three locations

Sl. no.	Hybrid	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
1	V-1154 × CM 500	**56.00**	58.50	54.50	56.33	57.00	58.00	58.00	57.67	1.00	0.50	**4.00**	1.83	112.00	117.50	**109.00**	112.83	**88.50**	**118.00**	102.50	103.00
2	V-1154 × SKV 50	**56.00**	57.50	54.50	56.00	56.50	58.00	57.50	57.33	0.50	0.50	**2.00**	1.00	111.00	114.50	**109.50**	111.67	**98.50**	**99.00**	102.50	100.00
3	V-1154 × MAI 105	**56.00**	58.50	56.50	57.00	56.50	59.50	56.50	57.50	0.50	1.00	**1.00**	0.83	113.50	116.00	**109.50**	113.00	**95.00**	**119.25**	110.00	108.08
4	V-1154 × LM 13	**56.00**	59.00	54.50	56.50	55.50	57.00	52.50	55.00	0.50	2.00	**3.00**	1.83	115.50	119.50	**111.50**	115.50	**97.00**	**94.75**	105.00	98.92
5	V-1168 × CM 500	**57.50**	57.50	55.50	56.83	55.50	57.00	53.00	55.17	2.00	0.50	**2.00**	1.50	105.00	105.50	**100.00**	103.50	**88.50**	**89.25**	95.00	90.92
6	V-1168 × SKV 50	**54.50**	57.00	56.00	55.83	54.50	56.50	54.00	55.00	1.00	0.50	**3.00**	1.50	102.00	102.50	**100.00**	101.50	**87.50**	**76.50**	82.50	82.17
7	V-1168 × MAI 105	**57.50**	59.50	52.50	56.50	59.50	62.50	59.50	60.50	2.00	3.00	**7.00**	4.00	96.00	100.00	**95.00**	97.00	**82.50**	**103.50**	92.50	92.83
8	V-1168 × LM 13	**57.50**	58.50	56.50	57.50	56.50	60.00	55.50	57.33	1.00	1.50	**0.00**	0.83	116.00	120.00	**112.50**	116.17	**119.00**	**108.50**	100.00	109.17
9	V-1522 × CM 500	**54.00**	55.50	51.50	53.67	53.50	56.00	53.00	54.17	0.50	0.50	**1.00**	0.67	107.50	112.00	**108.00**	109.17	**102.50**	**82.25**	80.00	88.25
10	V-1522 × SKV 50	**56.00**	57.00	56.00	56.33	56.00	58.50	53.50	56.00	0.00	1.50	**2.00**	1.17	105.00	106.50	**103.00**	104.83	**100.00**	**110.00**	102.50	104.17
11	V-1522 × MAI 105	**55.50**	56.50	53.50	55.17	57.50	60.50	56.50	58.17	2.00	4.00	**3.00**	3.00	105.00	113.00	**102.00**	106.67	**85.00**	**98.25**	92.50	91.92
12	V-1522 × LM 13	**57.50**	58.50	57.50	57.83	56.50	60.50	57.50	58.17	1.00	2.00	**1.00**	1.33	114.50	119.50	**111.50**	115.17	**113.50**	**103.50**	112.50	109.83
13	V-1649 × CM 500	**57.50**	59.00	54.00	56.83	59.50	61.50	56.50	59.17	2.00	2.50	**1.00**	1.83	102.00	106.50	**97.00**	101.83	**102.00**	**56.75**	77.50	78.75
14	V-1649 × SKV 50	**57.00**	61.00	54.50	57.50	56.00	58.50	57.50	57.33	1.00	2.50	**2.00**	1.83	113.50	117.50	**108.00**	113.00	**85.00**	**103.75**	100.00	96.25
15	V-1649 × MAI 105	**56.00**	58.50	58.50	57.67	59.50	62.00	56.50	59.33	3.50	3.50	**1.00**	2.67	112.50	116.50	**112.50**	113.83	**90.00**	**92.50**	90.00	90.83
16	V-1649 × LM 13	**57.50**	58.00	53.50	56.33	58.50	59.50	54.50	57.50	1.00	1.50	**1.00**	1.17	91.50	93.50	**88.50**	91.17	**95.00**	**96.50**	90.00	93.83
17	V-1742 × CM 500	**53.00**	54.50	50.50	52.67	52.00	54.50	48.50	51.67	1.00	0.00	**1.00**	0.67	99.50	107.00	**99.00**	101.83	**81.50**	**80.00**	90.00	83.83
18	V-1742 × SKV 50	**53.00**	54.00	51.00	52.67	54.00	56.50	50.50	53.67	1.00	2.50	**1.00**	1.50	92.50	92.50	**90.50**	91.83	**65.00**	**97.75**	85.00	82.58
19	V-1742 × MAI 105	**52.00**	53.00	51.50	52.17	54.50	57.50	53.00	55.00	2.50	4.50	**2.00**	3.00	92.00	95.00	**90.50**	92.50	**65.00**	**89.25**	75.00	76.42
20	V-1742 × LM 13	**53.00**	55.50	54.00	54.17	53.00	54.00	54.00	53.67	0.00	1.50	**1.00**	0.83	114.00	120.00	**111.00**	115.00	**82.50**	**86.50**	80.00	83.00
21	V-2205 × CM 500	**59.00**	60.50	61.00	60.17	62.00	64.50	60.50	62.33	3.00	4.00	**0.00**	2.33	99.50	104.00	**98.00**	100.50	**100.00**	**182.00**	137.50	139.83
22	V-2205 × SKV 50	**60.00**	63.00	58.00	60.33	60.00	62.50	58.50	60.33	0.00	0.50	**1.00**	0.50	100.00	107.00	**99.00**	102.00	**87.50**	**101.75**	95.00	94.75
23	V-2205 × MAI 105	**57.00**	58.50	57.50	57.67	58.50	58.50	59.00	58.67	1.50	0.00	**1.00**	0.83	110.50	117.00	**112.50**	113.33	**97.50**	**133.00**	127.50	119.33
24	V-2205 × LM 13	**57.00**	58.00	56.00	57.00	59.00	61.50	56.00	58.83	2.00	3.50	**0.00**	1.83	112.00	115.50	**107.50**	111.67	**95.00**	**139.00**	140.00	124.67
25	V-2232 × CM 500	**53.00**	54.50	53.00	53.50	52.50	53.00	49.50	51.67	0.50	1.50	**4.00**	2.00	93.50	95.00	**90.00**	92.83	**85.00**	**87.00**	100.00	90.67
26	V-2232 × SKV 50	**53.50**	56.50	49.50	53.17	55.50	57.00	56.50	56.33	2.00	0.50	**8.00**	3.50	93.50	94.00	**89.50**	92.33	**90.00**	**87.75**	80.00	85.92
27	V-2232 × MAI 105	**56.00**	58.50	54.00	56.17	57.50	61.50	57.50	58.83	1.50	3.00	**2.00**	2.17	114.00	120.50	**109.00**	114.50	**93.00**	**88.25**	87.50	89.58
28	V-2232 × LM 13	**56.00**	57.50	56.50	56.67	55.50	56.50	56.50	56.17	0.50	1.00	**1.00**	0.83	117.00	122.00	**111.50**	116.83	**122.50**	**122.50**	122.50	122.50
29	V-1410-1 × CM 500	**49.50**	52.00	47.50	49.67	49.50	49.50	49.50	49.50	0.00	2.50	**2.00**	1.50	92.50	97.00	**88.00**	92.50	**60.00**	**83.25**	72.50	71.92
30	V-1410-1 × SKV 50	**56.00**	57.50	52.50	55.33	56.50	60.50	56.00	57.67	0.50	3.00	**3.00**	2.17	96.50	99.00	**93.00**	96.17	**91.50**	**77.75**	80.00	83.08
31	V-1410-1 × MAI 105	**56.50**	56.50	54.50	55.83	56.50	59.50	56.00	57.33	0.00	3.00	**1.00**	1.33	112.50	118.00	**111.00**	113.83	**90.00**	**83.25**	87.50	86.92
32	V-1410-1 × LM 13	**57.50**	59.00	53.00	56.50	56.00	59.00	56.00	57.00	1.50	0.00	**3.00**	1.50	113.50	119.00	**112.50**	115.00	**107.50**	**104.00**	110.00	107.17
33	V-1712-1 × CM 500	**53.00**	56.00	51.00	53.33	54.00	56.50	51.50	54.00	1.00	0.50	**2.00**	1.17	92.00	99.50	**92.00**	94.50	**100.00**	**109.50**	87.50	99.00
34	V-1712-1 × SKV 50	**59.00**	61.50	55.50	58.67	59.50	62.50	59.50	60.50	0.50	1.00	**5.00**	2.17	113.00	119.50	**109.50**	114.00	**93.50**	**87.75**	85.00	88.75
35	V-1712-1 × MAI 105	**57.00**	59.00	54.00	56.67	58.00	59.50	55.50	57.67	1.00	0.50	**2.00**	1.17	113.00	116.50	**112.00**	113.83	**115.00**	**128.25**	120.00	121.08
36	V-1712-1 × LM 13	**59.00**	62.50	58.50	60.00	59.00	61.00	56.00	58.67	0.00	1.50	**2.00**	1.17	114.50	113.50	**111.50**	113.17	**110.00**	**132.75**	117.50	120.08
37	V-241-2 × CM 500	**52.00**	53.50	49.50	51.67	49.50	51.50	50.50	50.50	2.50	2.00	**0.00**	1.50	94.00	96.50	**89.00**	93.17	**82.50**	**73.75**	90.00	82.08
38	V-241-2 × SKV 50	**56.50**	57.50	55.50	56.50	54.50	57.00	56.50	56.00	2.00	0.50	**1.00**	1.17	106.00	112.00	**104.50**	107.50	**82.50**	**82.25**	87.50	84.08

Sl. no.	Hybrid	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
39	V-241-2 × MAI 105	**57.00**	59.50	54.00	56.83	58.00	59.50	56.00	57.83	1.00	1.00	**1.00**	1.00	102.50	104.50	**101.50**	102.83	**107.50**	**83.00**	92.50	94.33
40	V-241-2 × LM 13	**58.50**	61.50	54.50	58.17	56.50	57.50	54.50	56.17	2.00	4.00	**0.00**	2.00	93.00	93.50	**91.50**	92.67	**100.00**	**113.50**	122.50	112.00
41	V-2437-1 × CM 500	**56.00**	57.00	54.50	55.83	56.50	58.50	57.00	57.33	0.50	1.50	**3.00**	1.67	100.00	104.50	**97.00**	100.50	**75.00**	**76.25**	81.00	77.42
42	V-2437-1 × SKV 50	**57.00**	60.00	53.50	56.83	58.50	59.50	58.50	58.83	1.50	0.50	**6.00**	2.67	105.50	108.50	**102.00**	105.33	**82.50**	**53.25**	62.50	66.08
43	V-2437-1 × MAI 105	**56.00**	59.00	54.50	56.50	56.50	58.50	55.50	56.83	0.50	0.50	**1.00**	0.67	109.00	114.00	**106.50**	109.83	**90.00**	**91.25**	112.50	97.92
44	V-2437-1 × LM 13	**57.50**	60.50	54.50	57.50	59.50	59.50	59.50	59.50	2.00	1.00	**5.00**	2.67	113.50	114.00	**110.00**	112.50	**107.50**	**102.00**	102.50	104.00
45	V-2459-2 × CM 500	**53.00**	56.00	49.50	52.83	54.50	55.50	54.50	54.83	1.50	0.50	**6.00**	2.67	93.50	100.50	**92.50**	95.50	**77.50**	**67.50**	77.50	74.17
46	V-2459-2 × SKV 50	**56.00**	58.50	48.50	54.33	56.50	60.50	55.50	57.50	0.50	2.00	**7.00**	3.17	100.50	101.50	**97.50**	99.83	**84.00**	**87.00**	95.00	88.67
47	V-2459-2 × MAI 105	**57.50**	60.00	54.50	57.33	59.50	62.50	57.50	59.83	2.00	2.50	**2.00**	2.17	101.00	102.50	**96.00**	99.83	**89.00**	**94.00**	85.00	89.33
48	V-2459-2 × LM 13	**58.00**	59.50	56.00	57.83	59.00	61.50	57.50	59.33	1.00	2.00	**1.00**	1.33	101.00	105.00	**100.50**	102.17	**97.50**	**122.75**	115.00	111.75
49	V-2516-2 × CM 500	**52.00**	54.50	54.50	53.67	53.50	56.00	50.50	53.33	1.50	1.50	**3.00**	2.00	97.00	103.50	**93.00**	97.83	**70.00**	**108.50**	75.00	84.50
50	V-2516-2 × SKV 50	**55.00**	55.50	53.00	54.50	55.00	56.00	53.50	54.83	0.00	0.50	**1.00**	0.50	102.00	103.00	**100.00**	101.67	**102.50**	**122.25**	112.50	112.42
51	V-2516-2 × MAI 105	**56.00**	57.00	53.00	55.33	59.50	62.50	58.50	60.17	3.50	5.50	**5.00**	4.67	97.50	102.00	**96.00**	98.50	**82.50**	**110.00**	97.50	96.67
52	V-2516-2 × LM 13	**54.00**	59.00	56.50	56.50	54.50	55.50	51.00	53.67	2.50	3.50	**6.00**	4.00	92.50	98.00	**89.50**	93.33	**105.00**	**102.25**	85.00	97.42
53	V-2608-1 × CM 500	**54.00**	54.00	49.00	52.33	56.00	57.50	55.50	56.33	2.00	3.50	**7.00**	4.17	93.50	96.50	**90.50**	93.50	**72.50**	**58.50**	65.00	65.33
54	V-2608-1 × SKV 50	**55.00**	56.50	52.00	54.50	54.50	54.50	52.50	53.83	1.50	2.00	**0.00**	1.17	93.00	97.50	**90.50**	93.67	**84.00**	**77.75**	62.50	74.75
55	V-2608-1 × MAI 105	**56.00**	56.50	54.50	55.67	59.00	60.50	56.00	58.50	3.00	4.00	**3.00**	3.33	109.00	112.00	**106.50**	109.17	**97.50**	**102.75**	90.00	96.75
56	V-2608-1 × LM 13	**56.00**	59.50	55.50	57.00	58.00	60.50	57.00	58.50	2.00	1.00	**1.00**	1.33	92.50	98.00	**91.50**	94.00	**102.50**	**92.00**	110.00	101.50
57	V-291-2 × CM 500	**56.50**	57.50	60.00	58.00	56.50	56.50	53.50	55.50	0.00	1.00	**6.00**	2.33	99.50	103.00	**98.50**	100.33	**107.50**	**107.25**	112.50	109.08
58	V-291-2 × SKV 50	**57.50**	59.00	54.50	57.00	59.50	60.00	59.00	59.50	2.00	1.00	**4.00**	2.33	107.50	109.00	**106.00**	107.50	**97.50**	**104.75**	107.50	103.25
59	V-291-2 × MAI 105	**61.00**	62.50	54.50	59.33	62.50	64.00	62.00	62.83	1.50	1.50	**8.00**	3.67	107.00	108.00	**104.00**	106.33	**112.50**	**147.00**	117.50	125.67
60	V-291-2 × LM 13	**57.50**	60.00	60.00	59.17	56.50	57.00	54.50	56.00	1.00	3.00	**4.00**	2.67	92.00	94.00	**89.50**	91.83	**122.50**	**108.75**	117.50	116.25
61	V-70-1 × CM 500	**56.50**	58.50	54.50	56.50	55.50	58.00	56.00	56.50	1.00	0.50	**1.00**	0.83	103.50	103.00	**100.00**	102.17	**102.50**	**106.50**	115.00	108.00
62	V-70-1 × SKV 50	**58.50**	61.50	57.50	59.17	59.50	62.50	57.50	59.83	1.00	1.00	**0.00**	0.67	102.00	109.50	**101.50**	104.33	**102.50**	**67.00**	77.50	82.33
63	V-70-1 × MAI 105	**59.50**	62.00	59.00	60.17	59.00	62.00	58.50	59.83	0.50	0.00	**0.00**	0.17	103.50	112.00	**100.50**	105.33	**110.00**	**122.75**	112.50	115.08
64	V-70-1 × LM 13	**55.50**	56.50	53.50	55.17	57.50	58.00	54.00	56.50	2.00	1.50	**0.00**	1.17	114.00	116.50	**110.50**	113.67	**127.50**	**139.25**	122.50	129.75
65	CIMMYT-47 × CM 500	**56.00**	58.50	58.00	57.50	56.50	57.50	58.50	57.50	0.50	1.00	**1.00**	0.83	108.50	107.50	**104.50**	106.83	**80.00**	**112.50**	75.00	89.17
66	CIMMYT-47 × SKV 50	**56.50**	58.50	53.50	56.17	59.50	62.00	57.00	59.50	3.00	3.50	**4.00**	3.50	96.00	101.00	**95.50**	97.50	**85.00**	**86.25**	102.50	91.25
67	CIMMYT-47 × MAI 105	**58.00**	57.50	54.00	56.50	58.50	61.50	58.50	59.50	1.50	4.00	**5.00**	3.50	109.00	110.00	**109.00**	109.33	**87.00**	**113.00**	112.50	104.17
68	CIMMYT-47 × LM 13	**54.50**	56.50	48.00	53.00	55.00	58.50	53.00	55.50	0.50	2.00	**5.00**	2.50	93.00	97.00	**91.00**	93.67	**107.50**	**98.75**	92.50	99.58
69	CIMMYT-5 × CM 500	**55.50**	58.50	53.00	55.67	56.00	58.50	54.00	56.17	0.50	0.00	**1.00**	0.50	92.50	101.00	**89.00**	94.17	**66.00**	**110.00**	110.00	95.33
70	CIMMYT-5 × SKV 50	**56.50**	57.50	53.00	55.67	58.00	60.50	59.00	59.17	1.50	3.00	**6.00**	3.50	103.50	108.50	**106.00**	106.00	**90.00**	**81.50**	77.50	83.00
71	CIMMYT-5 × MAI 105	**56.00**	57.00	53.50	55.50	56.50	57.50	53.50	55.83	0.50	0.50	**1.00**	0.67	92.00	101.00	**91.00**	94.67	**100.00**	**142.50**	120.00	120.83
72	CIMMYT-5 × LM 13	**52.50**	58.50	57.00	56.00	49.50	52.50	51.00	51.00	3.00	6.00	**5.00**	4.67	92.50	97.50	**90.50**	93.50	**112.50**	**128.00**	125.00	121.83
73	CM-115 × CM 500	**52.50**	50.50	49.50	50.83	52.50	54.00	50.00	52.17	2.00	3.50	**0.00**	1.83	93.50	100.00	**90.00**	94.50	**76.50**	**77.00**	82.00	78.50
74	CM-115 × SKV 50	**53.50**	55.50	53.50	54.17	56.50	58.50	55.00	56.67	3.00	3.00	**2.00**	2.67	95.00	99.50	**90.50**	95.00	**80.00**	**83.25**	77.50	80.25
75	CM-115 × MAI 105	**55.00**	55.50	53.00	54.50	55.50	59.00	56.50	57.00	1.50	3.50	**3.00**	2.67	99.00	97.50	**97.00**	97.83	**79.00**	**93.75**	90.00	87.58
76	CM-115 × LM 13	**54.00**	57.50	53.50	55.00	51.50	53.50	50.50	51.83	2.50	4.00	**4.00**	3.50	93.50	95.00	**87.50**	92.00	**90.00**	**88.00**	82.50	86.83
77	CM-149 × CM 500	**51.50**	53.00	48.00	50.83	54.00	57.00	54.50	55.17	2.50	4.00	**6.00**	4.17	94.00	97.50	**92.50**	94.67	**76.50**	**67.25**	87.50	77.08
78	CM-149 × SKV 50	**52.50**	55.50	49.50	52.50	52.50	53.50	52.50	52.83	1.00	2.00	**3.00**	2.00	92.50	98.00	**92.50**	94.33	**85.00**	**87.25**	92.50	88.25

Sl. no.	Hybrid	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
79	CM-149 × MAI 105	**51.50**	51.50	47.50	50.17	51.50	51.50	50.50	51.17	0.00	0.00	**4.00**	1.33	104.00	106.00	**101.50**	103.83	**86.50**	**113.50**	107.50	102.50
80	CM-149 × LM 13	**53.50**	54.50	51.50	53.17	55.50	59.00	52.50	55.67	2.00	4.50	**2.00**	2.83	92.00	95.50	**92.50**	93.33	**75.00**	**76.75**	72.50	74.75
81	CML-165 × CM 500	**55.50**	57.50	54.50	55.83	54.50	58.50	56.50	56.50	1.00	1.00	**2.00**	1.33	96.00	101.00	**93.00**	96.67	**98.50**	**117.00**	102.50	106.00
82	CML-165 × SKV 50	**55.50**	57.50	51.00	54.67	56.50	60.00	56.00	57.50	1.00	2.50	**5.00**	2.83	101.00	109.50	**97.00**	102.50	**85.00**	**87.75**	97.50	90.08
83	CML-165 × MAI 105	**57.50**	58.50	54.00	56.67	57.50	57.50	54.50	56.50	1.00	1.00	**1.00**	1.00	102.50	104.00	**98.00**	101.50	**102.50**	**102.75**	105.00	103.42
84	CML-165 × LM 13	**55.50**	57.50	53.50	55.50	55.50	57.00	54.50	55.67	0.00	0.50	**0.00**	0.17	91.50	100.50	**90.00**	94.00	**100.00**	**106.25**	102.50	102.92
85	CML-166 × CM 500	**55.50**	59.00	54.00	56.17	55.00	57.50	55.50	56.00	0.50	1.50	**2.00**	1.33	93.50	98.50	**89.50**	93.83	**97.50**	**77.00**	85.00	86.50
86	CML-166 × SKV 50	**56.00**	56.50	51.50	54.67	57.50	60.00	57.50	58.33	1.50	3.50	**6.00**	3.67	92.50	96.50	**90.50**	93.17	**94.00**	**107.50**	97.50	99.67
87	CML-166 × MAI 105	**58.00**	58.50	54.50	57.00	56.50	56.50	57.50	56.83	1.50	2.00	**1.00**	1.50	110.50	111.00	**108.00**	109.83	**105.00**	**99.50**	112.50	105.67
88	CML-166 × LM 13	**53.50**	54.00	47.50	51.67	55.50	56.50	56.00	56.00	2.00	2.50	**8.00**	4.17	113.00	116.50	**107.50**	112.33	**107.50**	**107.50**	115.00	110.00
89	CML-169 × CM 500	**56.00**	56.00	54.00	55.33	59.50	61.00	57.50	59.33	3.50	5.00	**5.00**	4.50	99.50	106.50	**95.50**	100.50	**90.00**	**99.25**	87.50	92.25
90	CML-169 × SKV 50	**55.00**	57.50	54.00	55.50	56.00	57.50	56.50	56.67	1.00	0.00	**2.00**	1.00	93.50	97.50	**91.50**	94.17	**100.00**	**95.00**	92.50	95.83
91	CML-169 × MAI 105	**55.00**	55.50	53.00	54.50	54.00	55.50	52.00	53.83	1.00	1.00	**0.00**	0.67	109.50	108.50	**109.00**	109.00	**78.50**	**97.75**	95.00	90.42
92	CML-169 × LM 13	**57.50**	57.50	56.00	57.00	59.00	62.50	57.50	59.67	1.50	5.00	**2.00**	2.83	112.50	119.50	**109.00**	113.67	**100.00**	**118.50**	102.50	107.00
93	CML-172 × CM 500	**56.00**	57.00	55.00	56.00	56.00	59.50	53.50	56.33	0.00	2.50	**1.00**	1.17	104.50	105.00	**101.00**	103.50	**125.00**	**127.25**	112.50	121.58
94	CML-172 × SKV 50	**56.50**	59.00	54.50	56.67	60.50	63.50	60.00	61.33	4.00	4.50	**6.00**	4.83	109.00	115.50	**109.00**	111.17	**100.50**	**98.00**	97.50	98.67
95	CML-172 × MAI 105	**56.00**	56.50	53.50	55.33	59.50	61.50	57.00	59.33	3.50	5.00	**4.00**	4.17	116.00	121.00	**110.00**	115.67	**112.50**	**109.75**	110.00	110.75
96	CML-172 × LM 13	**54.50**	58.50	54.50	55.83	53.50	55.00	53.50	54.00	1.00	3.50	**1.00**	1.83	93.00	99.00	**90.50**	94.17	**102.50**	**133.25**	112.50	116.08
97	CML-359 × CM 500	**54.50**	55.50	54.00	54.67	56.00	58.00	54.00	56.00	1.50	2.50	**0.00**	1.33	101.00	106.50	**97.50**	101.67	**105.00**	**134.25**	122.50	120.58
98	CML-359 × SKV 50	**54.50**	57.00	51.50	54.33	54.50	57.00	50.50	54.00	2.00	0.00	**0.00**	0.67	92.50	95.00	**87.50**	91.67	**90.00**	**87.75**	80.00	85.92
99	CML-359 × MAI 105	**54.00**	51.50	51.50	52.33	56.50	59.50	54.50	56.83	2.50	8.00	**4.00**	4.83	105.50	106.00	**102.00**	104.50	**100.00**	**106.25**	90.00	98.75
100	CML-359 × LM 13	**54.50**	55.50	50.50	53.50	54.50	56.50	53.50	54.83	0.00	1.00	**2.00**	1.00	104.00	109.50	**103.00**	105.50	**115.00**	**109.25**	97.50	107.25
101	CML-411 × CM 500	**54.50**	56.50	53.00	54.67	52.50	52.50	49.50	51.50	2.00	4.00	**3.00**	3.00	105.00	109.00	**104.00**	106.00	**82.50**	**133.25**	132.50	116.08
102	CML-411 × SKV 50	**54.00**	55.00	51.50	53.50	55.00	58.50	55.00	56.17	1.00	3.50	**4.00**	2.83	91.50	98.50	**90.50**	93.50	**85.00**	**94.75**	80.00	86.58
103	CML-411 × MAI 105	**56.00**	56.00	52.50	54.83	59.00	61.50	58.00	59.50	3.00	5.50	**6.00**	4.83	111.00	110.50	**106.50**	109.33	**87.50**	**99.00**	92.50	93.00
104	CML-411 × LM 13	**51.50**	52.50	51.00	51.67	53.00	56.50	52.50	54.00	1.50	4.00	**1.00**	2.17	116.00	119.50	**114.50**	116.67	**105.00**	**131.50**	122.50	119.67
105	HKI-193-1 × CM 500	**52.50**	52.50	52.00	52.33	52.50	53.50	49.50	51.83	0.00	1.00	**3.00**	1.33	100.50	105.00	**96.50**	100.67	**62.50**	**77.00**	80.00	73.17
106	HKI-193-1 × SKV 50	**53.50**	56.00	51.50	53.67	55.50	56.00	53.00	54.83	2.00	0.00	**2.00**	1.33	103.00	111.50	**103.00**	105.83	**78.00**	**56.50**	57.50	64.00
107	HKI-193-1 × MAI 105	**55.50**	55.00	55.00	55.17	56.50	57.50	57.50	57.17	2.00	2.50	**3.00**	2.50	101.00	106.00	**99.50**	102.17	**75.00**	**86.50**	87.50	83.00
108	HKI-193-1 × LM 13	**52.50**	54.50	54.00	53.67	51.00	51.50	48.50	50.33	1.50	3.00	**5.00**	3.17	93.50	97.50	**87.50**	92.83	**85.00**	**98.50**	107.50	97.00
109	HKI-193-2 × CM 500	**54.50**	55.00	54.50	54.67	53.50	55.50	54.00	54.33	1.00	0.50	**0.00**	0.50	93.00	100.00	**88.50**	93.83	**86.00**	**62.25**	55.00	67.75
110	HKI-193-2 × SKV 50	**55.50**	55.50	53.50	54.83	60.50	63.50	61.00	61.67	5.00	8.00	**8.00**	7.00	96.00	100.00	**91.50**	95.83	**100.00**	**117.50**	102.50	106.67
111	HKI-193-2 × MAI 105	**56.00**	59.00	54.00	56.33	56.00	57.50	55.50	56.33	0.00	1.50	**1.00**	0.83	103.50	109.50	**102.00**	105.00	**90.00**	**87.50**	87.50	88.33
112	HKI-193-2 × LM 13	**57.00**	59.50	57.50	58.00	59.50	63.50	57.50	60.17	2.50	4.00	**1.00**	2.50	110.00	116.50	**105.50**	110.67	**102.50**	**103.75**	110.00	105.42
113	LTP-1 × CM 500	**56.50**	57.50	56.00	56.67	55.50	58.00	54.50	56.00	1.00	0.50	**2.00**	1.17	102.50	106.00	**100.50**	103.00	**88.50**	**98.00**	95.00	93.83
114	LTP-1 × SKV 50	**57.00**	58.50	54.00	56.50	60.00	60.50	59.00	59.83	3.00	2.00	**6.00**	3.67	104.50	108.50	**102.00**	105.00	**99.00**	**117.00**	125.00	113.67
115	LTP-1 × MAI 105	**56.50**	57.50	57.50	57.17	55.50	56.50	54.00	55.33	1.00	1.00	**4.00**	2.00	94.00	94.50	**89.00**	92.50	**110.00**	**117.75**	105.00	110.92
116	LTP-1 × LM 13	**51.50**	54.50	49.00	51.67	52.00	53.50	53.00	52.83	0.50	1.00	**4.00**	1.83	92.50	94.00	**89.00**	91.83	**102.50**	**117.25**	115.00	111.58
117	MAI-11 5 × CM 500	**52.50**	53.00	48.00	51.17	54.50	57.00	54.50	55.33	2.00	4.00	**7.00**	4.33	91.50	97.50	**91.00**	93.33	**59.00**	**73.00**	82.50	71.50
118	MAI-115 × SKV 50	**54.00**	56.50	51.00	53.83	54.50	57.50	54.50	55.50	0.50	1.00	**4.00**	1.83	92.50	97.00	**88.50**	92.67	**85.00**	**91.75**	92.50	89.75

Sl. no.	Hybrid	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
119	MAI-116 × MAI 105	**56.00**	57.50	51.50	55.00	60.00	62.50	59.00	60.50	4.00	5.00	**8.00**	5.67	101.00	103.00	**95.00**	99.67	**82.50**	**82.00**	86.50	83.67
120	MAI-117 × LM 13	**52.50**	53.50	54.50	53.50	53.50	56.50	51.00	53.67	1.00	3.00	**3.00**	2.33	93.00	94.00	**89.50**	92.17	**105.00**	**123.25**	122.50	116.92
121	MAI-107 × CM 500	**52.50**	52.50	51.00	52.00	54.00	56.50	51.50	54.00	1.50	4.00	**0.00**	1.83	91.00	99.50	**90.00**	93.50	**92.50**	**103.50**	97.50	97.83
122	MAI-107 × SKV 50	**53.50**	56.50	52.00	54.00	53.00	55.00	53.50	53.83	0.50	1.50	**2.00**	1.33	94.00	96.50	**88.50**	93.00	**83.00**	**75.00**	85.00	81.00
123	MAI-107 × MAI 105	**55.00**	57.00	52.50	54.83	55.50	56.50	53.50	55.17	0.50	0.50	**0.00**	0.33	105.00	111.00	**102.00**	106.00	**93.50**	**94.75**	72.50	86.92
124	MAI-107 × LM 13	**54.50**	58.50	52.50	55.17	54.00	57.50	54.50	55.33	1.50	1.00	**2.00**	1.50	111.00	117.50	**108.00**	112.17	**107.50**	**97.25**	87.50	97.42
125	MAI-109 × CM 500	**54.50**	55.50	49.00	53.00	57.00	59.00	56.00	57.33	2.50	3.50	**6.00**	4.00	96.00	99.50	**92.50**	96.00	**62.50**	**117.50**	110.00	96.67
126	MAI-109 × SKV 50	**54.00**	58.50	53.50	55.33	54.00	56.50	55.00	55.17	1.00	2.00	**1.00**	1.33	96.00	100.00	**96.00**	97.33	**81.50**	**81.25**	77.50	80.08
127	MAI-109 × MAI 105	**54.00**	55.50	52.50	54.00	56.00	58.00	55.50	56.50	2.00	2.50	**2.00**	2.17	100.50	105.00	**98.00**	101.17	**85.00**	**86.25**	95.00	88.75
128	MAI-109 × LM 13	**52.50**	56.50	53.00	54.00	48.50	51.50	45.50	48.50	4.00	5.00	**8.00**	5.67	93.50	100.50	**90.50**	94.83	**102.00**	**104.00**	112.50	106.17
129	MAI-112 × CM 500	**52.00**	54.00	47.50	51.17	53.00	55.50	53.50	54.00	1.00	1.50	**7.00**	3.17	93.50	96.50	**93.00**	94.33	**71.50**	**89.75**	70.00	77.08
130	MAI-112 × SKV 50	**52.50**	53.50	49.00	51.67	54.00	55.00	50.50	53.17	1.50	1.50	**3.00**	2.00	94.00	97.00	**91.00**	94.00	**77.50**	**66.25**	75.00	72.92
131	MAI-112 × MAI 105	**54.50**	55.50	54.50	54.83	56.50	58.50	55.00	56.67	2.00	3.00	**1.00**	2.00	91.50	97.50	**90.00**	93.00	**115.00**	**103.00**	105.00	107.67
132	MAI-112 × LM 13	**52.50**	59.00	54.00	55.17	49.00	52.00	48.50	49.83	3.50	7.00	**5.00**	5.17	91.50	100.50	**91.50**	94.50	**87.50**	**119.75**	100.00	102.42
133	MAI-121 × CM 500	**51.00**	51.50	49.00	50.50	54.00	57.50	52.00	54.50	3.00	6.00	**2.00**	3.67	92.50	96.00	**90.00**	92.83	**60.00**	**88.75**	68.00	72.25
134	MAI-121 × SKV 50	**52.50**	53.50	52.50	52.83	53.50	54.50	51.50	53.17	1.00	1.00	**0.00**	0.67	93.50	96.00	**92.50**	94.00	**57.50**	**73.00**	63.50	64.67
135	MAI-121 × MAI 105	**53.50**	52.50	53.50	53.17	56.50	59.50	54.00	56.67	3.00	7.00	**1.00**	3.67	93.50	97.00	**90.50**	93.67	**95.00**	**88.00**	80.00	87.67
136	MAI-121 × LM 13	**54.00**	58.50	54.00	55.50	52.50	55.00	53.50	53.67	1.50	3.50	**2.00**	2.33	103.00	108.50	**100.00**	103.83	**80.00**	**89.75**	75.00	81.58
137	MAI-137 × CM 500	**53.00**	52.00	47.00	50.67	57.00	58.00	56.50	57.17	4.00	6.00	**10.00**	6.67	92.00	93.00	**88.00**	91.00	**107.50**	**107.50**	97.50	104.17
138	MAI-137 × SKV 50	**56.00**	57.00	53.00	55.33	56.50	59.50	56.50	57.50	0.50	2.50	**4.00**	2.33	91.50	93.00	**89.00**	91.17	**87.50**	**91.75**	90.00	89.75
139	MAI-137 × MAI 105	**56.00**	57.50	57.00	56.83	55.50	57.50	54.50	55.83	0.50	1.00	**2.00**	1.17	100.50	106.50	**97.50**	101.50	**90.00**	**122.75**	117.50	110.08
140	MAI-137 × LM 13	**53.00**	58.50	56.00	55.83	51.00	54.00	49.00	51.33	3.00	4.50	**7.00**	4.83	94.50	96.50	**91.00**	94.00	**105.00**	**100.00**	102.50	102.50
141	MAI-27 × CM 500	**51.00**	51.00	47.50	49.83	53.50	55.50	53.50	54.17	2.50	4.50	**5.00**	4.00	92.50	99.50	**89.50**	93.83	**60.00**	**99.25**	87.50	82.25
142	MAI-27 × SKV 50	**52.50**	53.50	48.50	51.50	54.50	54.50	54.00	54.33	2.00	1.00	**5.00**	2.67	93.00	96.50	**91.00**	93.50	**67.50**	**79.50**	67.50	71.50
143	MAI-27 × MAI 105	**53.00**	53.50	53.00	53.17	51.50	52.00	51.50	51.67	1.50	1.50	**0.00**	1.00	99.50	103.00	**95.00**	99.17	**78.50**	**52.00**	60.00	63.50
144	MAI-27 × LM 13	**52.00**	53.50	54.50	53.33	54.50	57.50	54.50	55.50	2.50	4.00	**1.00**	2.50	108.50	115.50	**106.50**	110.17	**90.00**	**92.00**	87.50	89.83
145	MAI-29 × CM 500	**53.00**	53.50	48.00	51.50	54.00	55.50	54.50	54.67	1.00	2.00	**6.00**	3.00	93.00	98.00	**90.00**	93.67	**80.00**	**89.25**	67.50	78.92
146	MAI-29 × SKV 50	**54.00**	57.00	50.50	53.83	55.50	56.00	52.00	54.50	1.50	1.00	**3.00**	1.83	97.00	103.00	**93.50**	97.83	**60.00**	**88.25**	75.00	74.42
147	MAI-29 × MAI 105	**54.00**	55.50	51.00	53.50	55.00	57.50	56.00	56.17	1.00	2.00	**4.00**	2.33	91.50	96.00	**89.50**	92.33	**92.50**	**87.50**	87.50	89.17
148	MAI-29 × LM 13	**52.00**	55.00	54.50	53.83	48.50	49.50	46.50	48.17	3.50	5.50	**8.00**	5.67	94.50	95.00	**92.00**	93.83	**87.50**	**87.50**	97.50	90.83
149	MAI-35 × CM 500	**51.00**	50.00	49.00	50.00	54.50	56.00	52.00	54.17	3.50	6.00	**4.00**	4.50	91.50	97.00	**90.50**	93.00	**72.50**	**79.75**	85.00	79.08
150	MAI-35 × SKV 50	**52.50**	54.00	51.50	52.67	49.50	49.50	49.50	49.50	3.00	4.50	**2.00**	3.17	92.50	97.00	**92.50**	94.00	**67.50**	**82.50**	85.00	78.33
151	MAI-35 × MAI 105	**52.50**	54.50	51.50	52.83	54.50	56.00	55.00	55.17	2.00	1.50	**4.00**	2.50	93.00	98.50	**89.50**	93.67	**87.50**	**88.50**	85.50	87.17
152	MAI-35 × LM 13	**57.00**	56.50	52.00	55.17	60.50	60.50	61.50	60.83	3.50	4.00	**10.00**	5.83	100.50	103.00	**98.00**	100.50	**78.50**	**88.00**	85.00	83.83
153	MAI-45 × CM 500	**52.50**	51.50	47.00	50.33	56.50	60.00	56.50	57.67	4.00	8.50	**10.00**	7.50	92.00	100.00	**90.50**	94.17	**55.00**	**48.50**	55.00	52.83
154	MAI-45 × SKV 50	**54.50**	57.50	54.50	55.50	53.50	56.50	52.50	54.17	1.00	1.00	**2.00**	1.33	95.50	100.00	**95.50**	97.00	**87.50**	**48.75**	52.50	62.92
155	MAI-45 × MAI 105	**53.50**	54.00	52.00	53.17	53.50	56.50	52.50	54.17	0.00	2.50	**0.00**	0.83	105.00	106.00	**101.00**	104.00	**103.00**	**93.00**	110.00	102.00
156	MAI-45 × LM 13	**52.00**	56.50	52.50	53.67	51.00	54.00	51.50	52.17	2.00	2.50	**0.00**	1.50	92.50	93.50	**90.50**	92.17	**100.00**	**82.00**	92.50	91.50
157	MAI-48 × CM 500	**51.00**	51.50	47.50	50.00	52.50	54.50	52.50	53.17	2.50	3.00	**5.00**	3.50	92.50	96.00	**87.50**	92.00	**57.50**	**84.50**	77.50	73.17
158	MAI-48 × SKV 50	**53.50**	56.50	52.00	54.00	56.00	59.00	56.50	57.17	2.50	2.50	**5.00**	3.33	92.50	94.00	**89.50**	92.00	**72.50**	**62.75**	57.50	64.25

Sl. no.	Hybrid	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
159	MAI-48 × MAI 105	**54.00**	55.50	52.50	54.00	53.50	55.00	53.50	54.00	0.50	0.50	**1.00**	0.67	100.50	102.50	**97.00**	100.00	**80.50**	**76.75**	97.50	84.92
160	MAI-48 × LM 13	**53.00**	56.50	52.50	54.00	52.50	53.00	48.50	51.33	1.50	3.50	**3.00**	2.67	94.00	95.50	**92.50**	94.00	**105.00**	**107.25**	97.50	103.25
161	MAI-706 × CM 500	**52.50**	55.00	50.50	52.67	54.50	58.00	55.00	55.83	2.00	3.00	**5.00**	3.33	93.00	98.00	**91.00**	94.00	**70.00**	**83.75**	105.00	86.25
162	MAI-706 × SKV 50	**52.50**	54.00	50.50	52.33	52.50	54.00	52.50	53.00	1.00	0.00	**2.00**	1.00	98.00	102.00	**96.50**	98.83	**80.00**	**78.50**	85.00	81.17
163	MAI-706 × MAI 105	**55.00**	56.00	51.50	54.17	56.00	57.00	55.50	56.17	1.00	1.00	**4.00**	2.00	112.50	112.00	**109.00**	111.17	**97.50**	**89.75**	82.50	89.92
164	MAI-706 × LM 13	**55.00**	58.50	55.00	56.17	55.50	58.50	57.00	57.00	0.50	0.00	**1.00**	0.50	108.00	112.00	**105.50**	108.50	**95.50**	**104.00**	105.00	101.50
165	SKV-70 × CM 500	**53.00**	56.00	52.00	53.67	52.50	54.50	52.00	53.00	1.50	1.50	**1.00**	1.33	95.00	98.50	**89.50**	94.33	**51.50**	**100.00**	90.00	80.50
166	SKV-70 × SKV 50	**53.50**	54.50	52.50	53.50	54.50	57.50	55.50	55.83	1.00	3.00	**2.00**	2.00	98.50	102.00	**96.00**	98.83	**91.00**	**87.75**	70.00	82.92
167	SKV-70 × MAI 105	**53.50**	56.50	50.50	53.50	55.50	57.50	53.00	55.33	2.00	1.00	**2.00**	1.67	94.50	98.50	**93.50**	95.50	**81.50**	**88.00**	90.00	86.50
168	SKV-70 × LM 13	**56.00**	57.50	57.50	57.00	55.50	58.50	52.50	55.50	0.50	1.00	**6.00**	2.50	107.00	113.00	**104.50**	108.17	**97.50**	**93.00**	122.50	104.33
169	V-632-112 × CM 500	**57.00**	58.50	56.00	57.17	58.00	59.50	56.50	58.00	1.00	1.00	**1.00**	1.00	112.00	119.00	**108.50**	113.17	**112.50**	**111.25**	112.50	112.08
170	V-632-112 × SKV 50	**56.50**	59.50	57.50	57.83	57.50	61.50	57.00	58.67	1.00	2.00	**0.00**	1.00	104.50	108.00	**100.00**	104.17	**75.00**	**98.00**	87.50	86.83
171	V-632-112 × MAI 105	**56.00**	58.50	54.50	56.33	56.50	58.50	54.50	56.50	0.50	0.00	**0.00**	0.17	107.00	111.50	**102.50**	107.00	**93.00**	**107.50**	107.50	102.67
172	V-632-112 × LM 13	**56.00**	58.50	54.50	56.33	56.50	58.00	56.50	57.00	0.50	0.50	**3.00**	1.33	114.50	117.00	**111.00**	114.17	**107.50**	**123.25**	92.50	107.75
173	V-632-67 × CM 500	**56.00**	57.50	42.50	52.00	54.50	55.00	51.50	53.67	1.50	2.50	**8.00**	4.00	104.50	105.00	**98.50**	102.67	**91.50**	**107.00**	97.50	98.67
174	V-632-67 × SKV 50	**57.00**	57.50	54.50	56.33	56.50	58.50	54.50	56.50	0.50	1.00	**0.00**	0.50	111.00	116.50	**107.00**	111.50	**75.00**	**98.75**	97.50	90.42
175	V-632-67 × MAI 105	**62.00**	64.50	60.00	62.17	62.00	64.50	61.50	62.67	0.00	1.00	**1.00**	0.67	103.00	104.50	**100.50**	102.67	**85.00**	**103.25**	107.50	98.58
176	V-632-67 × LM 13	**56.50**	60.00	54.00	56.83	57.00	60.00	55.50	57.50	0.50	0.00	**1.00**	0.50	115.50	118.00	**111.50**	115.00	**103.50**	**127.50**	132.50	121.17
177	Z-50-3 × CM 500	**57.00**	58.50	54.50	56.67	57.50	60.50	56.50	58.17	1.50	2.00	**2.00**	1.83	93.00	97.50	**92.00**	94.17	**72.50**	**98.25**	87.50	86.08
178	Z-50-3 × SKV 50	**58.00**	61.50	55.00	58.17	58.00	59.00	55.50	57.50	0.00	2.50	**1.00**	1.17	94.50	97.00	**92.50**	94.67	**87.50**	**102.25**	102.50	97.42
179	Z-50-3 × MAI 105	**59.50**	59.50	56.00	58.33	59.00	61.50	60.00	60.17	1.50	2.00	**4.00**	2.50	93.00	98.50	**88.00**	93.17	**87.50**	**111.75**	105.00	101.42
180	Z-50-3 × LM 13	**54.50**	55.00	54.50	54.67	56.50	57.50	58.50	57.50	2.00	2.50	**4.00**	2.83	91.50	97.00	**88.50**	92.33	**107.50**	**102.00**	112.50	107.33
181	Z-51-1 × CM 500	**56.00**	55.50	54.00	55.17	56.50	57.50	57.00	57.00	0.50	2.00	**2.00**	1.50	94.00	99.00	**91.00**	94.67	**82.50**	**82.25**	70.00	78.25
182	Z-51-1 × SKV 50	**56.50**	57.50	55.00	56.33	59.00	60.50	57.50	59.00	2.50	3.00	**3.00**	2.83	105.00	112.00	**102.00**	106.33	**95.00**	**94.00**	85.00	91.33
183	Z-51-1 × MAI 105	**58.00**	58.00	57.50	57.83	60.50	63.50	58.50	60.83	2.50	5.50	**2.00**	3.33	108.50	111.50	**106.50**	108.83	**100.00**	**107.00**	110.00	105.67
184	Z-51-1 × LM 13	**55.50**	58.00	55.50	56.33	55.50	56.50	55.50	55.83	0.00	1.50	**1.00**	0.83	92.50	93.00	**87.00**	90.83	**107.50**	**112.75**	122.50	114.25
185	Z-51-6 × CM 500	**56.00**	56.50	56.00	56.17	55.50	56.50	56.50	56.17	0.50	0.00	**0.00**	0.17	109.50	114.50	**106.50**	110.17	**88.00**	**117.25**	107.50	104.25
186	Z-51-6 × SKV 50	**56.00**	59.50	52.00	55.83	56.00	58.50	52.50	55.67	0.00	1.00	**1.00**	0.67	110.50	114.00	**104.50**	109.67	**77.50**	**79.50**	87.50	81.50
187	Z-51-6 × MAI 105	**57.00**	57.00	54.50	56.17	56.50	60.50	55.50	57.50	1.50	3.50	**1.00**	2.00	101.50	104.00	**99.00**	101.50	**97.50**	**122.25**	110.00	109.92
188	Z-51-6 × LM 13	**49.00**	49.00	54.50	48.17	49.50	52.50	48.50	50.17	1.50	3.50	**3.00**	2.67	93.00	95.00	**90.50**	92.83	**107.50**	**94.00**	97.50	99.67
189	Z-52-29 × CM 500	**50.50**	52.50	54.50	49.50	51.50	53.00	51.00	51.83	1.00	0.50	**6.00**	2.50	91.00	100.50	**89.50**	93.67	**70.00**	**83.50**	82.50	78.67
190	Z-52-29 × SKV 50	**51.50**	53.50	54.50	51.50	52.50	53.00	50.00	51.83	1.00	0.50	**2.00**	1.17	92.50	98.00	**92.50**	94.33	**82.50**	**98.25**	92.50	91.08
191	Z-52-29 × MAI 105	**50.50**	55.00	54.50	51.33	48.00	49.00	45.50	47.50	2.50	6.00	**3.00**	3.83	93.50	101.00	**92.50**	95.67	**62.50**	**97.50**	85.00	81.67
192	Z-52-29 × LM 13	**49.50**	48.50	54.50	47.67	50.50	52.00	49.50	50.67	2.00	3.50	**5.00**	3.50	93.50	95.50	**90.50**	93.17	**62.50**	**62.75**	61.00	62.08
193	Z-56-1 × CM 500	**50.50**	52.50	54.50	50.00	52.50	55.50	52.50	53.50	2.00	3.00	**7.00**	4.00	91.50	95.00	**90.00**	92.17	**62.50**	**91.75**	71.00	75.08
194	Z-56-1 × SKV 50	**52.50**	51.50	54.50	51.50	54.50	57.50	55.50	55.83	2.00	6.00	**5.00**	4.33	95.50	99.00	**93.50**	96.00	**84.00**	**94.50**	97.50	92.00
195	Z-56-1 × MAI 105	**48.50**	52.00	54.50	50.17	47.50	50.50	46.00	48.00	1.00	1.50	**3.00**	1.83	93.50	97.50	**89.00**	93.33	**70.50**	**87.50**	77.50	78.50
196	Z-56-1 × LM 13	**49.00**	49.50	54.50	48.83	48.00	50.00	46.50	48.17	1.00	0.50	**2.00**	1.17	92.00	99.00	**91.50**	94.17	**67.50**	**67.25**	65.50	66.75
197	Z-56-8 × CM 500	**51.00**	52.50	54.50	51.00	50.50	53.00	48.00	50.50	0.50	0.50	**3.00**	1.33	92.00	95.00	**87.50**	91.50	**75.00**	**81.50**	75.00	77.17
198	Z-56-8 × SKV 50	**50.50**	54.50	54.50	52.00	49.50	51.50	51.50	50.83	1.00	3.00	**1.00**	1.67	91.50	97.50	**89.00**	92.67	**74.50**	**87.00**	87.50	83.00

Sl. no.	Hybrid	Days to 50% anthesis				Days to 50% silking				Anthesis silking interval				Days to 50% brown husk				Ear height (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
199	Z-56-8 × MAI 105	**51.00**	51.50	54.50	50.33	52.50	55.00	50.00	52.50	1.50	3.50	**2.00**	2.33	94.00	97.50	**90.50**	94.00	**88.00**	**68.50**	77.50	78.00
200	Z-56-8 × LM 13	**52.00**	56.50	54.50	53.83	50.00	52.00	47.50	49.83	2.00	4.50	**7.00**	4.50	91.50	94.50	**88.00**	91.33	**87.50**	**121.75**	112.50	107.25
201	Z-60-22 × CM 500	**51.50**	52.50	50.00	51.33	52.00	52.50	49.00	51.17	1.50	0.00	**0.00**	0.50	100.50	106.50	**100.00**	102.33	**92.50**	**74.00**	85.00	83.83
202	Z-60-22 × SKV 50	**54.50**	55.50	51.50	53.83	56.00	57.50	56.00	56.50	1.50	2.00	**4.00**	2.50	98.50	102.00	**95.00**	98.50	**76.50**	**91.75**	70.00	79.42
203	Z-60-22 × MAI 105	**56.00**	59.50	53.00	56.17	55.00	57.50	52.50	55.00	1.00	2.00	**1.00**	1.33	111.00	113.50	**110.50**	111.67	**75.00**	**113.25**	97.50	95.25
204	Z-60-22 × LM 13	**55.00**	58.00	54.50	55.83	55.00	57.50	52.50	55.00	1.00	0.50	**2.00**	1.17	108.00	109.00	**105.50**	107.50	**75.00**	**106.25**	97.50	92.92
205	Z-62-55 × CM 500	**53.50**	55.00	50.50	53.00	54.00	55.00	52.50	53.83	0.50	0.00	**1.00**	0.50	105.50	106.50	**103.50**	105.17	**87.50**	**118.25**	102.50	102.75
206	Z-62-55 × SKV 50	**55.00**	53.50	52.00	53.50	60.00	61.00	59.50	60.17	5.00	7.50	**8.00**	6.83	96.00	97.50	**97.50**	97.00	**90.00**	**104.50**	100.00	98.17
207	Z-62-55 × MAI 105	**56.00**	57.50	54.50	56.00	59.50	61.50	58.50	59.83	3.50	4.00	**4.00**	3.83	98.00	98.00	**98.50**	98.17	**80.00**	**96.50**	97.50	91.33
208	Z-62-55 × LM 13	**50.50**	52.50	50.50	51.17	49.50	51.00	46.00	48.83	1.00	1.50	**5.00**	2.50	92.50	95.50	**92.00**	93.33	**102.50**	**109.50**	122.50	111.50
209	Z-62-67 × CM 500	**54.00**	55.50	45.50	51.67	56.50	57.50	56.50	56.83	2.50	2.00	**12.00**	5.50	93.00	99.50	**91.50**	94.67	**55.00**	**47.50**	47.50	50.00
210	Z-62-67 × SKV 50	**54.50**	57.50	52.00	54.67	52.50	53.50	53.50	53.17	2.00	4.00	**0.00**	2.00	93.00	98.50	**90.00**	93.83	**84.00**	**73.25**	77.50	78.25
211	Z-62-67 × MAI 105	**54.00**	54.50	52.00	53.50	53.50	54.00	54.00	53.83	0.50	0.50	**2.00**	1.00	92.50	98.00	**91.00**	93.83	**96.00**	**99.25**	92.50	95.92
212	Z-62-67 × LM 13	**53.50**	56.50	53.50	54.50	51.50	53.50	51.50	52.17	2.00	3.00	**2.00**	2.33	102.50	111.50	**102.50**	105.50	**100.00**	**83.00**	80.00	87.67
213	Z-63-30 × CM 500	**52.50**	52.50	53.50	52.83	53.00	54.00	51.50	52.83	0.50	1.50	**2.00**	1.33	96.00	102.50	**93.50**	97.33	**82.00**	**75.00**	80.00	79.00
214	Z-63-30 × SKV 50	**55.00**	54.50	49.50	53.00	57.50	59.50	54.50	57.17	2.50	5.00	**6.00**	4.50	109.50	113.50	**105.00**	109.33	**90.00**	**98.25**	100.00	96.08
215	Z-63-30 × MAI 105	**59.50**	62.00	57.50	59.67	60.00	62.00	58.50	60.17	0.50	0.00	**1.00**	0.50	93.50	97.00	**91.50**	94.00	**94.50**	**112.25**	92.50	99.75
216	Z-63-30 × LM 13	**57.50**	60.50	58.50	58.83	59.50	62.50	56.50	59.50	2.00	2.00	**2.00**	2.00	115.50	115.50	**111.50**	114.17	**95.00**	**117.50**	110.00	107.50
217	**Decalb 8101**	**57.00**	58.00	53.50	56.17	58.00	60.50	55.00	57.83	1.00	2.50	**2.00**	1.83	115.50	121.00	**113.50**	116.67	**102.50**	**104.50**	100.00	102.33
218	**30v92**	**58.00**	61.00	59.00	59.33	58.50	61.50	58.50	59.50	0.50	0.50	**1.00**	0.67	111.50	117.00	**109.00**	112.50	**93.50**	**92.75**	97.50	94.58
219	**NK6240**	**56.00**	58.00	53.50	55.83	55.50	56.00	53.50	55.00	0.50	2.00	**0.00**	0.83	111.00	115.50	**110.00**	112.17	**100.00**	**88.00**	85.00	91.00
220	**PINNACLE**	**58.50**	61.00	55.50	58.33	60.50	63.50	56.50	60.17	2.00	2.50	**1.00**	1.83	116.00	116.00	**111.50**	114.50	**85.00**	**103.00**	110.00	99.33
221	**HEMA**	**53.00**	56.00	52.50	53.83	54.50	55.50	51.50	53.83	1.50	0.50	**0.00**	0.67	108.50	114.50	**109.00**	110.67	**100.00**	**103.25**	90.00	97.75
222	**CP 818**	**60.00**	63.00	56.50	59.83	59.50	62.50	60.50	60.83	0.50	0.50	**3.00**	1.33	112.50	116.50	**107.00**	112.00	**103.50**	**125.00**	100.00	109.50
223	**900M GOLD**	**48.50**	50.00	45.50	48.00	50.50	51.50	51.00	51.00	2.00	1.50	**5.00**	2.83	92.50	95.50	**90.00**	92.67	**96.00**	**99.50**	92.50	96.00
224	**NITYASHREE**	**55.50**	56.00	53.50	55.00	55.50	56.50	56.00	56.00	1.00	0.50	**2.00**	1.17	95.00	97.00	**90.50**	94.17	**87.50**	**97.25**	90.00	91.58
225	**PHI 3501**	**55.50**	57.00	51.00	54.50	58.00	59.50	57.00	58.17	2.50	2.50	**6.00**	3.67	92.50	100.00	**90.50**	94.33	**105.00**	**107.25**	86.00	99.42
Mean		54.80	56.51	52.95	54.75	55.46	57.46	54.46	55.79	1.50	2.30	2.93	2.24	100.39	104.38	97.79	100.85	89.64	97.11	93.98	93.58
Range		48.50	48.50	42.50	47.67	47.50	49.00	45.50	47.50	0.00	0.00	0.00	0.17	91.00	92.50	87.00	90.83	51.50	47.50	47.50	50.00
		62.00	64.50	61.00	62.17	62.50	64.50	62.00	62.83	5.00	8.50	12.00	7.50	117.00	122.00	114.50	116.83	127.50	182.00	140.00	139.83
S. Em. ±		1.54	0.58	0.95	1.13	0.58	0.58	0.58	0.82	1.30	0.78	0.02	1.14	1.26	1.24	1.28	1.27	8.13	1.45	8.28	8.35
C. D. 5%		3.04	1.14	1.87	3.16	1.14	1.14	1.14	2.30	2.56	1.54	1.23	3.18	2.48	2.45	2.53	3.53	16.03	2.86	16.32	23.21
C. D. 1%		4.01	1.50	2.46	3.58	1.50	1.50	1.50	2.77	3.37	2.02	1.54	3.46	3.27	3.23	3.33	4.23	21.13	3.77	21.52	25.36

Note: Figures in bold indicates adjusted mean values

Sl. no.	Hybrid	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
1	V-1154 × CM 500	**239.00**	223.00	235.00	232.33	**241.60**	**232.90**	**213.32**	229.27	**210.90**	**195.70**	**162.80**	189.80	**181.20**	**164.40**	**137.10**	160.90	85.91	**84.06**	**83.74**	84.57
2	V-1154 × SKV 50	**233.50**	233.75	236.50	234.58	**215.20**	**262.10**	**243.63**	240.31	**174.90**	**205.00**	**170.30**	183.40	**152.00**	**172.40**	**147.80**	157.40	86.91	**84.11**	**86.72**	85.91
3	V-1154 × MAI 105	**252.50**	244.25	232.50	243.08	**253.70**	**230.50**	**297.80**	260.67	**204.70**	**183.00**	**201.58**	196.43	**172.70**	**149.90**	**170.53**	164.38	84.37	**82.02**	**84.62**	83.67
4	V-1154 × LM 13	**342.00**	234.00	247.50	274.50	**280.60**	**248.50**	**253.35**	260.82	**243.20**	**206.80**	**177.45**	209.15	**209.00**	**172.70**	**150.40**	177.37	85.89	**83.57**	**84.47**	84.64
5	V-1168 × CM 500	**224.00**	199.50	217.50	213.67	**157.30**	**237.40**	**214.63**	203.11	**135.10**	**198.00**	**152.24**	161.78	**116.90**	**163.10**	**129.90**	136.63	86.60	**82.31**	**85.19**	84.70
6	V-1168 × SKV 50	**235.00**	227.25	232.50	231.58	**176.80**	**202.40**	**254.51**	211.24	**129.70**	**160.80**	**159.10**	149.87	**115.20**	**138.70**	**139.20**	131.03	88.85	**86.23**	**87.48**	87.52
7	V-1168 × MAI 105	**197.50**	217.75	215.00	210.08	**118.50**	**192.30**	**234.60**	181.80	**100.60**	**156.30**	**160.40**	139.10	**87.60**	**130.70**	**137.60**	118.63	87.03	**83.38**	**85.79**	85.40
8	V-1168 × LM 13	**378.00**	239.00	232.50	283.17	**233.70**	**275.70**	**258.55**	255.98	**200.40**	**224.40**	**181.05**	201.95	**176.20**	**191.10**	**157.88**	175.06	87.94	**85.09**	**87.17**	86.73
9	V-1522 × CM 500	**256.00**	226.75	215.00	232.58	**223.80**	**232.20**	**229.48**	228.49	**195.20**	**183.50**	**157.50**	178.73	**163.90**	**151.90**	**132.40**	149.40	84.17	**82.73**	**84.03**	83.64
10	V-1522 × SKV 50	**262.50**	245.50	232.50	246.83	**244.10**	**199.80**	**201.09**	215.00	**200.00**	**159.30**	**140.50**	166.60	**178.30**	**133.90**	**119.80**	144.00	89.39	**84.06**	**85.27**	86.24
11	V-1522 × MAI 105	**240.00**	232.50	232.50	235.00	**229.40**	**207.10**	**250.24**	228.91	**176.80**	**167.00**	**170.70**	171.50	**156.00**	**141.20**	**143.70**	146.97	88.09	**84.61**	**84.18**	85.62
12	V-1522 × LM 13	**261.00**	238.75	237.50	245.75	**271.10**	**287.80**	**266.27**	275.06	**222.90**	**228.00**	**175.60**	208.83	**188.60**	**191.50**	**150.00**	176.70	84.60	**84.03**	**85.43**	84.69
13	V-1649 × CM 500	**244.00**	186.75	192.50	207.75	**210.70**	**188.50**	**149.86**	183.02	**169.50**	**157.40**	**115.30**	147.40	**151.40**	**134.60**	**98.60**	128.20	89.41	**85.58**	**85.57**	86.85
14	V-1649 × SKV 50	**247.50**	248.50	232.50	242.83	**289.63**	**250.90**	**254.49**	265.01	**207.00**	**191.80**	**175.20**	191.33	**181.90**	**161.20**	**151.65**	164.92	87.83	**83.59**	**86.61**	86.01
15	V-1649 × MAI 105	**230.00**	221.75	205.00	218.92	**378.03**	**241.00**	**264.75**	294.59	**241.80**	**194.60**	**180.07**	205.49	**208.90**	**162.80**	**142.70**	171.47	86.46	**83.65**	**79.38**	83.16
16	V-1649 × LM 13	**248.00**	221.75	202.50	224.08	**304.90**	**412.10**	**289.82**	335.61	**251.70**	**320.90**	**189.40**	254.00	**219.00**	**273.80**	**164.40**	219.07	87.05	**85.38**	**86.80**	86.41
17	V-1742 × CM 500	**228.50**	215.75	210.00	218.08	**198.20**	**186.60**	**123.15**	169.32	**177.90**	**163.50**	**101.20**	147.53	**154.10**	**140.00**	**85.80**	126.63	86.63	**85.65**	**84.70**	85.66
18	V-1742 × SKV 50	**222.50**	257.25	245.00	241.58	**167.40**	**174.70**	**307.45**	216.52	**143.50**	**147.50**	**217.85**	169.62	**127.00**	**129.20**	**191.73**	149.31	88.45	**87.53**	**88.13**	88.04
19	V-1742 × MAI 105	**217.50**	208.75	197.50	207.92	**185.30**	**142.90**	**215.84**	181.35	**156.40**	**117.20**	**181.90**	151.83	**130.10**	**99.80**	**66.30**	98.73	82.88	**84.99**	**47.57**	71.81
20	V-1742 × LM 13	**250.00**	232.00	232.50	238.17	**217.70**	**281.70**	**216.75**	238.72	**192.20**	**237.10**	**154.80**	194.70	**168.60**	**204.50**	**136.20**	169.77	87.81	**86.25**	**87.94**	87.33
21	V-2205 × CM 500	**235.00**	251.25	252.50	246.25	**192.90**	**180.90**	**195.50**	189.77	**165.50**	**144.30**	**138.30**	149.37	**141.10**	**118.50**	**117.70**	125.77	85.35	**81.98**	**85.17**	84.16
22	V-2205 × SKV 50	**235.00**	232.00	227.50	231.50	**159.00**	**258.40**	**182.54**	199.98	**130.40**	**199.90**	**125.24**	151.85	**110.90**	**168.00**	**105.60**	128.17	85.17	**83.93**	**84.22**	84.44
23	V-2205 × MAI 105	**245.00**	242.75	242.50	243.42	**188.40**	**227.90**	**330.98**	249.09	**160.70**	**185.40**	**223.10**	189.73	**136.90**	**154.40**	**193.20**	161.50	85.03	**83.25**	**86.60**	84.96
24	V-2205 × LM 13	**260.00**	273.75	272.50	268.75	**238.50**	**302.20**	**174.91**	238.54	**202.60**	**235.10**	**128.20**	188.63	**174.90**	**196.60**	**108.30**	159.93	86.35	**83.72**	**84.49**	84.85
25	V-2232 × CM 500	**227.50**	202.50	215.00	215.00	**188.30**	**229.50**	**210.96**	209.59	**159.20**	**194.10**	**161.38**	171.56	**139.50**	**167.60**	**139.75**	148.95	87.77	**86.38**	**86.56**	86.90
26	V-2232 × SKV 50	**252.50**	212.00	220.00	228.17	**152.30**	**173.00**	**180.19**	168.50	**146.70**	**143.90**	**143.90**	144.83	**128.50**	**123.50**	**123.40**	125.13	87.41	**85.76**	**85.43**	86.20
27	V-2232 × MAI 105	**241.00**	213.25	205.00	219.75	**238.10**	**238.50**	**284.31**	253.64	**205.60**	**196.70**	**206.40**	202.90	**173.20**	**162.40**	**174.30**	169.97	84.28	**82.63**	**84.45**	83.79
28	V-2232 × LM 13	**287.50**	253.25	257.50	266.08	**281.10**	**349.70**	**233.93**	288.24	**246.50**	**277.00**	**183.25**	235.58	**214.90**	**235.90**	**154.40**	201.73	87.15	**85.17**	**84.38**	85.57
29	V-1410-1 × CM 500	**201.50**	178.75	177.50	185.92	**144.20**	**168.90**	**172.45**	161.85	**121.60**	**115.30**	**130.40**	122.43	**101.80**	**93.70**	**109.20**	101.57	83.75	**81.10**	**83.73**	82.86
30	V-1410-1 × SKV 50	**232.50**	207.00	215.00	218.17	**184.50**	**186.40**	**210.87**	193.92	**134.40**	**147.60**	**131.10**	137.70	**117.00**	**124.50**	**114.30**	118.60	87.14	**84.07**	**87.04**	86.08
31	V-1410-1 × MAI 105	**208.50**	208.25	210.00	208.92	**305.03**	**215.70**	**256.41**	259.05	**226.20**	**173.80**	**172.00**	190.67	**195.00**	**146.00**	**148.90**	163.30	86.48	**84.01**	**86.51**	85.66
32	V-1410-1 × LM 13	**247.50**	239.75	240.00	242.42	**231.90**	**307.10**	**291.92**	276.97	**197.20**	**240.80**	**194.20**	210.73	**170.20**	**167.00**	**167.25**	168.15	86.29	**68.27**	**86.16**	80.24
33	V-1712-1 × CM 500	**266.50**	243.75	227.50	245.92	**228.70**	**246.60**	**201.77**	225.69	**200.30**	**212.40**	**152.94**	188.55	**175.30**	**184.10**	**132.50**	163.97	87.49	**86.58**	**86.46**	86.84
34	V-1712-1 × SKV 50	**257.00**	242.50	235.00	244.83	**228.30**	**212.80**	**285.28**	242.13	**195.30**	**175.00**	**193.33**	187.88	**170.70**	**148.90**	**166.88**	162.16	87.34	**85.09**	**86.26**	86.23
35	V-1712-1 × MAI 105	**253.50**	243.75	242.50	246.58	**245.60**	**206.70**	**335.53**	262.61	**210.30**	**173.80**	**214.48**	199.53	**184.20**	**145.70**	**187.98**	172.63	87.64	**83.84**	**87.63**	86.37
36	V-1712-1 × LM 13	**257.50**	263.25	255.00	258.58	**261.00**	**243.00**	**243.93**	249.31	**222.90**	**205.90**	**161.60**	196.80	**192.10**	**172.70**	**137.80**	167.53	86.18	**83.79**	**85.24**	85.07
37	V-241-2 × CM 500	**225.00**	213.25	207.50	215.25	**189.30**	**150.40**	**109.50**	149.73	**162.90**	**129.10**	**87.97**	126.66	**135.60**	**110.30**	**72.60**	106.17	83.23	**85.37**	**82.00**	83.53
38	V-241-2 × SKV 50	**320.50**	238.00	232.50	263.67	**218.70**	**180.50**	**233.80**	211.00	**183.00**	**148.90**	**170.90**	167.60	**158.90**	**126.30**	**148.20**	144.47	86.83	**84.87**	**86.77**	86.15

Sl. no.	Hybrid	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
39	V-241-2 × MAI 105	**250.00**	203.50	210.00	221.17	**188.90**	**205.50**	**194.87**	196.42	**162.50**	**174.00**	**156.00**	164.17	**134.70**	**141.80**	**128.90**	135.13	82.94	**81.61**	**82.63**	82.39
40	V-241-2 × LM 13	**270.00**	243.25	245.00	252.75	**237.80**	**258.60**	**220.84**	239.08	**238.70**	**218.20**	**172.05**	209.65	**206.00**	**186.20**	**141.95**	178.05	86.30	**85.34**	**81.47**	84.37
41	V-2437-1 × CM 500	**239.00**	186.50	211.50	212.33	**170.50**	**205.30**	**172.94**	182.91	**157.90**	**158.50**	**123.90**	146.77	**138.00**	**137.10**	**106.90**	127.33	87.45	**86.46**	**85.84**	86.58
42	V-2437-1 × SKV 50	**229.50**	198.25	205.00	210.92	**187.10**	**246.60**	**196.43**	210.04	**156.70**	**188.30**	**140.30**	161.77	**138.10**	**163.20**	**123.60**	141.63	88.20	**86.52**	**87.97**	87.56
43	V-2437-1 × MAI 105	**245.00**	236.25	227.50	236.25	**172.70**	**245.90**	**257.23**	225.28	**142.40**	**194.40**	**183.40**	173.40	**121.90**	**165.40**	**160.30**	149.20	85.65	**85.10**	**87.41**	86.05
44	V-2437-1 × LM 13	**264.00**	231.50	225.00	240.17	**199.40**	**251.50**	**254.04**	234.98	**171.80**	**202.00**	**181.70**	185.17	**151.10**	**174.80**	**159.70**	161.87	87.96	**86.54**	**87.90**	87.46
45	V-2459-2 × CM 500	**218.00**	208.00	202.50	209.50	**159.10**	**160.20**	**147.42**	155.57	**133.40**	**132.30**	**116.30**	127.33	**115.70**	**114.20**	**99.60**	109.83	86.73	**86.32**	**85.69**	86.24
46	V-2459-2 × SKV 50	**214.00**	237.00	227.50	226.17	**175.20**	**204.30**	**181.03**	186.84	**135.30**	**166.20**	**134.45**	145.32	**116.70**	**142.70**	**118.35**	125.92	86.21	**85.88**	**87.92**	86.67
47	V-2459-2 × MAI 105	**347.50**	224.00	205.00	258.83	**202.80**	**185.70**	**168.53**	185.68	**177.70**	**147.10**	**128.80**	151.20	**152.00**	**124.30**	**111.00**	129.10	85.63	**84.38**	**85.96**	85.32
48	V-2459-2 × LM 13	**259.00**	242.00	242.50	247.83	**179.90**	**214.10**	**167.68**	187.23	**153.50**	**172.90**	**125.20**	150.53	**134.10**	**148.50**	**109.00**	130.53	87.42	**85.79**	**87.06**	86.75
49	V-2516-2 × CM 500	**225.00**	224.25	197.50	215.58	**145.80**	**169.30**	**143.43**	152.84	**126.20**	**149.30**	**127.20**	134.23	**109.30**	**128.10**	**109.80**	115.73	86.53	**85.76**	**86.46**	86.25
50	V-2516-2 × SKV 50	**250.00**	216.50	217.50	228.00	**204.10**	**191.50**	**190.46**	195.35	**161.00**	**154.10**	**152.80**	155.97	**140.80**	**132.70**	**128.40**	133.97	87.43	**86.09**	**84.07**	85.86
51	V-2516-2 × MAI 105	**300.50**	225.00	217.50	247.67	**164.40**	**211.60**	**190.00**	188.67	**135.60**	**154.10**	**140.00**	143.23	**113.30**	**129.80**	**118.30**	120.47	83.54	**84.09**	**84.50**	84.04
52	V-2516-2 × LM 13	**275.00**	222.25	227.50	241.58	**244.30**	**259.70**	**240.04**	248.01	**179.90**	**217.80**	**166.90**	188.20	**157.80**	**184.60**	**143.90**	162.10	87.63	**84.57**	**86.22**	86.14
53	V-2608-1 × CM 500	**235.00**	193.75	195.00	207.92	**148.00**	**174.30**	**155.72**	159.34	**128.90**	**144.20**	**123.40**	132.17	**110.80**	**122.80**	**106.30**	113.30	85.86	**85.17**	**85.97**	85.67
54	V-2608-1 × SKV 50	**307.50**	222.75	225.00	251.75	**174.20**	**198.60**	**253.35**	208.72	**149.50**	**150.70**	**187.14**	162.45	**129.50**	**126.90**	**161.60**	139.33	86.63	**84.21**	**86.53**	85.79
55	V-2608-1 × MAI 105	**237.50**	212.25	217.50	222.42	**196.00**	**245.80**	**249.75**	230.52	**162.30**	**203.90**	**184.60**	183.60	**118.30**	**169.40**	**154.90**	147.53	74.91	**83.07**	**83.91**	80.63
56	V-2608-1 × LM 13	**255.00**	226.50	232.50	238.00	**198.50**	**226.80**	**241.11**	222.14	**174.30**	**193.60**	**177.60**	181.83	**151.80**	**163.00**	**151.70**	155.50	87.08	**84.13**	**85.42**	85.54
57	V-291-2 × CM 500	**236.50**	237.50	239.00	237.67	**193.20**	**178.30**	**193.98**	188.49	**165.00**	**149.20**	**147.70**	153.97	**137.20**	**123.20**	**123.80**	128.07	83.16	**82.58**	**83.86**	83.20
58	V-291-2 × SKV 50	**254.00**	245.25	247.50	248.92	**198.00**	**176.80**	**285.81**	220.20	**170.70**	**141.80**	**202.90**	171.80	**149.80**	**121.20**	**176.35**	149.12	87.76	**85.45**	**86.96**	86.72
59	V-291-2 × MAI 105	**270.00**	246.25	240.00	252.08	**223.60**	**219.10**	**334.62**	259.11	**185.00**	**172.40**	**213.97**	190.46	**149.20**	**140.70**	**154.94**	148.28	80.71	**81.93**	**69.04**	77.23
60	V-291-2 × LM 13	**287.50**	243.25	247.50	259.42	**249.30**	**264.50**	**267.88**	260.56	**211.20**	**221.40**	**191.90**	208.17	**181.10**	**187.10**	**157.00**	175.07	85.74	**84.48**	**81.61**	83.94
61	V-70-1 × CM 500	**262.50**	240.75	247.50	250.25	**177.80**	**219.10**	**216.88**	204.59	**151.50**	**175.00**	**163.63**	163.38	**128.70**	**146.00**	**134.50**	136.40	84.97	**83.29**	**82.27**	83.51
62	V-70-1 × SKV 50	**250.50**	211.75	192.50	218.25	**215.60**	**214.30**	**161.99**	197.30	**180.20**	**174.70**	**122.90**	159.27	**157.70**	**150.10**	**106.60**	138.13	87.51	**85.89**	**86.75**	86.71
63	V-70-1 × MAI 105	**255.00**	232.50	242.50	243.33	**185.50**	**234.40**	**207.29**	209.06	**148.60**	**189.60**	**158.18**	165.46	**126.20**	**157.10**	**131.50**	138.27	84.68	**82.75**	**83.19**	83.54
64	V-70-1 × LM 13	**285.00**	284.75	275.00	281.58	**210.20**	**308.60**	**255.96**	258.25	**180.30**	**249.90**	**186.60**	205.60	**153.20**	**212.60**	**158.60**	174.80	84.99	**85.08**	**85.01**	85.03
65	CIMMYT-47 × CM 500	**228.00**	237.25	222.50	229.25	**212.10**	**195.10**	**231.90**	213.03	**183.30**	**165.80**	**165.40**	171.50	**161.20**	**141.80**	**145.70**	149.57	87.84	**85.52**	**88.09**	87.15
66	CIMMYT-47 × SKV 50	**221.00**	210.75	212.50	214.75	**169.50**	**179.60**	**180.58**	176.56	**145.30**	**143.60**	**118.90**	135.93	**128.40**	**123.90**	**100.00**	117.43	88.36	**85.99**	**82.22**	85.52
67	CIMMYT-47 × MAI 105	**216.00**	223.50	227.50	222.33	**232.00**	**193.90**	**247.78**	224.56	**192.90**	**158.70**	**177.93**	176.51	**167.40**	**134.40**	**154.50**	152.10	86.85	**84.71**	**86.72**	86.09
68	CIMMYT-47 × LM 13	**240.00**	224.00	222.50	228.83	**264.60**	**246.00**	**287.97**	266.19	**220.10**	**200.40**	**192.60**	204.37	**193.80**	**171.40**	**170.70**	178.63	88.03	**85.57**	**88.68**	87.42
69	CIMMYT-5 × CM 500	**191.00**	245.50	242.50	226.33	**250.10**	**173.60**	**205.34**	209.68	**204.20**	**146.90**	**198.30**	183.13	**171.00**	**116.30**	**161.50**	149.60	83.73	**79.03**	**81.63**	81.46
70	CIMMYT-5 × SKV 50	**231.00**	230.75	227.50	229.75	**191.30**	**209.00**	**203.25**	201.18	**186.10**	**169.00**	**156.70**	170.60	**159.70**	**142.10**	**124.90**	142.23	85.84	**83.90**	**80.40**	83.38
71	CIMMYT-5 × MAI 105	**244.00**	271.75	267.50	261.08	**192.30**	**227.70**	**226.34**	215.45	**160.10**	**173.60**	**169.40**	167.70	**133.50**	**138.60**	**139.20**	137.10	83.38	**79.77**	**82.05**	81.73
72	CIMMYT-5 × LM 13	**280.00**	253.75	252.50	262.08	**254.60**	**270.00**	**245.74**	256.78	**214.40**	**222.20**	**180.70**	205.77	**184.00**	**181.00**	**151.40**	172.13	85.80	**81.27**	**83.76**	83.61
73	CM-115 × CM 500	**225.00**	191.75	209.00	208.58	**149.70**	**160.20**	**91.38**	133.76	**127.10**	**134.40**	**104.75**	122.08	**105.70**	**111.40**	**89.00**	102.03	83.18	**82.83**	**84.94**	83.65
74	CM-115 × SKV 50	**212.50**	188.00	187.50	196.00	**170.10**	**166.50**	**140.52**	159.04	**144.70**	**132.30**	**102.70**	126.57	**123.00**	**112.60**	**87.30**	107.63	85.00	**85.00**	**84.93**	84.97
75	CM-115 × MAI 105	**211.50**	208.25	206.00	208.58	**168.60**	**178.40**	**203.70**	183.57	**133.80**	**147.20**	**155.60**	145.53	**113.10**	**121.30**	**128.40**	120.93	84.47	**82.41**	**82.66**	83.18
76	CM-115 × LM 13	**227.50**	203.50	210.00	213.67	**187.50**	**200.90**	**183.93**	190.78	**164.90**	**173.50**	**140.90**	159.77	**139.80**	**136.70**	**118.80**	131.77	84.83	**78.61**	**84.22**	82.55
77	CM-149 × CM 500	**212.50**	187.50	202.50	200.83	**141.20**	**159.50**	**147.56**	149.42	**128.60**	**140.60**	**123.20**	130.80	**107.30**	**116.40**	**104.20**	109.30	83.43	**82.76**	**84.38**	83.52
78	CM-149 × SKV 50	**222.50**	112.25	217.50	184.08	**179.10**	**192.90**	**198.58**	190.19	**159.00**	**167.10**	**148.30**	158.13	**132.50**	**138.80**	**124.60**	131.97	83.34	**83.06**	**83.97**	83.45

Sl. no.	Hybrid	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
79	CM-149 × MAI 105	**228.00**	234.00	232.50	231.50	**166.40**	**235.80**	**243.32**	215.17	**133.80**	**201.60**	**187.70**	174.37	**110.00**	**163.20**	**150.90**	141.37	80.79	**80.84**	**80.61**	80.75
80	CM-149 × LM 13	**212.50**	207.25	197.50	205.75	**165.00**	**188.20**	**175.40**	176.20	**145.50**	**161.70**	**136.45**	147.88	**120.80**	**135.50**	**112.85**	123.05	83.03	**83.80**	**82.72**	83.18
81	CML-165 × CM 500	**253.00**	217.50	227.50	232.67	**164.00**	**157.10**	**182.02**	167.71	**139.60**	**134.30**	**140.40**	138.10	**116.70**	**113.90**	**117.20**	115.93	83.59	**84.79**	**83.41**	83.93
82	CML-165 × SKV 50	**257.50**	232.75	250.00	246.75	**202.80**	**233.00**	**169.58**	201.79	**162.40**	**179.20**	**122.70**	154.77	**136.20**	**150.90**	**104.10**	130.40	83.90	**84.21**	**84.82**	84.31
83	CML-165 × MAI 105	**252.50**	238.50	237.50	242.83	**183.10**	**207.80**	**215.24**	202.05	**154.10**	**173.30**	**157.00**	161.47	**129.40**	**143.10**	**131.20**	134.57	83.95	**82.57**	**83.49**	83.33
84	CML-165 × LM 13	**256.00**	236.25	232.50	241.58	**208.80**	**261.70**	**194.94**	221.81	**177.50**	**216.70**	**134.46**	176.22	**148.60**	**181.70**	**111.67**	147.32	83.68	**83.87**	**81.69**	83.08
85	CML-166 × CM 500	**265.00**	227.75	215.00	235.92	**195.70**	**145.40**	**187.68**	176.26	**152.90**	**124.70**	**145.83**	141.14	**128.80**	**103.10**	**119.88**	117.26	84.29	**82.76**	**81.86**	82.97
86	CML-166 × SKV 50	**232.00**	231.75	230.00	231.25	**190.70**	**242.20**	**187.54**	206.81	**168.60**	**181.70**	**133.90**	161.40	**144.00**	**157.50**	**113.50**	138.33	85.62	**86.66**	**84.84**	85.70
87	CML-166 × MAI 105	**237.50**	225.25	237.50	233.42	**199.90**	**285.80**	**197.01**	227.57	**170.40**	**230.90**	**151.80**	184.37	**145.70**	**194.40**	**125.20**	155.10	85.52	**84.28**	**82.03**	83.94
88	CML-166 × LM 13	**270.00**	262.25	272.50	268.25	**231.80**	**308.40**	**195.81**	245.34	**195.90**	**253.80**	**140.10**	196.60	**161.90**	**205.80**	**116.30**	161.33	82.65	**80.94**	**83.10**	82.23
89	CML-169 × CM 500	**227.50**	228.50	225.00	227.00	**176.60**	**191.80**	**130.32**	166.24	**167.70**	**160.90**	**96.70**	141.77	**148.60**	**139.10**	**83.20**	123.63	88.60	**86.32**	**86.01**	86.97
90	CML-169 × SKV 50	**235.00**	225.00	217.50	225.83	**184.90**	**185.60**	**273.03**	214.51	**155.80**	**156.70**	**196.00**	169.50	**134.50**	**133.30**	**170.24**	146.01	86.30	**85.10**	**86.85**	86.08
91	CML-169 × MAI 105	**216.00**	222.00	222.50	220.17	**167.90**	**243.70**	**233.64**	215.08	**142.60**	**198.10**	**175.98**	172.23	**127.10**	**172.20**	**153.10**	150.80	89.13	**86.98**	**87.01**	87.70
92	CML-169 × LM 13	**247.50**	238.25	237.50	241.08	**222.90**	**219.40**	**261.56**	234.62	**193.60**	**186.90**	**193.00**	191.17	**169.50**	**159.10**	**159.00**	162.53	87.51	**85.11**	**82.27**	84.96
93	CML-172 × CM 500	**263.00**	252.50	245.00	253.50	**213.70**	**209.20**	**204.43**	209.11	**181.90**	**174.00**	**157.90**	171.27	**152.60**	**140.60**	**125.10**	139.43	83.87	**80.84**	**79.17**	81.29
94	CML-172 × SKV 50	**361.00**	237.50	230.00	276.17	**247.35**	**236.00**	**215.37**	232.91	**223.10**	**182.70**	**156.30**	187.37	**188.25**	**153.10**	**129.90**	157.08	84.37	**83.73**	**83.10**	83.73
95	CML-172 × MAI 105	**275.00**	274.50	250.00	266.50	**262.20**	**269.70**	**271.72**	267.87	**218.20**	**217.80**	**194.80**	210.27	**182.90**	**179.60**	**166.10**	176.20	83.89	**82.48**	**85.26**	83.88
96	CML-172 × LM 13	**285.00**	272.50	257.50	271.67	**223.40**	**273.10**	**231.63**	242.71	**176.80**	**211.00**	**162.10**	183.30	**145.70**	**171.90**	**134.60**	150.73	82.36	**81.44**	**83.03**	82.28
97	CML-359 × CM 500	**255.00**	264.25	262.50	260.58	**192.00**	**175.50**	**179.79**	182.43	**169.30**	**146.50**	**143.23**	153.01	**143.60**	**122.50**	**118.90**	128.33	84.81	**83.58**	**83.01**	83.80
98	CML-359 × SKV 50	**255.00**	227.25	227.50	236.58	**180.70**	**196.30**	**161.90**	179.63	**154.30**	**148.00**	**124.10**	142.13	**133.20**	**125.80**	**106.70**	121.90	86.34	**85.00**	**85.85**	85.73
99	CML-359 × MAI 105	**253.50**	211.00	225.00	229.83	**170.10**	**239.10**	**230.76**	213.32	**144.80**	**192.40**	**168.50**	168.57	**126.80**	**163.60**	**149.13**	146.51	87.47	**84.99**	**88.51**	86.99
100	CML-359 × LM 13	**262.50**	238.50	232.50	244.50	**181.00**	**212.10**	**218.97**	204.02	**167.60**	**173.30**	**158.30**	166.40	**144.70**	**147.60**	**138.40**	143.57	86.36	**85.20**	**87.45**	86.34
101	CML-411 × CM 500	**240.00**	247.75	240.00	242.58	**206.90**	**214.10**	**176.43**	199.14	**176.80**	**178.40**	**142.40**	165.87	**152.70**	**154.60**	**128.60**	145.30	86.35	**86.54**	**89.68**	87.52
102	CML-411 × SKV 50	**239.00**	239.50	227.50	235.33	**217.60**	**189.50**	**222.24**	209.78	**183.10**	**143.90**	**166.10**	164.37	**160.20**	**122.70**	**145.00**	142.63	87.49	**84.92**	**87.30**	86.57
103	CML-411 × MAI 105	**225.00**	233.50	236.50	231.67	**203.20**	**213.60**	**238.99**	218.60	**174.30**	**182.10**	**179.80**	178.73	**147.20**	**155.70**	**153.70**	152.20	84.42	**85.51**	**85.46**	85.13
104	CML-411 × LM 13	**265.00**	266.00	247.50	259.50	**327.90**	**243.70**	**262.64**	278.08	**270.10**	**195.20**	**186.50**	217.27	**235.10**	**164.10**	**156.90**	185.37	87.03	**84.71**	**84.12**	85.29
105	HKI-193-1 × CM 500	**215.00**	207.75	217.50	213.42	**159.50**	**212.70**	**174.68**	182.29	**142.60**	**181.60**	**140.54**	154.91	**117.80**	**153.20**	**118.80**	129.93	82.76	**84.36**	**84.23**	83.78
106	HKI-193-1 × SKV 50	**218.00**	206.25	207.50	210.58	**198.10**	**227.00**	**209.67**	211.59	**173.20**	**188.80**	**146.70**	169.57	**148.20**	**160.50**	**123.70**	144.13	85.67	**85.04**	**83.92**	84.88
107	HKI-193-1 × MAI 105	**250.00**	231.75	237.50	239.75	**192.50**	**189.30**	**328.16**	236.65	**162.70**	**159.20**	**224.60**	182.17	**137.50**	**132.80**	**130.80**	133.70	84.46	**83.29**	**59.96**	75.90
108	HKI-193-1 × LM 13	**263.00**	248.00	255.00	255.33	**246.00**	**318.50**	**291.23**	285.24	**216.10**	**263.80**	**199.10**	226.33	**184.00**	**218.30**	**168.40**	190.23	85.15	**82.82**	**84.43**	84.13
109	HKI-193-2 × CM 500	**216.50**	197.50	182.50	198.83	**138.80**	**160.60**	**178.38**	159.26	**122.00**	**139.80**	**138.44**	133.41	**103.50**	**116.80**	**115.67**	111.99	84.62	**83.48**	**83.29**	83.80
110	HKI-193-2 × SKV 50	**247.50**	237.75	235.00	240.08	**177.20**	**159.40**	**154.91**	163.84	**151.20**	**130.50**	**111.70**	131.13	**130.20**	**110.50**	**96.10**	112.27	86.16	**84.66**	**85.72**	85.51
111	HKI-193-2 × MAI 105	**236.50**	213.25	207.50	219.08	**180.60**	**247.20**	**223.37**	217.06	**155.30**	**198.10**	**155.50**	169.63	**130.90**	**161.40**	**130.90**	141.07	84.34	**81.54**	**84.15**	83.34
112	HKI-193-2 × LM 13	**260.00**	239.25	242.50	247.25	**217.60**	**226.20**	**253.71**	232.50	**184.90**	**180.10**	**182.00**	182.33	**158.60**	**149.00**	**151.80**	153.13	85.78	**82.41**	**83.41**	83.87
113	LTP-1 × CM 500	**241.00**	212.25	222.50	225.25	**143.90**	**203.10**	**242.96**	196.65	**121.40**	**165.00**	**175.10**	153.83	**105.60**	**141.70**	**150.10**	132.47	87.01	**85.86**	**85.74**	86.20
114	LTP-1 × SKV 50	**263.50**	261.75	262.50	262.58	**200.80**	**238.80**	**190.28**	209.96	**164.30**	**192.70**	**141.50**	166.17	**142.90**	**165.50**	**121.50**	143.30	86.99	**85.90**	**85.82**	86.23
115	LTP-1 × MAI 105	**250.00**	232.00	235.00	239.00	**187.70**	**261.70**	**208.32**	219.24	**163.00**	**211.90**	**146.85**	173.92	**140.90**	**181.60**	**126.18**	149.56	86.42	**85.68**	**85.86**	85.98
116	LTP-1 × LM 13	**252.50**	238.00	235.00	241.83	**201.20**	**251.40**	**231.63**	228.08	**175.20**	**202.50**	**157.25**	178.32	**143.00**	**173.30**	**137.15**	151.15	81.11	**85.54**	**87.18**	84.61
117	MAI-11 5 × CM 500	**201.50**	188.25	202.50	197.42	**130.90**	**162.50**	**173.64**	155.68	**112.90**	**133.50**	**132.30**	126.23	**94.80**	**108.40**	**111.00**	104.73	84.00	**81.14**	**83.88**	83.01
118	MAI-115 × SKV 50	**230.00**	207.25	217.50	218.25	**139.80**	**183.60**	**180.36**	167.92	**119.20**	**151.50**	**135.30**	135.33	**102.90**	**128.20**	**116.30**	115.80	86.35	**84.63**	**85.92**	85.63

Sl. no.	Hybrid	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
119	MAI-116 × MAI 105	**205.00**	211.50	214.50	210.33	**160.10**	**169.00**	**235.23**	188.11	**135.00**	**137.00**	**173.14**	148.38	**111.60**	**111.30**	**146.00**	122.97	82.65	**81.34**	**83.67**	82.55
120	MAI-117 × LM 13	**255.00**	243.25	255.00	251.08	**232.10**	**231.90**	**286.15**	250.05	**195.40**	**188.50**	**198.90**	194.27	**166.70**	**156.90**	**171.50**	165.03	85.26	**83.15**	**86.27**	84.89
121	MAI-107 × CM 500	**239.00**	234.25	222.50	231.92	**184.60**	**188.40**	**206.88**	193.29	**159.40**	**142.30**	**161.70**	154.47	**138.40**	**122.00**	**140.90**	133.77	86.77	**85.90**	**87.15**	86.61
122	MAI-107 × SKV 50	**227.50**	214.25	212.50	218.08	**146.00**	**165.20**	**158.03**	156.41	**120.10**	**134.60**	**123.30**	126.00	**105.00**	**115.70**	**105.90**	108.87	87.51	**85.99**	**85.89**	86.46
123	MAI-107 × MAI 105	**321.00**	220.25	200.00	247.08	**278.00**	**228.80**	**195.63**	234.14	**222.00**	**181.90**	**128.70**	177.53	**184.00**	**149.60**	**106.50**	146.70	82.95	**82.16**	**82.89**	82.66
124	MAI-107 × LM 13	**232.50**	227.00	237.50	232.33	**201.00**	**273.20**	**213.24**	229.15	**169.90**	**218.20**	**154.75**	180.95	**145.20**	**182.80**	**131.30**	153.10	85.34	**83.87**	**84.86**	84.69
125	MAI-109 × CM 500	**211.00**	242.75	227.50	227.08	**166.60**	**162.50**	**174.88**	167.99	**145.90**	**137.80**	**138.20**	140.63	**121.30**	**116.00**	**99.50**	112.27	82.78	**83.75**	**73.29**	79.94
126	MAI-109 × SKV 50	**223.50**	211.00	212.50	215.67	**166.50**	**176.50**	**182.94**	175.31	**140.50**	**147.70**	**138.60**	142.27	**118.20**	**125.20**	**113.20**	118.87	84.13	**84.82**	**81.72**	83.56
127	MAI-109 × MAI 105	**216.50**	226.50	222.50	221.83	**187.50**	**216.60**	**164.53**	189.54	**161.20**	**175.00**	**124.00**	153.40	**134.40**	**144.30**	**105.10**	127.93	83.40	**82.52**	**84.32**	83.41
128	MAI-109 × LM 13	**356.00**	233.25	235.00	274.75	**200.80**	**189.90**	**248.38**	213.03	**179.70**	**158.60**	**182.74**	173.68	**153.70**	**134.90**	**154.94**	147.85	85.58	**84.93**	**84.79**	85.10
129	MAI-112 × CM 500	**254.00**	199.50	202.50	218.67	**165.20**	**159.10**	**125.78**	150.03	**147.10**	**126.90**	**100.30**	124.77	**126.50**	**107.70**	**86.00**	106.73	86.00	**84.55**	**85.85**	85.47
130	MAI-112 × SKV 50	**244.00**	241.25	212.50	232.58	**156.60**	**171.10**	**176.86**	168.19	**132.30**	**132.30**	**125.90**	130.17	**115.40**	**113.20**	**107.00**	111.87	87.22	**85.47**	**85.01**	85.90
131	MAI-112 × MAI 105	**363.00**	223.00	217.50	267.83	**211.20**	**216.40**	**250.06**	225.89	**182.90**	**179.20**	**184.30**	182.13	**157.20**	**151.20**	**148.30**	152.23	85.96	**84.33**	**80.42**	83.57
132	MAI-112 × LM 13	**237.50**	240.25	222.50	233.42	**256.43**	**235.30**	**179.64**	223.79	**192.40**	**197.20**	**118.20**	169.27	**185.08**	**166.30**	**98.30**	149.89	96.06	**84.32**	**83.02**	87.80
133	MAI-121 × CM 500	**217.50**	229.25	220.00	222.25	**147.90**	**170.80**	**202.07**	173.59	**128.60**	**140.50**	**147.30**	138.80	**111.60**	**122.10**	**124.40**	119.37	86.77	**86.92**	**84.67**	86.12
134	MAI-121 × SKV 50	**205.00**	177.25	203.00	195.08	**153.50**	**146.40**	**168.22**	156.04	**129.70**	**120.20**	**132.42**	127.44	**112.60**	**105.40**	**115.79**	111.26	86.79	**87.60**	**87.45**	87.28
135	MAI-121 × MAI 105	**242.50**	213.75	205.00	220.42	**179.10**	**201.00**	**187.69**	189.26	**147.00**	**164.60**	**144.00**	151.87	**125.30**	**138.90**	**122.20**	128.80	85.22	**84.41**	**85.02**	84.88
136	MAI-121 × LM 13	**216.50**	219.50	212.50	216.17	**196.20**	**211.60**	**150.77**	186.19	**172.20**	**178.90**	**121.60**	157.57	**148.40**	**154.20**	**103.60**	135.40	86.28	**86.34**	**85.16**	85.92
137	MAI-137 × CM 500	**247.50**	223.00	227.50	232.67	**151.90**	**167.70**	**119.55**	146.38	**122.70**	**134.90**	**88.10**	115.23	**91.80**	**105.30**	**67.50**	88.20	74.81	**78.01**	**76.45**	76.42
138	MAI-137 × SKV 50	**237.50**	221.50	230.00	229.67	**199.10**	**201.00**	**132.45**	177.52	**159.40**	**151.40**	**101.60**	137.47	**135.30**	**126.10**	**84.80**	115.40	84.73	**83.21**	**81.84**	83.26
139	MAI-137 × MAI 105	**241.00**	228.00	235.00	234.67	**180.50**	**233.30**	**222.46**	212.09	**141.30**	**182.80**	**160.40**	161.50	**111.80**	**144.90**	**127.90**	128.20	79.20	**79.17**	**79.71**	79.36
140	MAI-137 × LM 13	**267.50**	230.25	232.50	243.42	**243.50**	**243.80**	**230.47**	239.26	**204.60**	**190.10**	**162.20**	185.63	**170.20**	**155.10**	**134.50**	153.27	83.19	**81.58**	**82.84**	82.53
141	MAI-27 × CM 500	**197.50**	195.00	187.50	193.33	**119.10**	**148.30**	**114.74**	127.38	**91.00**	**123.90**	**89.10**	101.33	**73.80**	**102.10**	**74.30**	83.40	81.50	**82.22**	**83.38**	82.36
142	MAI-27 × SKV 50	**192.50**	204.25	192.50	196.42	**106.50**	**151.20**	**158.87**	138.86	**106.10**	**124.80**	**121.70**	117.53	**88.60**	**106.40**	**101.90**	98.97	83.50	**85.34**	**83.50**	84.11
143	MAI-27 × MAI 105	**189.50**	167.00	155.00	170.50	**167.10**	**243.60**	**152.01**	187.57	**136.40**	**191.60**	**106.40**	144.80	**114.30**	**159.70**	**90.20**	121.40	83.84	**83.41**	**84.02**	83.76
144	MAI-27 × LM 13	**230.00**	221.50	225.00	225.50	**215.20**	**233.40**	**228.18**	225.59	**186.90**	**188.20**	**162.85**	179.32	**159.90**	**155.60**	**139.10**	151.53	85.58	**82.33**	**85.59**	84.50
145	MAI-29 × CM 500	**222.50**	225.00	200.00	215.83	**146.20**	**128.10**	**140.75**	138.35	**125.10**	**109.10**	**110.80**	115.00	**105.90**	**91.50**	**94.20**	97.20	84.72	**83.85**	**84.91**	84.49
146	MAI-29 × SKV 50	**192.50**	214.00	197.50	201.33	**153.70**	**183.10**	**150.69**	162.50	**129.70**	**150.10**	**109.90**	129.90	**110.70**	**130.70**	**95.60**	112.33	85.53	**87.05**	**86.94**	86.51
147	MAI-29 × MAI 105	**235.50**	212.50	197.50	215.17	**159.70**	**177.70**	**218.75**	185.38	**156.10**	**146.20**	**150.30**	150.87	**107.80**	**120.90**	**128.10**	118.93	70.82	**82.98**	**85.21**	79.67
148	MAI-29 × LM 13	**225.00**	221.75	227.50	224.75	**186.20**	**217.70**	**202.72**	202.21	**162.90**	**182.50**	**149.80**	165.07	**138.50**	**153.70**	**117.40**	136.53	85.02	**84.29**	**79.40**	82.90
149	MAI-35 × CM 500	**223.50**	199.75	207.50	210.25	**166.73**	**161.30**	**168.11**	165.38	**141.40**	**122.10**	**127.80**	130.43	**120.00**	**100.00**	**114.10**	111.37	84.87	**81.82**	**90.52**	85.73
150	MAI-35 × SKV 50	**224.00**	233.25	222.50	226.58	**142.10**	**157.90**	**132.25**	144.08	**122.10**	**128.00**	**100.60**	116.90	**105.70**	**110.50**	**86.50**	100.90	86.59	**86.26**	**85.99**	86.28
151	MAI-35 × MAI 105	**237.50**	228.00	227.50	231.00	**201.40**	**182.60**	**195.07**	193.02	**167.60**	**153.50**	**148.94**	156.68	**137.00**	**127.90**	**124.47**	129.79	81.77	**83.36**	**83.47**	82.87
152	MAI-35 × LM 13	**230.50**	222.25	210.00	220.92	**179.80**	**199.00**	**174.99**	184.60	**156.10**	**164.50**	**131.83**	150.81	**131.40**	**138.90**	**112.83**	127.71	84.16	**84.30**	**85.65**	84.70
153	MAI-45 × CM 500	**202.50**	244.00	180.00	208.83	**198.20**	**143.00**	**126.93**	156.04	**153.50**	**120.00**	**115.00**	129.50	**121.40**	**96.20**	**91.60**	103.07	78.96	**80.62**	**79.68**	79.75
154	MAI-45 × SKV 50	**245.00**	189.50	187.50	207.33	**192.40**	**210.20**	**138.01**	180.20	**149.80**	**158.60**	**109.80**	139.40	**125.30**	**132.30**	**91.50**	116.37	83.67	**83.42**	**83.32**	83.47
155	MAI-45 × MAI 105	**247.50**	212.75	225.00	228.42	**180.00**	**262.10**	**246.04**	229.38	**144.30**	**211.30**	**151.40**	169.00	**123.10**	**175.40**	**122.10**	140.20	85.39	**82.98**	**80.83**	83.07
156	MAI-45 × LM 13	**255.00**	212.00	232.50	233.17	**251.70**	**245.10**	**257.01**	251.27	**207.60**	**185.60**	**164.60**	185.93	**172.30**	**153.30**	**136.30**	153.97	83.01	**82.52**	**82.85**	82.79
157	MAI-48 × CM 500	**185.00**	184.00	240.00	203.00	**102.80**	**162.60**	**123.83**	129.74	**88.40**	**134.00**	**97.00**	106.47	**76.00**	**113.00**	**83.40**	90.80	86.28	**84.59**	**85.90**	85.59
158	MAI-48 × SKV 50	**182.50**	173.00	175.00	176.83	**126.20**	**140.70**	**131.12**	132.67	**109.60**	**110.50**	**92.40**	104.17	**93.00**	**95.60**	**77.88**	88.83	84.86	**86.48**	**84.38**	85.24

Sl. no.	Hybrid	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
159	MAI-48 × MAI 105	**225.50**	167.00	202.50	198.33	**190.40**	**193.00**	**189.60**	191.00	**155.20**	**149.60**	**144.40**	149.73	**130.90**	**125.60**	**120.80**	125.77	84.27	**83.97**	**83.69**	83.98
160	MAI-48 × LM 13	**250.00**	227.25	227.50	234.92	**211.20**	**205.80**	**233.94**	216.98	**183.30**	**170.20**	**171.00**	174.83	**154.80**	**141.70**	**146.00**	147.50	84.45	**83.25**	**85.35**	84.35
161	MAI-706 × CM 500	**212.50**	213.25	220.00	215.25	**170.60**	**168.30**	**158.68**	165.86	**152.80**	**147.80**	**127.05**	142.55	**134.00**	**126.30**	**109.38**	123.23	87.72	**85.46**	**86.01**	86.39
162	MAI-706 × SKV 50	**228.50**	218.00	227.50	224.67	**160.50**	**171.30**	**175.84**	169.21	**139.80**	**141.00**	**138.73**	139.84	**123.30**	**123.90**	**121.20**	122.80	88.22	**87.83**	**87.37**	87.80
163	MAI-706 × MAI 105	**240.00**	215.00	207.50	220.83	**227.70**	**220.40**	**208.44**	218.85	**197.50**	**192.90**	**164.20**	184.87	**171.70**	**168.60**	**142.20**	160.83	87.08	**87.44**	**86.63**	87.05
164	MAI-706 × LM 13	**240.50**	218.75	227.50	228.92	**196.30**	**230.00**	**211.21**	212.50	**170.90**	**195.90**	**155.60**	174.13	**147.70**	**167.60**	**134.10**	149.80	86.42	**85.56**	**86.15**	86.04
165	SKV-70 × CM 500	**216.50**	229.25	230.00	225.25	**149.50**	**168.90**	**173.18**	163.86	**133.10**	**128.60**	**133.50**	131.73	**111.10**	**105.20**	**103.50**	106.60	83.47	**81.71**	**76.78**	80.65
166	SKV-70 × SKV 50	**207.50**	207.50	200.00	205.00	**185.20**	**179.80**	**156.44**	173.81	**158.80**	**143.70**	**122.67**	141.72	**138.70**	**124.00**	**107.57**	123.42	87.34	**86.26**	**87.67**	87.09
167	SKV-70 × MAI 105	**232.50**	212.75	212.50	219.25	**176.10**	**149.70**	**170.19**	165.33	**147.40**	**124.60**	**128.00**	133.33	**122.50**	**101.50**	**105.70**	109.90	83.02	**81.06**	**82.39**	82.15
168	SKV-70 × LM 13	**265.00**	237.75	247.50	250.08	**222.50**	**209.40**	**241.72**	224.54	**183.80**	**173.90**	**173.00**	176.90	**159.90**	**143.50**	**143.60**	149.00	87.04	**82.51**	**82.97**	84.17
169	V-632-112 × CM 500	**270.00**	235.75	232.50	246.08	**241.20**	**266.90**	**183.73**	230.61	**204.10**	**225.30**	**141.80**	190.40	**173.10**	**187.90**	**119.00**	160.00	84.81	**83.30**	**83.90**	84.00
170	V-632-112 × SKV 50	**237.50**	223.75	222.50	227.92	**230.40**	**222.80**	**205.74**	219.65	**182.20**	**158.20**	**147.30**	162.57	**157.60**	**129.40**	**127.40**	138.13	86.50	**81.93**	**86.48**	84.97
171	V-632-112 × MAI 105	**246.00**	223.25	227.50	232.25	**244.30**	**229.30**	**251.99**	241.86	**200.30**	**168.90**	**167.90**	179.03	**166.60**	**137.90**	**142.00**	148.83	83.20	**81.63**	**84.40**	83.08
172	V-632-112 × LM 13	**252.50**	248.75	232.50	244.58	**264.60**	**269.50**	**237.90**	257.33	**226.30**	**213.00**	**173.84**	204.38	**193.90**	**177.80**	**147.34**	173.01	85.69	**83.48**	**84.77**	84.64
173	V-632-67 × CM 500	**240.00**	242.00	225.00	235.67	**211.40**	**179.80**	**207.03**	199.41	**178.70**	**150.30**	**156.10**	161.70	**149.40**	**124.10**	**131.80**	135.10	83.55	**82.46**	**84.44**	83.48
174	V-632-67 × SKV 50	**242.50**	223.00	220.00	228.50	**240.40**	**219.50**	**258.05**	239.32	**198.70**	**173.40**	**184.85**	185.65	**165.70**	**142.60**	**153.43**	153.91	83.38	**82.24**	**83.08**	82.90
175	V-632-67 × MAI 105	**225.00**	223.50	222.50	223.67	**211.00**	**229.70**	**178.69**	206.46	**176.50**	**192.80**	**131.30**	166.87	**146.70**	**157.60**	**108.10**	137.47	83.11	**81.44**	**82.19**	82.25
176	V-632-67 × LM 13	**251.00**	253.00	257.50	253.83	**224.40**	**301.10**	**301.96**	275.82	**191.80**	**247.80**	**202.30**	213.97	**159.10**	**200.30**	**168.70**	176.03	82.92	**80.75**	**83.22**	82.30
177	Z-50-3 × CM 500	**230.00**	233.25	222.50	228.58	**212.20**	**248.90**	**186.10**	215.73	**182.30**	**202.90**	**135.80**	173.67	**152.30**	**162.20**	**112.90**	142.47	83.57	**79.76**	**83.05**	82.12
178	Z-50-3 × SKV 50	**232.50**	228.00	230.00	230.17	**166.10**	**179.50**	**189.75**	178.45	**139.30**	**139.50**	**135.80**	138.20	**117.80**	**115.40**	**114.60**	115.93	84.57	**82.67**	**84.31**	83.85
179	Z-50-3 × MAI 105	**237.50**	261.75	260.00	253.08	**193.50**	**255.40**	**233.02**	227.31	**159.80**	**203.70**	**176.20**	179.90	**130.70**	**168.00**	**145.10**	147.93	81.79	**82.47**	**82.31**	82.19
180	Z-50-3 × LM 13	**255.00**	267.75	270.00	264.25	**215.80**	**244.90**	**251.37**	237.36	**186.50**	**198.30**	**186.40**	190.40	**157.20**	**164.00**	**155.90**	159.03	84.29	**82.68**	**83.70**	83.55
181	Z-51-1 × CM 500	**227.50**	216.75	210.00	218.08	**152.20**	**209.00**	**127.70**	162.97	**131.50**	**160.70**	**101.65**	131.28	**109.80**	**127.80**	**83.90**	107.17	83.68	**79.62**	**82.56**	81.95
182	Z-51-1 × SKV 50	**237.50**	223.25	222.50	227.75	**261.60**	**158.40**	**235.52**	218.51	**215.40**	**127.20**	**162.68**	168.43	**187.20**	**106.30**	**136.75**	143.42	86.92	**83.60**	**83.98**	84.83
183	Z-51-1 × MAI 105	**247.50**	242.00	252.50	247.33	**246.00**	**177.40**	**282.72**	235.37	**199.50**	**144.70**	**203.40**	182.53	**168.10**	**113.50**	**168.00**	149.87	84.33	**78.35**	**82.60**	81.76
184	Z-51-1 × LM 13	**259.00**	243.25	240.00	247.42	**254.30**	**231.30**	**339.12**	274.91	**218.20**	**194.60**	**235.80**	216.20	**182.90**	**158.50**	**199.35**	180.25	83.83	**81.35**	**84.55**	83.24
185	Z-51-6 × CM 500	**241.00**	248.00	240.00	243.00	**224.10**	**222.00**	**259.37**	235.16	**193.50**	**183.90**	**194.70**	190.70	**159.50**	**149.00**	**152.50**	153.67	82.57	**81.19**	**78.24**	80.67
186	Z-51-6 × SKV 50	**250.00**	224.75	227.50	234.08	**220.70**	**196.40**	**268.92**	228.67	**189.10**	**161.40**	**187.40**	179.30	**160.60**	**133.60**	**158.10**	150.77	84.90	**82.78**	**84.37**	84.02
187	Z-51-6 × MAI 105	**250.00**	243.00	232.50	241.83	**234.60**	**158.10**	**252.17**	214.96	**194.30**	**130.10**	**166.55**	163.65	**162.80**	**106.60**	**140.85**	136.75	83.83	**81.93**	**84.50**	83.42
188	Z-51-6 × LM 13	**250.00**	234.25	227.50	237.25	**227.50**	**259.20**	**174.57**	220.42	**197.90**	**215.70**	**123.20**	178.93	**166.30**	**177.70**	**99.90**	147.97	84.13	**82.38**	**81.53**	82.68
189	Z-52-29 × CM 500	**227.50**	229.00	220.00	225.50	**161.50**	**191.80**	**188.97**	180.76	**141.60**	**159.90**	**155.90**	152.47	**120.10**	**132.80**	**131.50**	128.13	84.82	**82.90**	**84.45**	84.05
190	Z-52-29 × SKV 50	**242.50**	228.50	215.00	228.67	**184.00**	**156.30**	**190.80**	177.03	**156.90**	**132.70**	**143.40**	144.33	**135.90**	**116.90**	**125.00**	125.93	86.60	**88.08**	**87.20**	87.29
191	Z-52-29 × MAI 105	**197.50**	221.75	212.50	210.58	**157.90**	**180.30**	**236.47**	191.56	**130.40**	**143.20**	**177.53**	150.38	**108.40**	**118.60**	**146.85**	124.62	83.16	**82.89**	**82.74**	82.93
192	Z-52-29 × LM 13	**170.00**	177.50	169.50	172.33	**60.40**	**172.50**	**266.58**	166.49	**59.90**	**140.80**	**119.80**	106.83	**49.30**	**116.30**	**108.80**	91.47	82.29	**82.49**	**90.82**	85.20
193	Z-56-1 × CM 500	**208.00**	231.25	215.00	218.08	**130.50**	**121.00**	**140.75**	130.75	**117.20**	**106.90**	**115.20**	113.10	**98.60**	**89.50**	**93.45**	93.85	84.18	**83.73**	**81.13**	83.01
194	Z-56-1 × SKV 50	**313.50**	215.25	220.00	249.58	**153.20**	**159.40**	**155.65**	156.08	**137.40**	**132.50**	**123.70**	131.20	**118.00**	**112.00**	**105.10**	111.70	85.87	**84.57**	**84.98**	85.14
195	Z-56-1 × MAI 105	**221.50**	207.50	190.00	206.33	**141.30**	**169.10**	**195.69**	168.70	**126.90**	**145.60**	**152.30**	141.60	**108.90**	**125.30**	**129.25**	121.15	85.84	**86.11**	**85.05**	85.66
196	Z-56-1 × LM 13	**205.00**	176.50	199.00	193.50	**198.80**	**118.30**	**117.07**	144.72	**137.20**	**102.90**	**79.34**	106.48	**117.20**	**85.90**	**65.10**	89.40	85.34	**83.37**	**82.38**	83.69
197	Z-56-8 × CM 500	**217.50**	216.00	203.00	212.17	**117.13**	**166.20**	**96.24**	126.52	**84.60**	**141.10**	**76.25**	100.65	**72.50**	**117.70**	**64.65**	84.95	85.37	**83.41**	**84.47**	84.42
198	Z-56-8 × SKV 50	**291.50**	212.75	215.00	239.75	**156.10**	**167.50**	**145.87**	156.49	**134.40**	**135.30**	**114.00**	127.90	**113.20**	**114.70**	**95.30**	107.73	84.28	**84.74**	**83.62**	84.21

Sl. no.	Hybrid	Plant height (cm)				Ear weight per plant (g)				Cob weight per plant (g)				Grain yield per plant (g)				Shelling %			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
199	Z-56-8 × MAI 105	**315.50**	208.75	201.50	241.92	**183.10**	**174.60**	**163.92**	173.87	**160.50**	**145.30**	**127.40**	144.40	**134.00**	**123.30**	**106.60**	121.30	83.40	**84.88**	**83.68**	83.98
200	Z-56-8 × LM 13	**240.00**	271.75	267.50	259.75	**200.40**	**256.90**	**237.99**	231.76	**176.20**	**211.60**	**172.40**	186.73	**150.10**	**180.60**	**145.80**	158.83	85.19	**85.34**	**84.49**	85.00
201	Z-60-22 × CM 500	**326.00**	199.50	207.50	244.33	**156.50**	**165.70**	**205.02**	175.74	**141.00**	**140.30**	**165.40**	148.90	**122.40**	**120.10**	**143.80**	128.77	86.83	**85.65**	**86.95**	86.47
202	Z-60-22 × SKV 50	**234.00**	226.50	215.00	225.17	**165.70**	**164.60**	**182.35**	170.88	**142.20**	**138.20**	**143.90**	141.43	**124.70**	**119.40**	**123.70**	122.60	87.70	**86.38**	**85.90**	86.66
203	Z-60-22 × MAI 105	**229.00**	229.00	232.50	230.17	**212.90**	**205.30**	**201.03**	206.41	**182.40**	**177.70**	**169.30**	176.47	**158.00**	**152.70**	**148.30**	153.00	86.64	**85.94**	**87.57**	86.71
204	Z-60-22 × LM 13	**232.50**	241.50	237.50	237.17	**199.90**	**221.00**	**195.06**	205.32	**164.10**	**187.10**	**155.00**	168.73	**144.30**	**162.20**	**136.40**	147.63	87.82	**86.68**	**88.02**	87.51
205	Z-62-55 × CM 500	**234.00**	223.25	225.00	227.42	**198.10**	**204.50**	**231.59**	211.40	**173.30**	**170.80**	**177.50**	173.87	**139.80**	**145.20**	**147.75**	144.25	80.15	**85.04**	**83.25**	82.81
206	Z-62-55 × SKV 50	**237.50**	240.25	227.50	235.08	**180.00**	**152.60**	**183.68**	172.09	**154.70**	**123.80**	**132.80**	137.10	**134.50**	**104.80**	**113.20**	117.50	86.95	**84.67**	**85.08**	85.56
207	Z-62-55 × MAI 105	**242.50**	236.75	225.00	234.75	**216.10**	**184.00**	**150.46**	183.52	**178.80**	**147.30**	**114.80**	146.97	**147.50**	**118.10**	**93.60**	119.73	82.45	**80.18**	**81.51**	81.38
208	Z-62-55 × LM 13	**245.00**	234.25	240.00	239.75	**212.00**	**261.10**	**234.66**	235.92	**184.40**	**218.60**	**166.94**	189.98	**157.80**	**185.40**	**143.20**	162.13	85.57	**84.84**	**85.75**	85.39
209	Z-62-67 × CM 500	**180.00**	162.75	157.50	166.75	**117.20**	**139.20**	**96.96**	117.79	**100.60**	**118.40**	**81.37**	100.12	**82.40**	**96.70**	**67.60**	82.23	81.91	**81.47**	**83.00**	82.13
210	Z-62-67 × SKV 50	**228.50**	182.75	192.50	201.25	**141.10**	**156.90**	**179.38**	159.13	**122.60**	**127.40**	**141.00**	130.33	**105.20**	**107.40**	**121.00**	111.20	85.66	**84.13**	**85.58**	85.12
211	Z-62-67 × MAI 105	**219.00**	224.50	217.50	220.33	**177.00**	**178.90**	**169.49**	175.13	**157.20**	**148.20**	**130.90**	145.43	**128.10**	**121.90**	**104.70**	118.23	81.58	**82.22**	**80.03**	81.28
212	Z-62-67 × LM 13	**252.50**	212.25	217.50	227.42	**238.10**	**198.00**	**176.19**	204.10	**206.50**	**169.20**	**119.00**	164.90	**177.10**	**141.70**	**97.30**	138.70	85.79	**83.76**	**81.34**	83.63
213	Z-63-30 × CM 500	**279.50**	209.50	202.50	230.50	**165.30**	**156.70**	**214.77**	178.92	**141.00**	**132.40**	**173.20**	148.87	**109.50**	**100.90**	**133.10**	114.50	77.60	**76.23**	**76.80**	76.87
214	Z-63-30 × SKV 50	**237.50**	223.75	225.00	228.75	**190.00**	**231.40**	**263.78**	228.39	**163.20**	**190.80**	**192.05**	182.02	**137.90**	**156.30**	**158.63**	150.94	84.65	**81.64**	**82.73**	83.00
215	Z-63-30 × MAI 105	**216.00**	223.00	217.50	218.83	**181.00**	**140.50**	**166.22**	162.57	**153.80**	**117.20**	**123.80**	131.60	**126.00**	**95.70**	**99.80**	107.17	81.92	**81.64**	**80.58**	81.38
216	Z-63-30 × LM 13	**242.50**	243.00	242.50	242.67	**237.70**	**252.40**	**297.97**	262.69	**205.70**	**209.10**	**205.80**	206.87	**170.00**	**176.20**	**172.50**	172.90	82.66	**83.69**	**83.80**	83.38
217	**Decalb 8101**	**285.00**	244.50	242.50	257.33	**299.60**	**310.20**	**330.26**	313.35	**244.90**	**258.30**	**239.78**	247.66	**214.40**	**220.60**	**212.08**	215.69	87.53	**85.51**	**88.51**	87.18
218	**30v92**	**352.00**	243.00	242.50	279.17	**238.80**	**183.30**	**264.49**	228.86	**230.90**	**158.50**	**197.00**	195.47	**204.30**	**135.10**	**171.98**	170.46	88.56	**85.24**	**87.30**	87.03
219	**NK6240**	**257.50**	227.50	222.50	235.83	**227.50**	**240.60**	**239.75**	235.95	**197.70**	**195.10**	**174.00**	188.93	**170.70**	**165.90**	**139.70**	158.77	86.32	**84.65**	**80.51**	83.82
220	**PINNACLE**	**277.50**	243.25	247.50	256.08	**221.10**	**220.70**	**336.12**	259.31	**247.10**	**167.60**	**234.40**	216.37	**220.70**	**140.00**	**204.90**	188.53	89.47	**83.85**	**87.49**	86.93
221	**HEMA**	**242.50**	212.75	212.50	222.58	**213.60**	**238.20**	**239.75**	230.52	**177.20**	**188.30**	**180.13**	181.88	**147.90**	**152.60**	**149.15**	149.88	83.47	**81.01**	**82.81**	82.43
222	**CP 818**	**266.00**	270.50	237.50	258.00	**245.20**	**249.20**	**233.06**	242.49	**208.50**	**199.90**	**214.90**	207.77	**174.70**	**163.00**	**181.70**	173.13	83.77	**81.51**	**84.92**	83.40
223	**900M GOLD**	**344.50**	295.25	240.00	293.25	**304.80**	**259.90**	**282.37**	282.36	**255.80**	**230.70**	**209.20**	231.90	**223.60**	**202.80**	**183.65**	203.35	87.45	**87.94**	**87.90**	87.76
224	**NITYASHREE**	**247.50**	221.75	237.50	235.58	**225.40**	**204.20**	**266.25**	231.95	**183.00**	**180.50**	**221.50**	195.00	**155.40**	**153.60**	**190.00**	166.33	84.91	**85.12**	**85.90**	85.31
225	**PHI 3501**	**265.00**	241.75	221.00	242.58	**265.40**	**293.20**	**317.12**	291.91	**220.20**	**239.30**	**212.57**	224.02	**194.90**	**204.20**	**187.90**	195.67	88.50	**85.31**	**88.40**	87.40
	Mean	244.73	225.67	224.03	231.48	198.40	210.30	210.36	206.35	167.94	171.51	154.15	164.54	143.17	143.76	129.66	138.86	85.16	83.80	84.15	84.37
	Range	170.00	112.25	155.00	166.75	60.40	118.30	91.38	117.79	59.90	102.90	76.25	100.12	49.30	85.90	64.65	82.23	70.82	68.27	47.57	71.81
		378.00	295.25	275.00	293.25	378.03	412.10	339.12	335.61	270.10	320.90	239.78	254.00	235.10	273.80	212.08	219.07	96.06	88.08	90.82	88.04
	S. Em. ±	11.11	1.63	8.76	15.40	30.79	38.89	52.38	25.02	24.19	29.73	33.79	18.13	20.86	25.26	29.63	15.56	2.23	1.90	4.99	1.98
	C. D. 5%	21.88	3.22	17.27	42.82	60.67	76.63	103.21	69.55	47.68	58.59	66.58	50.41	41.10	49.78	58.39	43.27	4.40	3.74	9.83	5.52
	C. D. 1%	28.85	4.25	22.77	46.94	79.98	101.02	136.07	82.00	62.86	77.24	87.78	59.31	54.18	65.62	76.98	50.66	5.81	4.93	12.96	7.36

Note: Figures in bold indicates adjusted mean values

Sl. no.	Hybrid	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
1	V-1154 × CM 500	50.61	46.86	47.46	48.31	31.00	29.00	24.84	28.28	13.20	13.20	16.20	14.20	43.00	35.60	36.30	38.30	17.00	16.42	15.59	16.34	4.74	4.73	4.58	4.68
2	V-1154 × SKV 50	46.43	44.72	49.75	46.97	37.00	31.00	26.78	31.59	13.80	13.60	14.00	13.80	38.00	39.54	35.50	37.68	16.23	17.75	17.42	17.13	4.53	4.79	4.68	4.66
3	V-1154 × MAI 105	37.49	44.30	49.04	43.61	40.00	30.50	34.50	35.00	16.00	16.60	16.40	16.33	31.34	35.07	35.20	33.87	15.36	15.50	15.75	15.54	5.22	4.95	5.12	5.09
4	V-1154 × LM 13	49.52	46.22	46.94	47.56	36.50	35.00	42.30	37.93	12.60	13.60	14.00	13.40	40.17	34.14	31.90	35.40	18.58	18.17	18.33	18.36	4.47	4.62	4.58	4.55
5	V-1168 × CM 500	47.84	45.73	47.68	47.08	32.00	29.50	35.52	32.34	15.60	16.00	15.00	15.53	31.00	40.27	30.70	33.99	12.83	16.50	13.84	14.39	4.74	4.97	4.93	4.88
6	V-1168 × SKV 50	49.94	47.17	49.49	48.86	32.00	30.00	33.64	31.88	12.80	13.80	13.20	13.27	29.00	44.34	37.40	36.91	14.57	17.42	17.17	16.38	4.49	4.53	4.81	4.61
7	V-1168 × MAI 105	48.45	45.98	48.41	47.61	33.00	29.50	36.00	32.83	15.00	14.80	15.80	15.20	25.17	34.94	28.40	29.50	12.06	16.00	14.75	14.27	4.32	4.85	4.93	4.70
8	V-1168 × LM 13	46.26	46.30	49.74	47.43	42.00	33.00	41.60	38.87	11.80	12.40	12.40	12.20	37.84	40.27	35.50	37.87	17.67	19.59	18.09	18.45	4.53	4.69	4.53	4.58
9	V-1522 × CM 500	46.77	44.43	47.30	46.17	33.00	31.00	32.60	32.20	13.80	12.80	13.20	13.27	37.67	35.80	35.10	36.19	14.84	17.17	16.09	16.03	4.64	4.80	4.89	4.78
10	V-1522 × SKV 50	48.58	45.42	49.98	47.99	35.00	32.00	31.14	32.71	13.40	15.80	12.80	14.00	37.84	29.00	32.70	33.18	18.05	17.08	16.33	17.15	4.43	4.54	4.34	4.44
11	V-1522 × MAI 105	44.80	46.32	50.82	47.31	35.00	30.50	33.74	33.08	13.80	14.40	13.40	13.87	36.84	37.74	36.10	36.89	15.80	16.84	16.42	16.35	4.64	4.88	4.65	4.72
12	V-1522 × LM 13	42.53	44.77	50.10	45.80	43.00	42.00	40.46	41.82	11.20	11.80	11.60	11.53	37.33	33.74	35.80	35.62	17.65	17.50	17.50	17.55	4.52	4.57	4.56	4.55
13	V-1649 × CM 500	42.66	47.98	43.20	44.61	32.25	27.50	32.38	30.71	15.80	14.60	14.80	15.07	36.00	38.34	30.10	34.81	15.08	16.83	14.92	15.61	4.63	4.32	4.28	4.41
14	V-1649 × SKV 50	44.81	44.14	49.81	46.25	34.00	28.00	28.88	30.29	13.60	12.40	14.40	13.47	38.83	40.27	34.30	37.80	18.46	18.58	17.79	18.28	4.57	4.25	4.74	4.52
15	V-1649 × MAI 105	43.37	45.40	42.75	43.84	33.00	29.50	30.64	31.05	16.00	15.00	16.00	15.67	39.17	41.47	34.30	38.31	19.14	20.34	17.59	19.02	5.00	4.75	4.82	4.85
16	V-1649 × LM 13	47.93	44.47	54.10	48.83	41.00	39.00	33.48	37.83	13.60	11.40	13.60	12.87	38.50	39.60	39.03	39.04	20.00	20.17	20.00	20.06	4.54	4.55	4.59	4.56
17	V-1742 × CM 500	59.14	49.63	49.65	52.80	30.00	27.00	25.82	27.61	16.20	16.00	14.40	15.53	34.17	36.14	28.20	32.83	16.65	16.92	14.17	15.91	4.67	4.55	3.77	4.33
18	V-1742 × SKV 50	56.67	49.74	52.71	53.04	32.00	30.00	35.90	32.63	13.80	13.80	13.80	13.80	31.33	39.14	38.90	36.46	15.12	17.92	19.84	17.63	4.36	4.34	4.92	4.54
19	V-1742 × MAI 105	54.00	48.26	27.13	43.13	38.00	28.50	34.82	33.77	17.40	17.80	15.80	17.00	23.84	30.07	26.80	26.90	14.90	15.25	14.50	14.88	5.23	4.87	5.16	5.09
20	V-1742 × LM 13	60.03	47.77	53.08	53.62	38.00	42.50	41.30	40.60	13.80	13.60	13.40	13.60	33.33	34.60	28.30	32.08	17.40	17.67	15.92	17.00	4.73	4.85	4.58	4.72
21	V-2205 × CM 500	46.48	44.90	47.67	46.35	34.00	28.50	34.18	32.23	12.40	12.40	13.40	12.73	34.00	34.00	27.60	31.87	16.15	16.17	15.17	15.83	4.63	4.47	4.61	4.57
22	V-2205 × SKV 50	52.48	44.20	44.19	46.96	34.50	35.50	36.18	35.39	11.20	11.40	10.80	11.13	33.17	34.34	31.40	32.97	16.52	17.42	15.99	16.64	4.05	4.58	4.10	4.24
23	V-2205 × MAI 105	50.80	45.55	49.81	48.72	27.00	30.50	39.84	32.45	14.40	14.20	14.20	14.27	36.17	41.34	37.90	38.47	16.42	18.42	19.00	17.95	4.53	4.74	5.15	4.81
24	V-2205 × LM 13	48.98	44.00	50.68	47.89	40.00	42.00	28.82	36.94	12.00	12.00	12.80	12.27	33.17	30.00	29.40	30.86	16.95	17.42	15.08	16.48	4.59	4.64	4.49	4.57
25	V-2232 × CM 500	52.26	48.44	52.24	50.98	31.00	31.50	32.64	31.71	16.40	14.80	14.20	15.13	33.67	35.87	38.50	36.01	15.74	17.59	16.59	16.64	4.32	4.60	4.63	4.52
26	V-2232 × SKV 50	55.35	48.31	46.18	49.94	31.00	32.50	35.28	32.93	12.80	12.40	12.00	12.40	33.33	34.74	37.00	35.02	17.25	20.34	17.25	18.28	4.13	4.30	4.25	4.23
27	V-2232 × MAI 105	53.47	45.45	59.20	52.70	38.00	33.50	39.92	37.14	15.20	16.00	14.60	15.27	33.34	29.00	32.70	31.68	16.34	16.09	16.50	16.31	5.05	5.22	5.20	5.15
28	V-2232 × LM 13	49.59	45.07	48.06	47.57	42.00	44.00	35.28	40.43	13.40	12.80	13.00	13.07	36.67	36.80	34.40	35.96	18.72	18.92	17.87	18.50	4.58	4.84	4.79	4.73
29	V-1410-1 × CM 500	49.27	40.44	47.93	45.88	30.00	27.00	36.08	31.03	15.40	13.40	13.80	14.20	26.34	33.54	26.10	28.66	14.07	14.92	15.58	14.86	4.61	4.57	4.62	4.60
30	V-1410-1 × SKV 50	51.62	45.71	47.49	48.27	28.00	30.50	36.90	31.80	12.20	12.40	12.60	12.40	33.17	35.74	28.80	32.57	15.76	17.08	16.92	16.59	4.42	4.39	4.67	4.49
31	V-1410-1 × MAI 105	53.51	45.81	49.68	49.67	39.00	32.50	32.64	34.71	16.20	16.00	16.20	16.13	33.84	29.40	30.70	31.31	17.23	16.59	16.67	16.83	5.27	5.03	5.00	5.10
32	V-1410-1 × LM 13	49.27	35.95	47.66	44.29	42.00	42.00	41.36	41.79	12.00	12.00	13.60	12.53	36.67	41.27	34.10	37.34	17.09	19.33	18.34	18.25	4.67	4.79	4.97	4.81
33	V-1712-1 × CM 500	54.37	48.89	52.16	51.81	31.50	31.00	29.74	30.75	14.80	16.60	15.20	15.53	38.17	46.14	34.50	39.60	17.10	18.17	15.42	16.90	5.06	5.09	4.64	4.93
34	V-1712-1 × SKV 50	50.05	47.03	49.21	48.76	36.00	30.00	27.74	31.25	15.20	14.40	14.80	14.80	37.33	38.20	37.60	37.71	16.46	18.00	19.25	17.90	4.89	4.92	5.18	4.99
35	V-1712-1 × MAI 105	56.00	47.05	49.41	50.82	33.00	25.00	36.58	31.53	17.80	16.80	17.80	17.47	37.00	36.47	37.50	36.99	15.19	15.34	16.09	15.54	5.34	5.14	5.60	5.36
36	V-1712-1 × LM 13	49.91	46.92	47.30	48.04	41.00	35.50	36.48	37.66	14.00	13.60	15.20	14.27	39.34	40.27	32.00	37.20	18.17	19.87	16.34	18.13	4.88	4.84	4.96	4.89
37	V-241-2 × CM 500	51.48	49.68	39.02	46.73	35.50	30.00	26.92	30.81	14.00	14.00	12.60	13.53	28.67	30.00	25.40	28.02	16.48	13.42	13.50	14.47	4.79	4.47	4.25	4.50
38	V-241-2 × SKV 50	50.68	47.46	51.45	49.86	37.00	30.00	38.86	35.29	13.40	12.80	12.80	13.00	36.00	34.40	32.40	34.27	17.64	17.09	17.42	17.38	4.59	4.40	4.59	4.53
39	V-241-2 × MAI 105	47.98	46.08	48.05	47.37	34.50	33.50	33.72	33.91	14.80	13.00	14.60	14.13	29.84	32.74	29.90	30.82	15.30	17.75	15.00	16.02	4.76	4.59	4.79	4.71
40	V-241-2 × LM 13	56.72	47.50	46.57	50.26	40.40	44.50	34.18	39.69	13.80	12.60	13.60	13.33	34.00	32.80	31.40	32.73	17.00	18.84	16.08	17.31	4.82	4.84	4.69	4.78

Sl. no.	Hybrid	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
41	V-2437-1 × CM 500	50.67	46.06	47.42	48.05	27.00	29.00	32.74	29.58	12.60	13.20	12.60	12.80	37.17	40.67	30.60	36.14	17.59	19.25	15.33	17.39	4.12	4.35	4.14	4.20
42	V-2437-1 × SKV 50	49.37	45.96	49.61	48.31	29.00	28.00	31.40	29.47	13.20	12.40	12.40	12.67	36.84	39.60	36.00	37.48	17.23	19.20	17.42	17.95	4.04	4.05	4.50	4.20
43	V-2437-1 × MAI 105	46.08	45.75	51.62	47.81	27.00	31.50	31.16	29.89	14.20	14.40	14.60	14.40	33.67	41.07	37.20	37.31	15.96	20.59	17.50	18.02	4.29	4.79	4.77	4.61
44	V-2437-1 × LM 13	52.89	46.77	48.51	49.39	40.00	33.50	39.54	37.68	12.00	12.80	12.60	12.47	35.50	38.34	38.40	37.41	18.02	18.50	18.59	18.37	4.21	4.38	4.40	4.33
45	V-2459-2 × CM 500	47.03	48.72	49.78	48.51	27.00	26.50	21.78	25.09	13.20	12.60	12.80	12.87	37.84	36.20	37.40	37.15	14.34	16.17	15.92	15.47	4.19	4.04	4.12	4.11
46	V-2459-2 × SKV 50	47.76	47.20	52.09	49.01	29.00	27.00	30.04	28.68	11.40	11.80	12.20	11.80	38.84	38.40	38.40	38.55	16.04	18.17	16.59	16.93	3.88	4.19	4.07	4.04
47	V-2459-2 × MAI 105	47.50	46.01	48.91	47.47	27.00	26.00	22.36	25.12	13.60	13.60	14.00	13.73	40.67	43.34	34.00	39.33	17.79	18.08	15.67	17.18	4.35	4.29	4.09	4.24
48	V-2459-2 × LM 13	47.86	47.06	46.21	47.04	34.00	31.50	30.88	32.13	11.60	12.40	12.20	12.07	37.34	33.67	32.40	34.47	16.49	17.92	16.34	16.91	3.98	4.27	4.10	4.12
49	V-2516-2 × CM 500	49.66	50.32	49.14	49.71	28.00	28.50	26.76	27.75	14.20	13.00	12.80	13.33	29.84	38.60	31.20	33.21	14.06	17.42	14.50	15.33	4.20	4.14	4.21	4.18
50	V-2516-2 × SKV 50	50.91	47.19	50.45	49.51	31.00	31.50	33.10	31.87	12.60	11.80	12.80	12.40	42.00	42.14	35.70	39.95	19.58	19.50	19.33	19.47	4.08	4.02	4.24	4.11
51	V-2516-2 × MAI 105	46.99	42.25	46.84	45.36	30.00	26.50	30.38	28.96	17.00	16.00	14.60	15.87	30.83	42.74	30.40	34.66	13.43	16.17	14.50	14.70	4.50	4.67	4.59	4.59
52	V-2516-2 × LM 13	50.32	46.77	51.76	49.61	39.00	35.00	35.28	36.43	13.40	12.60	12.40	12.80	38.67	39.74	37.70	38.70	18.50	21.25	20.00	19.92	4.24	4.40	4.33	4.32
53	V-2608-1 × CM 500	57.03	47.80	51.13	51.99	26.00	26.50	25.68	26.06	14.20	14.00	14.00	14.07	33.00	31.34	29.44	31.26	16.92	16.92	15.67	16.50	4.15	4.52	4.30	4.32
54	V-2608-1 × SKV 50	50.86	44.39	51.54	48.93	34.00	29.50	32.14	31.88	12.40	13.20	14.00	13.20	37.00	30.34	37.80	35.05	17.11	18.42	19.92	18.48	4.37	4.19	4.60	4.39
55	V-2608-1 × MAI 105	38.00	45.83	48.85	44.23	33.50	32.00	36.54	34.01	17.00	16.00	14.20	15.73	27.17	40.74	33.00	33.64	15.81	19.50	17.92	17.74	4.66	4.60	4.72	4.66
56	V-2608-1 × LM 13	46.29	47.43	47.15	46.95	36.00	33.50	35.78	35.09	13.60	14.00	14.00	13.87	35.34	36.80	33.90	35.35	17.01	18.84	17.50	17.78	4.43	4.49	4.71	4.54
57	V-291-2 × CM 500	48.12	46.59	49.53	48.08	33.00	27.50	33.74	31.41	14.60	14.20	13.20	14.00	33.50	33.40	31.50	32.80	18.03	19.59	17.50	18.37	4.61	4.47	4.38	4.48
58	V-291-2 × SKV 50	55.90	47.02	50.58	51.17	36.00	30.50	33.66	33.39	14.40	13.80	12.40	13.53	31.84	37.74	39.70	36.42	15.30	17.47	20.59	17.79	4.66	4.55	4.77	4.66
59	V-291-2 × MAI 105	43.76	44.24	41.87	43.29	31.50	30.50	33.74	31.91	18.60	17.80	18.80	18.40	28.50	26.27	31.20	28.66	15.51	15.83	18.17	16.50	5.11	5.09	5.42	5.21
60	V-291-2 × LM 13	52.25	46.71	47.74	48.90	38.00	37.50	36.00	37.17	14.40	14.00	14.40	14.27	35.84	38.54	34.10	36.16	18.81	19.58	17.67	18.69	4.58	4.52	4.83	4.64
61	V-70-1 × CM 500	48.48	45.11	45.32	46.30	29.00	32.00	31.74	30.91	14.00	13.80	13.80	13.87	35.50	43.80	38.00	39.10	16.07	18.83	18.75	17.88	4.42	4.42	4.49	4.44
62	V-70-1 × SKV 50	45.87	47.16	49.98	47.67	35.00	30.00	29.42	31.47	12.60	12.60	12.40	12.53	37.00	43.27	34.87	38.38	18.16	19.33	16.83	18.11	4.46	4.45	4.23	4.38
63	V-70-1 × MAI 105	47.97	44.95	47.11	46.68	30.00	33.00	28.60	30.53	15.40	16.20	15.20	15.60	32.33	37.27	30.80	33.47	14.69	17.25	15.75	15.90	4.69	4.77	4.66	4.70
64	V-70-1 × LM 13	45.03	45.94	49.47	46.81	38.00	40.00	36.54	38.18	13.20	12.60	11.60	12.47	33.50	37.87	39.70	37.02	17.75	18.75	18.09	18.20	4.37	4.65	4.66	4.56
65	CIMMYT-47 × CM 500	56.74	48.47	48.87	51.36	33.00	29.50	29.32	30.61	14.00	13.60	14.20	13.93	41.17	41.47	37.60	40.08	16.42	18.34	17.92	17.56	4.42	4.44	4.58	4.48
66	CIMMYT-47 × SKV 50	57.02	47.34	40.57	48.31	31.00	28.00	18.82	25.94	13.80	13.40	13.20	13.47	38.00	41.67	35.70	38.46	17.05	17.63	15.00	16.56	4.39	4.47	4.48	4.44
67	CIMMYT-47 × MAI 105	54.79	46.96	50.75	50.83	34.00	30.00	24.52	29.51	15.60	14.80	16.60	15.67	35.50	37.67	34.10	35.76	16.55	17.08	16.42	16.68	4.97	4.87	4.96	4.93
68	CIMMYT-47 × LM 13	49.71	46.74	53.85	50.10	34.50	36.00	38.90	36.47	12.00	12.00	12.80	12.27	39.67	41.80	38.70	40.06	17.50	18.09	18.75	18.11	4.46	4.47	4.64	4.52
69	CIMMYT-5 × CM 500	54.80	44.89	46.97	48.88	33.00	24.50	26.76	28.09	13.20	12.20	12.80	12.73	43.50	39.67	41.50	41.56	19.04	19.67	18.34	19.01	4.60	4.12	4.29	4.34
70	CIMMYT-5 × SKV 50	54.04	46.11	46.97	49.04	35.00	38.00	39.44	37.48	12.20	12.00	11.80	12.00	35.33	35.07	31.20	33.87	17.64	17.75	17.00	17.46	4.53	4.52	4.57	4.54
71	CIMMYT-5 × MAI 105	55.48	41.81	46.59	47.96	34.55	31.50	30.14	32.06	14.00	13.80	14.20	14.00	32.50	38.60	34.20	35.10	15.77	17.30	17.08	16.72	4.62	4.80	4.88	4.77
72	CIMMYT-5 × LM 13	46.71	44.45	47.51	46.22	43.00	40.00	42.30	41.77	12.20	10.80	12.00	11.67	36.17	36.27	35.70	36.04	17.68	19.42	18.58	18.56	4.71	4.45	4.74	4.63
73	CM-115 × CM 500	49.08	47.14	54.53	50.25	23.00	24.00	13.62	20.21	13.60	14.00	13.40	13.67	34.17	34.20	20.00	29.46	15.79	15.67	11.92	14.46	4.02	4.10	3.65	3.92
74	CM-115 × SKV 50	52.61	46.82	48.15	49.19	30.00	26.50	29.50	28.67	13.60	12.40	12.80	12.93	38.33	38.40	27.50	34.74	16.57	17.00	13.25	15.61	4.11	3.97	3.89	3.99
75	CM-115 × MAI 105	51.15	46.16	49.45	48.92	28.50	28.00	27.92	28.14	14.60	14.40	14.80	14.60	28.50	31.80	35.50	31.93	12.94	14.50	15.67	14.37	4.47	4.49	4.57	4.51
76	CM-115 × LM 13	55.02	44.92	50.23	50.05	33.00	31.50	29.30	31.27	12.60	12.40	13.00	12.67	35.84	32.54	30.30	32.89	17.00	16.97	16.25	16.74	4.06	4.14	4.57	4.25
77	CM-149 × CM 500	57.25	48.52	52.91	52.89	32.00	32.00	32.90	32.30	12.40	12.60	11.40	12.13	29.84	29.74	31.00	30.19	15.90	15.58	15.17	15.55	4.39	4.49	4.24	4.37
78	CM-149 × SKV 50	54.99	47.63	47.05	49.89	36.00	30.50	40.90	35.80	12.60	12.20	12.20	12.33	33.17	34.87	31.80	33.28	16.63	18.50	17.00	17.38	4.43	4.48	4.38	4.43
79	CM-149 × MAI 105	41.67	45.60	49.05	45.44	38.00	39.50	33.64	37.05	14.60	15.20	15.60	15.13	25.00	29.74	31.34	28.69	14.45	16.22	16.92	15.86	4.55	5.17	5.10	4.94
80	CM-149 × LM 13	50.42	47.89	47.82	48.71	36.00	35.00	34.02	35.01	13.80	12.60	12.40	12.93	28.84	37.20	32.40	32.81	15.78	18.34	16.25	16.79	4.48	4.67	4.35	4.50

Sl. no.	Hybrid	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
81	CML-165 × CM 500	46.60	48.86	50.56	48.67	32.00	28.50	31.22	30.57	12.60	13.40	13.40	13.13	32.67	33.20	35.90	33.92	15.67	15.33	15.83	15.61	4.37	4.39	4.27	4.34
82	CML-165 × SKV 50	47.00	44.72	47.36	46.36	32.50	33.00	31.48	32.33	12.40	12.60	11.80	12.27	37.84	37.47	29.10	34.80	16.40	17.80	14.84	16.35	4.24	4.37	4.24	4.28
83	CML-165 × MAI 105	46.90	46.03	45.94	46.29	33.00	30.00	30.36	31.12	13.80	15.40	14.20	14.47	30.84	34.20	30.00	31.68	14.70	16.00	14.67	15.12	4.65	4.72	4.65	4.67
84	CML-165 × LM 13	44.71	46.67	42.54	44.64	39.00	38.00	40.74	39.25	12.00	11.60	11.60	11.73	34.34	29.80	32.90	32.35	17.44	16.50	15.95	16.63	4.41	4.50	4.47	4.46
85	CML-166 × CM 500	51.00	48.04	45.77	48.27	30.00	24.00	27.20	27.07	13.60	14.40	14.00	14.00	43.17	38.94	39.40	40.50	17.02	19.12	16.75	17.63	4.28	4.35	4.25	4.29
86	CML-166 × SKV 50	53.53	44.91	46.19	48.21	28.00	31.00	31.70	30.23	13.60	13.80	13.60	13.67	42.50	44.60	36.20	41.10	17.66	20.25	17.92	18.61	4.43	4.43	4.50	4.45
87	CML-166 × MAI 105	50.54	45.56	46.05	47.38	29.00	29.00	26.48	28.16	14.20	15.20	15.40	14.93	35.67	41.40	32.80	36.62	15.90	19.17	15.84	16.97	4.57	4.80	4.71	4.69
88	CML-166 × LM 13	42.55	44.10	46.58	44.41	32.00	28.50	34.50	31.67	14.20	15.00	13.60	14.27	39.00	37.67	35.50	37.39	18.85	20.25	17.17	18.76	4.38	4.49	4.19	4.35
89	CML-169 × CM 500	56.74	48.71	47.39	50.95	29.50	29.00	27.00	28.50	14.20	15.00	13.00	14.07	38.33	25.60	29.60	31.18	16.01	16.75	14.34	15.70	4.54	4.42	4.20	4.38
90	CML-169 × SKV 50	55.61	48.17	51.49	51.75	31.00	28.50	31.98	30.49	14.60	14.40	14.60	14.53	29.00	38.54	39.80	35.78	14.57	15.92	17.00	15.83	4.88	4.60	4.88	4.78
91	CML-169 × MAI 105	53.48	47.44	51.61	50.84	34.00	32.50	33.12	33.21	12.20	13.20	12.20	12.53	32.50	39.67	42.40	38.19	15.81	19.17	19.17	18.05	4.42	4.55	4.55	4.51
92	CML-169 × LM 13	55.53	47.99	48.50	50.67	38.50	35.50	38.16	37.39	12.00	12.40	13.40	12.60	39.83	37.94	36.70	38.16	17.89	18.84	18.42	18.38	4.44	4.45	4.69	4.52
93	CML-172 × CM 500	48.15	45.09	45.13	46.12	36.00	31.50	30.46	32.65	14.20	13.20	13.20	13.53	35.67	40.14	37.54	37.78	17.09	17.92	17.42	17.47	4.63	4.60	4.52	4.58
94	CML-172 × SKV 50	45.80	44.29	46.23	45.44	38.00	33.00	33.00	34.67	12.40	13.20	12.40	12.67	41.33	37.80	34.40	37.84	19.58	19.17	18.08	18.94	4.78	4.60	4.46	4.61
95	CML-172 × MAI 105	49.39	44.50	49.29	47.72	36.00	33.00	34.20	34.40	14.80	16.00	14.80	15.20	36.50	36.74	35.20	36.15	17.53	17.92	16.09	17.18	4.69	4.78	4.73	4.73
96	CML-172 × LM 13	39.93	42.98	46.09	43.00	39.00	41.00	42.22	40.74	13.60	12.80	12.80	13.07	31.17	29.87	29.70	30.24	16.43	18.25	16.17	16.95	4.36	4.62	4.61	4.53
97	CML-359 × CM 500	52.10	47.33	48.77	49.40	28.00	32.00	25.72	28.57	14.40	13.80	13.80	14.00	40.67	39.00	38.10	39.26	17.32	18.67	17.09	17.69	4.41	4.39	4.27	4.36
98	CML-359 × SKV 50	48.27	44.69	53.72	48.89	35.00	33.50	29.40	32.63	13.40	13.20	12.80	13.13	34.00	33.27	33.57	33.61	16.95	17.83	14.92	16.57	4.25	4.37	4.19	4.27
99	CML-359 × MAI 105	49.64	46.06	51.64	49.11	28.00	27.50	32.02	29.17	16.80	16.60	16.60	16.67	28.67	36.67	30.80	32.05	13.46	16.92	15.50	15.29	4.72	5.03	4.91	4.89
100	CML-359 × LM 13	49.37	46.90	47.62	47.96	35.00	37.50	36.12	36.21	13.20	12.80	14.00	13.33	30.34	36.47	31.20	32.67	16.49	17.55	16.50	16.85	4.27	4.37	4.58	4.41
101	CML-411 × CM 500	53.55	48.18	50.96	50.90	30.00	24.00	27.64	27.21	13.20	14.80	14.60	14.20	39.67	39.74	32.30	37.23	17.18	17.42	15.50	16.70	4.52	4.52	4.38	4.47
102	CML-411 × SKV 50	50.57	45.29	50.10	48.65	38.00	36.50	38.06	37.52	12.40	12.00	11.80	12.07	38.33	38.20	35.80	37.44	18.48	18.42	18.67	18.52	4.49	4.27	4.59	4.45
103	CML-411 × MAI 105	50.80	48.33	49.64	49.59	30.00	32.00	39.56	33.85	14.60	13.80	14.40	14.27	37.17	33.20	35.90	35.42	15.68	16.17	16.09	15.98	4.78	4.72	4.81	4.77
104	CML-411 × LM 13	50.41	46.64	44.52	47.19	41.00	38.50	41.04	40.18	13.40	12.80	13.80	13.33	43.84	33.94	34.90	37.56	19.69	18.20	18.67	18.85	4.80	4.80	4.88	4.83
105	HKI-193-1 × CM 500	44.19	47.76	49.97	47.30	30.00	31.50	35.68	32.39	13.20	13.80	13.40	13.47	31.84	37.74	27.50	32.36	16.89	19.25	16.58	17.57	4.20	4.50	4.30	4.33
106	HKI-193-1 × SKV 50	54.09	47.18	45.19	48.82	32.50	32.50	35.90	33.63	13.80	13.60	13.00	13.47	35.33	31.67	33.70	33.57	17.64	18.08	16.67	17.46	4.50	4.53	4.19	4.41
107	HKI-193-1 × MAI 105	46.08	46.94	36.48	43.16	36.00	34.00	35.74	35.25	15.60	15.80	16.40	15.93	35.00	29.80	35.30	33.37	16.58	14.67	18.34	16.53	4.77	4.75	5.11	4.88
108	HKI-193-1 × LM 13	49.26	45.33	45.96	46.85	39.00	41.50	43.26	41.25	13.60	12.60	12.80	13.00	37.50	38.54	37.10	37.71	18.31	19.67	18.84	18.94	4.54	4.57	4.68	4.60
109	HKI-193-2 × CM 500	50.30	48.73	48.30	49.11	30.50	31.50	33.12	31.71	14.00	13.20	12.60	13.27	29.17	33.40	31.80	31.46	13.24	15.59	15.08	14.64	4.38	4.30	4.30	4.33
110	HKI-193-2 × SKV 50	50.67	47.74	48.12	48.84	32.00	29.50	29.92	30.47	13.60	13.60	12.60	13.27	33.84	35.14	30.90	33.29	15.91	15.34	14.84	15.36	4.28	4.33	4.22	4.28
111	HKI-193-2 × MAI 105	46.71	44.00	48.47	46.39	34.00	34.50	30.80	33.10	15.00	14.80	15.60	15.13	26.83	35.54	29.60	30.66	13.97	17.25	16.00	15.74	4.80	4.92	4.81	4.84
112	HKI-193-2 × LM 13	47.10	44.51	45.74	45.78	38.55	38.00	45.12	40.56	13.80	12.60	13.60	13.33	35.17	32.14	33.90	33.74	16.27	17.50	17.59	17.12	4.52	4.52	4.68	4.57
113	LTP-1 × CM 500	49.01	47.21	49.68	48.63	27.00	29.50	30.52	29.01	13.80	13.80	15.00	14.20	31.17	37.80	39.00	35.99	14.49	18.08	18.50	17.02	4.10	4.45	4.60	4.38
114	LTP-1 × SKV 50	51.54	46.74	49.66	49.31	29.00	28.00	30.06	29.02	12.20	13.20	13.80	13.07	39.34	36.80	35.50	37.21	19.12	20.64	18.50	19.42	4.22	4.17	4.19	4.19
115	LTP-1 × MAI 105	56.52	46.45	48.08	50.35	31.00	29.50	30.52	30.34	16.00	16.40	15.20	15.87	36.50	37.67	33.70	35.96	17.80	19.50	16.67	17.99	4.40	4.58	4.37	4.45
116	LTP-1 × LM 13	43.22	46.29	51.20	46.90	39.00	38.50	35.54	37.68	13.80	12.40	13.20	13.13	32.67	30.40	33.20	32.09	18.40	18.83	18.33	18.52	4.40	4.33	4.34	4.36
117	MAI-11 5 × CM 500	57.73	45.48	46.25	49.82	31.00	28.50	31.62	30.37	13.40	14.00	13.60	13.67	30.34	32.94	33.00	32.09	14.34	16.92	16.08	15.78	4.20	4.38	4.48	4.35
118	MAI-115 × SKV 50	55.57	47.36	47.72	50.21	31.00	31.50	32.76	31.75	13.60	12.80	12.80	13.07	31.00	35.74	28.80	31.85	14.28	17.50	15.42	15.73	4.44	4.48	4.39	4.44
119	MAI-116 × MAI 105	49.42	45.23	47.37	47.34	30.00	29.00	27.84	28.95	15.00	15.00	17.00	15.67	27.00	26.67	28.00	27.22	14.33	14.84	15.25	14.81	4.56	4.64	5.01	4.73
120	MAI-117 × LM 13	46.98	45.42	50.77	47.72	35.00	32.00	34.54	33.85	11.60	12.80	13.60	12.67	38.17	39.74	37.70	38.53	18.19	20.07	20.17	19.47	4.45	4.44	4.81	4.56

Sl. no.	Hybrid	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
121	MAI-107 × CM 500	54.27	44.99	53.10	50.78	33.00	31.50	32.86	32.45	16.00	16.40	15.80	16.07	31.00	32.14	30.10	31.08	15.18	16.42	16.09	15.89	4.90	4.87	4.99	4.92
122	MAI-107 × SKV 50	48.75	47.93	47.69	48.12	35.00	30.50	32.22	32.57	13.60	12.60	13.00	13.07	30.50	33.94	26.40	30.28	14.31	15.75	14.92	14.99	4.26	4.24	4.24	4.24
123	MAI-107 × MAI 105	43.50	44.33	45.35	44.39	39.00	37.00	41.56	39.19	15.80	15.80	14.40	15.33	37.17	32.60	21.60	30.46	17.77	17.09	13.92	16.26	4.54	5.09	4.82	4.81
124	MAI-107 × LM 13	53.32	44.99	47.54	48.62	39.00	40.50	40.08	39.86	13.20	11.20	12.40	12.27	32.50	39.14	30.80	34.15	16.06	20.17	16.34	17.52	4.50	4.59	4.29	4.46
125	MAI-109 × CM 500	47.88	48.04	40.53	45.48	34.00	34.00	33.78	33.93	13.00	11.80	12.00	12.27	34.17	39.27	32.60	35.34	16.82	18.09	15.84	16.91	4.36	4.35	4.29	4.33
126	MAI-109 × SKV 50	45.65	47.96	45.69	46.43	36.00	33.50	33.00	34.17	11.40	11.00	11.00	11.13	34.17	33.60	34.20	33.99	16.37	17.34	17.00	16.90	4.25	4.37	4.34	4.32
127	MAI-109 × MAI 105	54.47	45.16	48.38	49.34	38.00	36.50	33.74	36.08	14.80	14.20	13.40	14.13	31.17	31.87	25.70	29.58	15.53	16.92	14.67	15.71	4.67	4.55	4.48	4.56
128	MAI-109 × LM 13	49.94	47.86	47.97	48.59	44.00	39.50	40.60	41.37	11.20	13.00	11.60	11.93	34.83	37.47	35.60	35.97	16.61	17.25	17.25	17.04	4.44	4.30	4.63	4.46
129	MAI-112 × CM 500	57.74	46.26	49.11	51.04	32.00	28.50	28.18	29.56	15.60	14.60	13.40	14.53	30.84	33.20	26.40	30.15	16.75	18.58	13.42	16.25	4.39	4.15	4.29	4.28
130	MAI-112 × SKV 50	48.76	45.81	45.94	46.83	30.00	29.50	38.80	32.77	13.40	12.40	12.80	12.87	35.67	39.74	33.70	36.37	16.58	16.75	18.08	17.14	3.81	4.27	4.32	4.13
131	MAI-112 × MAI 105	48.31	46.72	48.23	47.75	35.00	34.50	34.80	34.77	16.40	15.20	16.20	15.93	31.34	35.27	32.60	33.07	16.45	16.75	16.75	16.65	4.98	4.94	4.79	4.90
132	MAI-112 × LM 13	56.93	46.92	44.65	49.50	38.00	38.50	33.88	36.79	13.60	12.60	13.40	13.20	33.17	35.27	27.90	32.11	18.54	18.25	14.34	17.04	4.56	4.47	4.28	4.44
133	MAI-121 × CM 500	54.08	48.75	48.41	50.41	26.00	26.50	25.54	26.01	14.00	14.20	13.60	13.93	34.67	41.40	36.80	37.62	14.99	16.84	17.00	16.28	4.25	4.45	4.27	4.32
134	MAI-121 × SKV 50	52.86	49.54	53.11	51.83	30.00	28.00	29.98	29.33	13.40	12.60	12.80	12.93	30.33	30.20	30.50	30.34	14.89	15.75	14.59	15.08	4.34	4.18	4.38	4.30
135	MAI-121 × MAI 105	44.70	46.68	48.36	46.58	33.00	29.50	26.28	29.59	15.80	17.40	15.40	16.20	29.83	30.20	31.60	30.54	13.38	14.84	14.75	14.32	4.86	4.99	4.76	4.87
136	MAI-121 × LM 13	55.60	48.79	46.95	50.44	36.00	35.50	28.48	33.33	13.80	13.60	12.60	13.33	34.50	36.80	31.70	34.33	15.66	16.25	13.87	15.26	4.54	4.53	4.26	4.44
137	MAI-137 × CM 500	40.96	43.18	40.97	41.70	31.00	31.50	22.98	28.49	11.80	12.00	13.20	12.33	30.84	24.94	22.10	25.96	14.17	15.00	13.75	14.31	4.51	4.29	4.54	4.44
138	MAI-137 × SKV 50	45.84	43.70	42.80	44.11	34.00	34.00	36.84	34.95	11.80	12.80	12.20	12.27	35.50	38.80	27.50	33.93	17.09	18.75	14.28	16.71	4.64	4.87	4.38	4.63
139	MAI-137 × MAI 105	38.45	42.25	45.70	42.13	36.60	35.50	33.46	35.19	14.60	14.40	13.60	14.20	25.67	30.27	29.85	28.60	13.93	15.17	15.50	14.87	4.80	5.09	5.16	5.02
140	MAI-137 × LM 13	45.59	43.34	46.22	45.05	40.00	42.50	39.34	40.61	13.20	11.00	13.20	12.47	35.83	32.54	31.50	33.29	17.99	16.75	16.58	17.11	4.71	4.65	4.74	4.70
141	MAI-27 × CM 500	39.45	46.93	54.93	47.10	30.00	31.50	32.12	31.21	13.60	13.60	13.20	13.47	26.17	36.80	23.80	28.92	12.39	15.59	15.42	14.46	4.32	4.45	4.10	4.29
142	MAI-27 × SKV 50	50.56	48.38	45.71	48.22	29.00	32.00	32.08	31.03	13.00	12.40	12.20	12.53	23.84	27.54	26.80	26.06	14.45	16.04	16.84	15.77	4.37	4.32	4.23	4.31
143	MAI-27 × MAI 105	43.51	44.64	47.20	45.12	33.50	35.00	36.30	34.93	16.60	13.60	14.20	14.80	26.34	39.74	21.80	29.29	13.02	18.00	13.09	14.70	4.89	4.78	4.33	4.67
144	MAI-27 × LM 13	50.47	44.77	47.42	47.55	37.00	38.50	40.50	38.67	12.40	12.40	12.80	12.53	33.83	38.87	28.90	33.87	16.44	18.42	16.08	16.98	4.53	4.40	4.37	4.43
145	MAI-29 × CM 500	48.04	49.19	48.30	48.51	26.50	24.50	24.22	25.07	14.00	13.80	13.20	13.67	31.67	31.20	31.40	31.42	15.39	15.45	15.33	15.39	3.98	4.02	4.03	4.01
146	MAI-29 × SKV 50	50.87	48.43	49.07	49.45	37.00	33.50	36.34	35.61	11.40	12.40	13.20	12.33	29.17	37.94	30.00	32.37	15.48	17.84	12.50	15.27	4.39	4.52	4.40	4.43
147	MAI-29 × MAI 105	42.53	46.98	47.51	45.67	37.50	30.50	37.34	35.11	13.40	14.20	14.60	14.07	29.67	37.60	26.90	31.39	15.02	16.60	15.42	15.68	4.72	4.60	4.86	4.73
148	MAI-29 × LM 13	52.50	47.08	47.22	48.93	34.00	32.50	38.20	34.90	13.20	14.00	13.40	13.53	33.84	39.80	27.50	33.71	16.21	17.50	14.72	16.14	4.49	4.52	4.52	4.51
149	MAI-35 × CM 500	52.33	43.19	53.35	49.62	31.00	30.00	30.60	30.53	13.80	12.80	13.60	13.40	29.17	31.34	32.00	30.84	15.87	15.59	15.75	15.74	4.40	4.39	4.33	4.37
150	MAI-35 × SKV 50	51.79	48.11	49.06	49.65	31.00	30.50	31.72	31.07	12.40	12.20	12.00	12.20	29.34	31.54	25.20	28.69	14.54	16.58	13.92	15.01	4.23	4.27	4.18	4.23
151	MAI-35 × MAI 105	47.18	46.96	46.50	46.88	34.00	33.00	36.40	34.47	14.00	13.00	14.00	13.67	32.67	36.87	33.20	34.24	17.25	17.09	15.17	16.50	4.67	4.60	4.57	4.61
152	MAI-35 × LM 13	53.98	46.81	49.40	50.06	39.00	36.50	36.38	37.29	13.80	13.60	14.60	14.00	28.67	30.67	25.60	28.31	15.27	16.20	15.50	15.66	4.65	4.54	4.65	4.61
153	MAI-45 × CM 500	47.93	46.56	47.49	47.33	33.00	32.50	34.50	33.33	12.80	12.60	12.00	12.47	29.84	38.34	24.80	30.99	14.77	15.55	12.75	14.36	4.61	4.40	4.19	4.40
154	MAI-45 × SKV 50	48.32	43.70	45.38	45.80	36.00	37.00	35.42	36.14	12.20	12.00	11.00	11.73	32.84	32.00	28.30	31.05	17.36	18.34	14.84	16.84	4.30	4.50	4.29	4.36
155	MAI-45 × MAI 105	254.97	44.91	44.18	114.69	37.00	36.50	42.78	38.76	15.60	15.00	14.00	14.87	25.00	33.54	29.30	29.28	14.49	16.00	15.59	15.36	5.14	5.14	5.08	5.12
156	MAI-45 × LM 13	46.84	43.18	49.17	46.39	40.00	39.50	41.72	40.41	11.20	10.80	12.00	11.33	37.67	36.47	35.97	36.70	18.42	19.37	18.00	18.60	4.42	4.40	4.60	4.47
157	MAI-48 × CM 500	54.26	48.18	47.17	49.87	28.00	37.00	29.28	31.43	13.80	12.00	12.00	12.60	23.34	27.87	26.50	25.90	12.11	16.67	13.17	13.98	4.17	4.32	4.18	4.22
158	MAI-48 × SKV 50	49.00	47.70	44.68	47.12	28.00	29.50	27.62	28.37	13.40	12.40	12.20	12.67	30.00	31.74	26.90	29.55	15.46	16.97	13.42	15.28	4.05	4.20	4.11	4.12
159	MAI-48 × MAI 105	45.46	44.96	49.16	46.53	32.00	29.00	31.88	30.96	14.80	15.00	13.60	14.47	32.17	30.87	30.40	31.14	14.23	17.33	16.00	15.85	4.72	4.34	4.47	4.51
160	MAI-48 × LM 13	48.43	46.46	50.77	48.55	38.00	35.00	35.78	36.26	13.80	13.80	14.20	13.93	32.67	37.67	30.40	33.58	16.50	17.25	16.17	16.64	4.67	4.82	9.18	6.22

Sl. no.	Hybrid	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
161	MAI-706 × CM 500	54.86	49.97	**48.94**	51.25	**32.00**	**29.50**	26.66	29.39	**14.80**	**14.00**	**14.20**	14.33	**39.17**	**39.47**	**33.50**	37.38	**15.21**	**17.67**	**16.50**	16.46	**4.52**	4.24	**4.20**	4.32
162	MAI-706 × SKV 50	57.48	49.27	**50.86**	52.53	**29.00**	**28.00**	33.20	30.07	**13.80**	**12.40**	**13.60**	13.27	**35.67**	**33.74**	**32.00**	33.80	**15.57**	**16.04**	**15.75**	15.79	**4.44**	4.24	**4.38**	4.35
163	MAI-706 × MAI 105	48.88	50.12	**52.33**	50.44	**35.00**	**31.00**	32.64	32.88	**16.40**	**16.40**	**15.00**	15.93	**34.33**	**36.07**	**38.40**	36.27	**16.68**	**17.65**	**16.75**	17.03	**4.80**	4.70	**4.47**	4.65
164	MAI-706 × LM 13	51.78	48.21	**52.18**	50.72	**38.00**	**36.50**	34.28	36.26	**12.20**	**12.60**	**13.20**	12.67	**35.50**	**34.67**	**32.50**	34.22	**17.06**	**18.09**	**16.59**	17.24	**4.52**	4.45	**4.50**	4.49
165	SKV-70 × CM 500	47.05	43.63	**43.41**	44.70	**27.00**	**26.00**	26.24	26.41	**12.80**	**14.20**	**15.00**	14.00	**33.17**	**39.67**	**30.00**	34.28	**15.00**	**16.10**	**15.84**	15.65	**4.17**	4.32	**4.23**	4.24
166	SKV-70 × SKV 50	53.09	47.26	**48.31**	49.55	**30.00**	**29.00**	31.54	30.18	**13.40**	**14.00**	**13.40**	13.60	**36.50**	**37.27**	**31.90**	35.22	**17.29**	**18.00**	**15.34**	16.88	**4.26**	4.04	**4.05**	4.11
167	SKV-70 × MAI 105	44.90	46.57	**46.56**	46.01	**31.00**	**24.50**	29.12	28.21	**16.20**	**13.00**	**16.00**	15.07	**29.00**	**28.27**	**30.30**	29.19	**14.50**	**15.25**	**14.42**	14.72	**4.78**	4.22	**4.65**	4.55
168	SKV-70 × LM 13	51.26	46.02	**48.73**	48.67	**35.00**	**30.50**	37.88	34.46	**13.40**	**14.00**	**14.60**	14.00	**33.00**	**39.14**	**31.80**	34.65	**16.65**	**19.58**	**16.92**	17.72	**4.45**	4.38	**4.72**	4.51
169	V-632-112 × CM 500	49.38	46.31	**46.75**	47.48	**34.00**	**30.00**	28.72	30.91	**14.20**	**13.60**	**14.00**	13.93	**39.84**	**43.67**	**34.30**	39.27	**18.29**	**17.83**	**16.00**	17.37	**4.72**	4.49	**4.10**	4.43
170	V-632-112 × SKV 50	43.19	41.67	**51.93**	45.59	**35.00**	**32.00**	32.98	33.33	**12.60**	**12.60**	**13.60**	12.93	**37.00**	**33.47**	**30.70**	33.72	**17.92**	**18.50**	**16.84**	17.75	**4.40**	4.27	**4.39**	4.35
171	V-632-112 × MAI 105	41.78	41.77	**45.43**	42.99	**36.00**	**31.50**	33.52	33.67	**14.40**	**15.00**	**14.60**	14.67	**32.84**	**33.80**	**31.10**	32.58	**17.10**	**17.50**	**16.17**	16.92	**4.88**	4.77	**4.69**	4.78
172	V-632-112 × LM 13	49.08	44.52	**49.26**	47.62	**39.00**	**41.00**	33.98	37.99	**13.40**	**12.80**	**12.40**	12.87	**36.00**	**38.60**	**35.70**	36.77	**19.02**	**20.75**	**18.17**	19.31	**4.51**	4.45	**4.43**	4.46
173	V-632-67 × CM 500	45.10	47.34	**48.49**	46.97	**36.00**	**27.50**	30.44	31.31	**14.80**	**14.20**	**14.80**	14.60	**32.84**	**39.54**	**30.40**	34.26	**15.91**	**15.58**	**15.25**	15.58	**4.76**	4.54	**4.68**	4.66
174	V-632-67 × SKV 50	44.44	44.43	**49.11**	45.99	**38.50**	**34.00**	35.16	35.89	**12.20**	**12.20**	**13.60**	12.67	**38.00**	**31.47**	**34.20**	34.56	**18.70**	**17.42**	**17.92**	18.01	**4.57**	4.57	**4.83**	4.66
175	V-632-67 × MAI 105	48.98	45.57	**47.37**	47.30	**37.00**	**36.00**	36.56	36.52	**14.40**	**14.20**	**15.40**	14.67	**29.34**	**34.27**	**25.70**	29.77	**14.91**	**16.04**	**14.42**	15.12	**4.95**	5.05	**4.75**	4.92
176	V-632-67 × LM 13	51.21	43.98	**47.48**	47.55	**42.00**	**41.50**	46.56	43.35	**13.80**	**13.80**	**14.20**	13.93	**32.17**	**34.54**	**31.70**	32.80	**15.47**	**17.83**	**18.00**	17.10	**4.70**	4.89	**5.02**	4.87
177	Z-50-3 × CM 500	47.44	43.51	**46.92**	45.96	**33.00**	**32.50**	30.22	31.91	**15.40**	**13.80**	**14.00**	14.40	**30.83**	**33.14**	**33.20**	32.39	**17.92**	**18.47**	**16.00**	17.46	**4.75**	4.75	**4.23**	4.58
178	Z-50-3 × SKV 50	47.24	45.23	**45.48**	45.98	**33.00**	**25.50**	33.98	30.83	**12.00**	**12.40**	**12.60**	12.33	**29.84**	**36.67**	**29.80**	32.10	**16.07**	**17.75**	**16.59**	16.80	**4.40**	4.32	**4.35**	4.35
179	Z-50-3 × MAI 105	41.41	44.33	**45.86**	43.87	**31.00**	**31.50**	33.70	32.07	**15.60**	**14.40**	**17.00**	15.67	**29.00**	**42.54**	**30.00**	33.85	**15.58**	**17.67**	**17.42**	16.89	**4.85**	5.04	**4.92**	4.94
180	Z-50-3 × LM 13	46.28	45.02	**47.61**	46.30	**41.00**	**38.00**	40.90	39.97	**12.20**	**12.00**	**13.40**	12.53	**30.84**	**41.47**	**33.50**	35.27	**18.21**	**20.20**	**18.59**	19.00	**4.45**	4.64	**4.69**	4.59
181	Z-51-1 × CM 500	50.40	42.23	**45.25**	45.96	**31.50**	**30.50**	33.84	31.95	**14.00**	**15.40**	**14.80**	14.73	**27.17**	**39.47**	**22.30**	29.64	**13.29**	**17.67**	**12.00**	14.32	**4.88**	4.82	**4.56**	4.75
182	Z-51-1 × SKV 50	47.71	46.59	**51.44**	48.58	**40.00**	**27.00**	32.94	33.31	**14.00**	**13.00**	**14.40**	13.80	**36.17**	**32.60**	**30.50**	33.09	**17.90**	**16.50**	**19.42**	17.94	**4.98**	4.40	**5.22**	4.86
183	Z-51-1 × MAI 105	47.12	43.58	**47.90**	46.20	**38.00**	**29.50**	23.06	30.19	**16.60**	**16.20**	**17.80**	16.87	**28.67**	**24.27**	**32.80**	28.58	**16.24**	**16.92**	**17.00**	16.72	**5.30**	5.19	**5.42**	5.30
184	Z-51-1 × LM 13	49.06	45.63	**49.23**	47.97	**41.00**	**31.50**	44.64	39.05	**14.20**	**14.00**	**14.40**	14.20	**36.50**	**37.07**	**36.40**	36.66	**17.13**	**19.00**	**17.75**	17.96	**4.89**	4.75	**5.02**	4.88
185	Z-51-6 × CM 500	52.89	45.15	**49.00**	49.01	**31.00**	**30.00**	33.00	31.33	**16.60**	**15.20**	**16.40**	16.07	**35.17**	**36.74**	**35.94**	35.95	**16.09**	**17.33**	**16.00**	16.47	**4.88**	4.59	**4.89**	4.78
186	Z-51-6 × SKV 50	54.76	45.98	**48.26**	49.66	**30.50**	**24.50**	32.54	29.18	**16.00**	**16.20**	**16.40**	16.20	**36.84**	**34.67**	**35.60**	35.70	**15.83**	**16.84**	**17.50**	16.72	**4.81**	4.55	**5.00**	4.79
187	Z-51-6 × MAI 105	48.97	46.10	**48.45**	47.84	**30.00**	**23.50**	28.34	27.28	**20.00**	**18.40**	**19.00**	19.13	**32.17**	**34.00**	**29.40**	31.86	**14.77**	**15.08**	**15.08**	14.98	**5.30**	4.72	**5.18**	5.06
188	Z-51-6 × LM 13	53.36	45.41	**43.34**	47.37	**36.00**	**37.00**	27.98	33.66	**14.20**	**14.00**	**14.60**	14.27	**35.00**	**33.20**	**25.00**	31.07	**17.24**	**17.59**	**14.75**	16.53	**4.65**	4.67	**4.39**	4.57
189	Z-52-29 × CM 500	55.21	46.59	**49.80**	50.53	**27.00**	**26.50**	30.56	28.02	**13.05**	**13.20**	**12.80**	13.02	**36.34**	**39.47**	**39.80**	38.53	**16.74**	**18.33**	**17.08**	17.38	**4.22**	4.29	**4.35**	4.28
190	Z-52-29 × SKV 50	51.85	50.65	**49.66**	50.72	**36.00**	**31.00**	33.04	33.35	**12.80**	**13.40**	**12.60**	12.93	**32.67**	**29.27**	**32.70**	31.55	**16.06**	**16.42**	**17.42**	16.63	**4.34**	4.15	**4.33**	4.27
191	Z-52-29 × MAI 105	50.86	45.46	**47.68**	48.00	**30.00**	**25.00**	29.98	28.33	**16.00**	**15.00**	**14.40**	15.13	**25.17**	**33.60**	**37.40**	32.06	**14.53**	**15.00**	**17.67**	15.73	**4.63**	4.35	**4.82**	4.60
192	Z-52-29 × LM 13	41.60	46.77	**48.14**	45.50	**21.00**	**29.50**	25.25	25.25	**13.20**	**15.20**	**14.40**	14.27	**23.00**	**39.27**	**38.08**	33.45	**11.48**	**16.59**	**19.67**	15.91	**3.84**	4.34	**4.97**	4.38
193	Z-56-1 × CM 500	54.37	50.23	**47.17**	50.59	**29.00**	**28.00**	27.50	28.17	**12.00**	**12.60**	**12.80**	12.47	**32.67**	**25.60**	**27.67**	28.64	**15.90**	**15.34**	**16.84**	16.02	**3.70**	3.90	**3.85**	3.82
194	Z-56-1 × SKV 50	58.18	47.93	**49.13**	51.75	**33.00**	**30.00**	30.94	31.31	**12.20**	**12.20**	**11.60**	12.00	**30.00**	**33.67**	**33.10**	32.26	**14.65**	**16.25**	**14.75**	15.22	**4.19**	4.20	**4.20**	4.20
195	Z-56-1 × MAI 105	60.58	49.60	**49.98**	53.39	**30.00**	**27.50**	30.14	29.21	**15.40**	**15.60**	**17.00**	16.00	**29.17**	**34.14**	**30.00**	31.10	**14.76**	**15.78**	**15.08**	15.21	**4.60**	4.50	**4.72**	4.61
196	Z-56-1 × LM 13	53.09	49.65	**43.00**	48.58	**28.00**	**27.50**	18.50	24.67	**13.40**	**13.40**	**13.20**	13.33	**34.67**	**33.74**	**31.20**	33.20	**16.39**	**15.59**	**13.92**	15.30	**4.06**	3.97	**3.61**	3.88
197	Z-56-8 × CM 500	47.59	47.72	**47.02**	47.44	**20.00**	**27.50**	22.66	23.39	**12.60**	**12.60**	**12.80**	12.67	**30.34**	**29.54**	**26.80**	28.89	**13.81**	**16.92**	**13.37**	14.70	**3.77**	4.15	**3.98**	3.97
198	Z-56-8 × SKV 50	49.63	46.97	**47.45**	48.01	**30.00**	**28.50**	29.48	29.33	**14.40**	**13.80**	**13.00**	13.73	**30.33**	**27.40**	**28.20**	28.64	**16.22**	**16.75**	**14.42**	15.80	**4.41**	4.44	**4.35**	4.40
199	Z-56-8 × MAI 105	50.13	47.79	**48.47**	48.79	**30.00**	**30.50**	27.54	29.35	**15.80**	**15.80**	**14.60**	15.40	**29.50**	**29.67**	**27.80**	28.99	**15.49**	**14.84**	**15.00**	15.11	**4.34**	4.78	**4.56**	4.56
200	Z-56-8 × LM 13	54.03	46.59	**50.60**	50.41	**40.00**	**38.50**	44.60	41.03	**12.20**	**12.20**	**13.20**	12.53	**32.50**	**42.87**	**30.50**	35.29	**17.31**	**18.84**	**17.92**	18.02	**4.46**	4.52	**4.72**	4.56

Sl. no.	Hybrid	Harvest index				Test weight (g)				Grain rows per cob				Grains per row				Cob length (cm)				Cob girth (cm)			
		E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean	E_1	E_2	E_3	Mean
201	Z-60-22 × CM 500	48.42	48.94	**49.15**	48.83	**31.00**	**32.00**	38.28	33.76	**12.20**	**12.40**	**12.60**	12.40	**37.83**	**31.27**	**35.90**	35.00	**16.55**	**16.58**	**16.83**	16.65	**4.11**	4.15	**4.12**	4.12
202	Z-60-22 × SKV 50	52.11	49.05	**49.10**	50.08	**34.00**	**29.00**	34.16	32.39	**13.40**	**12.60**	**12.40**	12.80	**35.50**	**38.14**	**33.20**	35.61	**16.94**	**19.70**	**16.92**	17.85	**4.11**	4.25	**4.19**	4.18
203	Z-60-22 × MAI 105	54.18	49.07	**51.02**	51.42	**33.00**	**27.00**	31.76	30.59	**15.60**	**16.00**	**17.00**	16.20	**34.34**	**35.74**	**30.30**	33.46	**16.49**	**16.17**	**15.33**	16.00	**4.80**	4.74	**4.97**	4.83
204	Z-60-22 × LM 13	51.49	48.68	**52.40**	50.86	**39.00**	**41.00**	40.52	40.17	**12.40**	**11.80**	**12.80**	12.33	**33.34**	**32.67**	**30.20**	32.07	**16.09**	**17.83**	**15.83**	16.58	**4.31**	4.42	**4.30**	4.34
205	Z-62-55 × CM 500	49.20	47.62	**48.69**	48.50	**32.00**	**31.00**	33.70	32.23	**13.40**	**13.00**	**13.20**	13.20	**38.34**	**31.00**	**38.10**	35.81	**16.39**	**18.17**	**18.63**	17.73	**4.60**	4.45	**4.70**	4.58
206	Z-62-55 × SKV 50	50.92	47.56	**50.10**	49.52	**30.00**	**26.50**	27.24	27.91	**13.80**	**12.60**	**13.80**	13.40	**39.17**	**33.54**	**31.10**	34.60	**18.68**	**18.50**	**18.00**	18.39	**4.15**	4.08	**4.39**	4.21
207	Z-62-55 × MAI 105	40.00	43.94	**45.32**	43.08	**29.00**	**26.50**	27.38	27.63	**17.40**	**17.00**	**17.00**	17.13	**32.33**	**29.60**	**23.90**	28.61	**16.32**	**16.75**	**13.83**	15.63	**4.80**	4.65	**4.46**	4.64
208	Z-62-55 × LM 13	46.46	46.96	**49.05**	47.49	**35.00**	**38.00**	36.18	36.39	**13.20**	**14.20**	**13.00**	13.47	**36.34**	**36.47**	**32.50**	35.10	**18.82**	**20.67**	**17.92**	19.13	**4.33**	4.63	**4.39**	4.45
209	Z-62-67 × CM 500	44.06	47.16	**46.20**	45.81	**28.50**	**26.50**	24.64	26.55	**12.80**	**12.20**	**13.40**	12.80	**25.00**	**38.47**	**23.80**	29.09	**13.63**	**15.09**	**11.84**	13.52	**4.64**	4.47	**4.26**	4.45
210	Z-62-67 × SKV 50	53.64	47.12	**49.28**	50.01	**27.00**	**27.50**	25.64	26.71	**14.00**	**12.60**	**13.40**	13.33	**32.00**	**34.40**	**34.30**	33.57	**14.88**	**17.09**	**16.00**	15.99	**4.42**	4.45	**4.57**	4.48
211	Z-62-67 × MAI 105	51.62	46.08	**45.61**	47.77	**32.00**	**27.00**	35.00	31.33	**16.20**	**16.80**	**16.20**	16.40	**30.17**	**33.40**	**25.90**	29.82	**13.30**	**15.33**	**13.84**	14.16	**4.96**	4.82	**4.99**	4.92
212	Z-62-67 × LM 13	54.93	47.63	**43.58**	48.71	**37.00**	**33.00**	31.50	33.83	**14.20**	**15.20**	**14.20**	14.53	**35.00**	**30.47**	**28.20**	31.22	**15.09**	**16.75**	**14.00**	15.28	**4.90**	4.90	**4.69**	4.83
213	Z-63-30 × CM 500	43.88	43.65	**43.58**	43.70	**35.00**	**30.50**	35.18	33.56	**14.00**	**13.00**	**12.60**	13.20	**28.00**	**29.27**	**30.70**	29.32	**14.75**	**16.09**	**16.75**	15.86	**4.56**	4.44	**4.68**	4.56
214	Z-63-30 × SKV 50	51.90	45.10	**49.33**	48.77	**34.00**	**36.50**	35.80	35.43	**13.60**	**12.40**	**13.60**	13.20	**32.00**	**35.80**	**42.20**	36.67	**17.23**	**19.58**	**19.00**	18.60	**4.61**	5.00	**4.88**	4.83
215	Z-63-30 × MAI 105	44.37	46.72	**44.70**	45.26	**37.00**	**30.50**	30.54	32.68	**15.20**	**15.60**	**15.20**	15.33	**23.00**	**25.14**	**24.10**	24.08	**13.62**	**14.75**	**13.75**	14.04	**4.99**	4.82	**5.07**	4.96
216	Z-63-30 × LM 13	48.73	46.14	**48.81**	47.89	**43.00**	**36.50**	45.60	41.70	**13.80**	**15.80**	**14.20**	14.60	**32.67**	**39.60**	**29.70**	33.99	**18.40**	**18.84**	**17.34**	18.19	**4.74**	4.88	**4.98**	4.87
217	**Decalb 8101**	57.50	46.89	**56.11**	53.50	**31.00**	**37.00**	38.32	35.44	**16.40**	**15.60**	**15.00**	15.67	**42.67**	**40.84**	**38.80**	40.77	**18.50**	**18.42**	**18.17**	18.36	**5.00**	5.04	**5.12**	5.05
218	**30v92**	62.07	49.02	**53.55**	54.88	**35.00**	**27.50**	31.36	31.29	**13.60**	**13.60**	**14.00**	13.73	**39.67**	**39.07**	**41.03**	39.92	**18.65**	**19.54**	**19.25**	19.15	**4.54**	4.32	**4.73**	4.53
219	**NK6240**	49.47	46.34	**48.77**	48.19	**41.00**	**38.50**	35.52	38.34	**13.60**	**13.40**	**12.80**	13.27	**34.17**	**35.80**	**31.45**	33.81	**17.62**	**17.50**	**16.17**	17.10	**4.81**	4.75	**4.63**	4.73
220	**PINNACLE**	63.75	43.78	**53.28**	53.60	**30.00**	**30.50**	28.40	29.63	**17.20**	**16.00**	**16.80**	16.67	**37.34**	**36.40**	**40.50**	38.08	**17.62**	**18.00**	**19.52**	18.38	**4.89**	4.93	**5.35**	5.06
221	**HEMA**	48.81	43.41	**47.97**	46.73	**31.00**	**34.00**	35.16	33.39	**17.20**	**15.80**	**14.80**	15.93	**31.83**	**33.60**	**32.50**	32.64	**15.44**	**17.00**	**16.67**	16.37	**4.98**	5.02	**5.03**	5.01
222	**CP 818**	52.31	44.00	**54.88**	50.40	**39.50**	**33.00**	28.42	33.64	**11.40**	**13.20**	**14.20**	12.93	**37.84**	**37.94**	**34.40**	36.72	**17.21**	**19.92**	**17.50**	18.21	**4.71**	4.89	**4.85**	4.82
223	**900M GOLD**	49.18	49.80	**53.64**	50.87	**36.00**	**33.50**	26.06	31.85	**14.20**	**13.80**	**15.40**	14.47	**41.67**	**37.80**	**36.20**	38.56	**18.14**	**17.34**	**17.17**	17.55	**5.09**	4.79	**4.97**	4.95
224	**NITYASHREE**	49.46	48.79	**49.75**	49.33	**34.00**	**29.00**	35.68	32.89	**14.40**	**14.20**	**15.20**	14.60	**34.17**	**30.74**	**31.60**	32.17	**17.56**	**17.84**	**17.62**	17.67	**4.72**	4.67	**5.14**	4.84
225	**PHI 3501**	53.31	46.47	**46.83**	48.87	**31.00**	**32.50**	32.64	32.05	**15.60**	**15.80**	**16.40**	15.93	**42.17**	**45.87**	**47.80**	45.28	**17.10**	**19.25**	**17.92**	18.09	**4.88**	4.95	**4.98**	4.94
	Mean	50.80	46.31	48.24	48.45	33.71	31.95	32.95	32.87	13.92	13.73	13.83	13.83	33.82	35.63	32.47	33.97	16.31	17.51	16.39	16.73	4.53	4.55	4.59	4.56
	Range	37.49	35.95	27.13	41.70	20.00	23.50	13.62	20.21	11.20	10.80	10.80	11.13	23.00	24.27	20.00	24.08	11.48	13.42	11.84	13.52	3.70	3.90	3.61	3.82
		254.97	50.65	59.20	114.69	44.00	44.50	46.56	43.35	20.00	18.40	19.00	19.13	43.84	46.14	47.80	45.28	20.00	21.25	20.59	20.06	5.34	5.22	9.18	6.22
	S. Em. ±	20.72	1.77	4.42	6.99	2.65	2.79	1.64	2.27	0.66	0.61	0.68	0.53	3.37	1.09	3.22	2.62	1.21	1.20	1.77	0.86	0.18	0.19	0.47	0.18
	C. D. 5%	40.82	3.48	8.70	19.45	5.22	5.51	3.24	6.32	1.30	1.21	1.34	1.49	6.63	2.15	6.35	7.30	2.39	2.36	3.50	2.40	0.35	0.37	0.93	0.52
	C. D. 1%	53.82	4.58	11.47	21.56	6.89	7.26	4.27	7.67	1.71	1.59	1.77	1.78	8.74	2.84	8.37	8.66	3.15	3.12	4.61	2.96	0.46	0.49	1.23	0.61

Note: Figures in bold indicates adjusted mean values

Appendix III. Estimates of midparent and standard heterosis

Sl. no.	Hybrid	Days to 50% anthesis						Days to 50% silking					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	-0.44	4.64 **	2.42	0.3	17.36 **	3.36 *	1.62	7.12 **	2.98 **	-0.29	13.07 **	-0.86
2	V-1154 × SKV 50	-3.17 **	4.02 **	1.82	-0.3	16.67 **	2.75 *	-0.58	6.50 **	2.38 *	-0.86	12.42 **	-1.43
3	V-1154 × MAI 105	-5.13 **	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-5.09 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
4	V-1154 × LM 13	-5.17 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-6.25 **	2.17 *	-1.79	-4.90 **	7.84 **	-5.44 **
5	V-1168 × CM 500	-3.81 **	5.57 **	3.33 *	1.19	18.40 **	4.28 **	-6.89 **	2.48 *	-1.49	-4.61 **	8.17 **	-5.16 **
6	V-1168 × SKV 50	-7.46 **	3.72 **	1.52	-0.59	16.32 **	2.45	-8.59 **	2.17 *	-1.79	-4.90 **	7.84 **	-5.44 **
7	V-1168 × MAI 105	-9.72 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-4.10 **	12.38 **	8.04 **	4.61 **	18.63 **	4.01 **
8	V-1168 × LM 13	-7.38 **	6.81 **	4.55 **	2.37	19.79 **	5.50 **	-6.27 **	6.50 **	2.38 *	-0.86	12.42 **	-1.43
9	V-1522 × CM 500	-9.55 **	-0.31	-2.42	-4.45 **	11.81 **	-1.53	-10.47 **	0.62	-3.27 **	-6.34 **	6.21 **	-6.88 **
10	V-1522 × SKV 50	-7.02 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-8.82 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
11	V-1522 × MAI 105	-12.20 **	2.48	0.3	-1.78	14.93 **	1.22	-9.59 **	8.05 **	3.87 **	0.58	14.05 **	0
12	V-1522 × LM 13	-7.22 **	7.43 **	5.15 **	2.97 *	20.49 **	6.12 **	-6.81 **	8.05 **	3.87 **	0.58	14.05 **	0
13	V-1649 × CM 500	-7.08 **	5.57 **	3.33 *	1.19	18.40 **	4.28 **	-4.31 **	9.91 **	5.65 **	2.31 *	16.01 **	1.72
14	V-1649 × SKV 50	-7.88 **	6.81 **	4.55 **	2.37	19.79 **	5.50 **	-8.63 **	6.50 **	2.38 *	-0.86	12.42 **	-1.43
15	V-1649 × MAI 105	-10.82 **	7.12 **	4.85 **	2.67 *	20.14 **	5.81 **	-9.64 **	10.22 **	5.95 **	2.59 **	16.34 **	2.01 *
16	V-1649 × LM 13	-12.21 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-9.80 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
17	V-1742 × CM 500	-4.39 **	-2.17	-4.24 **	-6.23 **	9.72 **	-3.36 *	-8.01 **	-4.02 **	-7.74 **	-10.66 **	1.31	-11.17 **
18	V-1742 × SKV 50	-6.51 **	-2.17	-4.24 **	-6.23 **	9.72 **	-3.36 *	-5.99 **	-0.31	-4.17 **	-7.20 **	5.23 **	-7.74 **
19	V-1742 × MAI 105	-10.95 **	-3.10 *	-5.15 **	-7.12 **	8.68 **	-4.28 **	-8.33 **	2.17 *	-1.79	-4.90 **	7.84 **	-5.44 **
20	V-1742 × LM 13	-6.74 **	0.62	-1.52	-3.56 **	12.85 **	-0.61	-7.60 **	-0.31	-4.17 **	-7.20 **	5.23 **	-7.74 **
21	V-2205 × CM 500	-3.09 **	11.76 **	9.39 **	7.12 **	25.35 **	10.40 **	-1.45	15.79 **	11.31 **	7.78 **	22.22 **	7.16 **
22	V-2205 × SKV 50	-4.74 **	12.07 **	9.70 **	7.42 **	25.69 **	10.70 **	-5.97 **	12.07 **	7.74 **	4.32 **	18.30 **	3.72 **
23	V-2205 × MAI 105	-12.07 **	7.12 **	4.85 **	2.67 *	20.14 **	5.81 **	-12.55 **	8.98 **	4.76 **	1.44	15.03 **	0.86
24	V-2205 × LM 13	-12.42 **	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-9.72 **	9.29 **	5.06 **	1.73	15.36 **	1.15
25	V-2232 × CM 500	-5.31 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-9.49 **	-4.02 **	-7.74 **	-10.66 **	1.31	-11.17 **
26	V-2232 × SKV 50	-7.94 **	-1.24	-3.33 *	-5.34 **	10.76 **	-2.45	-2.87 **	4.64 **	0.6	-2.59 **	10.46 **	-3.15 **
27	V-2232 × MAI 105	-6.39 **	4.33 **	2.12	0	17.01 **	3.06 *	-3.42 **	9.29 **	5.06 **	1.73	15.36 **	1.15
28	V-2232 × LM 13	-4.76 **	5.26 **	3.03 *	0.89	18.06 **	3.98 **	-4.80 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
29	V-1410-1 × CM 500	-15.58 **	-7.74 **	-9.70 **	-11.57 **	3.47 *	-8.87 **	-16.10 **	-8.05 **	-11.61 **	-14.41 **	-2.94 **	-14.90 **
30	V-1410-1 × SKV 50	-7.91 **	2.79 *	0.61	-1.48	15.28 **	1.53	-3.76 **	7.12 **	2.98 **	-0.29	13.07 **	-0.86
31	V-1410-1 × MAI 105	-10.43 **	3.72 **	1.52	-0.59	16.32 **	2.45	-8.75 **	6.50 **	2.38 *	-0.86	12.42 **	-1.43
32	V-1410-1 × LM 13	-8.63 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-6.43 **	5.88 **	1.79	-1.44	11.76 **	-2.01 *
33	V-1712-1 × CM 500	-12.81 **	-0.93	-3.03 *	-5.04 **	11.11 **	-2.14	-12.67 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
34	V-1712-1 × SKV 50	-6.01 **	8.98 **	6.67 **	4.45 **	22.22 **	7.65 **	-3.59 **	12.38 **	8.04 **	4.61 **	18.63 **	4.01 **
35	V-1712-1 × MAI 105	-12.37 **	5.26 **	3.03 *	0.89	18.06 **	3.98 **	-12.18 **	7.12 **	2.98 **	-0.29	13.07 **	-0.86

36	V-1712-1 × LM 13	-6.49 **	11.46 **	9.09 **	6.82 **	25.00 **	10.09 **	-7.97 **	8.98 **	4.76 **	1.44	15.03 **	0.86
37	V-241-2 × CM 500	-2.97 *	-4.02 **	-6.06 **	-8.01 **	7.64 **	-5.20 **	-14.65 **	-6.19 **	-9.82 **	-12.68 **	-0.98	-13.18 **
38	V-241-2 × SKV 50	3.67 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-6.80 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
39	V-241-2 × MAI 105	0.15	5.57 **	3.33 *	1.19	18.40 **	4.28 **	-8.20 **	7.43 **	3.27 **	0	13.40 **	-0.57
40	V-241-2 × LM 13	3.41 **	8.05 **	5.76 **	3.56 **	21.18 **	6.73 **	-8.05 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
41	V-2437-1 × CM 500	-5.37 **	3.72 **	1.52	-0.59	16.32 **	2.45	-2.27 **	6.50 **	2.38 *	-0.86	12.42 **	-1.43
42	V-2437-1 × SKV 50	-5.67 **	5.57 **	3.33 *	1.19	18.40 **	4.28 **	-1.26	9.29 **	5.06 **	1.73	15.36 **	1.15
43	V-2437-1 × MAI 105	-9.60 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-9.07 **	5.57 **	1.49	-1.73	11.44 **	-2.29 *
44	V-2437-1 × LM 13	-7.26 **	6.81 **	4.55 **	2.37	19.79 **	5.50 **	-1.79 *	10.53 **	6.25 **	2.88 **	16.67 **	2.29 *
45	V-2459-2 × CM 500	-11.94 **	-1.86	-3.94 **	-5.93 **	10.07 **	-3.06 *	-3.38 **	1.86	-2.08 *	-5.19 **	7.52 **	-5.73 **
46	V-2459-2 × SKV 50	-11.29 **	0.93	-1.21	-3.26 *	13.19 **	-0.31	-0.29	6.81 **	2.68 **	-0.58	12.75 **	-1.15
47	V-2459-2 × MAI 105	-9.71 **	6.50 **	4.24 **	2.08	19.44 **	5.20 **	-1.24	11.15 **	6.85 **	3.46 **	17.32 **	2.87 **
48	V-2459-2 × LM 13	-8.20 **	7.43 **	5.15 **	2.97 *	20.49 **	6.12 **	1.14	10.22 **	5.95 **	2.59 **	16.34 **	2.01 *
49	V-2516-2 × CM 500	-8.00 **	-0.31	-2.42	-4.45 **	11.81 **	-1.53	-10.74 **	-0.93	-4.76 **	-7.78 **	4.58 **	-8.31 **
50	V-2516-2 × SKV 50	-8.53 **	1.24	-0.91	-2.97 *	13.54 **	0	-9.62 **	1.86	-2.08 *	-5.19 **	7.52 **	-5.73 **
51	V-2516-2 × MAI 105	-10.51 **	2.79 *	0.61	-1.48	15.28 **	1.53	-5.37 **	11.76 **	7.44 **	4.03 **	17.97 **	3.44 **
52	V-2516-2 × LM 13	-7.88 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-12.97 **	-0.31	-4.17 **	-7.20 **	5.23 **	-7.74 **
53	V-2608-1 × CM 500	-8.19 **	-2.79 *	-4.85 **	-6.82 **	9.03 **	-3.98 **	-4.38 **	4.64 **	0.6	-2.59 **	10.46 **	-3.15 **
54	V-2608-1 × SKV 50	-6.44 **	1.24	-0.91	-2.97 *	13.54 **	0	-10.03 **	0	-3.87 **	-6.92 **	5.56 **	-7.45 **
55	V-2608-1 × MAI 105	-7.99 **	3.41 *	1.21	-0.89	15.97 **	2.14	-6.77 **	8.67 **	4.46 **	1.15	14.71 **	0.57
56	V-2608-1 × LM 13	-5.00 **	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-3.84 **	8.67 **	4.46 **	1.15	14.71 **	0.57
57	V-291-2 × CM 500	7.08 **	7.74 **	5.45 **	3.26 *	20.83 **	6.42 **	-7.63 **	3.10 **	-0.89	-4.03 **	8.82 **	-4.58 **
58	V-291-2 × SKV 50	2.86 *	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-2.46 **	10.53 **	6.25 **	2.88 **	16.67 **	2.29 *
59	V-291-2 × MAI 105	2.89 **	10.22 **	7.88 **	5.64 **	23.61 **	8.87 **	-1.69 *	16.72 **	12.20 **	8.65 **	23.20 **	8.02 **
60	V-291-2 × LM 13	3.50 **	9.91 **	7.58 **	5.34 **	23.26 **	8.56 **	-9.68 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
61	V-70-1 × CM 500	-7.50 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-8.50 **	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
62	V-70-1 × SKV 50	-5.08 **	9.91 **	7.58 **	5.34 **	23.26 **	8.56 **	-4.52 **	11.15 **	6.85 **	3.46 **	17.32 **	2.87 **
63	V-70-1 × MAI 105	-6.84 **	11.76 **	9.39 **	7.12 **	25.35 **	10.40 **	-8.77 **	11.15 **	6.85 **	3.46 **	17.32 **	2.87 **
64	V-70-1 × LM 13	-13.91 **	2.48	0.3	-1.78	14.93 **	1.22	-11.26 **	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
65	CIMMYT-47 × CM 500	9.18 **	6.81 **	4.55 **	2.37	19.79 **	5.50 **	-3.90 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
66	CIMMYT-47 × SKV 50	4.17 **	4.33 **	2.12	0	17.01 **	3.06 *	-2.06 *	10.53 **	6.25 **	2.88 **	16.67 **	2.29 *
67	CIMMYT-47 × MAI 105	0.59	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-6.54 **	10.53 **	6.25 **	2.88 **	16.67 **	2.29 *
68	CIMMYT-47 × LM 13	-4.79 **	-1.55	-3.64 **	-5.64 **	10.42 **	-2.75 *	-10.12 **	3.10 **	-0.89	-4.03 **	8.82 **	-4.58 **
69	CIMMYT-5 × CM 500	-6.57 **	3.41 *	1.21	-0.89	15.97 **	2.14	-9.04 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
70	CIMMYT-5 × SKV 50	-8.49 **	3.41 *	1.21	-0.89	15.97 **	2.14	-5.59 **	9.91 **	5.65 **	2.31 *	16.01 **	1.72
71	CIMMYT-5 × MAI 105	-12.02 **	3.10 *	0.91	-1.19	15.63 **	1.83	-14.87 **	3.72 **	-0.3	-3.46 **	9.48 **	-4.01 **
72	CIMMYT-5 × LM 13	-10.52 **	4.02 **	1.82	-0.3	16.67 **	2.75 *	-19.90 **	-5.26 **	-8.93 **	-11.82 **	0	-12.32 **
73	CM-115 × CM 500	-18.23 **	-5.57 **	-7.58 **	-9.50 **	5.90 **	-6.73 **	-9.14 **	-3.10 **	-6.85 **	-9.80 **	2.29 *	-10.32 **
74	CM-115 × SKV 50	-14.59 **	0.62	-1.52	-3.56 **	12.85 **	-0.61	-2.86 **	5.26 **	1.19	-2.02 *	11.11 **	-2.58 **
75	CM-115 × MAI 105	-17.01 **	1.24	-0.91	-2.97 *	13.54 **	0	-6.94 **	5.88 **	1.79	-1.44	11.76 **	-2.01 *

76	CM-115 × LM 13	-15.60 **	2.17	0	-2.08	14.58 **	0.92	-12.64 **	-3.72 **	-7.44 **	-10.37 **	1.63	-10.89 **
77	CM-149 × CM 500	-9.36 **	-5.57 **	-7.58 **	-9.50 **	5.90 **	-6.73 **	0.61	2.48 *	-1.49	-4.61 **	8.17 **	-5.16 **
78	CM-149 × SKV 50	-8.43 **	-2.48	-4.55 **	-6.53 **	9.38 **	-3.67 **	-5.23 **	-1.86	-5.65 **	-8.65 **	3.59 **	-9.17 **
79	CM-149 × MAI 105	-15.80 **	-6.81 **	-8.79 **	-10.68 **	4.51 **	-7.95 **	-12.78 **	-4.95 **	-8.63 **	-11.53 **	0.33	-12.03 **
80	CM-149 × LM 13	-10.01 **	-1.24	-3.33 *	-5.34 **	10.76 **	-2.45	-1.91 *	3.41 **	-0.6	-3.75 **	9.15 **	-4.30 **
81	CML-165 × CM 500	-4.69 **	3.72 **	1.52	-0.59	16.32 **	2.45	-2.16 *	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
82	CML-165 × SKV 50	-8.64 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-1.99 *	6.81 **	2.68 **	-0.58	12.75 **	-1.15
83	CML-165 × MAI 105	-8.72 **	5.26 **	3.03 *	0.89	18.06 **	3.98 **	-8.25 **	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
84	CML-165 × LM 13	-9.88 **	3.10 *	0.91	-1.19	15.63 **	1.83	-6.70 **	3.41 **	-0.6	-3.75 **	9.15 **	-4.30 **
85	CML-166 × CM 500	-3.71 **	4.33 **	2.12	0	17.01 **	3.06 *	-5.35 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
86	CML-166 × SKV 50	-8.25 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-2.91 **	8.36 **	4.17 **	0.86	14.38 **	0.29
87	CML-166 × MAI 105	-7.82 **	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-9.79 **	5.57 **	1.49	-1.73	11.44 **	-2.29 *
88	CML-166 × LM 13	-15.76 **	-4.02 **	-6.06 **	-8.01 **	7.64 **	-5.20 **	-8.32 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
89	CML-169 × CM 500	-4.87 **	2.79 *	0.61	-1.48	15.28 **	1.53	0.85	10.22 **	5.95 **	2.59 **	16.34 **	2.01 *
90	CML-169 × SKV 50	-6.59 **	3.10 *	0.91	-1.19	15.63 **	1.83	-5.16 **	5.26 **	1.19	-2.02 *	11.11 **	-2.58 **
91	CML-169 × MAI 105	-11.62 **	1.24	-0.91	-2.97 *	13.54 **	0	-14.10 **	0	-3.87 **	-6.92 **	5.56 **	-7.45 **
92	CML-169 × LM 13	-6.81 **	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-1.78 *	10.84 **	6.55 **	3.17 **	16.99 **	2.58 **
93	CML-172 × CM 500	-6.01 **	4.02 **	1.82	-0.3	16.67 **	2.75 *	-8.40 **	4.64 **	0.6	-2.59 **	10.46 **	-3.15 **
94	CML-172 × SKV 50	-6.85 **	5.26 **	3.03 *	0.89	18.06 **	3.98 **	-1.74 *	13.93 **	9.52 **	6.05 **	20.26 **	5.44 **
95	CML-172 × MAI 105	-12.29 **	2.79 *	0.61	-1.48	15.28 **	1.53	-9.18 **	10.22 **	5.95 **	2.59 **	16.34 **	2.01 *
96	CML-172 × LM 13	-10.79 **	3.72 **	1.52	-0.59	16.32 **	2.45	-14.85 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
97	CML-359 × CM 500	-6.29 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-3.86 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
98	CML-359 × SKV 50	-8.81 **	0.93	-1.21	-3.26 *	13.19 **	-0.31	-8.73 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
99	CML-359 × MAI 105	-15.36 **	-2.79 *	-4.85 **	-6.82 **	9.03 **	-3.98 **	-8.46 **	5.57 **	1.49	-1.73	11.44 **	-2.29 *
100	CML-359 × LM 13	-12.77 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-8.86 **	1.86	-2.08 *	-5.19 **	7.52 **	-5.73 **
101	CML-411 × CM 500	-5.20 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-12.46 **	-4.33 **	-8.04 **	-10.95 **	0.98	-11.46 **
102	CML-411 × SKV 50	-9.19 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-6.00 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
103	CML-411 × MAI 105	-10.35 **	1.86	-0.3	-2.37	14.24 **	0.61	-5.05 **	10.53 **	6.25 **	2.88 **	16.67 **	2.29 *
104	CML-411 × LM 13	-14.84 **	-4.02 **	-6.06 **	-8.01 **	7.64 **	-5.20 **	-11.11 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
105	HKI-193-1 × CM 500	-4.27 **	-2.79 *	-4.85 **	-6.82 **	9.03 **	-3.98 **	-11.90 **	-3.72 **	-7.44 **	-10.37 **	1.63	-10.89 **
106	HKI-193-1 × SKV 50	-4.02 **	-0.31	-2.42	-4.45 **	11.81 **	-1.53	-8.23 **	1.86	-2.08 *	-5.19 **	7.52 **	-5.73 **
107	HKI-193-1 × MAI 105	-5.16 **	2.48	0.3	-1.78	14.93 **	1.22	-8.78 **	6.19 **	2.08 *	-1.15	12.09 **	-1.72
108	HKI-193-1 × LM 13	-6.94 **	-0.31	-2.42	-4.45 **	11.81 **	-1.53	-17.15 **	-6.50 **	-10.12 **	-12.97 **	-1.31	-13.47 **
109	HKI-193-2 × CM 500	-3.24 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-6.86 **	0.93	-2.98 **	-6.05 **	6.54 **	-6.59 **
110	HKI-193-2 × SKV 50	-5.05 **	1.86	-0.3	-2.37	14.24 **	0.61	4.08 **	14.55 **	10.12 **	6.63 **	20.92 **	6.02 **
111	HKI-193-2 × MAI 105	-6.11 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-9.38 **	4.64 **	0.6	-2.59 **	10.46 **	-3.15 **
112	HKI-193-2 × LM 13	-2.52 *	7.74 **	5.45 **	3.26 *	20.83 **	6.42 **	-0.14	11.76 **	7.44 **	4.03 **	17.97 **	3.44 **
113	LTP-1 × CM 500	-7.73 **	5.26 **	3.03 *	0.89	18.06 **	3.98 **	-8.07 **	4.02 **	0	-3.17 **	9.80 **	-3.72 **
114	LTP-1 × SKV 50	-9.84 **	4.95 **	2.73 *	0.59	17.71 **	3.67 **	-3.23 **	11.15 **	6.85 **	3.46 **	17.32 **	2.87 **
115	LTP-1 × MAI 105	-11.94 **	6.19 **	3.94 **	1.78	19.10 **	4.89 **	-14.54 **	2.79 **	-1.19	-4.32 **	8.50 **	-4.87 **

116	LTP-1 × LM 13	-19.79 **	-4.02 **	-6.06 **	-8.01 **	7.64 **	-5.20 **	-15.92 **	-1.86	-5.65 **	-8.65 **	3.59 **	-9.17 **
117	MAI-11 5 × CM 500	-12.03 **	-4.95 **	-6.97 **	-8.90 **	6.60 **	-6.12 **	-5.14 **	2.79 **	-1.19	-4.32 **	8.50 **	-4.87 **
118	MAI-115 × SKV 50	-9.40 **	0	-2.12	-4.15 **	12.15 **	-1.22	-6.33 **	3.10 **	-0.89	-4.03 **	8.82 **	-4.58 **
119	MAI-116 × MAI 105	-10.81 **	2.17	0	-2.08	14.58 **	0.92	-2.68 **	12.38 **	8.04 **	4.61 **	18.63 **	4.01 **
120	MAI-117 × LM 13	-12.53 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-10.93 **	-0.31	-4.17 **	-7.20 **	5.23 **	-7.74 **
121	MAI-107 × CM 500	-9.17 **	-3.41 *	-5.45 **	-7.42 **	8.33 **	-4.59 **	-6.09 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
122	MAI-107 × SKV 50	-7.69 **	0.31	-1.82	-3.86 **	12.50 **	-0.92	-7.85 **	0	-3.87 **	-6.92 **	5.56 **	-7.45 **
123	MAI-107 × MAI 105	-9.74 **	1.86	-0.3	-2.37	14.24 **	0.61	-10.05 **	2.48 *	-1.49	-4.61 **	8.17 **	-5.16 **
124	MAI-107 × LM 13	-8.44 **	2.48	0.3	-1.78	14.93 **	1.22	-6.87 **	2.79 **	-1.19	-4.32 **	8.50 **	-4.87 **
125	MAI-109 × CM 500	-7.29 **	-1.55	-3.64 **	-5.64 **	10.42 **	-2.75 *	-1.29	6.50 **	2.38 *	-0.86	12.42 **	-1.43
126	MAI-109 × SKV 50	-5.28 **	2.79 *	0.61	-1.48	15.28 **	1.53	-6.50 **	2.48 *	-1.49	-4.61 **	8.17 **	-5.16 **
127	MAI-109 × MAI 105	-10.99 **	0.31	-1.82	-3.86 **	12.50 **	-0.92	-8.75 **	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
128	MAI-109 × LM 13	-10.25 **	0.31	-1.82	-3.86 **	12.50 **	-0.92	-19.17 **	-9.91 **	-13.39 **	-16.14 **	-4.90 **	-16.62 **
129	MAI-112 × CM 500	-10.36 **	-4.95 **	-6.97 **	-8.90 **	6.60 **	-6.12 **	-6.36 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
130	MAI-112 × SKV 50	-11.43 **	-4.02 **	-6.06 **	-8.01 **	7.64 **	-5.20 **	-9.25 **	-1.24	-5.06 **	-8.07 **	4.25 **	-8.60 **
131	MAI-112 × MAI 105	-9.49 **	1.86	-0.3	-2.37	14.24 **	0.61	-7.86 **	5.26 **	1.19	-2.02 *	11.11 **	-2.58 **
132	MAI-112 × LM 13	-8.18 **	2.48	0.3	-1.78	14.93 **	1.22	-16.36 **	-7.43 **	-11.01 **	-13.83 **	-2.29 *	-14.33 **
133	MAI-121 × CM 500	-8.87 **	-6.19 **	-8.18 **	-10.09 **	5.21 **	-7.34 **	-4.94 **	1.24	-2.68 **	-5.76 **	6.86 **	-6.30 **
134	MAI-121 × SKV 50	-6.76 **	-1.86	-3.94 **	-5.93 **	10.07 **	-3.06 *	-8.73 **	-1.24	-5.06 **	-8.07 **	4.25 **	-8.60 **
135	MAI-121 × MAI 105	-9.76 **	-1.24	-3.33 *	-5.34 **	10.76 **	-2.45	-7.36 **	5.26 **	1.19	-2.02 *	11.11 **	-2.58 **
136	MAI-121 × LM 13	-4.99 **	3.10 *	0.91	-1.19	15.63 **	1.83	-9.42 **	-0.31	-4.17 **	-7.20 **	5.23 **	-7.74 **
137	MAI-137 × CM 500	-10.46 **	-5.88 **	-7.88 **	-9.79 **	5.56 **	-7.03 **	-0.15	6.19 **	2.08 *	-1.15	12.09 **	-1.72
138	MAI-137 × SKV 50	-4.32 **	2.79 *	0.61	-1.48	15.28 **	1.53	-1.15	6.81 **	2.68 **	-0.58	12.75 **	-1.15
139	MAI-137 × MAI 105	-5.41 **	5.57 **	3.33 *	1.19	18.40 **	4.28 **	-8.59 **	3.72 **	-0.3	-3.46 **	9.48 **	-4.01 **
140	MAI-137 × LM 13	-6.29 **	3.72 **	1.52	-0.59	16.32 **	2.45	-13.24 **	-4.64 **	-8.33 **	-11.24 **	0.65	-11.75 **
141	MAI-27 × CM 500	-10.75 **	-7.43 **	-9.39 **	-11.28 **	3.82 *	-8.56 **	-0.31	0.62	-3.27 **	-6.34 **	6.21 **	-6.88 **
142	MAI-27 × SKV 50	-9.78 **	-4.33 **	-6.36 **	-8.31 **	7.29 **	-5.50 **	-1.66	0.93	-2.98 **	-6.05 **	6.54 **	-6.59 **
143	MAI-27 × MAI 105	-10.39 **	-1.24	-3.33 *	-5.34 **	10.76 **	-2.45	-11.17 **	-4.02 **	-7.74 **	-10.66 **	1.31	-11.17 **
144	MAI-27 × LM 13	-9.35 **	-0.93	-3.03 *	-5.04 **	11.11 **	-2.14	-1.33	3.10 **	-0.89	-4.03 **	8.82 **	-4.58 **
145	MAI-29 × CM 500	-8.85 **	-4.33 **	-6.36 **	-8.31 **	7.29 **	-5.50 **	-4.93 **	1.55	-2.38 *	-5.48 **	7.19 **	-6.02 **
146	MAI-29 × SKV 50	-6.78 **	0	-2.12	-4.15 **	12.15 **	-1.22	-6.70 **	1.24	-2.68 **	-5.76 **	6.86 **	-6.30 **
147	MAI-29 × MAI 105	-10.83 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-8.42 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
148	MAI-29 × LM 13	-9.52 **	0	-2.12	-4.15 **	12.15 **	-1.22	-18.93 **	-10.53 **	-13.99 **	-16.71 **	-5.56 **	-17.19 **
149	MAI-35 × CM 500	-9.64 **	-7.12 **	-9.09 **	-10.98 **	4.17 **	-8.26 **	-4.13 **	0.62	-3.27 **	-6.34 **	6.21 **	-6.88 **
150	MAI-35 × SKV 50	-6.92 **	-2.17	-4.24 **	-6.23 **	9.72 **	-3.36 *	-13.79 **	-8.05 **	-11.61 **	-14.41 **	-2.94 **	-14.90 **
151	MAI-35 × MAI 105	-10.20 **	-1.86	-3.94 **	-5.93 **	10.07 **	-3.06 *	-8.56 **	2.48 *	-1.49	-4.61 **	8.17 **	-5.16 **
152	MAI-35 × LM 13	-5.43 **	2.48	0.3	-1.78	14.93 **	1.22	4.14 **	13.00 **	8.63 **	5.19 **	19.28 **	4.58 **
153	MAI-45 × CM 500	-10.52 **	-6.50 **	-8.48 **	-10.39 **	4.86 **	-7.65 **	3.13 **	7.12 **	2.98 **	-0.29	13.07 **	-0.86
154	MAI-45 × SKV 50	-3.48 **	3.10 *	0.91	-1.19	15.63 **	1.83	-4.69 **	0.62	-3.27 **	-6.34 **	6.21 **	-6.88 **
155	MAI-45 × MAI 105	-11.02 **	-1.24	-3.33 *	-5.34 **	10.76 **	-2.45	-9.34 **	0.62	-3.27 **	-6.34 **	6.21 **	-6.88 **

156	MAI-45 × LM 13	-9.42 **	-0.31	-2.42	-4.45 **	11.81 **	-1.53	-9.80 **	-3.10 **	-6.85 **	-9.80 **	2.29 *	-10.32 **
157	MAI-48 × CM 500	-11.50 **	-7.12 **	-9.09 **	-10.98 **	4.17 **	-8.26 **	-0.93	-1.24	-5.06 **	-8.07 **	4.25 **	-8.60 **
158	MAI-48 × SKV 50	-6.49 **	0.31	-1.82	-3.86 **	12.50 **	-0.92	4.73 **	6.19 **	2.08 *	-1.15	12.09 **	-1.72
159	MAI-48 × MAI 105	-10.00 **	0.31	-1.82	-3.86 **	12.50 **	-0.92	-6.09 **	0.31	-3.57 **	-6.63 **	5.88 **	-7.16 **
160	MAI-48 × LM 13	-9.24 **	0.31	-1.82	-3.86 **	12.50 **	-0.92	-7.65 **	-4.64 **	-8.33 **	-11.24 **	0.65	-11.75 **
161	MAI-706 × CM 500	-3.36 **	-2.17	-4.24 **	-6.23 **	9.72 **	-3.36 *	1.52	3.72 **	-0.3	-3.46 **	9.48 **	-4.01 **
162	MAI-706 × SKV 50	-6.13 **	-2.79 *	-4.85 **	-6.82 **	9.03 **	-3.98 **	-5.22 **	-1.55	-5.36 **	-8.36 **	3.92 **	-8.88 **
163	MAI-706 × MAI 105	-6.61 **	0.62	-1.52	-3.56 **	12.85 **	-0.61	-4.53 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
164	MAI-706 × LM 13	-2.32 *	4.33 **	2.12	0	17.01 **	3.06 *	0.15	5.88 **	1.79	-1.44	11.76 **	-2.01 *
165	SKV-70 × CM 500	-3.16 **	-0.31	-2.42	-4.45 **	11.81 **	-1.53	-2.90 **	-1.55	-5.36 **	-8.36 **	3.92 **	-8.88 **
166	SKV-70 × SKV 50	-5.59 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	0.6	3.72 **	-0.3	-3.46 **	9.48 **	-4.01 **
167	SKV-70 × MAI 105	-9.19 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-5.28 **	2.79 **	-1.19	-4.32 **	8.50 **	-4.87 **
168	SKV-70 × LM 13	-2.43 *	5.88 **	3.64 **	1.48	18.75 **	4.59 **	-1.77 *	3.10 **	-0.89	-4.03 **	8.82 **	-4.58 **
169	V-632-112 × CM 500	-2.14 *	6.19 **	3.94 **	1.78	19.10 **	4.89 **	-1.97 *	7.74 **	3.57 **	0.29	13.73 **	-0.29
170	V-632-112 × SKV 50	-3.07 **	7.43 **	5.15 **	2.97 *	20.49 **	6.12 **	-2.36 **	8.98 **	4.76 **	1.44	15.03 **	0.86
171	V-632-112 × MAI 105	-9.02 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-10.32 **	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
172	V-632-112 × LM 13	-8.28 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-6.68 **	5.88 **	1.79	-1.44	11.76 **	-2.01 *
173	V-632-67 × CM 500	-12.36 **	-3.41 *	-5.45 **	-7.42 **	8.33 **	-4.59 **	-12.74 **	-0.31	-4.17 **	-7.20 **	5.23 **	-7.74 **
174	V-632-67 × SKV 50	-7.02 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-9.48 **	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
175	V-632-67 × MAI 105	#REF!	15.48 **	13.03 **	10.68 **	29.51 **	14.07 **	-4.08 **	16.41 **	11.90 **	8.36 **	22.88 **	7.74 **
176	V-632-67 × LM 13	-8.82 **	5.57 **	3.33 *	1.19	18.40 **	4.28 **	-9.33 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
177	Z-50-3 × CM 500	-3.27 **	5.26 **	3.03 *	0.89	18.06 **	3.98 **	-1.41	8.05 **	3.87 **	0.58	14.05 **	0
178	Z-50-3 × SKV 50	-2.79 **	8.05 **	5.76 **	3.56 **	21.18 **	6.73 **	-4.03 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
179	Z-50-3 × MAI 105	-6.04 **	8.36 **	6.06 **	3.86 **	21.53 **	7.03 **	-4.24 **	11.76 **	7.44 **	4.03 **	17.97 **	3.44 **
180	Z-50-3 × LM 13	-11.23 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-5.61 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
181	Z-51-1 × CM 500	-7.80 **	2.48	0.3	-1.78	14.93 **	1.22	-5.39 **	5.88 **	1.79	-1.44	11.76 **	-2.01 *
182	Z-51-1 × SKV 50	-7.78 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-3.54 **	9.60 **	5.36 **	2.02 *	15.69 **	1.43
183	Z-51-1 × MAI 105	-8.68 **	7.43 **	5.15 **	2.97 *	20.49 **	6.12 **	-5.07 **	13.00 **	8.63 **	5.19 **	19.28 **	4.58 **
184	Z-51-1 × LM 13	-10.34 **	4.64 **	2.42	0.3	17.36 **	3.36 *	-10.19 **	3.72 **	-0.3	-3.46 **	9.48 **	-4.01 **
185	Z-51-6 × CM 500	-3.58 **	4.33 **	2.12	0	17.01 **	3.06 *	-5.60 **	4.33 **	0.3	-2.88 **	10.13 **	-3.44 **
186	Z-51-6 × SKV 50	-6.16 **	3.72 **	1.52	-0.59	16.32 **	2.45	-7.86 **	3.41 **	-0.6	-3.75 **	9.15 **	-4.30 **
187	Z-51-6 × MAI 105	-9.04 **	4.33 **	2.12	0	17.01 **	3.06 *	-9.21 **	6.81 **	2.68 **	-0.58	12.75 **	-1.15
188	Z-51-6 × LM 13	-21.36 **	-10.53 **	-12.42 **	-14.24 **	0.35	-11.62 **	-18.32 **	-6.81 **	-10.42 **	-13.26 **	-1.63	-13.75 **
189	Z-52-29 × CM 500	-7.62 **	-8.05 **	-10.00 **	-11.87 **	3.13 *	-9.17 **	-2.81 **	-3.72 **	-7.44 **	-10.37 **	1.63	-10.89 **
190	Z-52-29 × SKV 50	-6.08 **	-4.33 **	-6.36 **	-8.31 **	7.29 **	-5.50 **	-4.45 **	-3.72 **	-7.44 **	-10.37 **	1.63	-10.89 **
191	Z-52-29 × MAI 105	-10.07 **	-4.64 **	-6.67 **	-8.61 **	6.94 **	-5.81 **	-16.91 **	-11.76 **	-15.18 **	-17.87 **	-6.86 **	-18.34 **
192	Z-52-29 × LM 13	-15.76 **	-11.46 **	-13.33 **	-15.13 **	-0.69	-12.54 **	-8.30 **	-5.88 **	-9.52 **	-12.39 **	-0.65	-12.89 **
193	Z-56-1 × CM 500	-6.25 **	-7.12 **	-9.09 **	-10.98 **	4.17 **	-8.26 **	0.16	-0.62	-4.46 **	-7.49 **	4.90 **	-8.02 **
194	Z-56-1 × SKV 50	-5.65 **	-4.33 **	-6.36 **	-8.31 **	7.29 **	-5.50 **	2.76 **	3.72 **	-0.3	-3.46 **	9.48 **	-4.01 **
195	Z-56-1 × MAI 105	-11.73 **	-6.81 **	-8.79 **	-10.68 **	4.51 **	-7.95 **	-16.16 **	-10.84 **	-14.29 **	-17.00 **	-5.88 **	-17.48 **

196	Z-56-1 × LM 13	-13.31 **	-9.29 **	-11.21 **	-13.06 **	1.74	-10.40 **	-12.95 **	-10.53 **	-13.99 **	-16.71 **	-5.56 **	-17.19 **
197	Z-56-8 × CM 500	-6.56 **	-5.26 **	-7.27 **	-9.20 **	6.25 **	-6.42 **	-6.19 **	-6.19 **	-9.82 **	-12.68 **	-0.98	-13.18 **
198	Z-56-8 × SKV 50	-6.87 **	-3.41 *	-5.45 **	-7.42 **	8.33 **	-4.59 **	-7.15 **	-5.57 **	-9.23 **	-12.10 **	-0.33	-12.61 **
199	Z-56-8 × MAI 105	-13.34 **	-6.50 **	-8.48 **	-10.39 **	4.86 **	-7.65 **	-8.96 **	-2.48 *	-6.25 **	-9.22 **	2.94 **	-9.74 **
200	Z-56-8 × LM 13	-6.51 **	0	-2.12	-4.15 **	12.15 **	-1.22	-10.61 **	-7.43 **	-11.01 **	-13.83 **	-2.29 *	-14.33 **
201	Z-60-22 × CM 500	-10.20 **	-4.64 **	-6.67 **	-8.61 **	6.94 **	-5.81 **	-8.77 **	-4.95 **	-8.63 **	-11.53 **	0.33	-12.03 **
202	Z-60-22 × SKV 50	-7.85 **	0	-2.12	-4.15 **	12.15 **	-1.22	-0.88	4.95 **	0.89	-2.31 *	10.78 **	-2.87 **
203	Z-60-22 × MAI 105	-7.42 **	4.33 **	2.12	0	17.01 **	3.06 *	-8.21 **	2.17 *	-1.79	-4.90 **	7.84 **	-5.44 **
204	Z-60-22 × LM 13	-7.20 **	3.72 **	1.52	-0.59	16.32 **	2.45	-5.17 **	2.17 *	-1.79	-4.90 **	7.84 **	-5.44 **
205	Z-62-55 × CM 500	-5.22 **	-1.55	-3.64 **	-5.64 **	10.42 **	-2.75 *	-3.15 **	0	-3.87 **	-6.92 **	5.56 **	-7.45 **
206	Z-62-55 × SKV 50	-6.41 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	6.49 **	11.76 **	7.44 **	4.03 **	17.97 **	3.44 **
207	Z-62-55 × MAI 105	-5.75 **	4.02 **	1.82	-0.3	16.67 **	2.75 *	0.7	11.15 **	6.85 **	3.46 **	17.32 **	2.87 **
208	Z-62-55 × LM 13	-13.15 **	-4.95 **	-6.97 **	-8.90 **	6.60 **	-6.12 **	-15.07 **	-9.29 **	-12.80 **	-15.56 **	-4.25 **	-16.05 **
209	Z-62-67 × CM 500	-11.30 **	-4.02 **	-6.06 **	-8.01 **	7.64 **	-5.20 **	-5.15 **	5.57 **	1.49	-1.73	11.44 **	-2.29 *
210	Z-62-67 × SKV 50	-8.12 **	1.55	-0.61	-2.67 *	13.89 **	0.31	-12.60 **	-1.24	-5.06 **	-8.07 **	4.25 **	-8.60 **
211	Z-62-67 × MAI 105	-13.36 **	-0.62	-2.73 *	-4.75 **	11.46 **	-1.83	-15.56 **	0	-3.87 **	-6.92 **	5.56 **	-7.45 **
212	Z-62-67 × LM 13	-11.02 **	1.24	-0.91	-2.97 *	13.54 **	0	-15.63 **	-3.10 **	-6.85 **	-9.80 **	2.29 *	-10.32 **
213	Z-63-30 × CM 500	-10.70 **	-1.86	-3.94 **	-5.93 **	10.07 **	-3.06 *	-11.33 **	-1.86	-5.65 **	-8.65 **	3.59 **	-9.17 **
214	Z-63-30 × SKV 50	-12.28 **	-1.55	-3.64 **	-5.64 **	10.42 **	-2.75 *	-5.51 **	6.19 **	2.08 *	-1.15	12.09 **	-1.72
215	Z-63-30 × MAI 105	-4.79 **	10.84 **	8.48 **	6.23 **	24.31 **	9.48 **	-5.12 **	11.76 **	7.44 **	4.03 **	17.97 **	3.44 **
216	Z-63-30 × LM 13	-5.36 **	9.29 **	6.97 **	4.75 **	22.57 **	7.95 **	-3.25 **	10.53 **	6.25 **	2.88 **	16.67 **	2.29 *
Range		-21.36	-11.46	-13.33	-15.13	-0.69	-12.54	-19.9	-11.76	-15.18	-17.87	-6.86	-18.34
		9.18	15.48	13.03	10.68	29.51	14.07	6.49	16.72	12.2	8.65	23.2	8.02
S. Em. ±		0.6335	0.7315					0.4955	0.5721				
C.D. 5%		1.2439	1.4363					0.9729	1.1234				
C.D. 1%		1.6366	1.8897					1.28	1.478				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Anthesis silking interval						Days to 50% brown husk					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	175.00 *	175.00 *	57.14	0	-35.29	-50.00 **	9.46 **	1.96 **	19.82 **	-3.29 **	21.76 **	19.61 **
2	V-1154 × SKV 50	200	50	-14.29	-45.45	-64.71 **	-72.73 **	6.77 **	0.9	18.58 **	-4.29 **	20.50 **	18.37 **
3	V-1154 × MAI 105	-16.67	25	-28.57	-54.55	-70.59 **	-77.27 **	-3.28 **	2.11 **	20.00 **	-3.14 **	21.94 **	19.79 **
4	V-1154 × LM 13	4.76	175.00 *	57.14	0	-35.29	-50.00 **	-0.43	4.37 **	22.65 **	-1	24.64 **	22.44 **
5	V-1168 × CM 500	125	125	28.57	-18.18	-47.06 *	-59.09 **	15.21 **	-6.48 **	9.91 **	-11.29 **	11.69 **	9.72 **
6	V-1168 × SKV 50	350.00 *	125	28.57	-18.18	-47.06 *	-59.09 **	11.13 **	-8.28 **	7.79 **	-13.00 **	9.53 **	7.60 **
7	V-1168 × MAI 105	300.00 **	500.00 **	242.86 **	118.18 **	41.18 *	9.09	-6.36 **	-12.35 **	3.01 **	-16.86 **	4.68 **	2.83 **
8	V-1168 × LM 13	-52.38	25	-28.57	-54.55	-70.59 **	-77.27 **	13.06 **	4.97 **	23.36 **	-0.43	25.36 **	23.14 **
9	V-1522 × CM 500	-42.86	0	-42.86	-63.64 *	-76.47 **	-81.82 **	8.44 **	-1.36	15.93 **	-6.43 **	17.81 **	15.72 **
10	V-1522 × SKV 50	40	75	0	-36.36	-58.82 **	-68.18 **	2.61 **	-5.27 **	11.33 **	-10.14 **	13.13 **	11.13 **
11	V-1522 × MAI 105	100.00 **	350.00 **	157.14 **	63.64 *	5.88	-18.18	-6.77 **	-3.61 **	13.27 **	-8.57 **	15.11 **	13.07 **
12	V-1522 × LM 13	-40.74	100	14.29	-27.27	-52.94 *	-63.64 **	1.39 *	4.07 **	22.30 **	-1.29	24.28 **	22.08 **
13	V-1649 × CM 500	175.00 *	175.00 *	57.14	0	-35.29	-50.00 **	1.75 *	-7.98 **	8.14 **	-12.71 **	9.89 **	7.95 **
14	V-1649 × SKV 50	450.00 **	175.00 *	57.14	0	-35.29	-50.00 **	11.24 **	2.11 **	20.00 **	-3.14 **	21.94 **	19.79 **
15	V-1649 × MAI 105	166.67 **	300.00 **	128.57 *	45.45	-5.88	-27.27	0	2.86 **	20.88 **	-2.43 **	22.84 **	20.67 **
16	V-1649 × LM 13	-33.33	75	0	-36.36	-58.82 **	-68.18 **	-19.32 **	-17.62 **	-3.19 **	-21.86 **	-1.62	-3.36 **
17	V-1742 × CM 500	-38.46	0	-42.86	-63.64 *	-76.47 **	-81.82 **	12.11 **	-7.98 **	8.14 **	-12.71 **	9.89 **	7.95 **
18	V-1742 × SKV 50	100	125	28.57	-18.18	-47.06 *	-59.09 **	-0.54	-17.02 **	-2.48 **	-21.29 **	-0.9	-2.65 **
19	V-1742 × MAI 105	111.76 **	350.00 **	157.14 **	63.64 *	5.88	-18.18	-11.55 **	-16.42 **	-1.77 *	-20.71 **	-0.18	-1.94 *
20	V-1742 × LM 13	-61.54 **	25	-28.57	-54.55	-70.59 **	-77.27 **	10.84 **	3.92 **	22.12 **	-1.43 *	24.10 **	21.91 **
21	V-2205 × CM 500	100.00 *	250.00 **	100.00 *	27.27	-17.65	-36.36 *	5.24 **	-9.19 **	6.73 **	-13.86 **	8.45 **	6.54 **
22	V-2205 × SKV 50	-40	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	5.15 **	-7.83 **	8.32 **	-12.57 **	10.07 **	8.13 **
23	V-2205 × MAI 105	-44.44	25	-28.57	-54.55	-70.59 **	-77.27 **	3.74 **	2.41 **	20.35 **	-2.86 **	22.30 **	20.14 **
24	V-2205 × LM 13	-18.52	175.00 *	57.14	0	-35.29	-50.00 **	3.00 **	0.9	18.58 **	-4.29 **	20.50 **	18.37 **
25	V-2232 × CM 500	166.67 *	200.00 *	71.43	9.09	-29.41	-45.45 **	1.09	-16.11 **	-1.42	-20.43 **	0.18	-1.59
26	V-2232 × SKV 50	740.00 **	425.00 **	200.00 **	90.91 **	23.53	-4.55	-1.07	-16.57 **	-1.95 *	-20.86 **	-0.36	-2.12 *
27	V-2232 × MAI 105	100.00 *	225.00 *	85.71	18.18	-23.53	-40.91 *	8.45 **	3.46 **	21.59 **	-1.86 **	23.56 **	21.38 **
28	V-2232 × LM 13	-54.55	25	-28.57	-54.55	-70.59 **	-77.27 **	11.54 **	5.57 **	24.07 **	0.14	26.08 **	23.85 **
29	V-1410-1 × CM 500	125	125	28.57	-18.18	-47.06 *	-59.09 **	0.09	-16.42 **	-1.77 *	-20.71 **	-0.18	-1.94 *
30	V-1410-1 × SKV 50	550.00 **	225.00 *	85.71	18.18	-23.53	-40.91 *	2.40 **	-13.10 **	2.12 *	-17.57 **	3.78 **	1.94 *
31	V-1410-1 × MAI 105	33.33	100	14.29	-27.27	-52.94 *	-63.64 **	7.22 **	2.86 **	20.88 **	-2.43 **	22.84 **	20.67 **
32	V-1410-1 × LM 13	-14.29	125	28.57	-18.18	-47.06 *	-59.09 **	9.18 **	3.92 **	22.12 **	-1.43 *	24.10 **	21.91 **
33	V-1712-1 × CM 500	75	75	0	-36.36	-58.82 **	-68.18 **	-5.97 **	-14.61 **	0.35	-19.00 **	1.98 *	0.18
34	V-1712-1 × SKV 50	550.00 **	225.00 *	85.71	18.18	-23.53	-40.91 *	11.76 **	3.01 **	21.06 **	-2.29 **	23.02 **	20.85 **
35	V-1712-1 × MAI 105	16.67	75	0	-36.36	-58.82 **	-68.18 **	-0.36	2.86 **	20.88 **	-2.43 **	22.84 **	20.67 **
36	V-1712-1 × LM 13	-33.33	75	0	-36.36	-58.82 **	-68.18 **	-0.22	2.26 **	20.18 **	-3.00 **	22.12 **	19.96 **
37	V-241-2 × CM 500	-74.65 **	125	28.57	-18.18	-47.06 *	-59.09 **	1.45	-15.81 **	-1.06	-20.14 **	0.54	-1.24

Sl. no.	Hybrid	Anthesis silking interval						Days to 50% brown husk					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	-79.10 **	75	0	-36.36	-58.82 **	-68.18 **	15.18 **	-2.86 **	14.16 **	-7.86 **	16.01 **	13.96 **
39	V-241-2 × MAI 105	-84.00 **	50	-14.29	-45.45	-64.71 **	-72.73 **	-2.60 **	-7.08 **	9.20 **	-11.86 **	10.97 **	9.01 **
40	V-241-2 × LM 13	-71.43 **	200.00 *	71.43	9.09	-29.41	-45.45 **	-11.54 **	-16.27 **	-1.59	-20.57 **	0	-1.77 *
41	V-2437-1 × CM 500	42.86	150	42.86	-9.09	-41.18 *	-54.55 **	13.45 **	-9.19 **	6.73 **	-13.86 **	8.45 **	6.54 **
42	V-2437-1 × SKV 50	220.00 **	300.00 **	128.57 *	45.45	-5.88	-27.27	16.93 **	-4.82 **	11.86 **	-9.71 **	13.67 **	11.66 **
43	V-2437-1 × MAI 105	-55.56	0	-42.86	-63.64 *	-76.47 **	-81.82 **	7.33 **	-0.75	16.64 **	-5.86 **	18.53 **	16.43 **
44	V-2437-1 × LM 13	18.52	300.00 **	128.57 *	45.45	-5.88	-27.27	10.84 **	1.66 *	19.47 **	-3.57 **	21.40 **	19.26 **
45	V-2459-2 × CM 500	-34.69 **	300.00 **	128.57 *	45.45	-5.88	-27.27	0.26	-13.70 **	1.42	-18.14 **	3.06 **	1.24
46	V-2459-2 × SKV 50	-15.56	375.00 **	171.43 **	72.73 *	11.76	-13.64	3.19 **	-9.79 **	6.02 **	-14.43 **	7.73 **	5.83 **
47	V-2459-2 × MAI 105	-50.94 **	225.00 *	85.71	18.18	-23.53	-40.91 *	-8.41 **	-9.79 **	6.02 **	-14.43 **	7.73 **	5.83 **
48	V-2459-2 × LM 13	-74.19 **	100	14.29	-27.27	-52.94 *	-63.64 **	-5.55 **	-7.68 **	8.50 **	-12.43 **	10.25 **	8.30 **
49	V-2516-2 × CM 500	26.32	200.00 *	71.43	9.09	-29.41	-45.45 **	4.36 **	-11.60 **	3.89 **	-16.14 **	5.58 **	3.71 **
50	V-2516-2 × SKV 50	-60	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	6.74 **	-8.13 **	7.96 **	-12.86 **	9.71 **	7.77 **
51	V-2516-2 × MAI 105	143.48 **	600.00 **	300.00 **	154.55 **	64.71 **	27.27	-8.37 **	-10.99 **	4.60 **	-15.57 **	6.29 **	4.42 **
52	V-2516-2 × LM 13	50.00 **	500.00 **	242.86 **	118.18 **	41.18 *	9.09	-12.50 **	-15.66 **	-0.88	-20.00 **	0.72	-1.06
53	V-2608-1 × CM 500	117.39 **	525.00 **	257.14 **	127.27 **	47.06 *	13.64	-6.89 **	-15.51 **	-0.71	-19.86 **	0.9	-0.88
54	V-2608-1 × SKV 50	-26.32	75	0	-36.36	-58.82 **	-68.18 **	-8.09 **	-15.36 **	-0.53	-19.71 **	1.08	-0.71
55	V-2608-1 × MAI 105	48.15 *	400.00 **	185.71 **	81.82 *	17.65	-9.09	-4.38 **	-1.36	15.93 **	-6.43 **	17.81 **	15.72 **
56	V-2608-1 × LM 13	-55.56 **	100	14.29	-27.27	-52.94 *	-63.64 **	-17.06 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
57	V-291-2 × CM 500	-60.56 **	250.00 **	100.00 *	27.27	-17.65	-36.36 *	9.75 **	-9.34 **	6.55 **	-14.00 **	8.27 **	6.36 **
58	V-291-2 × SKV 50	-58.21 **	250.00 **	100.00 *	27.27	-17.65	-36.36 *	15.70 **	-2.86 **	14.16 **	-7.86 **	16.01 **	13.96 **
59	V-291-2 × MAI 105	-41.33 **	450.00 **	214.29 **	100.00 **	29.41	0	1.11	-3.92 **	12.92 **	-8.86 **	14.75 **	12.72 **
60	V-291-2 × LM 13	-61.90 **	300.00 **	128.57 *	45.45	-5.88	-27.27	-11.98 **	-17.02 **	-2.48 **	-21.29 **	-0.9	-2.65 **
61	V-70-1 × CM 500	25	25	-28.57	-54.55	-70.59 **	-77.27 **	8.11 **	-7.68 **	8.50 **	-12.43 **	10.25 **	8.30 **
62	V-70-1 × SKV 50	100	0	-42.86	-63.64 *	-76.47 **	-81.82 **	8.68 **	-5.72 **	10.80 **	-10.57 **	12.59 **	10.60 **
63	V-70-1 × MAI 105	-83.33	-75	-85.71	-90.91 **	-94.12 **	-95.45 **	-2.69 **	-4.82 **	11.86 **	-9.71 **	13.67 **	11.66 **
64	V-70-1 × LM 13	-33.33	75	0	-36.36	-58.82 **	-68.18 **	5.82 **	2.71 **	20.71 **	-2.57 **	22.66 **	20.49 **
65	CIMMYT-47 × CM 500	-88.37 **	25	-28.57	-54.55	-70.59 **	-77.27 **	8.64 **	-3.46 **	13.45 **	-8.43 **	15.29 **	13.25 **
66	CIMMYT-47 × SKV 50	-48.78 **	425.00 **	200.00 **	90.91 **	23.53	-4.55	-2.34 **	-11.90 **	3.54 **	-16.43 **	5.22 **	3.36 **
67	CIMMYT-47 × MAI 105	-53.33 **	425.00 **	200.00 **	90.91 **	23.53	-4.55	-2.45 **	-1.2	16.11 **	-6.29 **	17.99 **	15.90 **
68	CIMMYT-47 × LM 13	-69.70 **	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-15.81 **	-15.36 **	-0.53	-19.71 **	1.08	-0.71
69	CIMMYT-5 × CM 500	-76.92 **	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	6.00 **	-14.91 **	0	-19.29 **	1.62	-0.18
70	CIMMYT-5 × SKV 50	90.91 **	425.00 **	200.00 **	90.91 **	23.53	-4.55	17.34 **	-4.22 **	12.57 **	-9.14 **	14.39 **	12.37 **
71	CIMMYT-5 × MAI 105	-73.33 **	0	-42.86	-63.64 *	-76.47 **	-81.82 **	-7.72 **	-14.46 **	0.53	-18.86 **	2.16 *	0.35
72	CIMMYT-5 × LM 13	43.59 **	600.00 **	300.00 **	154.55 **	64.71 **	27.27	-8.11 **	-15.51 **	-0.71	-19.86 **	0.9	-0.88
73	CM-115 × CM 500	-67.16 **	175.00 *	57.14	0	-35.29	-50.00 **	6.68 **	-14.61 **	0.35	-19.00 **	1.98 *	0.18
74	CM-115 × SKV 50	-49.21 **	300.00 **	128.57 *	45.45	-5.88	-27.27	5.46 **	-14.16 **	0.88	-18.57 **	2.52 **	0.71

Sl. no.	Hybrid	Anthesis silking interval						Days to 50% brown husk					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	-54.93 **	300.00 **	128.57 *	45.45	-5.88	-27.27	-4.40 **	-11.60 **	3.89 **	-16.14 **	5.58 **	3.71 **
76	CM-115 × LM 13	-47.50 **	425.00 **	200.00 **	90.91 **	23.53	-4.55	-9.36 **	-16.87 **	-2.30 **	-21.14 **	-0.72	-2.47 **
77	CM-149 × CM 500	100.00 **	525.00 **	257.14 **	127.27 **	47.06 *	13.64	5.87 **	-14.46 **	0.53	-18.86 **	2.16 *	0.35
78	CM-149 × SKV 50	14.29	200.00 *	71.43	9.09	-29.41	-45.45 **	3.76 **	-14.76 **	0.18	-19.14 **	1.80 *	0
79	CM-149 × MAI 105	-44.83 *	100	14.29	-27.27	-52.94 *	-63.64 **	0.65	-6.17 **	10.27 **	-11.00 **	12.05 **	10.07 **
80	CM-149 × LM 13	-10.53	325.00 **	142.86 **	54.55	0	-22.73	-8.79 **	-15.66 **	-0.88	-20.00 **	0.72	-1.06
81	CML-165 × CM 500	-20	100	14.29	-27.27	-52.94 *	-63.64 **	4.60 **	-12.65 **	2.65 **	-17.14 **	4.32 **	2.47 **
82	CML-165 × SKV 50	112.50 **	325.00 **	142.86 **	54.55	0	-22.73	9.14 **	-7.38 **	8.85 **	-12.14 **	10.61 **	8.66 **
83	CML-165 × MAI 105	-50	50	-14.29	-45.45	-64.71 **	-72.73 **	-4.40 **	-8.28 **	7.79 **	-13.00 **	9.53 **	7.60 **
84	CML-165 × LM 13	-93.94 **	-75	-85.71	-90.91 **	-94.12 **	-95.45 **	-10.76 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
85	CML-166 × CM 500	60	100	14.29	-27.27	-52.94 *	-63.64 **	2.18 **	-15.21 **	-0.35	-19.57 **	1.26	-0.53
86	CML-166 × SKV 50	633.33 **	450.00 **	214.29 **	100.00 **	29.41	0	-0.18	-15.81 **	-1.06	-20.14 **	0.54	-1.24
87	CML-166 × MAI 105	28.57	125	28.57	-18.18	-47.06 *	-59.09 **	4.03 **	-0.75	16.64 **	-5.86 **	18.53 **	16.43 **
88	CML-166 × LM 13	117.39 **	525.00 **	257.14 **	127.27 **	47.06 *	13.64	7.24 **	1.51 *	19.29 **	-3.71 **	21.22 **	19.08 **
89	CML-169 × CM 500	575.00 **	575.00 **	285.71 **	145.45 **	58.82 **	22.73	3.25 **	-9.19 **	6.73 **	-13.86 **	8.45 **	6.54 **
90	CML-169 × SKV 50	200	50	-14.29	-45.45	-64.71 **	-72.73 **	-4.72 **	-14.91 **	0	-19.29 **	1.62	-0.18
91	CML-169 × MAI 105	-33.33	0	-42.86	-63.64 *	-76.47 **	-81.82 **	-1.88 **	-1.51 *	15.75 **	-6.57 **	17.63 **	15.55 **
92	CML-169 × LM 13	61.90 *	325.00 **	142.86 **	54.55	0	-22.73	3.10 **	2.71 **	20.71 **	-2.57 **	22.66 **	20.49 **
93	CML-172 × CM 500	-39.13	75	0	-36.36	-58.82 **	-68.18 **	5.70 **	-6.48 **	9.91 **	-11.29 **	11.69 **	9.72 **
94	CML-172 × SKV 50	205.26 **	625.00 **	314.29 **	163.64 **	70.59 **	31.82 *	11.82 **	0.45	18.05 **	-4.71 **	19.96 **	17.84 **
95	CML-172 × MAI 105	85.19 **	525.00 **	257.14 **	127.27 **	47.06 *	13.64	3.58 **	4.52 **	22.83 **	-0.86	24.82 **	22.61 **
96	CML-172 × LM 13	-38.89 *	175.00 *	57.14	0	-35.29	-50.00 **	-15.04 **	-14.91 **	0	-19.29 **	1.62	-0.18
97	CML-359 × CM 500	45.45	100	14.29	-27.27	-52.94 *	-63.64 **	1.08	-8.13 **	7.96 **	-12.86 **	9.71 **	7.77 **
98	CML-359 × SKV 50	14.29	0	-42.86	-63.64 *	-76.47 **	-81.82 **	-10.20 **	-17.17 **	-2.65 **	-21.43 **	-1.08	-2.83 **
99	CML-359 × MAI 105	286.67 **	625.00 **	314.29 **	163.64 **	70.59 **	31.82 *	-8.60 **	-5.57 **	10.97 **	-10.43 **	12.77 **	10.78 **
100	CML-359 × LM 13	-50	50	-14.29	-45.45	-64.71 **	-72.73 **	-7.05 **	-4.67 **	12.04 **	-9.57 **	13.85 **	11.84 **
101	CML-411 × CM 500	157.14 **	350.00 **	157.14 **	63.64 *	5.88	-18.18	10.32 **	-4.22 **	12.57 **	-9.14 **	14.39 **	12.37 **
102	CML-411 × SKV 50	240.00 **	325.00 **	142.86 **	54.55	0	-22.73	-4.18 **	-15.51 **	-0.71	-19.86 **	0.9	-0.88
103	CML-411 × MAI 105	222.22 **	625.00 **	314.29 **	163.64 **	70.59 **	31.82 *	-0.46	-1.2	16.11 **	-6.29 **	17.99 **	15.90 **
104	CML-411 × LM 13	-3.7	225.00 *	85.71	18.18	-23.53	-40.91 *	7.03 **	5.42 **	23.89 **	0	25.90 **	23.67 **
105	HKI-193-1 × CM 500	-68.00 **	100	14.29	-27.27	-52.94 *	-63.64 **	12.37 **	-9.04 **	6.90 **	-13.71 **	8.63 **	6.71 **
106	HKI-193-1 × SKV 50	-65.22 **	100	14.29	-27.27	-52.94 *	-63.64 **	16.19 **	-4.37 **	12.39 **	-9.29 **	14.21 **	12.19 **
107	HKI-193-1 × MAI 105	-44.44 **	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-1.13	-7.68 **	8.50 **	-12.43 **	10.25 **	8.30 **
108	HKI-193-1 × LM 13	-39.68 **	375.00 **	171.43 **	72.73 *	11.76	-13.64	-9.43 **	-16.11 **	-1.42	-20.43 **	0.18	-1.59
109	HKI-193-2 × CM 500	-82.35 **	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	4.45 **	-15.21 **	-0.35	-19.57 **	1.26	-0.53
110	HKI-193-2 × SKV 50	180.00 **	950.00 **	500.00 **	281.82 **	147.06 **	90.91 **	4.93 **	-13.40 **	1.77 *	-17.86 **	3.42 **	1.59
111	HKI-193-2 × MAI 105	-73.68 **	25	-28.57	-54.55	-70.59 **	-77.27 **	1.37 *	-5.12 **	11.50 **	-10.00 **	13.31 **	11.31 **

Sl. no.	Hybrid	Anthesis silking interval						Days to 50% brown husk					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	-36.17 **	275.00 **	114.29 *	36.36	-11.76	-31.82 *	7.70 **	0	17.52 **	-5.14 **	19.42 **	17.31 **
113	LTP-1 × CM 500	-12.5	75	0	-36.36	-58.82 **	-68.18 **	14.02 **	-6.93 **	9.38 **	-11.71 **	11.15 **	9.19 **
114	LTP-1 × SKV 50	266.67 **	450.00 **	214.29 **	100.00 **	29.41	0	14.34 **	-5.12 **	11.50 **	-10.00 **	13.31 **	11.31 **
115	LTP-1 × MAI 105	20	200.00 *	71.43	9.09	-29.41	-45.45 **	-11.13 **	-16.42 **	-1.77 *	-20.71 **	-0.18	-1.94 *
116	LTP-1 × LM 13	-24.14	175.00 *	57.14	0	-35.29	-50.00 **	-11.06 **	-17.02 **	-2.48 **	-21.29 **	-0.9	-2.65 **
117	MAI-11 5 × CM 500	550.00 **	550.00 **	271.43 **	136.36 **	52.94 *	18.18	-7.97 **	-15.66 **	-0.88	-20.00 **	0.72	-1.06
118	MAI-115 × SKV 50	450.00 **	175.00 *	57.14	0	-35.29	-50.00 **	-9.96 **	-16.27 **	-1.59	-20.57 **	0	-1.77 *
119	MAI-116 × MAI 105	466.67 **	750.00 **	385.71 **	209.09 **	100.00 **	54.55 **	-13.46 **	-9.94 **	5.84 **	-14.57 **	7.55 **	5.65 **
120	MAI-117 × LM 13	33.33	250.00 **	100.00 *	27.27	-17.65	-36.36 *	-19.39 **	-16.72 **	-2.12 *	-21.00 **	-0.54	-2.30 **
121	MAI-107 × CM 500	214.29 *	175.00 *	57.14	0	-35.29	-50.00 **	-7.73 **	-15.51 **	-0.71	-19.86 **	0.9	-0.88
122	MAI-107 × SKV 50	433.33 *	100	14.29	-27.27	-52.94 *	-63.64 **	-9.56 **	-15.96 **	-1.24	-20.29 **	0.36	-1.41
123	MAI-107 × MAI 105	-63.64	-50	-71.43	-81.82 *	-88.24 **	-90.91 **	-7.89 **	-4.22 **	12.57 **	-9.14 **	14.39 **	12.37 **
124	MAI-107 × LM 13	-10	125	28.57	-18.18	-47.06 *	-59.09 **	-1.82 **	1.36	19.12 **	-3.86 **	21.04 **	18.90 **
125	MAI-109 × CM 500	336.36 **	500.00 **	242.86 **	118.18 **	41.18 *	9.09	1.86 *	-13.25 **	1.95 *	-17.71 **	3.60 **	1.77 *
126	MAI-109 × SKV 50	128.57	100	14.29	-27.27	-52.94 *	-63.64 **	1.65 *	-12.05 **	3.36 **	-16.57 **	5.04 **	3.18 **
127	MAI-109 × MAI 105	73.33	225.00 *	85.71	18.18	-23.53	-40.91 *	-6.33 **	-8.58 **	7.43 **	-13.29 **	9.17 **	7.24 **
128	MAI-109 × LM 13	183.33 **	750.00 **	385.71 **	209.09 **	100.00 **	54.55 **	-11.51 **	-14.31 **	0.71	-18.71 **	2.34 **	0.53
129	MAI-112 × CM 500	442.86 **	375.00 **	171.43 **	72.73 *	11.76	-13.64	-4.07 **	-14.76 **	0.18	-19.14 **	1.80 *	0
130	MAI-112 × SKV 50	700.00 **	200.00 *	71.43	9.09	-29.41	-45.45 **	-5.84 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
131	MAI-112 × MAI 105	118.18 *	200.00 *	71.43	9.09	-29.41	-45.45 **	-17.03 **	-15.96 **	-1.24	-20.29 **	0.36	-1.41
132	MAI-112 × LM 13	210.00 **	675.00 **	342.86 **	181.82 **	82.35 **	40.91 *	-15.06 **	-14.61 **	0.35	-19.00 **	1.98 *	0.18
133	MAI-121 × CM 500	91.30 **	450.00 **	214.29 **	100.00 **	29.41	0	-2.19 **	-16.11 **	-1.42	-20.43 **	0.18	-1.59
134	MAI-121 × SKV 50	-57.89	0	-42.86	-63.64 *	-76.47 **	-81.82 **	-2.51 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
135	MAI-121 × MAI 105	62.96 **	450.00 **	214.29 **	100.00 **	29.41	0	-13.80 **	-15.36 **	-0.53	-19.71 **	1.08	-0.71
136	MAI-121 × LM 13	-22.22	250.00 **	100.00 *	27.27	-17.65	-36.36 *	-3.71 **	-6.17 **	10.27 **	-11.00 **	12.05 **	10.07 **
137	MAI-137 × CM 500	900.00 **	900.00 **	471.43 **	263.64 **	135.29 **	81.82 **	1.96 *	-17.77 **	-3.36 **	-22.00 **	-1.80 *	-3.53 **
138	MAI-137 × SKV 50	600.00 **	250.00 **	100.00 *	27.27	-17.65	-36.36 *	0.46	-17.62 **	-3.19 **	-21.86 **	-1.62	-3.36 **
139	MAI-137 × MAI 105	16.67	75	0	-36.36	-58.82 **	-68.18 **	-1.46 *	-8.28 **	7.79 **	-13.00 **	9.53 **	7.60 **
140	MAI-137 × LM 13	176.19 **	625.00 **	314.29 **	163.64 **	70.59 **	31.82 *	-7.99 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
141	MAI-27 × CM 500	71.43 **	500.00 **	242.86 **	118.18 **	41.18 *	9.09	3.78 **	-15.21 **	-0.35	-19.57 **	1.26	-0.53
142	MAI-27 × SKV 50	33.33	300.00 **	128.57 *	45.45	-5.88	-27.27	1.72 *	-15.51 **	-0.71	-19.86 **	0.9	-0.88
143	MAI-27 × MAI 105	-62.50 **	50	-14.29	-45.45	-64.71 **	-72.73 **	-4.80 **	-10.39 **	5.31 **	-15.00 **	7.01 **	5.12 **
144	MAI-27 × LM 13	-26.83	275.00 **	114.29 *	36.36	-11.76	-31.82 *	6.61 **	-0.45	16.99 **	-5.57 **	18.88 **	16.78 **
145	MAI-29 × CM 500	157.14 **	350.00 **	157.14 **	63.64 *	5.88	-18.18	-4.18 **	-15.36 **	-0.53	-19.71 **	1.08	-0.71
146	MAI-29 × SKV 50	120	175.00 *	57.14	0	-35.29	-50.00 **	-1.43 *	-11.60 **	3.89 **	-16.14 **	5.58 **	3.71 **
147	MAI-29 × MAI 105	55.56	250.00 **	100.00 *	27.27	-17.65	-36.36 *	-17.19 **	-16.57 **	-1.95 *	-20.86 **	-0.36	-2.12 *
148	MAI-29 × LM 13	151.85 **	750.00 **	385.71 **	209.09 **	100.00 **	54.55 **	-15.21 **	-15.21 **	-0.35	-19.57 **	1.26	-0.53

Sl. no.	Hybrid	Anthesis silking interval						Days to 50% brown husk					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	285.71 **	575.00 **	285.71 **	145.45 **	58.82 **	22.73	3.81 **	-15.96 **	-1.24	-20.29 **	0.36	-1.41
150	MAI-35 × SKV 50	280.00 **	375.00 **	171.43 **	72.73 *	11.76	-13.64	3.20 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
151	MAI-35 × MAI 105	66.67	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-9.35 **	-15.36 **	-0.53	-19.71 **	1.08	-0.71
152	MAI-35 × LM 13	159.26 **	775.00 **	400.00 **	218.18 **	105.88 **	59.09 **	-1.95 **	-9.19 **	6.73 **	-13.86 **	8.45 **	6.54 **
153	MAI-45 × CM 500	246.15 **	1025.00 **	542.86 **	309.09 **	164.71 **	104.55 **	-4.16 **	-14.91 **	0	-19.29 **	1.62	-0.18
154	MAI-45 × SKV 50	-27.27	100	14.29	-27.27	-52.94 *	-63.64 **	-2.76 **	-12.35 **	3.01 **	-16.86 **	4.68 **	2.83 **
155	MAI-45 × MAI 105	-66.67 **	25	-28.57	-54.55	-70.59 **	-77.27 **	-7.14 **	-6.02 **	10.44 **	-10.86 **	12.23 **	10.25 **
156	MAI-45 × LM 13	-53.85 **	125	28.57	-18.18	-47.06 *	-59.09 **	-17.09 **	-16.72 **	-2.12 *	-21.00 **	-0.54	-2.30 **
157	MAI-48 × CM 500	-4.55	425.00 **	200.00 **	90.91 **	23.53	-4.55	-9.06 **	-16.87 **	-2.30 **	-21.14 **	-0.72	-2.47 **
158	MAI-48 × SKV 50	0	400.00 **	185.71 **	81.82 *	17.65	-9.09	-10.39 **	-16.87 **	-2.30 **	-21.14 **	-0.72	-2.47 **
159	MAI-48 × MAI 105	-83.33 **	0	-42.86	-63.64 *	-76.47 **	-81.82 **	-12.98 **	-9.64 **	6.19 **	-14.29 **	7.91 **	6.01 **
160	MAI-48 × LM 13	-43.86 **	300.00 **	128.57 *	45.45	-5.88	-27.27	-17.60 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
161	MAI-706 × CM 500	566.67 **	400.00 **	185.71 **	81.82 *	17.65	-9.09	-9.98 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
162	MAI-706 × SKV 50	500	50	-14.29	-45.45	-64.71 **	-72.73 **	6.69 **	-10.69 **	4.96 **	-15.29 **	6.65 **	4.77 **
163	MAI-706 × MAI 105	140.00 *	200.00 *	71.43	9.09	-29.41	-45.45 **	-5.92 **	0.45	18.05 **	-4.71 **	19.96 **	17.84 **
164	MAI-706 × LM 13	-68.42 *	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	-7.53 **	-1.96 **	15.22 **	-7.00 **	17.09 **	15.02 **
165	SKV-70 × CM 500	-20	100	14.29	-27.27	-52.94 *	-63.64 **	3.38 **	-14.76 **	0.18	-19.14 **	1.80 *	0
166	SKV-70 × SKV 50	50	200.00 *	71.43	9.09	-29.41	-45.45 **	6.56 **	-10.69 **	4.96 **	-15.29 **	6.65 **	4.77 **
167	SKV-70 × MAI 105	-16.67	150	42.86	-9.09	-41.18 *	-54.55 **	-9.05 **	-13.70 **	1.42	-18.14 **	3.06 **	1.24
168	SKV-70 × LM 13	-9.09	275.00 **	114.29 *	36.36	-11.76	-31.82 *	3.84 **	-2.26 **	14.87 **	-7.29 **	16.73 **	14.66 **
169	V-632-112 × CM 500	33.33	50	-14.29	-45.45	-64.71 **	-72.73 **	24.93 **	2.26 **	20.18 **	-3.00 **	22.12 **	19.96 **
170	V-632-112 × SKV 50	140	50	-14.29	-45.45	-64.71 **	-72.73 **	13.12 **	-5.87 **	10.62 **	-10.71 **	12.41 **	10.42 **
171	V-632-112 × MAI 105	-84.62	-75	-85.71	-90.91 **	-94.12 **	-95.45 **	2.56 **	-3.31 **	13.63 **	-8.29 **	15.47 **	13.43 **
172	V-632-112 × LM 13	-27.27	100	14.29	-27.27	-52.94 *	-63.64 **	10.31 **	3.16 **	21.24 **	-2.14 **	23.20 **	21.02 **
173	V-632-67 × CM 500	84.62 **	500.00 **	242.86 **	118.18 **	41.18 *	9.09	15.03 **	-7.23 **	9.03 **	-12.00 **	10.79 **	8.83 **
174	V-632-67 × SKV 50	-72.73 **	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	22.87 **	0.75	18.41 **	-4.43 **	20.32 **	18.20 **
175	V-632-67 × MAI 105	-73.33 **	0	-42.86	-63.64 *	-76.47 **	-81.82 **	-0.32	-7.23 **	9.03 **	-12.00 **	10.79 **	8.83 **
176	V-632-67 × LM 13	-84.62 **	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	12.56 **	3.92 **	22.12 **	-1.43 *	24.10 **	21.91 **
177	Z-50-3 × CM 500	120	175.00 *	57.14	0	-35.29	-50.00 **	-1.82 *	-14.91 **	0	-19.29 **	1.62	-0.18
178	Z-50-3 × SKV 50	600	75	0	-36.36	-58.82 **	-68.18 **	-2.82 **	-14.46 **	0.53	-18.86 **	2.16 *	0.35
179	Z-50-3 × MAI 105	66.67	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-15.05 **	-15.81 **	-1.06	-20.14 **	0.54	-1.24
180	Z-50-3 × LM 13	-5.56	325.00 **	142.86 **	54.55	0	-22.73	-15.16 **	-16.57 **	-1.95 *	-20.86 **	-0.36	-2.12 *
181	Z-51-1 × CM 500	80	125	28.57	-18.18	-47.06 *	-59.09 **	-7.04 **	-14.46 **	0.53	-18.86 **	2.16 *	0.35
182	Z-51-1 × SKV 50	1600.00 **	325.00 **	142.86 **	54.55	0	-22.73	2.90 **	-3.92 **	12.92 **	-8.86 **	14.75 **	12.72 **
183	Z-51-1 × MAI 105	122.22 **	400.00 **	185.71 **	81.82 *	17.65	-9.09	-5.84 **	-1.66 *	15.58 **	-6.71 **	17.45 **	15.37 **
184	Z-51-1 × LM 13	-72.22 **	25	-28.57	-54.55	-70.59 **	-77.27 **	-20.84 **	-17.92 **	-3.54 **	-22.14 **	-1.98 *	-3.71 **
185	Z-51-6 × CM 500	-86.67 *	-75	-85.71	-90.91 **	-94.12 **	-95.45 **	16.68 **	-0.45	16.99 **	-5.57 **	18.88 **	16.78 **

Sl. no.	Hybrid	Anthesis silking interval						Days to 50% brown husk					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	-27.27	0	-42.86	-63.64 *	-76.47 **	-81.82 **	14.34 **	-0.9	16.46 **	-6.00 **	18.35 **	16.25 **
187	Z-51-6 × MAI 105	26.32	200.00 *	71.43	9.09	-29.41	-45.45 **	-6.16 **	-8.28 **	7.79 **	-13.00 **	9.53 **	7.60 **
188	Z-51-6 × LM 13	14.29	300.00 **	128.57 *	45.45	-5.88	-27.27	-13.51 **	-16.11 **	-1.42	-20.43 **	0.18	-1.59
189	Z-52-29 × CM 500	20	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-0.88	-15.36 **	-0.53	-19.71 **	1.08	-0.71
190	Z-52-29 × SKV 50	-33.33	75	0	-36.36	-58.82 **	-68.18 **	-1.74 *	-14.76 **	0.18	-19.14 **	1.80 *	0
191	Z-52-29 × MAI 105	58.62 **	475.00 **	228.57 **	109.09 **	35.29	4.55	-11.62 **	-13.55 **	1.59	-18.00 **	3.24 **	1.41
192	Z-52-29 × LM 13	10.53	425.00 **	200.00 **	90.91 **	23.53	-4.55	-13.27 **	-15.81 **	-1.06	-20.14 **	0.54	-1.24
193	Z-56-1 × CM 500	182.35 **	500.00 **	242.86 **	118.18 **	41.18 *	9.09	0	-16.72 **	-2.12 *	-21.00 **	-0.54	-2.30 **
194	Z-56-1 × SKV 50	300.00 **	550.00 **	271.43 **	136.36 **	52.94 *	18.18	2.49 **	-13.25 **	1.95 *	-17.71 **	3.60 **	1.77 *
195	Z-56-1 × MAI 105	4.76	175.00 *	57.14	0	-35.29	-50.00 **	-11.88 **	-15.66 **	-0.88	-20.00 **	0.72	-1.06
196	Z-56-1 × LM 13	-53.33 **	75	0	-36.36	-58.82 **	-68.18 **	-10.39 **	-14.91 **	0	-19.29 **	1.62	-0.18
197	Z-56-8 × CM 500	-15.79	100	14.29	-27.27	-52.94 *	-63.64 **	-0.36	-17.32 **	-2.83 **	-21.57 **	-1.26	-3.00 **
198	Z-56-8 × SKV 50	33.33	150	42.86	-9.09	-41.18 *	-54.55 **	-0.71	-16.27 **	-1.59	-20.57 **	0	-1.77 *
199	Z-56-8 × MAI 105	21.74	250.00 **	100.00 *	27.27	-17.65	-36.36 *	-10.97 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
200	Z-56-8 × LM 13	68.75 **	575.00 **	285.71 **	145.45 **	58.82 **	22.73	-12.81 **	-17.47 **	-3.01 **	-21.71 **	-1.44	-3.18 **
201	Z-60-22 × CM 500	-73.91 **	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	3.89 **	-7.53 **	8.67 **	-12.29 **	10.43 **	8.48 **
202	Z-60-22 × SKV 50	57.89	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-1.50 *	-10.99 **	4.60 **	-15.57 **	6.29 **	4.42 **
203	Z-60-22 × MAI 105	-40.74	100	14.29	-27.27	-52.94 *	-63.64 **	-0.52	0.9	18.58 **	-4.29 **	20.50 **	18.37 **
204	Z-60-22 × LM 13	-61.11 **	75	0	-36.36	-58.82 **	-68.18 **	-3.52 **	-2.86 **	14.16 **	-7.86 **	16.01 **	13.96 **
205	Z-62-55 × CM 500	-57.14	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	4.38 **	-4.97 **	11.68 **	-9.86 **	13.49 **	11.48 **
206	Z-62-55 × SKV 50	720.00 **	925.00 **	485.71 **	272.73 **	141.18 **	86.36 **	-5.13 **	-12.35 **	3.01 **	-16.86 **	4.68 **	2.83 **
207	Z-62-55 × MAI 105	155.56 **	475.00 **	228.57 **	109.09 **	35.29	4.55	-14.26 **	-11.30 **	4.25 **	-15.86 **	5.94 **	4.06 **
208	Z-62-55 × LM 13	11.11	275.00 **	114.29 *	36.36	-11.76	-31.82 *	-17.89 **	-15.66 **	-0.88	-20.00 **	0.72	-1.06
209	Z-62-67 × CM 500	230.00 **	725.00 **	371.43 **	200.00 **	94.12 **	50.00 **	2.25 **	-14.46 **	0.53	-18.86 **	2.16 *	0.35
210	Z-62-67 × SKV 50	50	200.00 *	71.43	9.09	-29.41	-45.45 **	-0.27	-15.21 **	-0.35	-19.57 **	1.26	-0.53
211	Z-62-67 × MAI 105	-50	50	-14.29	-45.45	-64.71 **	-72.73 **	-11.76 **	-15.21 **	-0.35	-19.57 **	1.26	-0.53
212	Z-62-67 × LM 13	-15.15	250.00 **	100.00 *	27.27	-17.65	-36.36 *	0	-4.67 **	12.04 **	-9.57 **	13.85 **	11.84 **
213	Z-63-30 × CM 500	60	100	14.29	-27.27	-52.94 *	-63.64 **	3.09 **	-12.05 **	3.36 **	-16.57 **	5.04 **	3.18 **
214	Z-63-30 × SKV 50	2600.00 **	575.00 **	285.71 **	145.45 **	58.82 **	22.73	13.99 **	-1.2	16.11 **	-6.29 **	17.99 **	15.90 **
215	Z-63-30 × MAI 105	-66.67	-25	-57.14	-72.73 *	-82.35 **	-86.36 **	-13.10 **	-15.06 **	-0.18	-19.43 **	1.44	-0.35
216	Z-63-30 × LM 13	-33.33	200.00 *	71.43	9.09	-29.41	-45.45 **	6.37 **	3.16 **	21.24 **	-2.14 **	23.20 **	21.02 **
Range		-93.94	-75	-85.71	-90.91	-94.12	-95.45	-20.84	-17.92	-3.54	-22.14	-1.98	-3.71
		5300	1025	542.86	309.09	164.71	104.55	24.93	5.57	24.07	0.14	26.08	23.85
S. Em. ±		0.5096	0.5884					0.7197	0.831				
C.D. 5%		1.0006	1.1554					1.4132	1.6318				
C.D. 1%		1.3165	1.5202					1.8592	2.1469				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Ear height (cm)						Plant height (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	30.84 **	5.37	12.47 **	0.65	7.29	3.6	8.86 **	4.38 *	-1.38	-9.72 **	-20.77 **	-4.23 *
2	V-1154 × SKV 50	36.55 **	2.3	9.19 *	-2.28	4.17	0.59	23.76 **	5.39 *	-0.42	-8.84 **	-20.01 **	-3.3
3	V-1154 × MAI 105	40.93 **	10.57 **	18.02 **	5.62	12.59 **	8.72 *	24.58 **	9.21 **	3.18	-5.54 **	-17.11 **	0.21
4	V-1154 × LM 13	14.34 **	1.19	8.01	-3.34	3.04	-0.5	30.96 **	23.32 **	16.52 **	6.67 **	-6.39 **	13.16 **
5	V-1168 × CM 500	34.81 **	-6.99	-0.73	-11.16 **	-5.3	-8.55 *	8.92 **	-4.01	-9.30 **	-16.97 **	-27.14 **	-11.92 **
6	V-1168 × SKV 50	32.63 **	-15.94 **	-10.28 *	-19.71 **	-14.41 **	-17.35 **	34.42 **	4.04	-1.7	-10.01 **	-21.03 **	-4.53 *
7	V-1168 × MAI 105	41.93 **	-5.03	1.36	-9.28 *	-3.3	-6.62	18.11 **	-5.62 *	-10.82 **	-18.36 **	-28.36 **	-13.40 **
8	V-1168 × LM 13	45.12 **	11.68 **	19.20 **	6.68	13.72 **	9.81 *	47.21 **	27.22 **	20.20 **	10.04 **	-3.44 *	16.73 **
9	V-1522 × CM 500	28.07 **	-9.72 *	-3.64	-13.76 **	-8.07 *	-11.23 **	8.84 **	4.49 *	-1.27	-9.62 **	-20.69 **	-4.12 *
10	V-1522 × SKV 50	64.26 **	6.56	13.74 **	1.79	8.51 *	4.78	30.04 **	10.89 **	4.78 *	-4.08 *	-15.83 **	1.75
11	V-1522 × MAI 105	37.45 **	-5.97	0.36	-10.18 **	-4.25	-7.54	20.27 **	5.58 *	-0.25	-8.68 **	-19.86 **	-3.13
12	V-1522 × LM 13	43.21 **	12.36 **	19.93 **	7.33	14.41 **	10.48 **	17.09 **	10.41 **	4.32 *	-4.50 *	-16.20 **	1.31
13	V-1649 × CM 500	21.53 **	-19.44 **	-14.01 **	-23.05 **	-17.97 **	-20.79 **	10.75 **	-6.66 **	-11.81 **	-19.27 **	-29.16 **	-14.36 **
14	V-1649 × SKV 50	62.29 **	-1.53	5.1	-5.94	0.26	-3.19	48.34 **	9.10 **	3.08	-5.63 **	-17.19 **	0.1
15	V-1649 × MAI 105	44.72 **	-7.08	-0.82	-11.24 **	-5.38	-8.63 *	29.32 **	-1.65	-7.07 **	-14.93 **	-25.35 **	-9.76 **
16	V-1649 × LM 13	29.28 **	-4.01	2.46	-8.31 *	-2.26	-5.62	21.94 **	0.67	-4.88 *	-12.92 **	-23.59 **	-7.63 **
17	V-1742 × CM 500	44.88 **	-14.24 **	-8.46 *	-18.08 **	-12.67 **	-15.67 **	15.69 **	-2.02	-7.43 **	-15.25 **	-25.63 **	-10.10 **
18	V-1742 × SKV 50	57.69 **	-15.52 **	-9.83 *	-19.30 **	-13.98 **	-16.93 **	46.75 **	8.54 **	2.55	-6.12 **	-17.62 **	-0.41
19	V-1742 × MAI 105	36.88 **	-21.82 **	-16.56 **	-25.33 **	-20.40 **	-23.13 **	22.16 **	-6.59 **	-11.74 **	-19.20 **	-29.10 **	-14.29 **
20	V-1742 × LM 13	26.44 **	-15.09 **	-9.37 *	-18.89 **	-13.54 **	-16.51 **	28.96 **	7.00 **	1.1	-7.45 **	-18.78 **	-1.82
21	V-2205 × CM 500	101.57 **	43.05 **	52.68 **	36.64 **	45.66 **	40.65 **	27.25 **	10.63 **	4.53 *	-4.31 *	-16.03 **	1.51
22	V-2205 × SKV 50	48.33 **	-3.07	3.46	-7.41	-1.3	-4.69	36.47 **	4.01	-1.73	-10.04 **	-21.06 **	-4.57 *
23	V-2205 × MAI 105	77.22 **	22.08 **	30.30 **	16.61 **	24.31 **	20.03 **	38.93 **	9.36 **	3.33	-5.41 **	-16.99 **	0.34
24	V-2205 × LM 13	61.58 **	27.54 **	36.12 **	21.82 **	29.86 **	25.40 **	41.67 **	20.74 **	14.08 **	4.44 *	-8.35 **	10.79 **
25	V-2232 × CM 500	28.83 **	-7.25	-1	-11.40 **	-5.56	-8.80 *	4.97 *	-3.41	-8.74 **	-16.45 **	-26.68 **	-11.37 **
26	V-2232 × SKV 50	32.41 **	-12.11 **	-6.19	-16.04 **	-10.50 **	-13.58 **	26.09 **	2.51	-3.15	-11.33 **	-22.19 **	-5.94 **
27	V-2232 × MAI 105	31.07 **	-8.35 *	-2.18	-12.46 **	-6.68	-9.89 *	17.81 **	-1.27	-6.72 **	-14.60 **	-25.06 **	-9.41 **
28	V-2232 × LM 13	56.72 **	25.32 **	33.76 **	19.71 **	27.60 **	23.22 **	32.37 **	19.54 **	12.95 **	3.4	-9.26 **	9.69 **
29	V-1410-1 × CM 500	16.32 **	-26.43 **	-21.47 **	-29.72 **	-25.09 **	-27.66 **	2.47	-16.47 **	-21.08 **	-27.75 **	-36.60 **	-23.36 **
30	V-1410-1 × SKV 50	47.49 **	-15.00 **	-9.28 *	-18.81 **	-13.45 **	-16.43 **	38.47 **	-1.98	-7.39 **	-15.22 **	-25.60 **	-10.07 **
31	V-1410-1 × MAI 105	45.37 **	-11.08 **	-5.1	-15.07 **	-9.46 *	-12.57 **	28.07 **	-6.14 **	-11.32 **	-18.81 **	-28.76 **	-13.88 **
32	V-1410-1 × LM 13	53.96 **	9.63 *	17.02 **	4.72	11.63 **	7.80 *	36.49 **	8.91 **	2.9	-5.80 **	-17.33 **	-0.07
33	V-1712-1 × CM 500	46.04 **	1.28	8.1	-3.26	3.13	-0.42	20.96 **	10.48 **	4.39 *	-4.44 *	-16.14 **	1.37
34	V-1712-1 × SKV 50	42.47 **	-9.21 *	-3.09	-13.27 **	-7.55	-10.73 **	36.45 **	10.00 **	3.93	-4.86 *	-16.51 **	0.93
35	V-1712-1 × MAI 105	84.15 **	23.87 **	32.21 **	18.32 **	26.13 **	21.79 **	33.28 **	10.78 **	4.67 *	-4.18 *	-15.91 **	1.65
36	V-1712-1 × LM 13	58.90 **	22.85 **	31.12 **	17.35 **	25.09 **	20.79 **	29.62 **	16.17 **	9.76 **	0.49	-11.82 **	6.60 **
37	V-241-2 × CM 500	41.65 **	-16.03 **	-10.37 *	-19.79 **	-14.50 **	-17.44 **	13.19 **	-3.29	-8.63 **	-16.35 **	-26.60 **	-11.27 **

Sl. no.	Hybrid	Ear height (cm)						Plant height (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	60.29 **	-13.98 **	-8.19	-17.83 **	-12.41 **	-15.42 **	58.55 **	18.46 **	11.92 **	2.46	-10.09 **	8.69 **
39	V-241-2 × MAI 105	68.71 **	-3.5	3	-7.82 *	-1.74	-5.11	28.68 **	-0.64	-6.12 **	-14.05 **	-24.58 **	-8.83 **
40	V-241-2 × LM 13	70.39 **	14.58 **	22.29 **	9.45 *	16.67 **	12.66 **	35.63 **	13.55 **	7.29 **	-1.78	-13.81 **	4.19 *
41	V-2437-1 × CM 500	39.04 **	-20.80 **	-15.47 **	-24.35 **	-19.36 **	-22.13 **	18.83 **	-4.61 *	-9.87 **	-17.49 **	-27.59 **	-12.47 **
42	V-2437-1 × SKV 50	31.67 **	-32.40 **	-27.84 **	-35.42 **	-31.16 **	-33.53 **	36.25 **	-5.24 *	-10.47 **	-18.04 **	-28.08 **	-13.05 **
43	V-2437-1 × MAI 105	82.52 **	0.17	6.92	-4.32	2	-1.51	47.30 **	6.14 **	0.28	-8.19 **	-19.44 **	-2.61
44	V-2437-1 × LM 13	63.88 **	6.39	13.56 **	1.63	8.33 *	4.61	37.34 **	7.90 **	1.95	-6.67 **	-18.10 **	-1
45	V-2459-2 × CM 500	25.41 **	-24.13 **	-19.02 **	-27.52 **	-22.74 **	-25.40 **	17.19 **	-5.88 **	-11.07 **	-18.59 **	-28.56 **	-13.64 **
46	V-2459-2 × SKV 50	65.28 **	-9.29 *	-3.18	-13.36 **	-7.64	-10.81 **	46.01 **	1.61	-4	-12.11 **	-22.88 **	-6.77 **
47	V-2459-2 × MAI 105	56.44 **	-8.61 *	-2.46	-12.70 **	-6.94	-10.14 **	61.30 **	16.29 **	9.87 **	0.58	-11.74 **	6.70 **
48	V-2459-2 × LM 13	66.99 **	14.32 **	22.02 **	9.20 *	16.41 **	12.41 **	41.65 **	11.34 **	5.20 *	-3.69	-15.49 **	2.16
49	V-2516-2 × CM 500	40.12 **	-13.55 **	-7.73	-17.43 **	-11.98 **	-15.00 **	19.02 **	-3.14	-8.49 **	-16.22 **	-26.48 **	-11.13 **
50	V-2516-2 × SKV 50	105.09 **	15.00 **	22.75 **	9.85 **	17.10 **	13.08 **	44.98 **	2.43	-3.22	-11.40 **	-22.25 **	-6.01 **
51	V-2516-2 × MAI 105	65.89 **	-1.11	5.55	-5.54	0.69	-2.77	52.09 **	11.27 **	5.13 *	-3.76 *	-15.54 **	2.1
52	V-2516-2 × LM 13	43.08 **	-0.34	6.37	-4.8	1.48	-2.01	36.24 **	8.54 **	2.55	-6.12 **	-17.62 **	-0.41
53	V-2608-1 × CM 500	-5.51	-33.16 **	-28.66 **	-36.16 **	-31.94 **	-34.28 **	5.22 *	-6.59 **	-11.74 **	-19.20 **	-29.10 **	-14.29 **
54	V-2608-1 × SKV 50	17.44 **	-23.53 **	-18.38 **	-26.95 **	-22.14 **	-24.81 **	44.91 **	13.10 **	6.86 **	-2.17	-14.15 **	3.78
55	V-2608-1 × MAI 105	44.17 **	-1.02	5.64	-5.46	0.78	-2.68	24.04 **	-0.07	-5.59 **	-13.57 **	-24.15 **	-8.31 **
56	V-2608-1 × LM 13	31.95 **	3.84	10.83 *	-0.81	5.73	2.1	22.81 **	6.93 **	1.03	-7.51 **	-18.84 **	-1.89
57	V-291-2 × CM 500	39.33 **	11.59 **	19.11 **	6.6	13.63 **	9.72 *	12.43 **	6.78 **	0.88	-7.64 **	-18.95 **	-2.03
58	V-291-2 × SKV 50	41.83 **	5.63	12.74 **	0.9	7.55	3.86	32.74 **	11.83 **	5.66 **	-3.27	-15.12 **	2.61
59	V-291-2 × MAI 105	64.79 **	28.56 **	37.22 **	22.80 **	30.90 **	26.40 **	30.55 **	13.25 **	7.00 **	-2.04	-14.04 **	3.92
60	V-291-2 × LM 13	35.06 **	18.93 **	26.93 **	13.60 **	21.09 **	16.93 **	24.97 **	16.55 **	10.12 **	0.81	-11.54 **	6.94 **
61	V-70-1 × CM 500	53.46 **	10.49 **	17.93 **	5.54	12.50 **	8.63 *	26.01 **	12.43 **	6.23 **	-2.75	-14.66 **	3.16
62	V-70-1 × SKV 50	26.89 **	-15.77 **	-10.10 *	-19.54 **	-14.24 **	-17.18 **	24.92 **	-1.95	-7.36 **	-15.19 **	-25.58 **	-10.03 **
63	V-70-1 × MAI 105	68.39 **	17.73 **	25.66 **	12.46 **	19.88 **	15.76 **	34.96 **	9.32 **	3.29	-5.44 **	-17.02 **	0.31
64	V-70-1 × LM 13	66.01 **	32.74 **	41.67 **	26.79 **	35.16 **	30.51 **	44.57 **	26.51 **	19.53 **	9.42 **	-3.98 *	16.08 **
65	CIMMYT-47 × CM 500	50.33 **	-8.78 *	-2.64	-12.87 **	-7.12	-10.31 **	31.55 **	3	-2.69	-10.91 **	-21.82 **	-5.50 **
66	CIMMYT-47 × SKV 50	69.54 **	-6.65	-0.36	-10.83 **	-4.95	-8.21 *	42.80 **	-3.52	-8.84 **	-16.55 **	-26.77 **	-11.47 **
67	CIMMYT-47 × MAI 105	81.86 **	6.56	13.74 **	1.79	8.51 *	4.78	42.55 **	-0.11	-5.62 **	-13.60 **	-24.18 **	-8.35 **
68	CIMMYT-47 × LM 13	48.42 **	1.88	8.74 *	-2.69	3.73	0.17	34.25 **	2.81	-2.87	-11.08 **	-21.97 **	-5.67 **
69	CIMMYT-5 × CM 500	79.24 **	-2.47	4.09	-6.84	-0.69	-4.11	33.90 **	1.68	-3.93	-12.05 **	-22.82 **	-6.70 **
70	CIMMYT-5 × SKV 50	74.02 **	-15.09 **	-9.37 *	-18.89 **	-13.54 **	-16.51 **	58.28 **	3.22	-2.48	-10.72 **	-21.65 **	-5.29 **
71	CIMMYT-5 × MAI 105	136.21 **	23.61 **	31.94 **	18.08 **	25.87 **	21.54 **	73.22 **	17.30 **	10.82 **	1.46	-10.97 **	7.63 **
72	CIMMYT-5 × LM 13	99.82 **	24.64 **	33.03 **	19.06 **	26.91 **	22.55 **	58.63 **	17.75 **	11.25 **	1.85	-10.63 **	8.04 **
73	CM-115 × CM 500	37.23 **	-19.69 **	-14.29 **	-23.29 **	-18.23 **	-21.04 **	21.11 **	-6.29 **	-11.46 **	-18.94 **	-28.87 **	-14.02 **
74	CM-115 × SKV 50	55.18 **	-17.90 **	-12.37 **	-21.58 **	-16.41 **	-19.28 **	32.12 **	-11.94 **	-16.80 **	-23.83 **	-33.16 **	-19.20 **

Sl. no.	Hybrid	Ear height (cm)						Plant height (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	58.75 **	-10.40 **	-4.37	-14.41 **	-8.77 *	-11.90 **	35.51 **	-6.29 **	-11.46 **	-18.94 **	-28.87 **	-14.02 **
76	CM-115 × LM 13	33.62 **	-11.17 **	-5.19	-15.15 **	-9.55 *	-12.66 **	26.88 **	-4.01	-9.30 **	-16.97 **	-27.14 **	-11.92 **
77	CM-149 × CM 500	29.64 **	-21.14 **	-15.83 **	-24.67 **	-19.70 **	-22.46 **	13.59 **	-9.77 **	-14.75 **	-21.96 **	-31.51 **	-17.21 **
78	CM-149 × SKV 50	63.52 **	-9.72 *	-3.64	-13.76 **	-8.07 *	-11.23 **	20.37 **	-17.30 **	-21.86 **	-28.47 **	-37.23 **	-24.12 **
79	CM-149 × MAI 105	78.48 **	4.86	11.92 **	0.16	6.77	3.1	46.05 **	4.01	-1.73	-10.04 **	-21.06 **	-4.57 *
80	CM-149 × LM 13	11.16 *	-23.53 **	-18.38 **	-26.95 **	-22.14 **	-24.81 **	18.94 **	-7.56 **	-12.66 **	-20.05 **	-29.84 **	-15.18 **
81	CML-165 × CM 500	89.85 **	8.44 *	15.74 **	3.58	10.42 **	6.62	33.63 **	4.53 *	-1.24	-9.59 **	-20.66 **	-4.09 *
82	CML-165 × SKV 50	78.95 **	-7.84 *	-1.64	-11.97 **	-6.16	-9.39 *	64.24 **	10.86 **	4.74 *	-4.11 *	-15.86 **	1.72
83	CML-165 × MAI 105	92.23 **	5.8	12.92 **	1.06	7.73	4.02	55.85 **	9.10 **	3.08	-5.63 **	-17.19 **	0.1
84	CML-165 × LM 13	61.78 **	5.29	12.37 **	0.57	7.2	3.52	41.86 **	8.54 **	2.55	-6.12 **	-17.62 **	-0.41
85	CML-166 × CM 500	43.54 **	-11.51 **	-5.55	-15.47 **	-9.90 *	-12.99 **	22.16 **	5.99 **	0.14	-8.32 **	-19.55 **	-2.75
86	CML-166 × SKV 50	81.98 **	1.96	8.83 *	-2.61	3.82	0.25	36.64 **	3.89	-1.84	-10.14 **	-21.14 **	-4.67 *
87	CML-166 × MAI 105	81.47 **	8.10 *	15.38 **	3.26	10.07 *	6.29	33.52 **	4.87 *	-0.92	-9.29 **	-20.40 **	-3.78
88	CML-166 × LM 13	61.66 **	12.53 **	20.11 **	7.49 *	14.58 **	10.65 **	41.71 **	20.52 **	13.87 **	4.24 *	-8.53 **	10.58 **
89	CML-169 × CM 500	55.46 **	-5.63	0.73	-9.85 **	-3.91	-7.21	29.78 **	1.98	-3.64	-11.79 **	-22.59 **	-6.42 **
90	CML-169 × SKV 50	77.96 **	-1.96	4.64	-6.35	-0.17	-3.6	49.52 **	1.46	-4.14 *	-12.24 **	-22.99 **	-6.90 **
91	CML-169 × MAI 105	57.77 **	-7.5	-1.27	-11.64 **	-5.82	-9.05 *	40.58 **	-1.09	-6.54 **	-14.44 **	-24.92 **	-9.24 **
92	CML-169 × LM 13	59.40 **	9.46 *	16.83 **	4.56	11.46 **	7.63	40.90 **	8.31 **	2.33	-6.31 **	-17.79 **	-0.62
93	CML-172 × CM 500	74.52 **	24.38 **	32.76 **	18.81 **	26.65 **	22.30 **	19.28 **	13.89 **	7.61 **	-1.49	-13.55 **	4.50 *
94	CML-172 × SKV 50	53.75 **	0.94	7.73	-3.58	2.78	-0.75	46.40 **	24.07 **	17.23 **	7.32 **	-5.83 **	13.84 **
95	CML-172 × MAI 105	63.75 **	13.30 **	20.93 **	8.22 *	15.36 **	11.40 **	37.22 **	19.73 **	13.12 **	3.56	-9.12 **	9.86 **
96	CML-172 × LM 13	49.88 **	18.76 **	26.75 **	13.44 **	20.92 **	16.76 **	30.17 **	22.05 **	15.32 **	5.57 **	-7.36 **	11.99 **
97	CML-359 × CM 500	73.85 **	23.36 **	31.67 **	17.83 **	25.61 **	21.29 **	29.82 **	17.07 **	10.61 **	1.26	-11.14 **	7.42 **
98	CML-359 × SKV 50	34.52 **	-12.11 **	-6.19	-16.04 **	-10.50 **	-13.58 **	33.77 **	6.29 **	0.42	-8.06 **	-19.32 **	-2.47
99	CML-359 × MAI 105	46.67 **	1.02	7.83	-3.5	2.86	-0.67	25.98 **	3.26	-2.44	-10.69 **	-21.63 **	-5.26 **
100	CML-359 × LM 13	39.02 **	9.72 *	17.11 **	4.8	11.72 **	7.88 *	24.16 **	9.85 **	3.78	-4.99 **	-16.62 **	0.79
101	CML-411 × CM 500	96.57 **	18.76 **	26.75 **	13.44 **	20.92 **	16.76 **	31.06 **	8.99 **	2.97	-5.73 **	-17.28 **	0
102	CML-411 × SKV 50	61.65 **	-11.42 **	-5.46	-15.39 **	-9.81 *	-12.91 **	45.98 **	5.73 **	-0.11	-8.55 **	-19.75 **	-2.99
103	CML-411 × MAI 105	63.10 **	-4.86	1.55	-9.12 *	-3.13	-6.45	38.90 **	4.08	-1.66	-9.97 **	-21.00 **	-4.50 *
104	CML-411 × LM 13	79.04 **	22.42 **	30.66 **	16.94 **	24.65 **	20.37 **	43.15 **	16.59 **	10.15 **	0.84	-11.51 **	6.97 **
105	HKI-193-1 × CM 500	24.77 **	25.15 **	-20.11 **	-28.50 **	-23.78 **	-26.40 **	10.67 **	-4.12	-9.41 **	-17.07 **	-27.22 **	-12.02 **
106	HKI-193-1 × SKV 50	20.41 **	-34.53 **	-30.12 **	-37.46 **	-33.33 **	-35.62 **	24.64 **	-5.39 *	-10.61 **	-18.17 **	-28.19 **	-13.19 **
107	HKI-193-1 × MAI 105	46.62 **	-15.09 **	-9.37 *	-18.89 **	-13.54 **	-16.51 **	37.37 **	7.71 **	1.77	-6.83 **	-18.24 **	-1.17
108	HKI-193-1 × LM 13	46.03 **	-0.77	5.91	-5.21	1.04	-2.43	35.08 **	14.71 **	8.38 **	-0.78	-12.93 **	5.26 **
109	HKI-193-2 × CM 500	14.78 **	-30.69 **	-26.02 **	-33.79 **	-29.43 **	-31.85 **	10.34 **	-10.67 **	-15.60 **	-22.73 **	-32.20 **	-18.04 **
110	HKI-193-2 × SKV 50	99.24 **	9.12 *	16.47 **	4.23	11.11 **	7.29	53.58 **	7.86 **	1.91	-6.70 **	-18.13 **	-1.03
111	HKI-193-2 × MAI 105	54.99 **	-9.63 *	-3.55	-13.68 **	-7.99 *	-11.15 **	35.32 **	-1.57	-7.00 **	14.86 **	-25.29 **	-9.69 **

Sl. no.	Hybrid	Ear height (cm)						Plant height (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	57.78 **	7.84 *	15.10 **	3.01	9.81 *	6.04	40.18 **	11.08 **	4.95 *	-3.92 *	-15.69 **	1.92
113	LTP-1 × CM 500	29.87 **	-4.01	2.46	-8.31 *	-2.26	-5.62	16.86 **	1.2	-4.39 *	-12.47 **	-23.19 **	-7.15 **
114	LTP-1 × SKV 50	70.27 **	16.28 **	24.11 **	11.07 **	18.40 **	14.33 **	55.49 **	17.97 **	11.46 **	2.04	-10.46 **	8.24 **
115	LTP-1 × MAI 105	57.96 **	13.47 **	21.11 **	8.39 *	15.54 **	11.57 **	37.00 **	7.38 **	1.45	-7.12 **	-18.50 **	-1.48
116	LTP-1 × LM 13	39.42 **	14.15 **	21.84 **	9.04 *	16.23 **	12.24 **	28.00 **	8.65 **	2.65	-6.02 **	-17.53 **	-0.31
117	MAI-11 5 × CM 500	17.66 **	-26.85 **	-21.93 **	-30.13 **	-25.52 **	-28.08 **	7.82 **	-11.31 **	-16.20 **	-23.28 **	-32.68 **	-18.62 **
118	MAI-115 × SKV 50	62.37 **	-8.18 *	-2	-12.30 **	-6.51	-9.72 *	37.08 **	-1.95	-7.36 **	-15.19 **	-25.58 **	-10.03 **
119	MAI-116 × MAI 105	42.45 **	-14.41 **	-8.64 *	-18.24 **	-12.85 **	-15.84 **	27.63 **	-5.50 *	-10.72 **	-18.26 **	-28.28 **	-13.29 **
120	MAI-117 × LM 13	70.55 **	19.61 **	27.66 **	14.25 **	21.79 **	17.60 **	40.05 **	12.80 **	6.58 **	-2.43	-14.38 **	3.5
121	MAI-107 × CM 500	49.04 **	0.09	6.82	-4.4	1.91	-1.59	21.05 **	4.19	-1.56	-9.88 **	-20.92 **	-4.40 *
122	MAI-107 × SKV 50	34.66 **	-17.14 **	-11.56 **	-20.85 **	-15.63 **	-18.52 **	30.03 **	-2.02	-7.43 **	-15.25 **	-25.63 **	-10.10 **
123	MAI-107 × MAI 105	36.64 **	-11.08 **	-5.1	-15.07 **	-9.46 *	-12.57 **	42.58 **	11.01 **	4.88 *	-3.98 *	-15.74 **	1.86
124	MAI-107 × LM 13	32.67 **	-0.34	6.37	-4.8	1.48	-2.01	23.73 **	4.38 *	-1.38	-9.72 **	-20.77 **	-4.23 *
125	MAI-109 × CM 500	70.16 **	-1.11	5.55	-5.54	0.69	-2.77	22.49 **	2.02	-3.61	-11.76 **	-22.56 **	-6.39 **
126	MAI-109 × SKV 50	56.05 **	-18.07 **	-12.56 **	-21.74 **	-16.58 **	-19.45 **	33.54 **	-3.11	-8.45 **	-16.19 **	-26.46 **	-11.10 **
127	MAI-109 × MAI 105	62.02 **	-9.21 *	-3.09	-13.27 **	-7.55	-10.73 **	32.77 **	-0.34	-5.84 **	-13.80 **	-24.35 **	-8.55 **
128	MAI-109 × LM 13	64.36 **	8.61 *	15.92 **	3.75	10.59 **	6.79	51.32 **	23.44 **	16.63 **	6.77 **	-6.31 **	13.26 **
129	MAI-112 × CM 500	13.91 **	-21.14 **	-15.83 **	-24.67 **	-19.70 **	-22.46 **	13.99 **	-1.76	-7.18 **	-15.03 **	-25.43 **	-9.86 **
130	MAI-112 × SKV 50	17.27 **	-25.40 **	-20.38 **	-28.75 **	-24.05 **	-26.66 **	38.49 **	4.49 *	-1.27	-9.62 **	-20.69 **	-4.12 *
131	MAI-112 × MAI 105	64.03 **	10.14 *	17.56 **	5.21	12.15 **	8.30 *	54.35 **	20.33 **	13.69 **	4.08 *	-8.67 **	10.41 **
132	MAI-112 × LM 13	35.73 **	4.77	11.83 **	0.08	6.68	3.02	24.15 **	4.87 *	-0.92	-9.29 **	-20.40 **	-3.78
133	MAI-121 × CM 500	28.14 **	-26.09 **	-21.11 **	-29.40 **	-24.74 **	-27.33 **	21.91 **	-0.15	-5.66 **	-13.63 **	-24.21 **	-8.38 **
134	MAI-121 × SKV 50	27.07 **	-33.84 **	-29.39 **	-36.81 **	-32.64 **	-34.95 **	23.14 **	-12.35 **	-17.19 **	-24.19 **	-33.48 **	-19.58 **
135	MAI-121 × MAI 105	61.31 **	-10.32 **	-4.28	-14.33 **	-8.68 *	-11.82 **	34.40 **	-0.97	-6.44 **	-14.35 **	-24.84 **	-9.14 **
136	MAI-121 × LM 13	27.15 **	-16.54 **	-10.92 **	-20.28 **	-15.02 **	-17.94 **	21.11 **	-2.88	-8.24 **	-16.00 **	-26.29 **	-10.89 **
137	MAI-137 × CM 500	74.23 **	6.56	13.74 **	1.79	8.51 *	4.78	35.29 **	4.53 *	-1.24	-9.59 **	-20.66 **	-4.09 *
138	MAI-137 × SKV 50	65.30 **	-8.18 *	-2	-12.30 **	-6.51	-9.72 *	55.08 **	3.18	-2.51	-10.75 **	-21.68 **	-5.32 **
139	MAI-137 × MAI 105	90.60 **	12.62 **	20.20 **	7.57 *	14.67 **	10.73 **	52.71 **	5.43 *	-0.39	-8.81 **	-19.98 **	-3.26
140	MAI-137 × LM 13	51.69 **	4.86	11.92 **	0.16	6.77	3.1	44.76 **	9.36 **	3.33	-5.41 **	-16.99 **	0.34
141	MAI-27 × CM 500	46.15 **	-15.86 **	-10.19 *	-19.63 **	-14.32 **	-17.27 **	6.26 **	-13.14 **	-17.93 **	-24.87 **	-34.07 **	-20.30 **
142	MAI-27 × SKV 50	40.79 **	-26.85 **	-21.93 **	-30.13 **	-25.52 **	-28.08 **	24.27 **	-11.76 **	-16.63 **	-23.67 **	-33.02 **	-19.03 **
143	MAI-27 × MAI 105	17.06 **	-35.04 **	-30.66 **	-37.95 **	-33.85 **	-36.13 **	4.19	-23.40 **	-27.63 **	-33.74 **	-41.86 **	-29.71 **
144	MAI-27 × LM 13	40.23 **	-8.10 *	-1.91	-12.21 **	-6.42	-9.64 *	26.60 **	1.31	-4.28 *	-12.37 **	-23.10 **	-7.04 **
145	MAI-29 × CM 500	32.21 **	-19.27 **	-13.83 **	-22.88 **	-17.80 **	-20.62 **	16.61 **	-3.03	-8.38 **	-16.13 **	-26.40 **	-11.03 **
146	MAI-29 × SKV 50	37.31 **	-23.87 **	-18.74 **	-27.28 **	-22.48 **	-25.15 **	24.89 **	-9.55 **	-14.54 **	-21.76 **	-31.34 **	-17.00 **
147	MAI-29 × MAI 105	54.66 **	-8.78 *	-2.64	-12.87 **	-7.12	-10.31 **	29.01 **	-3.33	-8.67 **	-16.39 **	-26.63 **	-11.30 **
148	MAI-29 × LM 13	34.62 **	-7.08	-0.82	-11.24 **	-5.38	-8.63 *	23.99 **	0.97	-4.60 *	-12.66 **	-23.36 **	-7.35 **

Sl. no.	Hybrid	Ear height (cm)						Plant height (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	46.28 **	-19.10 **	-13.65 **	-22.72 **	-17.62 **	-20.45 **	15.82 **	-5.54 *	-10.75 **	-18.30 **	-28.30 **	-13.33 **
150	MAI-35 × SKV 50	61.28 **	-19.86 **	-14.47 **	-23.45 **	-18.40 **	-21.21 **	43.72 **	1.8	-3.82	-11.95 **	-22.73 **	-6.60 **
151	MAI-35 × MAI 105	67.53 **	-10.83 **	-4.82	-14.82 **	-9.20 *	-12.32 **	41.52 **	3.78	-1.95	-10.23 **	-21.23 **	-4.77 *
152	MAI-35 × LM 13	35.55 **	-14.24 **	-8.46 *	-18.08 **	-12.67 **	-15.67 **	24.31 **	-0.75	-6.23 **	-14.15 **	-24.67 **	-8.93 **
153	MAI-45 × CM 500	-0.4	-45.95 **	-42.31 **	-48.37 **	-44.97 **	-46.86 **	18.91 **	-6.18 **	-11.35 **	-18.85 **	-28.79 **	-13.91 **
154	MAI-45 × SKV 50	32.31 **	-35.64 **	-31.30 **	-38.52 **	-34.46 **	-36.71 **	36.63 **	-6.85 **	-11.99 **	-19.43 **	-29.30 **	-14.53 **
155	MAI-45 × MAI 105	99.96 **	4.35	11.37 **	-0.33	6.25	2.6	45.19 **	2.62	-3.04	-11.24 **	-22.11 **	-5.84 **
156	MAI-45 × LM 13	50.43 **	-6.39	-0.09	-10.59 **	-4.69	-7.96 *	35.72 **	4.75 *	-1.03	-9.39 **	-20.49 **	-3.88
157	MAI-48 × CM 500	33.45 **	-25.15 **	-20.11 **	-28.50 **	-23.78 **	-26.40 **	12.34 **	-8.80 **	-13.83 **	-21.11 **	-30.78 **	-16.32 **
158	MAI-48 × SKV 50	30.24 **	-34.27 **	-29.85 **	-37.21 **	-33.07 **	-35.37 **	12.76 **	-20.55 **	-24.94 **	-31.28 **	-39.70 **	-27.10 **
159	MAI-48 × MAI 105	60.85 **	-13.13 **	-7.28	-17.02 **	-11.55 **	-14.59 **	22.12 **	-10.89 **	-15.81 **	-22.93 **	-32.37 **	-18.24 **
160	MAI-48 × LM 13	64.91 **	5.63	12.74 **	0.9	7.55	3.86	32.80 **	5.54 *	-0.28	-8.71 **	-19.89 **	-3.16
161	MAI-706 × CM 500	18.58 **	-11.76 **	-5.82	-15.72 **	-10.16 *	-13.24 **	1.14	-3.29	-8.63 **	-16.35 **	-26.60 **	-11.27 **
162	MAI-706 × SKV 50	20.71 **	-16.97 **	-11.37 **	-20.68 **	-15.45 **	-18.36 **	18.91 **	0.94	-4.63 *	-12.69 **	-23.39 **	-7.39 **
163	MAI-706 × MAI 105	27.18 **	-8.01 *	-1.82	-12.13 **	-6.34	-9.56 *	13.53 **	-0.79	-6.26 **	-14.18 **	-24.69 **	-8.97 **
164	MAI-706 × LM 13	26.06 **	3.84	10.83 *	-0.81	5.73	2.1	9.53 **	2.85	-2.83	-11.04 **	-21.94 **	-5.63 **
165	SKV-70 × CM 500	35.77 **	-17.65 **	-12.10 **	-21.34 **	-16.15 **	-19.03 **	15.94 **	1.2	-4.39 *	-12.47 **	-23.19 **	-7.15 **
166	SKV-70 × SKV 50	54.12 **	-15.17 **	-9.46 *	-18.97 **	-13.63 **	-16.60 **	20.31 **	-7.90 **	-12.98 **	-20.34 **	-30.09 **	-15.49 **
167	SKV-70 × MAI 105	51.07 **	-11.51 **	-5.55	-15.47 **	-9.90 *	-12.99 **	24.59 **	-1.5	-6.93 **	-14.80 **	-25.23 **	-9.62 **
168	SKV-70 × LM 13	55.55 **	6.73	13.92 **	1.95	8.68 *	4.95	31.30 **	12.35 **	6.15 **	-2.82	-14.72 **	3.09
169	V-632-112 × CM 500	64.27 **	14.66 **	22.38 **	9.53 *	16.75 **	12.74 **	27.78 **	10.56 **	4.46 *	-4.37 *	-16.08 **	1.44
170	V-632-112 × SKV 50	38.41 **	-11.17 **	-5.19	-15.15 **	-9.55 *	-12.66 **	35.10 **	2.4	-3.25	-11.43 **	-22.28 **	-6.05 **
171	V-632-112 × MAI 105	55.10 **	5.03	12.10 **	0.33	6.94	3.27	33.26 **	4.34 *	-1.41	-9.75 **	-20.80 **	-4.26 *
172	V-632-112 × LM 13	41.75 **	10.23 **	17.65 **	5.29	12.24 **	8.38 *	29.57 **	9.88 **	3.82	-4.95 **	-16.60 **	0.82
173	V-632-67 × CM 500	48.81 **	0.94	7.73	-3.58	2.78	-0.75	22.28 **	5.88 **	0.04	-8.42 **	-19.64 **	-2.85
174	V-632-67 × SKV 50	48.68 **	-7.5	-1.27	-11.64 **	-5.82	-9.05 *	35.33 **	2.66	-3.01	-11.20 **	-22.08 **	-5.81 **
175	V-632-67 × MAI 105	53.39 **	0.85	7.64	-3.66	2.69	-0.84	28.23 **	0.49	-5.06 *	-13.08 **	-23.73 **	-7.80 **
176	V-632-67 × LM 13	63.55 **	23.96 **	32.30 **	18.40 **	26.22 **	21.88 **	34.37 **	14.04 **	7.75 **	-1.36	-13.44 **	4.64 *
177	Z-50-3 × CM 500	45.05 **	-11.94 **	-6.01	-15.88 **	-10.33 *	-13.41 **	23.46 **	2.7	-2.97	-11.17 **	-22.05 **	-5.77 **
178	Z-50-3 × SKV 50	80.89 **	-0.34	6.37	-4.8	1.48	-2.01	42.72 **	3.41	-2.3	-10.56 **	-21.51 **	-5.12 *
179	Z-50-3 × MAI 105	76.95 **	3.75	10.74 *	-0.9	5.64	2.01	51.69 **	13.70 **	7.43 **	-1.65	-13.70 **	4.33 *
180	Z-50-3 × LM 13	59.89 **	9.80 *	17.20 **	4.89	11.81 **	7.96 *	45.73 **	18.72 **	12.17 **	2.69	-9.89 **	8.93 **
181	Z-51-1 × CM 500	20.00 **	-19.95 **	-14.56 **	-23.53 **	-18.49 **	-21.29 **	15.55 **	-2.02	-7.43 **	-15.25 **	-25.63 **	-10.10 **
182	Z-51-1 × SKV 50	52.94 **	-6.56	-0.27	-10.75 **	-4.86	-8.13 *	38.15 **	2.32	-3.33	-11.50 **	-22.34 **	-6.11 **
183	Z-51-1 × MAI 105	67.26 **	8.10 *	15.38 **	3.26	10.07 *	6.29	45.12 **	11.12 **	4.99 *	-3.89 *	-15.66 **	1.96
184	Z-51-1 × LM 13	56.52 **	16.88 **	24.75 **	11.64 **	19.01 **	14.92 **	33.79 **	11.16 **	5.02 *	-3.85 *	-15.63 **	1.99
185	Z-51-6 × CM 500	70.96 **	6.65	13.83 **	1.87	8.59 *	4.86	30.38 **	9.17 **	3.15	-5.57 **	-17.14 **	0.17

Sl. no.	Hybrid	Ear height (cm)						Plant height (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	46.88 **	-16.62 **	-11.01 **	-20.36 **	-15.10 **	-18.02 **	44.06 **	5.17 *	-0.64	-9.03 **	-20.18 **	-3.5
187	Z-51-6 × MAI 105	86.47 **	12.45 **	20.02 **	7.41	14.50 **	10.56 **	43.89 **	8.65 **	2.65	-6.02 **	-17.53 **	-0.31
188	Z-51-6 × LM 13	44.94 **	1.96	8.83 *	-2.61	3.82	0.25	29.96 **	6.59 **	0.71	-7.80 **	-19.10 **	-2.2
189	Z-52-29 × CM 500	34.85 **	-19.52 **	-14.10 **	-23.13 **	-18.06 **	-20.87 **	18.83 **	1.31	-4.28 *	-12.37 **	-23.10 **	-7.04 **
190	Z-52-29 × SKV 50	72.36 **	-6.82	-0.55	-10.99 **	-5.12	-8.38 *	37.85 **	2.73	-2.94	-11.14 **	-22.02 **	-5.74 **
191	Z-52-29 × MAI 105	45.05 **	-16.45 **	-10.83 *	-20.20 **	-14.93 **	-17.85 **	22.82 **	-5.39 *	-10.61 **	-18.17 **	-28.19 **	-13.19 **
192	Z-52-29 × LM 13	-6.1	-36.49 **	-32.21 **	-39.33 **	-35.33 **	-37.55 **	-7.32 **	-22.58 **	-26.85 **	-33.03 **	-41.23 **	-28.96 **
193	Z-56-1 × CM 500	28.18 **	-23.19 **	-18.02 **	-26.63 **	-21.79 **	-24.48 **	13.87 **	-2.02	-7.43 **	-15.25 **	-25.63 **	-10.10 **
194	Z-56-1 × SKV 50	73.31 **	-5.88	0.45	-10.10 **	-4.17	-7.46	48.87 **	12.13 **	5.94 **	-3.01	-14.89 **	2.89
195	Z-56-1 × MAI 105	38.84 **	-19.69 **	-14.29 **	-23.29 **	-18.23 **	-21.04 **	19.11 **	-7.30 **	-12.42 **	-19.82 **	-29.64 **	-14.94 **
196	Z-56-1 × LM 13	0.59	-31.71 **	-27.12 **	-34.77 **	-30.47 **	-32.86 **	3.08	-13.07 **	-17.86 **	-24.81 **	-34.02 **	-20.23 **
197	Z-56-8 × CM 500	41.17 **	-21.06 **	-15.74 **	-24.59 **	-19.62 **	-22.38 **	15.85 **	-4.68 *	-9.94 **	-17.55 **	-27.65 **	-12.54 **
198	Z-56-8 × SKV 50	68.80 **	-15.09 **	-9.37 *	-18.89 **	-13.54 **	-16.51 **	50.54 **	7.71 **	1.77	-6.83 **	-18.24 **	-1.17
199	Z-56-8 × MAI 105	48.20 **	-20.20 **	-14.83 **	-23.78 **	-18.75 **	-21.54 **	46.77 **	8.69 **	2.69	-5.99 **	-17.50 **	-0.27
200	Z-56-8 × LM 13	71.75 **	9.72 *	17.11 **	4.8	11.72 **	7.88 *	44.86 **	16.70 **	10.26 **	0.94	-11.42 **	7.08 **
201	Z-60-22 × CM 500	24.09 **	-14.24 **	-8.46 *	-18.08 **	-12.67 **	-15.67 **	26.52 **	9.77 **	3.71	-5.05 **	-16.68 **	0.72
202	Z-60-22 × SKV 50	27.96 **	-18.76 **	-13.28 **	-22.39 **	-17.27 **	-20.12 **	33.04 **	1.16	-4.42 *	-12.50 **	-23.22 **	-7.18 **
203	Z-60-22 × MAI 105	45.37 **	-2.56	4	-6.92	-0.78	-4.19	31.66 **	3.41	-2.3	-10.56 **	-21.51 **	-5.12 *
204	Z-60-22 × LM 13	23.33 **	-4.94	1.46	-9.20 *	-3.21	-6.54	25.28 **	6.55 **	0.67	-7.84 **	-19.12 **	-2.23
205	Z-62-55 × CM 500	62.62 **	5.12	12.19 **	0.41	7.03	3.35	24.27 **	2.17	-3.47	-11.63 **	-22.45 **	-6.25 **
206	Z-62-55 × SKV 50	70.15 **	0.43	7.19	-4.07	2.26	-1.26	47.74 **	5.62 *	-0.21	-8.65 **	-19.84 **	-3.09
207	Z-62-55 × MAI 105	49.35 **	-6.56	-0.27	-10.75 **	-4.86	-8.13 *	42.53 **	5.47 *	-0.35	-8.78 **	-19.95 **	-3.23
208	Z-62-55 × LM 13	57.11 **	14.07 **	21.75 **	8.96 *	16.15 **	12.15 **	33.80 **	7.71 **	1.77	-6.83 **	-18.24 **	-1.17
209	Z-62-67 × CM 500	-18.26 **	-48.85 **	-45.40 **	-51.14 **	-47.92 **	-49.71 **	-13.18 **	-25.08 **	-29.22 **	-35.20 **	-43.14 **	-31.26 **
210	Z-62-67 × SKV 50	40.55 **	-19.95 **	-14.56 **	-23.53 **	-18.49 **	-21.29 **	19.65 **	-9.58 **	-14.57 **	-21.79 **	-31.37 **	-17.04 **
211	Z-62-67 × MAI 105	62.20 **	-1.88	4.73	-6.27	-0.09	-3.52	26.79 **	-1.01	-6.47 **	-14.38 **	-24.87 **	-9.17 **
212	Z-62-67 × LM 13	27.15 **	-10.32 **	-4.28	-14.33 **	-8.68 *	-11.82 **	20.80 **	2.17	-3.47	-11.63 **	-22.45 **	-6.25 **
213	Z-63-30 × CM 500	23.92 **	-19.18 **	-13.74 **	-22.80 **	-17.71 **	-20.54 **	27.60 **	3.56	-2.16	-10.43 **	-21.40 **	-4.98 *
214	Z-63-30 × SKV 50	64.93 **	-1.71	4.91	-6.11	0.09	-3.35	45.91 **	2.77	-2.9	-11.11 **	-21.99 **	-5.70 **
215	Z-63-30 × MAI 105	61.63 **	2.05	8.92 *	-2.52	3.91	0.34	34.79 **	-1.68	-7.11 **	-14.96 **	-25.38 **	-9.79 **
216	Z-63-30 × LM 13	50.28 **	9.97 *	17.38 **	5.05	11.98 **	8.13 *	37.23 **	9.02 **	3.01	-5.70 **	-17.25 **	0.03
Range		-18.26	-48.85	-45.4	-51.14	-47.92	-49.71	-13.18	-25.08	-29.22	-35.2	-43.14	-31.26
		136.21	43.05	52.68	36.64	45.66	40.65	73.22	27.22	20.2	10.04	-3.44	16.73
S. Em. ±		3.3456	3.8631					4.2022	4.8523				
C.D. 5%		6.5695	7.5858					8.2516	9.5282				
C.D. 1%		8.6432	9.9804					10.8563	12.5358				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Ear weight per plant (g)						Cob weight per plant (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	33.69 **	-0.54	-1.15	-26.83 **	-18.80 *	-21.46 **	43.75 **	4.36	-2.67	-23.36 **	-18.15 *	-15.28 *
2	V-1154 × SKV 50	68.51 **	4.25	3.6	-23.31 **	-14.89	-17.68 *	67.11 **	0.84	-5.95	-25.95 **	-20.91 **	-18.13 *
3	V-1154 × MAI 105	37.07 **	13.08	12.38	-16.81 *	-7.68	-10.7	37.35 **	8	0.73	-20.69 **	-15.30 *	-12.32
4	V-1154 × LM 13	45.00 **	13.14	12.45	-16.77 *	-7.63	-10.65	54.95 **	15	7.26	-15.55 *	-9.81	-6.64
5	V-1168 × CM 500	37.89 **	-11.89	-12.43	-35.18 **	-28.07 **	-30.42 **	37.97 **	-11.05	-17.04 *	-34.68 **	-30.24 **	-27.78 **
6	V-1168 × SKV 50	78.39 **	-8.36	-8.93	-32.59 **	-25.19 **	-27.64 **	57.81 **	-17.6	-23.15 **	-39.49 **	-35.37 **	-33.10 **
7	V-1168 × MAI 105	9.54	-21.13 *	-21.62 *	-41.98 **	-35.61 **	-37.72 **	8.48	-23.52 **	-28.67 **	-43.83 **	-40.02 **	-37.91 **
8	V-1168 × LM 13	64.43 **	11.05	10.36	-18.31 *	-9.34	-12.31	68.02 **	11.04	3.56	-18.46 **	-12.92	-9.85
9	V-1522 × CM 500	52.91 **	-0.88	-1.49	-27.08 **	-19.08 *	-21.72 **	67.12 **	-1.73	-8.34	-27.83 **	-22.93 **	-20.22 **
10	V-1522 × SKV 50	78.35 **	-6.73	-7.31	-31.39 **	-23.86 **	-26.35 **	96.79 **	-8.4	-14.56	-32.73 **	-28.16 **	-25.63 **
11	V-1522 × MAI 105	36.18 **	-0.7	-1.31	-26.95 **	-18.93 *	-21.58 **	45.43 **	-5.7	-12.05	-30.75 **	-26.05 **	-23.44 **
12	V-1522 × LM 13	74.30 **	19.32	18.59	-12.22	-2.59	-5.77	90.04 **	14.82	7.09	-15.68 *	-9.95	-6.78
13	V-1649 × CM 500	29.77 *	-20.61 *	-21.10 *	-41.59 **	-35.18 **	-37.30 **	35.16 **	-18.96 *	-24.41 **	-40.48 **	-36.44 **	-34.20 **
14	V-1649 × SKV 50	136.31 **	14.96	14.25	-15.43 *	-6.15	-9.22	120.51 **	5.2	-1.88	-22.74 **	-17.49 *	-14.59 *
15	V-1649 × MAI 105	84.47 **	27.80 **	27.01 **	-5.99	4.33	0.92	71.20 **	12.98	5.38	-17.03 **	-11.39	-8.27
16	V-1649 × LM 13	124.62 **	45.59 **	44.69 **	7.1	18.86 *	14.97	126.79 **	39.66 **	30.26 **	2.56	9.53	13.38
17	V-1742 × CM 500	56.29 **	-26.55 **	-27.00 **	-45.97 **	-40.04 **	-42.00 **	71.18 **	-18.88 *	-24.34 **	-40.43 **	-36.38 **	-34.14 **
18	V-1742 × SKV 50	172.55 **	-6.07	-6.65	-30.90 **	-23.32 **	-25.83 **	165.45 **	-6.74	-13.02	-31.51 **	-26.86 **	-24.29 **
19	V-1742 × MAI 105	42.80 **	-21.33 *	-21.82 *	-42.13 **	-35.77 **	-37.87 **	56.27 **	-16.52	-22.14 **	-38.69 **	-34.53 **	-32.22 **
20	V-1742 × LM 13	104.54 **	3.56	2.92	-23.82 **	-15.46	-18.22 *	118.45 **	7.05	-0.15	-21.38 **	-16.04 *	-13.09
21	V-2205 × CM 500	53.82 **	-17.68	-18.19	-39.44 **	-32.79 **	-34.99 **	48.53 **	-17.87 *	-23.40 **	-39.69 **	-35.59 **	-33.32 **
22	V-2205 × SKV 50	111.67 **	-13.25	-13.78	-36.18 **	-29.18 **	-31.49 **	93.99 **	-16.51	-22.13 **	-38.69 **	-34.52 **	-32.22 **
23	V-2205 × MAI 105	75.38 **	8.06	7.39	-20.51 **	-11.78	-14.67	70.11 **	4.32	-2.7	-23.39 **	-18.18 **	-15.31 *
24	V-2205 × LM 13	81.06 **	3.48	2.84	-23.88 **	-15.52	-18.28 *	82.25 **	3.72	-3.26	-23.83 **	-18.66 **	-15.80 *
25	V-2232 × CM 500	34.15 **	-9.08	-9.64	-33.12 **	-25.77 **	-28.20 **	29.66 **	-5.67	-12.02	-30.73 **	-26.02 **	-23.42 **
26	V-2232 × SKV 50	32.32 *	-26.91 **	-27.36 **	-46.23 **	-40.33 **	-42.28 **	31.64 *	-20.37 *	-25.73 **	-41.52 **	-37.54 **	-35.35 **
27	V-2232 × MAI 105	45.02 **	10.03	9.35	-19.06 **	-10.17	-13.11	41.60 **	11.56	4.05	-18.07 **	-12.51	-9.43
28	V-2232 × LM 13	75.11 **	25.04 *	24.27 *	-8.01	2.08	-1.25	74.18 **	29.53 **	20.81 *	-4.88	1.59	5.16
29	V-1410-1 × CM 500	23.01	-29.79 **	-30.22 **	-48.35 **	-42.68 **	-44.55 **	18.28	-32.68 **	-37.21 **	-50.56 **	-47.20 **	-45.35 **
30	V-1410-1 × SKV 50	88.86 **	-15.88	-16.39	-38.11 **	-31.32 **	-33.57 **	69.53 **	-24.29 **	-29.38 **	-44.40 **	-40.62 **	-38.53 **
31	V-1410-1 × MAI 105	72.43 **	12.38	11.68	-17.33 *	-8.26	-11.26	66.54 **	4.83	-2.22	-23.01 **	-17.78 *	-14.89 *
32	V-1410-1 × LM 13	97.91 **	20.15 *	19.41 *	-11.61	-1.91	-5.12	97.96 **	15.87	8.07	-14.91 *	-9.13	-5.93
33	V-1712-1 × CM 500	66.29 **	-2.09	-2.7	-27.98 **	-20.07 *	-22.68 **	72.19 **	3.67	-3.31	-23.87 **	-18.70 **	-15.84 *
34	V-1712-1 × SKV 50	126.65 **	5.04	4.39	-22.73 **	-14.25	-17.05 *	115.43 **	3.3	-3.65	-24.14 **	-18.98 **	-16.14 *
35	V-1712-1 × MAI 105	70.11 **	13.92	13.22	-16.19 *	-6.99	-10.04	65.62 **	9.7	2.32	-19.44 **	-13.96 *	-10.93
36	V-1712-1 × LM 13	73.02 **	8.15	7.49	-20.44 **	-11.7	-14.59	75.03 **	8.21	0.92	-20.54 **	-15.14 *	-12.15
37	V-241-2 × CM 500	29.22	-35.04 **	-35.45 **	-52.22 **	-46.97 **	-48.70 **	30.21 *	-30.36 **	-35.05 **	-48.86 **	-45.38 **	-43.46 **

Sl. no.	Hybrid	Ear weight per plant (g)						Cob weight per plant (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	142.58 **	-8.47	-9.03	-32.66 **	-25.27 **	-27.72 **	123.52 **	-7.85	-14.05	-32.33 **	-27.73 **	-25.19 **
39	V-241-2 × MAI 105	46.00 **	-14.79	-15.32	-37.32 **	-30.43 **	-32.71 **	51.66 **	-9.74	-15.81	-33.71 **	-29.21 **	-26.72 **
40	V-241-2 × LM 13	92.42 **	3.71	3.07	-23.70 **	-15.33	-18.10 *	109.21 **	15.27	7.51	-15.35 *	-9.59	-6.42
41	V-2437-1 × CM 500	63.58 **	-20.65 *	-21.14 *	-41.63 **	-35.22 **	-37.34 **	68.92 **	-19.30 *	-24.74 **	-40.74 **	-36.71 **	-34.49 **
42	V-2437-1 × SKV 50	153.28 **	-8.88	-9.44	-32.97 **	-25.61 **	-28.04 **	150.41 **	-11.06	-17.04 *	-34.68 **	-30.24 **	-27.79 **
43	V-2437-1 × MAI 105	72.65 **	-2.27	-2.88	-28.11 **	-20.22 *	-22.83 **	77.19 **	-4.66	-11.08	-29.98 **	-25.23 **	-22.60 **
44	V-2437-1 × LM 13	95.50 **	1.94	1.31	-25.01 **	-16.78 *	-19.50 *	106.13 **	1.81	-5.04	-25.23 **	-20.15 **	-17.34 *
45	V-2459-2 × CM 500	29.84	-32.51 **	-32.93 **	-50.35 **	-44.90 **	-46.70 **	33.40 *	-29.99 **	-34.70 **	-48.59 **	-45.09 **	-43.16 **
46	V-2459-2 × SKV 50	105.48 **	-18.95	-19.45 *	-40.37 **	-33.83 **	-35.99 **	98.61 **	-20.10 *	-25.48 **	-41.32 **	-37.34 **	-35.13 **
47	V-2459-2 × MAI 105	34.08 *	-19.45 *	-19.95 *	-40.74 **	-34.24 **	-36.39 **	42.07 **	-16.87	-22.46 **	-38.95 **	-34.80 **	-32.51 **
48	V-2459-2 × LM 13	46.05 **	-18.78	-19.28	-40.25 **	-33.69 **	-35.86 **	52.99 **	-17.23	-22.80 **	-39.22 **	-35.09 **	-32.80 **
49	V-2516-2 × CM 500	36.30 *	-33.70 **	-34.10 **	-51.22 **	-45.87 **	-47.64 **	46.94 **	-26.19 **	-31.16 **	-45.80 **	-42.12 **	-40.08 **
50	V-2516-2 × SKV 50	134.66 **	-15.25	-15.78	-37.66 **	-30.81 **	-33.08 **	125.83 **	-14.25	-20.02 *	-37.02 **	-32.74 **	-30.38 **
51	V-2516-2 × MAI 105	44.24 **	-18.16	-18.66	-39.79 **	-33.18 **	-35.37 **	39.98 **	-21.25 *	-26.55 **	-42.16 **	-38.23 **	-36.06 **
52	V-2516-2 × LM 13	105.80 **	7.59	6.93	-20.85 **	-12.16	-15.04	99.59 **	3.48	-3.49	-24.01 **	-18.84 **	-15.99 *
53	V-2608-1 × CM 500	19.4	-30.88 **	-31.30 **	-49.15 **	-43.57 **	-45.41 **	24.71	-27.33 **	-32.22 **	-46.63 **	-43.01 **	-41.00 **
54	V-2608-1 × SKV 50	99.60 **	-9.46	-10.02	-33.39 **	-26.08 **	-28.50 **	94.09 **	-10.68	-16.69 *	-34.41 **	-29.95 **	-27.49 **
55	V-2608-1 × MAI 105	51.54 **	0	-0.62	-26.44 **	-18.36 *	-21.03 **	56.98 **	0.95	-5.85	-25.87 **	-20.83 **	-18.04 *
56	V-2608-1 × LM 13	56.62 **	-3.64	-4.23	-29.11 **	-21.33 **	-23.90 **	66.93 **	-0.02	-6.75	-26.58 **	-21.59 **	-18.83 **
57	V-291-2 × CM 500	46.65 **	-18.23	-18.73	-39.85 **	-33.24 **	-35.43 **	44.56 **	-15.34	-21.04 *	-37.83 **	-33.61 **	-31.27 **
58	V-291-2 × SKV 50	120.99 **	-4.47	-5.06	-29.73 **	-22.01 **	-24.56 **	103.98 **	-5.54	-11.9	-30.63 **	-25.92 **	-23.31 **
59	V-291-2 × MAI 105	76.03 **	12.4	11.71	-17.31 *	-8.23	-11.24	62.11 **	4.72	-2.33	-23.10 **	-17.87 *	-14.98 *
60	V-291-2 × LM 13	90.32 **	13.03	12.34	-16.85 *	-7.72	-10.74	90.19 **	14.46	6.75	-15.95 *	-10.23	-7.08
61	V-70-1 × CM 500	74.90 **	-11.25	-11.79	-34.71 **	-27.54 **	-29.91 **	69.50 **	-10.17	-16.22	-34.03 **	-29.55 **	-27.07 **
62	V-70-1 × SKV 50	123.98 **	-14.41	-14.94	-37.04 **	-30.13 **	-32.41 **	114.93 **	-12.43	-18.32 *	-35.69 **	-31.32 **	-28.91 **
63	V-70-1 × MAI 105	54.13 **	-9.31	-9.87	-33.28 **	-25.96 **	-28.38 **	54.11 **	-9.03	-15.15	-33.19 **	-28.65 **	-26.14 **
64	V-70-1 × LM 13	106.03 **	12.03	11.34	-17.58 *	-8.54	-11.53	106.99 **	13.04	5.44	-16.98 *	-11.34	-8.22
65	CIMMYT-47 × CM 500	67.82 **	-7.58	-8.15	-32.01 **	-24.55 **	-27.02 **	69.77 **	-5.7	-12.05	-30.75 **	-26.05 **	-23.44 **
66	CIMMYT-47 × SKV 50	80.07 **	-23.41 *	-23.88 *	-43.65 **	-37.47 **	-39.52 **	72.66 **	-25.26 **	-30.29 **	-45.11 **	-41.38 **	-39.32 **
67	CIMMYT-47 × MAI 105	54.23 **	-2.58	-3.19	-28.34 **	-20.47 *	-23.07 **	57.61 **	-2.95	-9.48	-28.73 **	-23.89 **	-21.21 **
68	CIMMYT-47 × LM 13	96.72 **	15.47	14.76	-15.05 *	-5.73	-8.81	96.59 **	12.37	4.8	-17.48 **	-11.87	-8.77
69	CIMMYT-5 × CM 500	104.30 **	-9.04	-9.6	-33.09 **	-25.74 **	-28.17 **	120.94 **	0.69	-6.09	-26.05 **	-21.03 **	-18.25 *
70	CIMMYT-5 × SKV 50	172.81 **	-12.73	-13.26	-35.80 **	-28.75 **	-31.08 **	181.52 **	-6.2	-12.51	-31.11 **	-26.43 **	-23.85 **
71	CIMMYT-5 × MAI 105	77.62 **	-6.54	-7.12	-31.24 **	-23.70 **	-26.19 **	78.67 **	-7.79	-14	-32.29 **	-27.68 **	-25.14 **
72	CIMMYT-5 × LM 13	131.31 **	11.39	10.7	-18.05 *	-9.06	-12.03	139.74 **	13.14	5.52	-16.92 *	-11.27	-8.15
73	CM-115 × CM 500	27.92	-41.97 **	-42.33 **	-57.31 **	-52.63 **	-54.18 **	51.71 **	-32.88 **	-37.39 **	-50.70 **	-47.36 **	-45.50 **
74	CM-115 × SKV 50	110.15 **	-31.01 **	-31.43 **	-49.25 **	-43.67 **	-45.52 **	117.52 **	-30.41 **	-35.09 **	-48.89 **	-45.42 **	-43.50 **

Sl. no.	Hybrid	Ear weight per plant (g)						Cob weight per plant (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	48.96 **	-20.37 *	-20.86 *	-41.42 **	-34.99 **	-37.11 **	59.14 **	-19.98 *	-25.37 **	-41.24 **	-37.24 **	-35.04 **
76	CM-115 × LM 13	68.92 **	-17.24	-17.75	-39.12 **	-32.43 **	-34.64 **	91.53 **	-12.16	-18.07 *	-35.49 **	-31.11 **	-28.68 **
77	CM-149 × CM 500	43.51 *	-35.18 **	-35.58 **	-52.32 **	-47.08 **	-48.81 **	50.77 **	-28.08 **	-32.92 **	-47.19 **	-43.60 **	-41.61 **
78	CM-149 × SKV 50	152.82 **	-17.49	-18	-39.30 **	-32.64 **	-34.84 **	145.29 **	-13.05	-18.91 *	-36.15 **	-31.81 **	-29.41 **
79	CM-149 × MAI 105	75.25 **	-6.66	-7.23	-31.33 **	-23.79 **	-26.29 **	78.42 **	-4.13	-10.58	-29.59 **	-24.81 **	-22.17 **
80	CM-149 × LM 13	56.63 **	-23.56 *	-24.03 *	-43.77 **	-37.60 **	-39.64 **	64.87 **	-18.69 *	-24.16 **	-40.29 **	-36.23 **	-33.99 **
81	CML-165 × CM 500	51.93 **	-27.25 **	-27.70 **	-46.48 **	-40.60 **	-42.55 **	55.67 **	-24.07 **	-29.18 **	-44.24 **	-40.45 **	-38.35 **
82	CML-165 × SKV 50	147.62 **	-12.46	-13	-35.60 **	-28.53 **	-30.87 **	132.99 **	-14.9	-20.63 *	-37.51 **	-33.26 **	-30.91 **
83	CML-165 × MAI 105	56.57 **	-12.35	-12.89	-35.52 **	-28.44 **	-30.78 **	61.97 **	-11.22	-17.20 *	-34.80 **	-30.37 **	-27.92 **
84	CML-165 × LM 13	86.78 **	-3.78	-4.37	-29.21 **	-21.44 **	-24.01 **	92.26 **	-3.11	-9.63	-28.85 **	-24.01 **	-21.34 **
85	CML-166 × CM 500	47.79 **	-23.54 *	-24.01 *	-43.75 **	-37.58 **	-39.62 **	55.20 **	-22.40 *	-27.62 **	-43.01 **	-39.14 **	-37.00 **
86	CML-166 × SKV 50	128.83 **	-10.28	-10.84	-34.00 **	-26.75 **	-29.15 **	135.10 **	-11.26	-17.23 *	-34.83 **	-30.40 **	-27.95 **
87	CML-166 × MAI 105	64.99 **	-1.28	-1.89	-27.38 **	-19.40 *	-22.04 **	80.90 **	1.37	-5.45	-25.56 **	-20.50 **	-17.70 *
88	CML-166 × LM 13	92.21 **	6.43	5.77	-21.71 **	-13.11	-15.95 *	109.41 **	8.1	0.82	-20.62 **	-15.22 *	-12.24
89	CML-169 × CM 500	37.04 *	-27.88 **	-28.33 **	-46.95 **	-41.12 **	-43.05 **	43.76 **	-22.05 *	-27.30 **	-42.76 **	-38.87 **	-36.72 **
90	CML-169 × SKV 50	132.10 **	-6.94	-7.52	-31.54 **	-24.03 **	-26.51 **	122.08 **	-6.8	-13.08	-31.56 **	-26.91 **	-24.34 **
91	CML-169 × MAI 105	53.66 **	-6.7	-7.27	-31.36 **	-23.83 **	-26.32 **	57.16 **	-5.31	-11.68	-30.46 **	-25.73 **	-23.12 **
92	CML-169 × LM 13	80.91 **	1.78	1.15	-25.13 **	-16.91 *	-19.63 *	88.24 **	5.11	-1.97	-22.81 **	-17.57 *	-14.67 *
93	CML-172 × CM 500	53.73 **	-9.29	-9.85	-33.27 **	-25.94 **	-28.36 **	60.14 **	-5.83	-12.17	-30.85 **	-26.15 **	-23.55 **
94	CML-172 × SKV 50	117.39 **	1.04	0.41	-25.67 **	-17.51 *	-20.21 **	121.31 **	3.02	-3.91	-24.34 **	-19.20 **	-16.36 *
95	CML-172 × MAI 105	73.17 **	16.21	15.49	-14.51 *	-5.13	-8.23	78.30 **	15.61	7.83	-15.10 *	-9.33	-6.14
96	CML-172 × LM 13	68.08 **	5.29	4.64	-22.54 **	-14.04	-16.85 *	66.80 **	0.78	-6	-25.99 **	-20.96 **	-18.18 *
97	CML-359 × CM 500	44.46 **	-20.86 *	-21.35 *	-41.78 **	-35.39 **	-37.50 **	45.75 **	-15.87	-21.53 *	-38.22 **	-34.02 **	-31.70 **
98	CML-359 × SKV 50	84.45 **	-22.07 *	-22.55 *	-42.67 **	-36.38 **	-38.46 **	71.88 **	-21.85 *	-27.11 **	-42.61 **	-38.71 **	-36.55 **
99	CML-359 × MAI 105	47.18 **	-7.46	-8.03	-31.92 **	-24.45 **	-26.92 **	45.37 **	-7.32	-13.56	-31.94 **	-27.31 **	-24.75 **
100	CML-359 × LM 13	51.52 **	-11.49	-12.04	-34.89 **	-27.74 **	-30.11 **	54.19 **	-8.51	-14.67	-32.81 **	-28.24 **	-25.72 **
101	CML-411 × CM 500	60.05 **	-13.61	-14.14	-36.45 **	-29.47 **	-31.78 **	65.78 **	-8.8	-14.94	-33.03 **	-28.47 **	-25.96 **
102	CML-411 × SKV 50	119.58 **		-9.56	-33.05 **	-25.70 **	-28.13 **	111.36 **	-9.63	-15.71	-33.63 **	-29.12 **	-26.63 **
103	CML-411 × MAI 105	52.77 **	-5.17	-5.76	-30.24 **	-22.58 **	-25.11 **	60.98 **	-1.73	-8.34	-27.83 **	-22.93 **	-20.22 **
104	CML-411 × LM 13	109.40 **	20.63 *	19.89 *	-11.26	-1.52	-4.74	110.95 **	19.46 *	11.42	-12.27	-6.31	-3.02
105	HKI-193-1 × CM 500	45.00 **	-20.92 *	-21.41 *	-41.83 **	-35.44 **	-37.55 **	45.86 **	-14.83	-20.56 *	-37.45 **	-33.20 **	-30.85 **
106	HKI-193-1 × SKV 50	118.52 **	-8.21	-8.78	-32.48 **	-25.06 **	-27.51 **	102.07 **	-6.77	-13.04	-31.53 **	-26.88 **	-24.31 **
107	HKI-193-1 × MAI 105	63.91 **	2.66	2.03	-24.48 **	-16.19 *	-18.93 *	55.46 **	0.16	-6.58	-26.44 **	-21.45 **	-18.68 *
108	HKI-193-1 × LM 13	112.72 **	23.74 *	22.98 *	-8.97	1.02	-2.28	107.37 **	24.44 **	16.07	-8.61	-2.4	1.03
109	HKI-193-2 × CM 500	52.46 **	-30.91 **	-31.34 **	-49.18 **	-43.60 **	-45.44 **	54.71 **	-26.65 **	-31.58 **	-46.13 **	-42.47 **	-40.45 **
110	HKI-193-2 × SKV 50	116.79 **	-28.93 **	-29.37 **	-47.71 **	-41.98 **	-43.87 **	105.07 **	-27.90 **	-32.75 **	-47.05 **	-43.45 **	-41.46 **
111	HKI-193-2 × MAI 105	76.29 **	-5.84	-6.42	-30.73 **	-23.13 **	-25.64 **	74.50 **	-6.73	-13.01	-31.51 **	-26.85 **	-24.28 **

Sl. no.	Hybrid	Ear weight per plant (g)						Cob weight per plant (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	106.05 **	0.86	0.24	-25.80 **	-17.66 *	-20.35 **	104.47 **	0.25	-6.5	-26.38 **	-21.37 **	-18.61 *
113	LTP-1 × CM 500	84.88 **	-14.69	-15.22	-37.24 **	-30.35 **	-32.63 **	75.30 **	-15.42	-21.11 *	-37.88 **	-33.66 **	-31.33 **
114	LTP-1 × SKV 50	170.99 **	-8.92	-9.48	-33.00 **	-25.64 **	-28.07 **	153.82 **	-8.64	-14.79	-32.90 **	-28.35 **	-25.83 **
115	LTP-1 × MAI 105	75.35 **	-4.89	-5.48	-30.03 **	-22.35 **	-24.89 **	76.16 **	-4.38	-10.81	-29.78 **	-25.00 **	-22.37 **
116	LTP-1 × LM 13	98.77 **	-1.06	-1.67	-27.21 **	-19.22 *	-21.87 **	96.61 **	-1.96	-8.56	-28.00 **	-23.11 **	-20.40 **
117	MAI-11 5 × CM 500	10.54	-32.47 **	-32.88 **	-50.32 **	-44.86 **	-46.67 **	12.13	-30.59 **	-35.26 **	-49.03 **	-45.57 **	-43.65 **
118	MAI-115 × SKV 50	50.00 **	-27.15 **	-27.60 **	-46.41 **	-40.53 **	-42.47 **	49.88 **	-25.59 **	-30.60 **	-45.35 **	-41.64 **	-39.59 **
119	MAI-116 × MAI 105	17.94	-18.4	-18.9	-39.97 **	-33.38 **	-35.56 **	20.09	-18.42 *	-23.91 **	-40.09 **	-36.02 **	-33.77 **
120	MAI-117 × LM 13	67.58 **	8.47	7.8	-20.20 **	-11.44	-14.34	68.17 **	6.81	-0.38	-21.56 **	-16.23 *	-13.28
121	MAI-107 × CM 500	47.39 **	-16.15	-16.67	-38.31 **	-31.54 **	-33.78 **	43.85 **	-15.07	-20.79 *	-37.63 **	-33.39 **	-31.05 **
122	MAI-107 × SKV 50	52.96 **	-32.15 **	-32.57 **	-50.08 **	-44.61 **	-46.42 **	48.07 **	-30.72 **	-35.38 **	-49.12 **	-45.67 **	-43.76 **
123	MAI-107 × MAI 105	56.30 **	1.57	0.95	-25.28 **	-17.08 *	-19.79 *	50.00 **	-2.39	-8.96	-28.32 **	-23.44 **	-20.75 **
124	MAI-107 × LM 13	64.24 **	-0.59	-1.21	-26.87 **	-18.84 *	-21.50 **	64.02 **	-0.51	-7.21	-26.94 **	-21.97 **	-19.23 **
125	MAI-109 × CM 500	46.57 **	-27.12 **	-27.57 **	-46.39 **	-40.50 **	-42.45 **	48.16 **	-22.68 *	-27.88 **	-43.21 **	-39.36 **	-37.22 **
126	MAI-109 × SKV 50	104.50 **	-23.95 *	-24.42 *	-44.05 **	-37.91 **	-39.94 **	95.87 **	-21.78 *	-27.04 **	-42.56 **	-38.65 **	-36.49 **
127	MAI-109 × MAI 105	42.22 **	-17.77	-18.28	-39.51 **	-32.87 **	-35.07 **	44.86 **	-15.66	-21.33 *	-38.06 **	-33.85 **	-31.52 **
128	MAI-109 × LM 13	73.20 **	-7.59	-8.16	-32.02 **	-24.55 **	-27.02 **	77.47 **	-4.51	-10.93	-29.87 **	-25.11 **	-22.47 **
129	MAI-112 × CM 500	13.08	-34.92 **	-35.32 **	-52.12 **	-46.87 **	-48.60 **	24.2	-31.40 **	-36.02 **	-49.62 **	-46.20 **	-44.31 **
130	MAI-112 × SKV 50	62.05 **	-27.04 **	-27.49 **	-46.33 **	-40.44 **	-42.38 **	66.52 **	-28.43 **	-33.25 **	-47.44 **	-43.87 **	-41.90 **
131	MAI-112 × MAI 105	49.26 **	-2.01	-2.61	-27.91 **	-20.00 *	-22.62 **	63.45 **	0.14	-6.6	-26.46 **	-21.46 **	-18.70 *
132	MAI-112 × LM 13	58.66 **	-2.92	-3.52	-28.58 **	-20.74 *	-23.34 **	63.71 **	-6.93	-13.2	-31.65 **	-27.01 **	-24.44 **
133	MAI-121 × CM 500	56.14 **	-24.70 *	-25.16 *	-44.60 **	-38.52 **	-40.53 **	51.16 **	-23.68 **	-28.82 **	-43.96 **	-40.15 **	-38.04 **
134	MAI-121 × SKV 50	89.63 **	-32.31 **	-32.73 **	-50.20 **	-44.74 **	-46.54 **	83.27 **	-29.93 **	-34.65 **	-48.54 **	-45.05 **	-43.11 **
135	MAI-121 × MAI 105	45.77 **	-17.9	-18.4	-39.60 **	-32.97 **	-35.16 **	47.73 **	-16.5	-22.12 **	-38.68 **	-34.51 **	-32.21 **
136	MAI-121 × LM 13	55.74 **	-19.23	-19.73 *	-40.58 **	-34.06 **	-36.22 **	66.27 **	-13.37	-19.20 *	-36.38 **	-32.05 **	-29.66 **
137	MAI-137 × CM 500	44.48 *	-36.50 **	-36.89 **	-53.29 **	-48.16 **	-49.85 **	56.41 **	-36.64 **	-40.91 **	-53.47 **	-50.31 **	-48.56 **
138	MAI-137 × SKV 50	145.11 **	-22.99 *	-23.47 *	-43.35 **	-37.13 **	-39.19 **	167.52 **	-24.42 **	-29.50 **	-44.49 **	-40.72 **	-38.64 **
139	MAI-137 × MAI 105	76.77 **	-8	-8.56	-32.32 **	-24.89 **	-27.34 **	90.79 **	-11.2	-17.18 *	-34.79 **	-30.36 **	-27.91 **
140	MAI-137 × LM 13	118.12 **	3.79	3.15	-23.65 **	-15.26	-18.04 *	142.30 **	2.07	-4.8	-25.04 **	-19.95 **	-17.14 *
141	MAI-27 × CM 500	8.1	-44.74 **	-45.08 **	-59.35 **	-54.89 **	-56.36 **	5.09	-44.28 **	-48.03 **	-59.08 **	-56.30 **	-54.77 **
142	MAI-27 × SKV 50	56.11 *	-39.76 **	-40.14 **	-55.69 **	-50.82 **	-52.43 **	58.53 **	-35.38 **	-39.73 **	-52.54 **	-49.32 **	-47.53 **
143	MAI-27 × MAI 105	37.42 **	-18.63	-19.13	-40.14 **	-33.57 **	-35.74 **	34.82 **	-20.38 *	-25.74 **	-41.53 **	-37.56 **	-35.36 **
144	MAI-27 × LM 13	78.75 **	-2.14	-2.74	-28.01 **	-20.10 *	-22.72 **	80.46 **	-1.41	-8.04	-27.60 **	-22.68 **	-19.96 **
145	MAI-29 × CM 500	13.63	-39.98 **	-40.35 **	-55.85 **	-51.00 **	-52.61 **	16.37	-36.77 **	-41.03 **	-53.57 **	-50.41 **	-48.67 **
146	MAI-29 × SKV 50	74.99 **	-29.51 **	-29.94 **	-48.14 **	-42.45 **	-44.33 **	69.73 **	-28.58 **	-33.38 **	-47.55 **	-43.98 **	-42.01 **
147	MAI-29 × MAI 105	32.03 *	-19.58 *	-20.08 *	-40.84 **	-34.34 **	-36.49 **	37.41 **	-17.05	-22.63 **	-39.08 **	-34.94 **	-32.66 **
148	MAI-29 × LM 13	55.39 **	-12.28	-12.82	-35.47 **	-28.39 **	-30.73 **	62.21 **	-9.24	-15.35	-33.35 **	-28.82 **	-26.32 **

Sl. no.	Hybrid	Ear weight per plant (g)						Cob weight per plant (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	41.57 *	-28.26 **	-28.70 **	-47.22 **	-41.43 **	-43.35 **	45.48 **	-28.28 **	-33.11 **	-47.33 **	-43.75 **	-41.78 **
150	MAI-35 × SKV 50	63.87 **	-37.50 **	-37.88 **	-54.02 **	-48.97 **	-50.64 **	73.52 **	-35.73 **	-40.05 **	-52.80 **	-49.59 **	-47.82 **
151	MAI-35 × MAI 105	42.48 **	-16.26	-16.78	-38.40 **	-31.64 **	-33.87 **	55.69 **	-13.85	-19.65 *	-36.74 **	-32.44 **	-30.06 **
152	MAI-35 × LM 13	47.45 **	-19.92 *	-20.42 *	-41.09 **	-34.62 **	-36.76 **	62.86 **	-17.08	-22.66 **	-39.11 **	-34.97 **	-32.68 **
153	MAI-45 × CM 500	24.78	-32.31 **	-32.72 **	-50.20 **	-44.74 **	-46.54 **	26.46	-28.80 **	-33.59 **	-47.71 **	-44.16 **	-42.19 **
154	MAI-45 × SKV 50	87.38 **	-21.83 *	-22.31 *	-42.49 **	-36.18 **	-38.27 **	74.00 **	-23.35 **	-28.51 **	-43.71 **	-39.89 **	-37.77 **
155	MAI-45 × MAI 105	59.60 **	-0.49	-1.11	-26.80 **	-18.76 *	-21.42 **	49.06 **	-7.08	-13.33	-31.76 **	-27.12 **	-24.56 **
156	MAI-45 × LM 13	88.31 **	9	8.33	-19.81 **	-11.01	-13.92	76.50 **	2.23	-4.65	-24.92 **	-19.82 **	-17.00 *
157	MAI-48 × CM 500	-2.2	-43.72 **	-44.06 **	-58.59 **	-54.05 **	-55.55 **	-2.71	-41.46 **	-45.40 **	-57.01 **	-54.09 **	-52.47 **
158	MAI-48 × SKV 50	27.84	-42.45 **	-42.80 **	-57.66 **	-53.01 **	-54.55 **	19.53	-42.73 **	-46.58 **	-57.94 **	-55.08 **	-53.50 **
159	MAI-48 × MAI 105	26.21 *	-17.14	-17.65	-39.05 **	-32.36 **	-34.57 **	24.35 *	-17.67 *	-23.21 **	-39.54 **	-35.43 **	-33.16 **
160	MAI-48 × LM 13	53.84 **	-5.87	-6.45	-30.76 **	-23.15 **	-25.67 **	55.57 **	-3.87	-10.34	-29.41 **	-24.61 **	-21.96 **
161	MAI-706 × CM 500	-9.4	-28.05 **	-28.49 **	47.07 **	-41.26 **	-43.18 **	-9.33	-21.62 *	-26.90 **	-42.44 **	-38.53 **	-36.37 **
162	MAI-706 × SKV 50	9.75	-26.59 **	-27.05 **	-46.00 **	-40.07 **	-42.03 **	3.63	-23.11 *	-28.29 **	-43.53 **	-39.70 **	-37.58 **
163	MAI-706 × MAI 105	8.48	-5.06	-5.65	-30.16 **	-22.49 **	-25.03 **	9.91	1.64	-5.2	-25.35 **	-20.28 **	-17.48 *
164	MAI-706 × LM 13	11	-7.82	-8.38	-32.18 **	-24.74 **	-27.20 **	8.72	-4.26	-10.7	-29.69 **	-24.91 **	-22.27 **
165	SKV-70 × CM 500	22.39	-28.92 **	-29.35 **	-47.71 **	-41.97 **	-43.87 **	22.1	-27.57 **	-32.44 **	-46.81 **	-43.19 **	-41.20 **
166	SKV-70 × SKV 50	65.54 **	-24.60 *	-25.06 *	-44.53 **	-38.44 **	-40.46 **	65.56 **	-22.08 *	-27.32 **	-42.78 **	-38.89 **	-36.74 **
167	SKV-70 × MAI 105	8.38	-28.28 **	-28.72 **	-47.24 **	-41.45 **	-43.36 **	12.17	-26.69 **	-31.62 **	-46.16 **	-42.50 **	-40.48 **
168	SKV-70 × LM 13	57.84 **	-2.59	-3.19	-28.34 **	-20.48 *	-23.08 **	59.62 **	-2.74	-9.28	-28.57 **	-23.72 **	-21.03 **
169	V-632-112 × CM 500	68.97 **	0.04	-0.58	-26.41 **	-18.33 *	-21.00 **	83.63 **	4.69	-2.36	-23.12 **	-17.90 *	-15.01 *
170	V-632-112 × SKV 50	104.15 **	-4.72	-5.3	-29.90 **	-22.21 **	-24.75 **	99.71 **	-10.62	-16.63 *	-34.36 **	-29.90 **	-27.43 **
171	V-632-112 × MAI 105	55.90 **	4.92	4.27	-22.81 **	-14.34	-17.14 *	56.14 **	-1.56	-8.19	-27.71 **	-22.80 **	-20.08 **
172	V-632-112 × LM 13	77.65 **	11.63	10.94	-17.88 *	-8.86	-11.84	91.67 **	12.37	4.81	-17.48 **	-11.87	-8.77
173	V-632-67 × CM 500	64.19 **	-13.5	-14.03	-36.36 **	-29.38 **	-31.69 **	70.28 **	-11.09	-17.08 *	-34.71 **	-30.27 **	-27.82 **
174	V-632-67 × SKV 50	158.55 **	3.82	3.18	-23.63 **	-15.24	-18.02 *	155.46 **	2.08	-4.79	-25.04 **	-19.94 **	-17.13 *
175	V-632-67 × MAI 105	47.35 **	-10.44	-10.99	-34.11 **	-26.88 **	-29.27 **	57.52 **	-8.25	-14.43	-32.62 **	-28.04 **	-25.51 **
176	V-632-67 × LM 13	112.45 **	19.65 *	18.91	-11.98	-2.32	-5.51	118.55 **	17.64 *	9.73	-13.60 *	-7.73	-4.49
177	Z-50-3 × CM 500	75.04 **	-6.41	-6.99	-31.15 **	-23.60 **	-26.09 **	65.20 **	-4.51	-10.94	-29.88 **	-25.11 **	-22.48 **
178	Z-50-3 × SKV 50	89.11 **	-22.59 *	-23.06 *	-43.05 **	-36.80 **	-38.87 **	66.83 **	-24.01 **	-29.13 **	-44.20 **	-40.41 **	-38.31 **
179	Z-50-3 × MAI 105	60.17 **	-1.39	-2	-27.46 **	-19.50 *	-22.13 **	54.95 **	-1.09	-7.74	-27.36 **	-22.42 **	-19.70 **
180	Z-50-3 × LM 13	80.33 **	2.97	2.33	-24.25 **	-15.94 *	-18.69 *	76.18 **	4.69	-2.36	-23.12 **	-17.90 *	-15.01 *
181	Z-51-1 × CM 500	13.13	-29.30 **	-29.74 **	-47.99 **	-42.28 **	-44.17 **	14.9	-27.82 **	-32.68 **	-46.99 **	-43.39 **	-41.40 **
182	Z-51-1 × SKV 50	89.74 **	-5.21	-5.8	-30.27 **	-22.61 **	-25.14 **	83.14 **	-7.4	-13.63	-31.99 **	-27.37 **	-24.82 **
183	Z-51-1 × MAI 105	44.66 **	2.11	1.48	-24.89 **	-16.64 *	-19.37 *	45.76 **	0.36	-6.39	-26.30 **	-21.29 **	-18.52 *
184	Z-51-1 × LM 13	80.36 **	19.26	18.52	-12.27	-2.64	-5.82	84.48 **	18.87 *	10.87	-12.7	-6.77	-3.49
185	Z-51-6 × CM 500	105.42 **	2.01	1.38	-24.95 **	-16.72 *	-19.44 *	107.62 **	4.85	-2.21	-23.00 **	-17.77 *	-14.87 *

Sl. no.	Hybrid	Ear weight per plant (g)						Cob weight per plant (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	167.18 **	-0.8	-1.41	-27.02 **	-19.01 *	-21.66 **	157.76 **	-1.42	-8.05	-27.60 **	-22.68 **	-19.96 **
187	Z-51-6 × MAI 105	61.45 **	-6.75	-7.33	-31.40 **	-23.87 **	-26.36 **	59.16 **	-10.02	-16.08	-33.92 **	-29.43 **	-26.95 **
188	Z-51-6 × LM 13	79.42 **	-4.38	-4.97	-29.66 **	-21.94 **	-24.49 **	88.77 **	-1.62	-8.24	-27.75 **	-22.84 **	-20.13 **
189	Z-52-29 × CM 500	49.80 **	-21.59 *	-22.07 *	-42.32 **	-35.98 **	-38.08 **	57.32 **	-16.17	-21.81 **	-38.44 **	-34.25 **	-31.94 **
190	Z-52-29 × SKV 50	92.90 **	-23.20 *	-23.68 *	-43.50 **	-37.30 **	-39.35 **	93.40 **	-20.64 *	-25.98 **	-41.72 **	-37.76 **	-35.57 **
191	Z-52-29 × MAI 105	37.49 **	-16.9	-17.41	-38.87 **	-32.16 **	-34.38 **	39.38 **	-17.32	-22.88 **	-39.28 **	-35.16 **	-32.87 **
192	Z-52-29 × LM 13	29.02	-27.77 **	-28.22 **	-46.87 **	-41.03 **	-42.96 **	6.98	-41.26 **	-45.21 **	-56.86 **	-53.93 **	-52.31 **
193	Z-56-1 × CM 500	19.47	-43.28 **	-43.63 **	-58.27 **	-53.69 **	-55.21 **	28.6	-37.81 **	-42.00 **	-54.33 **	-51.23 **	-49.51 **
194	Z-56-1 × SKV 50	93.76 **	-32.29 **	-32.71 **	-50.19 **	-44.72 **	-46.53 **	99.82 **	-27.86 **	-32.72 **	-47.02 **	-43.42 **	-41.43 **
195	Z-56-1 × MAI 105	31.69 *	-26.82 **	-27.27 **	-46.16 **	-40.25 **	-42.21 **	43.14 **	-22.14 *	-27.38 **	-42.82 **	-38.94 **	-36.79 **
196	Z-56-1 × LM 13	22.84	-37.22 **	-37.61 **	-53.81 **	-48.75 **	-50.42 **	17.15	-41.46 **	-45.40 **	-57.01 **	-54.08 **	-52.47 **
197	Z-56-8 × CM 500	5.99	-45.11 **	-45.45 **	-59.62 **	-55.19 **	-56.66 **	8.69	-44.66 **	-48.38 **	-59.36 **	-56.60 **	-55.07 **
198	Z-56-8 × SKV 50	72.96 **	-32.11 **	-32.53 **	-50.06 **	-44.58 **	-46.39 **	81.90 **	-29.68 **	-34.41 **	-48.36 **	-44.85 **	-42.91 **
199	Z-56-8 × MAI 105	25.97	-24.57 *	-25.04 *	-44.51 **	-38.42 **	-40.43 **	39.41 **	-20.60 *	-25.95 **	-41.69 **	-37.73 **	-35.54 **
200	Z-56-8 × LM 13	81.43 **	0.54	-0.08	-26.04 **	-17.92 *	-20.60 **	95.44 **	2.67	-4.24	-24.60 **	-19.48 **	-16.64 *
201	Z-60-22 × CM 500	42.95 **	-23.76 *	-24.23 *	-43.92 **	-37.76 **	-39.80 **	44.71 **	-18.13 *	-23.64 **	-39.88 **	-35.79 **	-33.53 **
202	Z-60-22 × SKV 50	81.71 **	-25.87 **	-26.33 **	-45.47 **	-39.48 **	-41.46 **	75.46 **	-22.24 *	-27.47 **	-42.89 **	-39.01 **	-36.87 **
203	Z-60-22 × MAI 105	45.77 **	-10.46	-11.01	-34.13 **	-26.90 **	-29.29 **	54.97 **	-2.97	-9.5	-28.75 **	-23.90 **	-21.23 **
204	Z-60-22 × LM 13	56.36 **	-10.93	-11.48	-34.48 **	-27.28 **	-29.66 **	59.43 **	-7.23	-13.47	-31.87 **	-27.24 **	-24.68 **
205	Z-62-55 × CM 500	53.82 **	-8.29	-8.86	-32.54 **	-25.13 **	-27.58 **	54.92 **	-4.4	-10.84	-29.80 **	-25.03 **	-22.39 **
206	Z-62-55 × SKV 50	58.55 **	-25.35 *	-25.81 **	-45.08 **	-39.05 **	-41.05 **	52.43 **	-24.62 **	-29.69 **	-44.64 **	-40.88 **	-38.80 **
207	Z-62-55 × MAI 105	17.57	-20.39 *	-20.88 *	-41.43 **	-35.00 **	-37.13 **	19.28	-19.19 *	-24.63 **	-40.66 **	-36.62 **	-34.40 **
208	Z-62-55 × LM 13	61.81 **	2.34	1.71	-24.71 **	-16.45 *	-19.18 *	64.95 **	4.46	-2.58	-23.29 **	-18.08 *	-15.20 *
209	Z-62-67 × CM 500	3.15	-48.90 **	-49.22 **	-62.41 **	-58.29 **	-59.65 **	13.07	-44.95 **	-48.66 **	-59.57 **	-56.83 **	-55.31 **
210	Z-62-67 × SKV 50	86.55 **	-30.97 **	-31.40 **	-49.22 **	-43.64 **	-45.49 **	96.70 **	-28.34 **	-33.16 **	-47.37 **	-43.80 **	-41.82 **
211	Z-62-67 × MAI 105	31.82 *	-24.03 *	-24.50 *	-44.11 **	-37.98 **	-40.00 **	46.13 **	-20.04 *	-25.42 **	-41.28 **	-37.29 **	-35.08 **
212	Z-62-67 × LM 13	66.52 **	-11.46	-12.01	-34.87 **	-27.72 **	-30.08 **	80.24 **	-9.33	-15.44	-33.42 **	-28.89 **	-26.39 **
213	Z-63-30 × CM 500	34.28 *	-22.38 *	-22.86 *	-42.90 **	-36.63 **	-38.71 **	49.12 **	-18.15 *	-23.66 **	-39.89 **	-35.81 **	-33.55 **
214	Z-63-30 × SKV 50	118.85 **	-0.92	-1.53	-27.11 **	-19.11 *	-21.76 **	134.73 **	0.08	-6.66	-26.50 **	-21.51 **	-18.75 *
215	Z-63-30 × MAI 105	7.02	-29.48 **	-29.91 **	-48.12 **	-42.42 **	-44.31 **	18.77	-27.64 **	-32.51 **	-46.86 **	-43.25 **	-41.26 **
216	Z-63-30 × LM 13	85.48 **	13.96	13.25	-16.17 *	-6.97	-10.01	101.29 **	13.74	6.09	-16.47 *	-10.79	-7.66
Range		-9.4	-48.9	-49.22	-62.41	-58.29	-59.65	-9.33	-44.95	-48.66	-59.57	-56.83	-55.31
		172.81	45.59	44.69	7.1	18.86	14.97	181.52	39.66	30.26	2.56	9.53	13.38
S. Em. ±		19.7337	22.7865					14.1191	16.3033				
C.D. 5%		38.7499	44.7445					27.7248	32.0138				
C.D. 1%		50.9817	58.8685					36.4764	42.1193				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Grain yield per plant (g)						Shelling %					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	54.25 **	7.35	-3.27	-25.40 **	-20.88 **	-17.77 *	7.72 **	2.6	-0.87	-3	-3.63	-3.24
2	V-1154 × SKV 50	78.56 **	5.02	-5.37	-27.03 **	-22.60 **	-19.56 **	6.57 **	4.23	0.71	-1.45	-2.1	-1.7
3	V-1154 × MAI 105	43.33 **	9.67	-1.18	-23.79 **	-19.17 **	-15.99 *	4.48	1.51	-1.92	-4.03	-4.66	-4.27
4	V-1154 × LM 13	60.76 **	18.34	6.63	-17.77 **	-12.78	-9.35	3.38	2.69	-0.78	-2.91	-3.55	-3.16
5	V-1168 × CM 500	41.79 **	-8.84	-17.86 *	-36.65 **	-32.81 **	-30.17 **	3.64	2.75	-0.72	-2.85	-3.49	-3.09
6	V-1168 × SKV 50	63.38 **	-12.58	-21.22 *	-39.25 **	-35.56 **	-33.03 **	4.40 *	6.18 *	2.59	0.39	-0.27	0.14
7	V-1168 × MAI 105	11.15	-20.85 *	-28.68 **	-45.00 **	-41.66 **	-39.37 **	2.53	3.61	0.11	-2.04	-2.69	-2.29
8	V-1168 × LM 13	70.98 **	16.8	5.25	-18.84 **	-13.91 *	-10.53	1.94	5.22 *	1.67	-0.51	-1.17	-0.76
9	V-1522 × CM 500	73.29 **	-0.32	-10.18	-30.73 **	-26.53 **	-23.65 **	3.89	1.48	-1.95	-4.06	-4.69	-4.3
10	V-1522 × SKV 50	105.57 **	-3.93	-13.43	-33.24 **	-29.19 **	-26.41 **	4.38	4.63	1.09	-1.08	-1.73	-1.33
11	V-1522 × MAI 105	52.17 **	-1.95	-11.64	-31.86 **	-27.73 **	-24.89 **	4.31	3.88	0.37	-1.79	-2.43	-2.03
12	V-1522 × LM 13	91.58 **	17.89	6.23	-18.08 **	-13.11	-9.69	0.97	2.74	-0.73	-2.86	-3.5	-3.1
13	V-1649 × CM 500	49.54 **	-14.47	-22.93 **	-40.56 **	-36.96 **	-34.48 **	9.97 **	5.37 *	1.81	-0.38	-1.03	-0.63
14	V-1649 × SKV 50	137.06 **	10.03	-0.85	-23.54 **	-18.90 **	-15.72 *	6.07 **	4.35	0.82	-1.34	-1.99	-1.59
15	V-1649 × MAI 105	78.43 **	14.4	3.09	-20.50 **	-15.68 *	-12.37	3.23	0.89	-2.52	-4.61	-5.24 *	-4.85 *
16	V-1649 × LM 13	138.76 **	46.16 **	31.70 **	1.56	7.73	11.96	4.93 *	4.83	1.29	-0.89	-1.54	-1.13
17	V-1742 × CM 500	86.67 **	-15.51	-23.87 **	-41.29 **	-37.73 **	-35.28 **	7.40 **	3.92	0.41	-1.75	-2.39	-1.99
18	V-1742 × SKV 50	188.94 **	-0.38	-10.24	-30.78 **	-26.58 **	-23.69 **	7.54 **	6.81 **	3.2	0.98	0.32	0.73
19	V-1742 × MAI 105	26.24	-34.13 **	-40.64 **	-54.22 **	-51.45 **	-49.54 **	-11.70 **	-12.88 **	-15.82 **	-17.63 **	-18.17 **	-17.84 **
20	V-1742 × LM 13	129.85 **	13.27	2.06	-21.29 **	-16.52 *	-13.24	5.06 *	5.95 *	2.37	0.17	-0.49	-0.08
21	V-2205 × CM 500	59.94 **	-16.09	-24.39 **	-41.69 **	-38.15 **	-35.72 **	8.71 **	2.11	-1.34	-3.46	-4.1	-3.7
22	V-2205 × SKV 50	105.16 **	-14.49	-22.95 **	-40.58 **	-36.97 **	-34.50 **	6.17 **	2.44	-1.02	-3.15	-3.79	-3.39
23	V-2205 × MAI 105	81.45 **	7.75	-2.91	-25.12 **	-20.58 **	-17.46 *	7.55 **	3.07	-0.41	-2.55	-3.19	-2.79
24	V-2205 × LM 13	88.92 **	6.71	-3.85	-25.85 **	-21.35 **	-18.26 *	5.03 *	2.94	-0.54	-2.67	-3.31	-2.92
25	V-2232 × CM 500	39.06 **	-0.62	-10.45	-30.94 **	-26.75 **	-23.88 **	8.58 **	5.43 *	1.87	-0.32	-0.98	-0.57
26	V-2232 × SKV 50	37.58 **	-16.51	-24.77 **	-41.99 **	-38.46 **	-36.05 **	4.93 *	4.58	1.04	-1.13	-1.78	-1.37
27	V-2232 × MAI 105	44.67 **	13.4	2.18	-21.20 **	-16.42 *	-13.13	2.66	1.65	-1.79	-3.89	-4.53	-4.13
28	V-2232 × LM 13	78.31 **	34.59 **	21.28 *	-6.47	-0.8	3.1	2.59	3.81	0.3	-1.85	-2.5	-2.1
29	V-1410-1 × CM 500	24.01	-32.24 **	-38.94 **	-52.91 **	-50.05 **	-48.09 **	4.55	0.52	-2.88	-4.96 *	-5.59 *	-5.20 *
30	V-1410-1 × SKV 50	80.40 **	-20.87 *	-28.70 **	-45.01 **	-41.68 **	-39.39 **	5.81 *	4.44	0.91	-1.26	-1.91	-1.51
31	V-1410-1 × MAI 105	76.97 **	8.95	-1.82	-24.29 **	-19.70 **	-16.54 *	5.99 **	3.93	0.42	-1.74	-2.39	-1.99
32	V-1410-1 × LM 13	91.24 **	12.19	1.09	-22.04 **	-17.31 *	-14.06	-2.88	-2.65	-5.95 *	-7.96 **	-8.57 **	-8.19 **
33	V-1712-1 × CM 500	87.77 **	9.4	-1.42	-23.98 **	-19.37 **	-16.20 *	8.99 **	5.36 *	1.8	-0.39	-1.05	-0.64
34	V-1712-1 × SKV 50	127.88 **	8.19	-2.51	-24.82 **	-20.26 **	-17.13 *	5.43 *	4.61	1.08	-1.09	-1.75	-1.34
35	V-1712-1 × MAI 105	76.70 **	15.17	3.78	-19.97 **	-15.11 *	-11.78	6.29 **	4.78	1.24	-0.93	-1.58	-1.18
36	V-1712-1 × LM 13	79.48 **	11.78	0.72	-22.33 **	-17.61 *	-14.38 *	2.44	3.21	-0.28	-2.42	-3.07	-2.67
37	V-241-2 × CM 500	36.33 *	-29.17 **	-36.17 **	-50.78 **	-47.79 **	-45.74 **	3.95	1.34	-2.08	-4.19	-4.82	-4.43

Sl. no.	Hybrid	Grain yield per plant (g)						Shelling %					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	134.10 **	-3.61	-13.15	-33.02 **	-28.96 **	-26.17 **	4.47 *	4.52	0.99	-1.18	-1.83	-1.43
39	V-241-2 × MAI 105	53.14 **	-9.84	-18.76 *	-37.35 **	-33.55 **	-30.94 **	0.56	-0.04	-3.42	-5.49 *	-6.12 *	-5.73 *
40	V-241-2 × LM 13	112.23 **	18.79 *	7.04	-17.45 **	-12.44		0.78	2.36	-1.1	-3.23	-3.86	-3.47
41	V-2437-1 × CM 500	89.54 **	-15.05	-23.45 **	-40.97 **	-37.38 **	-34.92 **	13.69 **	5.04	1.49	-0.69	-1.34	-0.93
42	V-2437-1 × SKV 50	177.62 **	-5.5	-14.85	-34.34 **	-30.35 **	-27.61 **	11.88 **	6.23 *	2.64	0.44	-0.22	0.19
43	V-2437-1 × MAI 105	92.39 **	-0.46	-10.3	-30.83 **	-26.63 **	-23.75 **	10.70 **	4.4	0.87	-1.3	-1.95	-1.54
44	V-2437-1 × LM 13	121.13 **	8	-2.69	-24.95 **	-20.40 **	-17.27 *	9.99 **	6.11 *	2.53	0.32	-0.34	0.07
45	V-2459-2 × CM 500	44.46 **	-26.72 **	-33.97 **	-49.08 **	-45.99 **	-43.87 **	7.22 **	4.63	1.1	-1.07	-1.73	-1.32
46	V-2459-2 × SKV 50	110.33 **	-15.99	-24.30 **	-41.62 **	-38.08 **	-35.65 **	5.00 *	5.15 *	1.59	-0.59	-1.24	-0.84
47	V-2459-2 × MAI 105	49.42 **	-13.87	-22.38 **	-40.15 **	-36.51 **	-34.02 **	4.04	3.51	0.01	-2.13	-2.78	-2.38
48	V-2459-2 × LM 13	59.09 **	-12.91	-21.52 *	-39.48 **	-35.81 **	-33.29 **	3.52	5.25 *	1.69	-0.49	-1.15	-0.74
49	V-2516-2 × CM 500	59.60 **	-22.78 *	-30.42 **	-46.34 **	-43.09 **	-40.85 **	7.60 **	4.63	1.1	-1.07	-1.72	-1.32
50	V-2516-2 × SKV 50	137.74 **	-10.62	-19.46 *	-37.89 **	-34.12 **	-31.53 **	4.38	4.17	0.65	-1.51	-2.16	-1.76
51	V-2516-2 × MAI 105	45.34 **	-19.63 *	-27.58 **	-44.15 **	-40.76 **	-38.43 **	2.83	1.96	-1.48	-3.6	-4.24	-3.84
52	V-2516-2 × LM 13	106.41 **	8.15	-2.55	-24.85 **	-20.29 **	-17.16 *	3.14	4.5	0.97	-1.2	-1.85	-1.44
53	V-2608-1 × CM 500	34.04 *	-24.41 **	-31.88 **	-47.47 **	-44.28 **	-42.10 **	7.74 **	3.93	0.42	-1.74	-2.39	-1.98
54	V-2608-1 × SKV 50	103.82 **	-7.04	-16.23	-35.40 **	-31.48 **	-28.79 **	5.11 *	4.08	0.56	-1.6	-2.24	-1.84
55	V-2608-1 × MAI 105	55.47 **	-1.57	-11.3	-31.60 **	-27.45 **	-24.60 **	-0.56	-2.18	-5.49 *	-7.52 **	-8.13 **	-7.75 **
56	V-2608-1 × LM 13	71.74 **	3.75	-6.51	-27.91 **	-23.53 **	-20.53 **	3.22	3.78	0.27	-1.88	-2.53	-2.12
57	V-291-2 × CM 500	52.86 **	-14.56	-23.01 **	-40.63 **	-37.02 **	-34.55 **	5.74 *	0.93	-2.48	-4.57	-5.20 *	-4.81
58	V-291-2 × SKV 50	120.53 **	-0.51	-10.35	-30.87 **	-26.67 **	-23.79 **	7.35 **	5.21 *	1.65	-0.53	-1.19	-0.78
59	V-291-2 × MAI 105	57.49 **	-1.07	-10.85	-31.25 **	-27.08 **	-24.22 **	-3.77	-6.31 *	-9.47 **	-11.42 **	-12.00 **	-11.64 **
60	V-291-2 × LM 13	94.95 **	16.8	5.25	-18.83 **	-13.91 *	-10.53	2.31	1.84	-1.6	-3.72	-4.35	-3.96
61	V-70-1 × CM 500	78.76 **		-18.00 *	-36.76 **	-32.92 **	-30.29 **	5.08 *	1.31	-2.11	-4.21	-4.84 *	-4.45
62	V-70-1 × SKV 50	129.68 **	-7.84	-16.95 *	-35.96 **	-32.07 **	-29.40 **	6.30 **	5.20 *	1.65	-0.54	-1.19	-0.78
63	V-70-1 × MAI 105	59.52 **	-7.75	-16.87 *	-35.90 **	-32.01 **	-29.34 **	3.08	1.35	-2.08	-4.18	-4.81	-4.42
64	V-70-1 × LM 13	112.33 **	16.62	5.09	-18.96 **	-14.04 *	-10.66	2.65	3.15	-0.33	-2.47	-3.11	-2.72
65	CIMMYT-47 × CM 500	83.05 **	-0.21	-10.08	-30.66 **	-26.45 **	-23.56 **	7.41 **	5.73 *	2.16	-0.03	-0.69	-0.28
66	CIMMYT-47 × SKV 50	79.16 **	-21.65 *	-29.40 **	-45.55 **	-42.25 **	-39.98 **	2.73	3.76	0.25	-1.9	-2.55	-2.15
67	CIMMYT-47 × MAI 105	65.18 **	1.48	-8.56	-29.48 **	-25.20 **	-22.27 **	4.08	4.45	0.92	-1.25	-1.9	-1.5
68	CIMMYT-47 × LM 13	103.62 **	19.18 *	7.39	-17.18 **	-12.15	-8.71	3.45	6.06 *	2.48	0.28	-0.38	0.03
69	CIMMYT-5 × CM 500	132.92 **	-0.19	-10.06	-30.64 **	-26.43 **	-23.54 **	4.52	-1.17	-4.51	-6.56 **	-7.18 **	-6.79 **
70	CIMMYT-5 × SKV 50	195.91 **	-5.1	-14.49	-34.06 **	-30.05 **	-27.31 **	4.16	1.15	-2.26	-4.36	-4.99 *	-4.6
71	CIMMYT-5 × MAI 105	83.78 **	-8.53	-17.58 *	-36.44 **	-32.58 **	-29.93 **	2.79	-0.84	-4.19	-6.25 *	-6.87 **	-6.49 **
72	CIMMYT-5 × LM 13	145.03 **	14.84	3.49	-20.19 **	-15.35 *	-12.03	2.83	1.43	-1.99	-4.1	-4.73	-4.34
73	CM-115 × CM 500	64.40 **	-31.92 **	-38.66 **	-52.69 **	-49.82 **	-47.85 **	7.30 **	1.48	-1.95	-4.05	-4.69	-4.29
74	CM-115 × SKV 50	134.48 **	-28.19 **	-35.29 **	-50.10 **	-47.07 **	-44.99 **	6.13 **	3.09	-0.39	-2.53	-3.17	-2.77

Sl. no.	Hybrid	Grain yield per plant (g)						Shelling %					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	66.95 **	-19.32 *	-27.29 **	-43.93 **	-40.53 **	-38.19 **	4.58	0.91	-2.5	-4.59	-5.22 *	-4.83
76	CM-115 × LM 13	93.53 **	-12.09	-20.78 *	-38.91 **	-35.20 **	-32.66 **	1.51	0.15	-3.23	-5.31 *	-5.93 *	-5.55 *
77	CM-149 × CM 500	63.59 **	-27.08 **	-34.29 **	-49.33 **	-46.25 **	-44.14 **	8.27 **	1.33	-2.1	-4.2	-4.83 *	-4.44
78	CM-149 × SKV 50	160.55 **	-11.95	-20.66 *	-38.82 **	-35.10 **	-32.56 **	5.31 *	1.25	-2.17	-4.27	-4.91 *	-4.51
79	CM-149 × MAI 105	83.16 **	-5.68	-15.01	-34.46 **	-30.48 **	-27.75 **	2.58	-2.04	-5.35 *	-7.38 **	-7.99 **	-7.61 **
80	CM-149 × LM 13	68.95 **	-17.9	-26.02 **	-42.95 **	-39.49 **	-37.11 **	3.33	0.92	-2.49	-4.58	-5.21 *	-4.82
81	CML-165 × CM 500	66.82 **	-22.65 *	-30.30 **	-46.25 **	-42.99 **	-40.75 **	6.52 **	1.82	-1.62	-3.73	-4.37	-3.97
82	CML-165 × SKV 50	144.49 **	-13	-21.60 *	-39.54 **	-35.87 **	-33.36 **	4.21	2.28	-1.18	-3.3	-3.94	-3.54
83	CML-165 × MAI 105	68.49 **	-10.22	-19.10 *	-37.61 **	-33.83 **	-31.23 **	3.69	1.1	-2.32	-4.41	-5.04 *	-4.65
84	CML-165 × LM 13	95.08 **	-1.71	-11.43	-31.70 **	-27.55 **	-24.71 **	1.12	0.79	-2.61	-4.7	-5.33 *	-4.94 *
85	CML-166 × CM 500	66.64 **	-21.77 *	-29.50 **	-45.64 **	-42.34 **	-40.07 **	6.94 **	0.66	-2.75	-4.83	-5.46 *	-5.07 *
86	CML-166 × SKV 50	155.20 **	-7.71	-16.83 *	-35.87 **	-31.97 **	-29.30 **	7.54 **	3.98	0.46	-1.7	-2.34	-1.94
87	CML-166 × MAI 105	92.10 **	3.48	-6.75	-28.09 **	-23.73 **	-20.73 **	6.04 *	1.84	-1.6	-3.72	-4.35	-3.96
88	CML-166 × LM 13	111.20 **	7.64	-3.01	-25.20 **	-20.66 **	-17.55 *	1.58	-0.24	-3.61	-5.68 *	-6.30 *	-5.92 *
89	CML-169 × CM 500	55.04 **	-17.51	-25.67 **	-42.68 **	-39.20 **	-36.81 **	6.77 **	5.52 *	1.95	-0.24	-0.89	-0.49
90	CML-169 × SKV 50	129.65 **	-2.58	-12.22	-32.31 **	-28.20 **	-25.38 **	3.01	4.43	0.9	-1.26	-1.91	-1.51
91	CML-169 × MAI 105	67.34 **	0.61	-9.34	-30.09 **	-25.84 **	-22.93 **	5.63 *	6.40 *	2.81	0.6	-0.06	0.35
92	CML-169 × LM 13	89.51 **	8.44	-2.28	-24.65 **	-20.07 **	-16.93 *	0.17	3.08	-0.41	-2.54	-3.19	-2.79
93	CML-172 × CM 500	69.40 **	-6.97	-16.17	-35.36 **	-31.43 **	-28.74 **	5.75 *	-1.38	-4.71	-6.76 **	-7.37 **	-6.99 **
94	CML-172 × SKV 50	137.47 **	4.8	-5.56	-27.17 **	-22.75 **	-19.72 **	6.02 *	1.59	-1.85	-3.96	-4.59	-4.2
95	CML-172 × MAI 105	90.11 **	17.56	5.93	-18.31 **	-13.35	-9.95	6.92 **	1.76	-1.68	-3.79	-4.43	-4.03
96	CML-172 × LM 13	70.64 **	0.57	-9.38	-30.12 **	-25.87 **	-22.96 **	2.54	-0.18	-3.56	-5.63 *	-6.25 *	-5.86 *
97	CML-359 × CM 500	49.30 **	-14.38	-22.85 **	-40.50 **	-36.89 **	-34.41 **	2.12	1.67	-1.77	-3.88	-4.51	-4.12
98	CML-359 × SKV 50	74.65 **	-18.67 *	-26.71 **	-43.48 **	-40.05 **	-37.70 **	1.85	4.01	0.49	-1.67	-2.31	-1.91
99	CML-359 × MAI 105	52.09 **	-2.25	-11.92	-32.08 **	-27.95 **	-25.12 **	4.01	5.53 *	1.97	-0.22	-0.88	-0.47
100	CML-359 × LM 13	56.09 **	-4.21	-13.69	-33.44 **	-29.40 **	-26.63 **	1.07	4.74	1.2	-0.97	-1.62	-1.22
101	CML-411 × CM 500	83.55 **	-3.06	-12.65	-32.64 **	-28.55 **	-25.74 **	10.41 **	6.18 *	2.59	0.39	-0.27	0.14
102	CML-411 × SKV 50	126.40 **	-4.84	-14.25	-33.87 **	-29.86 **	-27.10 **	6.38 **	5.02	1.48	-0.7	-1.36	-0.95
103	CML-411 × MAI 105	69.99 **	1.55	-8.5	-29.44 **	-25.15 **	-22.21 **	5.30 *	3.28	-0.21	-2.35	-3	-2.6
104	CML-411 × LM 13	117.61 **	23.67 *	11.44	-14.06 *	-8.84	-5.26	3.21	3.47	-0.03	-2.17	-2.82	-2.42
105	HKI-193-1 × CM 500	53.15 **	-13.31	-21.88 *	-39.76 **	-36.10 **	-33.59 **	4.84 *	1.64	-1.79	-3.9	-4.53	-4.14
106	HKI-193-1 × SKV 50	109.86 **	-3.84	-13.35	-33.18 **	-29.12 **	-26.34 **	3.48	2.97	-0.51	-2.64	-3.29	-2.89
107	HKI-193-1 × MAI 105	40.42 **	-10.8	-19.62 *	-38.01 **	-34.25 **	-31.67 **	-6.86 **	-7.91 **	-11.03 **	-12.94 **	-13.51 **	-13.15 **
108	HKI-193-1 × LM 13	109.36 **	26.92 **	14.37	-11.8	-6.45	-2.78	1.02	2.07	-1.38	-3.5	-4.13	-3.74
109	HKI-193-2 × CM 500	65.15 **	-25.28 **	-32.67 **	-48.08 **	-44.93 **	-42.77 **	5.38 *	1.66	-1.77	-3.88	-4.52	-4.12
110	HKI-193-2 × SKV 50	117.37 **	-25.10 **	-32.51 **	-47.95 **	-44.79 **	-42.62 **	4.76 *	3.74	0.23	-1.92	-2.56	-2.16
111	HKI-193-2 × MAI 105	80.43 **	-5.88	-15.19	-34.60 **	-30.63 **	-27.90 **	2.78	1.11	-2.31	-4.4	-5.03 *	-4.64

Sl. no.	Hybrid	Grain yield per plant (g)						Shelling %					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	107.41 **	2.17	-7.94	-29.00 **	-24.69 **	-21.74 **	1.19	1.75	-1.69	-3.8	-4.44	-4.04
113	LTP-1 × CM 500	92.22 **	-11.62	-20.36 *	-38.59 **	-34.86 **	-32.30 **	9.42 **	4.58	1.05	-1.12	-1.78	-1.37
114	LTP-1 × SKV 50	171.66 **	-4.39	-13.85	-33.56 **	-29.53 **	-26.76 **	6.61 **	4.62	1.08	-1.09	-1.74	-1.33
115	LTP-1 × MAI 105	88.64 **	-0.22	-10.09	-30.66 **	-26.45 **	-23.56 **	7.01 **	4.32	0.79	-1.37	-2.02	-1.62
116	LTP-1 × LM 13	101.71 **	0.85	-9.13	-29.92 **	-25.67 **	-22.75 **	3	2.65	-0.82	-2.95	-3.59	-3.19
117	MAI-11 5 × CM 500	13.37	-30.12 **	-37.03 **	-51.44 **	-48.50 **	-46.47 **	1.45	0.71	-2.7	-4.79	-5.41 *	-5.02 *
118	MAI-115 × SKV 50	51.93 **	-22.74 *	-30.38 **	-46.31 **	-43.05 **	-40.82 **	2.03	3.89	0.38	-1.78	-2.43	-2.02
119	MAI-116 × MAI 105	19.67	-17.96	-26.07 **	-42.99 **	-39.53 **	-37.16 **	-1.01	0.15	-3.23	-5.31 *	-5.93 *	-5.55 *
120	MAI-117 × LM 13	67.71 **	10.11	-0.78	-23.49 **	-18.84 **	-15.66 *	-0.34	2.99	-0.49	-2.62	-3.27	-2.87
121	MAI-107 × CM 500	52.90 **	-10.75	-19.58 *	-37.98 **	-34.22 **	-31.64 **	6.27 **	5.07	1.52	-0.66	-1.31	-0.91
122	MAI-107 × SKV 50	52.64 **	-27.37 **	-34.55 **	-49.53 **	-46.46 **	-44.36 **	3.42	4.9	1.35	-0.82	-1.48	-1.07
123	MAI-107 × MAI 105	49.91 **	-2.12	-11.8	-31.99 **	-27.86 **	-25.03 **	-0.49	0.29	-3.1	-5.18 *	-5.81 *	-5.42 *
124	MAI-107 × LM 13	63.73 **	2.15	-7.96	-29.02 **	-24.71 **	-21.75 **	-0.21	2.74	-0.73	-2.86	-3.5	-3.1
125	MAI-109 × CM 500	49.80 **	-25.10 **	-32.51 **	-47.95 **	-44.79 **	-42.62 **	0.88	-3.02	-6.30 *	-8.31 **	-8.91 **	-8.54 **
126	MAI-109 × SKV 50	102.21 **	-20.69 *	-28.54 **	-44.89 **	-41.55 **	-39.25 **	2.71	1.37	-2.05	-4.16	-4.79	-4.4
127	MAI-109 × MAI 105	49.95 **	-14.64	-23.09 **	-40.69 **	-37.09 **	-34.62 **	3.22	1.2	-2.22	-4.32	-4.95 *	-4.56
128	MAI-109 × LM 13	82.60 **	-1.36	-11.12	-31.46 **	-27.30 **	-24.44 **	3.02	3.24	-0.25	-2.39	-3.03	-2.63
129	MAI-112 × CM 500	32.57 *	-28.79 **	-35.83 **	-50.52 **	-47.51 **	-45.45 **	6.45 **	3.69	0.19	-1.97	-2.61	-2.21
130	MAI-112 × SKV 50	73.84 **	-25.36 **	-32.75 **	-48.14 **	-44.99 **	-42.83 **	4.25	4.21	0.69	-1.47	-2.12	-1.72
131	MAI-112 × MAI 105	67.50 **	1.57	-8.48	-29.42 **	-25.14 **	-22.20 **	2.09	1.39	-2.04	-4.14	-4.77	-4.38
132	MAI-112 × LM 13	73.22 **	0.01	-9.88	-30.51 **	-26.29 **	-23.39 **	4.96 *	6.52 *	2.92	0.71	0.05	0.46
133	MAI-121 × CM 500	63.54 **	-20.36 *	-28.24 **	-44.66 **	-41.30 **	-38.99 **	7.47 **	4.48	0.95	-1.22	-1.87	-1.47
134	MAI-121 × SKV 50	95.80 **	-25.77 **	-33.11 **	-48.42 **	-45.28 **	-43.14 **	6.13 **	5.89 *	2.31	0.11	-0.55	-0.14
135	MAI-121 × MAI 105	54.51 **	-14.07	-22.57 **	-40.29 **	-36.66 **	-34.17 **	3.89	2.98	-0.5	-2.64	-3.28	-2.88
136	MAI-121 × LM 13	71.37 **	-9.66	-18.60 *	-37.23 **	-33.42 **	-30.80 **	2.91	4.24	0.72	-1.44	-2.09	-1.69
137	MAI-137 × CM 500	61.01 **	-41.15 **	-46.97 **	-59.11 **	-56.63 **	-54.92 **	5.24 *	-7.28 **	-10.42 **	-12.34 **	-12.92 **	-12.56 **
138	MAI-137 × SKV 50	198.83 **	-23.01 *	-30.62 **	-46.50 **	-43.25 **	-41.02 **	11.42 **	1.01	-2.41	-4.5	-5.13 *	-4.74
139	MAI-137 × MAI 105	96.78 **	-14.47	-22.93 **	-40.56 **	-36.96 **	-34.48 **	6.97 **	-3.72	-6.98 **	-8.97 **	-9.57 **	-9.20 **
140	MAI-137 × LM 13	152.08 **	2.26	-7.86	-28.94 **	-24.63 **	-21.67 **	8.63 **	0.13	-3.25	-5.33 *	-5.95 *	-5.57 *
141	MAI-27 × CM 500	8.26	-44.36 **	-49.86 **	-61.33 **	-58.99 **	-57.38 **	2.49	-0.07	-3.45	-5.52 *	-6.15 *	-5.76 *
142	MAI-27 × SKV 50	62.58 **	-33.97 **	-40.50 **	-54.12 **	-51.33 **	-49.42 **	1.99	2.04	-1.4	-3.52	-4.16	-3.76
143	MAI-27 × MAI 105	38.89 **	-19.00 *	-27.01 **	-43.72 **	-40.30 **	-37.96 **	2.22	1.62	-1.82	-3.93	-4.56	-4.17
144	MAI-27 × LM 13	82.45 **	1.1	-8.9	-29.75 **	-25.48 **	-22.56 **	0.91	2.51	-0.95	-3.08	-3.72	-3.32
145	MAI-29 × CM 500	21.99	-35.15 **	-41.56 **	-54.94 **	-52.20 **	-50.32 **	4.31	2.51	-0.96	-3.09	-3.72	-3.33
146	MAI-29 × SKV 50	76.86 **	-25.05 **	-32.46 **	-47.92 **	-44.76 **	-42.59 **	4.09	4.95	1.4	-0.77	-1.43	-1.02
147	MAI-29 × MAI 105	32.07 *	-20.65 *	-28.50 **	-44.86 **	-41.51 **	-39.22 **	-3.52	-3.34	-6.61 **	-8.62 **	-9.22 **	-8.84 **
148	MAI-29 × LM 13	59.32 **	-8.91	-17.92 *	-36.70 **	-32.86 **	-30.22 **	-1.73	0.58	-2.82	-4.91 *	-5.53 *	-5.15 *

Sl. no.	Hybrid	Grain yield per plant (g)						Shelling %					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	57.58 **	-25.70 **	-33.05 **	-48.37 **	-45.23 **	-43.08 **	7.73 **	4.01	0.5	-1.66	-2.31	-1.91
150	MAI-35 × SKV 50	85.10 **	-32.68 **	-39.34 **	-53.22 **	-50.38 **	-48.43 **	5.61 *	4.67	1.14	-1.04	-1.69	-1.28
151	MAI-35 × MAI 105	60.14 **	-13.41	-21.97 **	-39.83 **	-36.17 **	-33.67 **	2.11	0.53	-2.86	-4.95 *	-5.58 *	-5.19 *
152	MAI-35 × LM 13	66.51 **	-14.79	-23.22 **	-40.79 **	-37.20 **	-34.73 **	2.11	2.76	-0.71	-2.84	-3.48	-3.09
153	MAI-45 × CM 500	28.73	-31.24 **	-38.04 **	-52.22 **	-49.32 **	-47.33 **	2.02	-3.25	-6.52 *	-8.52 **	-9.13 **	-8.75 **
154	MAI-45 × SKV 50	82.11 **	-22.36 *	-30.04 **	-46.05 **	-42.78 **	-40.53 **	3.97	1.27	-2.16	-4.26	-4.89 *	-4.5
155	MAI-45 × MAI 105	55.03 **	-6.46	-15.71	-35.00 **	-31.05 **	-28.35 **	4.16	0.78	-2.63	-4.72	-5.35 *	-4.96 *
156	MAI-45 × LM 13	78.86 **	2.72	-7.43	-28.62 **	-24.28 **	-21.31 **	1.53	0.44	-2.95	-5.04 *	-5.66 *	-5.27 *
157	MAI-48 × CM 500	5.2	-39.42 **	-45.41 **	-57.90 **	-55.35 **	-53.59 **	8.75 **	3.84	0.33	-1.83	-2.47	-2.07
158	MAI-48 × SKV 50	26.63	-40.74 **	-46.60 **	-58.82 **	-56.32 **	-54.60 **	5.48 *	3.41	-0.08	-2.23	-2.87	-2.47
159	MAI-48 × MAI 105	30.09 *	-16.09	-24.39 **	-41.69 **	-38.15 **	-35.72 **	4.61 *	1.88	-1.56	-3.68	-4.31	-3.92
160	MAI-48 × LM 13	59.75 **	-1.59	-11.32	-31.62 **	-27.46 **	-24.62 **	2.78	2.33	-1.13	-3.25	-3.89	-3.49
161	MAI-706 × CM 500	-5.97	-17.79	-25.92 **	-42.87 **	-39.40 **	-37.02 **	5.78 *	4.81	1.27	-0.9	-1.56	-1.15
162	MAI-706 × SKV 50	6.89	-18.07	-26.17 **	-43.07 **	-39.61 **	-37.24 **	4.80 *	6.53 *	2.92	0.71	0.05	0.46
163	MAI-706 × MAI 105	13.73	7.31	-3.31	-25.43 **	-20.91 **	-17.80 *	4.56 *	5.61 *	2.04	-0.15	-0.81	-0.4
164	MAI-706 × LM 13	9.29	-0.06	-9.94	-30.55 **	-26.33 **	-23.44 **	1.18	4.39	0.86	-1.31	-1.96	-1.55
165	SKV-70 × CM 500	20.68	-28.88 **	-35.91 **	-50.58 **	-47.58 **	-45.52 **	-1.51	-2.15	-5.46 *	-7.49 **	-8.10 **	-7.72 **
166	SKV-70 × SKV 50	71.02 **	-17.65	-25.80 **	-42.78 **	-39.31 **	-36.92 **	3.68	5.66 *	2.09	-0.1	-0.76	-0.35
167	SKV-70 × MAI 105	11.35	-26.68 **	-33.93 **	-49.05 **	-45.96 **	-43.83 **	-1.57	-0.33	-3.7	-5.77 *	-6.39 **	-6.00 *
168	SKV-70 × LM 13	57.92 **	-0.59	-10.42	-30.92 **	-26.73 **	-23.85 **	-1.27	2.12	-1.33	-3.45	-4.09	-3.69
169	V-632-112 × CM 500	92.65 **	6.75	-3.81	-25.82 **	-21.32 **	-18.23 *	4.89 *	1.91	-1.53	-3.65	-4.28	-3.89
170	V-632-112 × SKV 50	106.51 **	-7.84	-16.95 *	-35.96 **	-32.07 **	-29.40 **	3.38	3.08	-0.4	-2.54	-3.18	-2.78
171	V-632-112 × MAI 105	59.31 **	-0.7	-10.52	-31.00 **	-26.81 **	-23.94 **	1.74	0.79	-2.62	-4.71	-5.33 *	-4.94 *
172	V-632-112 × LM 13	94.24 **	15.43	4.02	-19.79 **	-14.92 *	-11.58	1.43	2.69	-0.78	-2.91	-3.55	-3.15
173	V-632-67 × CM 500	87.22 **	-9.86	-18.78 *	-37.36 **	-33.56 **	-30.95 **	10.01 **	1.28	-2.14	-4.24	-4.88 *	-4.48
174	V-632-67 × SKV 50	174.85 **	2.69	-7.47	-28.64 **	-24.31 **	-21.34 **	6.29 **	0.57	-2.83	-4.91 *	-5.54 *	-5.15 *
175	V-632-67 × MAI 105	66.56 **	-8.28	-17.35 *	-36.27 **	-32.40 **	-29.74 **	6.18 *	-0.22	-3.59	-5.66 *	-6.28 *	-5.89 *
176	V-632-67 × LM 13	125.16 **	17.45	5.83	-18.39 **	-13.43	-10.03	3.84	-0.16	-3.53	-5.60 *	-6.22 *	-5.84 *
177	Z-50-3 × CM 500	68.67 **	-4.95	-14.35	-33.95 **	-29.94 **	-27.19 **	2.02	-0.37	-3.74	-5.80 *	-6.42 **	-6.04 *
178	Z-50-3 × SKV 50	69.74 **	-22.65 *	-30.30 **	-46.25 **	-42.99 **	-40.75 **	1.51	1.73	-1.71	-3.82	-4.46	-4.06
179	Z-50-3 × MAI 105	55.99 **	-1.3	-11.06	-31.41 **	-27.25 **	-24.40 **	0.15	-0.29	-3.66	-5.73 *	-6.35 *	-5.96 *
180	Z-50-3 × LM 13	75.76 **	6.1	-4.39	-26.27 **	-21.79 **	-18.72 **	-0.37	1.37	-2.06	-4.16	-4.79	-4.4
181	Z-51-1 × CM 500	18.99	-28.50 **	-35.57 **	-50.31 **	-47.30 **	-45.23 **	4.27	-0.58	-3.94	-6.00 *	-6.62 **	-6.23 *
182	Z-51-1 × SKV 50	94.07 **	-4.31	-13.78	-33.51 **	-29.47 **	-26.70 **	5.11 *	2.92	-0.56	-2.7	-3.34	-2.94
183	Z-51-1 × MAI 105	49.22 **	-0.01	-9.9	-30.52 **	-26.30 **	-23.41 **	1.98	-0.81	-4.16	-6.22 *	-6.84 **	-6.46 **
184	Z-51-1 × LM 13	87.60 **	20.26 *	8.37	-16.43 *	-11.36	-7.88	1.56	0.99	-2.42	-4.52	-5.15 *	-4.76
185	Z-51-6 × CM 500	113.98 **	2.52	-7.62	-28.76 **	-24.43 **	-21.47 **	2.61	-2.13	-5.44 *	-7.47 **	-8.08 **	-7.70 **

Sl. no.	Hybrid	Grain yield per plant (g)						Shelling %					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	170.92 **	0.59	-9.36	-30.10 **	-25.86 **	-22.95 **	4.08	1.93	-1.52	-3.63	-4.27	-3.87
187	Z-51-6 × MAI 105	66.40 **	-8.76	-17.79 *	-36.60 **	-32.75 **	-30.11 **	4.02	1.21	-2.22	-4.31	-4.95 *	-4.55
188	Z-51-6 × LM 13	90.11 **	-1.28	-11.04	-31.40 **	-27.24 **	-24.38 **	0.85	0.31	-3.08	-5.16 *	-5.79 *	-5.40 *
189	Z-52-29 × CM 500	71.18 **	-14.51	-22.97 **	-40.59 **	-36.99 **	-34.51 **	8.79 **	1.98	-1.47	-3.59	-4.22	-3.83
190	Z-52-29 × SKV 50	114.57 **	-15.98	-24.29 **	-41.61 **	-38.07 **	-35.64 **	9.98 **	5.90 *	2.32	0.13	-0.53	-0.12
191	Z-52-29 × MAI 105	46.22 **	-16.86	-25.08 **	-42.22 **	-38.72 **	-36.31 **	5.19 *	0.61	-2.79	-4.88 *	-5.51 *	-5.12 *
192	Z-52-29 × LM 13	13.1	-38.97 **	-45.01 **	-57.59 **	-55.02 **	-53.25 **	5.67 *	3.36	-0.13	-2.27	-2.92	-2.52
193	Z-56-1 × CM 500	35.61 *	-37.38 **	-43.58 **	-56.49 **	-53.85 **	-52.04 **	4.54	0.71	-2.69	-4.78	-5.41 *	-5.02 *
194	Z-56-1 × SKV 50	110.59 **	-25.48 **	-32.85 **	-48.21 **	-45.07 **	-42.91 **	4.44	3.29	-0.2	-2.34	-2.99	-2.59
195	Z-56-1 × MAI 105	52.25 **	-19.17 *	-27.16 **	-43.83 **	-40.42 **	-38.08 **	5.78 *	3.93	0.42	-1.74	-2.39	-1.99
196	Z-56-1 × LM 13	18.84	-40.35 **	-46.25 **	-58.55 **	-56.04 **	-54.31 **	1.11	1.54	-1.9	-4	-4.63	-4.24
197	Z-56-8 × CM 500	24.88	-43.32 **	-48.93 **	-60.62 **	-58.22 **	-56.58 **	10.99 **	2.41	-1.05	-3.17	-3.81	-3.41
198	Z-56-8 × SKV 50	107.72 **	-28.12 **	-35.23 **	-50.05 **	-47.02 **	-44.94 **	7.73 **	2.17	-1.29	-3.41	-4.04	-3.65
199	Z-56-8 × MAI 105	54.72 **	-19.07 *	-27.07 **	-43.76 **	-40.35 **	-38.01 **	8.18 **	1.89	-1.55	-3.67	-4.3	-3.91
200	Z-56-8 × LM 13	114.50 **	5.97	-4.51	-26.36 **	-21.89 **	-18.82 **	7.03 **	3.13	-0.36	-2.5	-3.14	-2.74
201	Z-60-22 × CM 500	55.01 **	-14.09	-22.59 **	-40.30 **	-36.68 **	-34.19 **	6.83 **	4.91	1.37	-0.81	-1.46	-1.06
202	Z-60-22 × SKV 50	83.24 **	-18.2	-26.29 **	-43.16 **	-39.71 **	-37.34 **	4.34	5.14	1.58	-0.6	-1.25	-0.85
203	Z-60-22 × MAI 105	63.74 **	2.08	-8.02	-29.07 **	-24.76 **	-21.81 **	5.08 *	5.20 *	1.65	-0.54	-1.19	-0.78
204	Z-60-22 × LM 13	65.71 **	-1.5	-11.24	-31.55 **	-27.40 **	-24.55 **	3.79	6.16 *	2.57	0.37	-0.29	0.12
205	Z-62-55 × CM 500	59.34 **	-3.76	-13.28	-33.12 **	-29.06 **	-26.28 **	2.93	0.47	-2.93	-5.01 *	-5.64 *	-5.25 *
206	Z-62-55 × SKV 50	58.00 **	-21.61 *	-29.36 **	-45.52 **	-42.22 **	-39.95 **	3.63	3.81	0.3	-1.85	-2.5	-2.1
207	Z-62-55 × MAI 105	18.66	-20.12 *	-28.02 **	-44.49 **	-41.12 **	-38.81 **	-0.79	-1.27	-4.61	-6.65 **	-7.27 **	-6.89 **
208	Z-62-55 × LM 13	67.92 **	8.17	-2.53	-24.83 **	-20.27 **	-17.14 *	1.87	3.59	0.09	-2.06	-2.7	-2.3
209	Z-62-67 × CM 500	18.46	-45.14 **	-50.56 **	-61.87 **	-59.56 **	-57.97 **	3.93	-0.36	-3.73	-5.80 *	-6.42 **	-6.03 *
210	Z-62-67 × SKV 50	108.81 **	-25.81 **	-33.15 **	-48.44 **	-45.32 **	-43.17 **	4.92 *	3.27	-0.22	-2.36	-3.01	-2.61
211	Z-62-67 × MAI 105	48.19 **	-21.12 *	-28.92 **	-45.18 **	-41.86 **	-39.57 **	0.85	-1.4	-4.73	-6.77 **	-7.39 **	-7.01 **
212	Z-62-67 × LM 13	83.86 **	-7.46	-16.61	-35.70 **	-31.79 **	-29.11 **	1.51	1.46	-1.97	-4.07	-4.71	-4.31
213	Z-63-30 × CM 500	51.68 **	-23.61 *	-31.16 **	-46.91 **	-43.69 **	-41.48 **	1.83	-6.74 *	-9.89 **	-11.82 **	-12.41 **	-12.04 **
214	Z-63-30 × SKV 50	154.43 **	0.71	-9.25	-30.02 **	-25.77 **	-22.86 **	6.97 **	0.7	-2.7	-4.79	-5.42 *	-5.03 *
215	Z-63-30 × MAI 105	24.82	-28.50 **	-35.57 **	-50.31 **	-47.30 **	-45.23 **	5.60 *	-1.27	-4.61	-6.65 **	-7.27 **	-6.89 **
216	Z-63-30 × LM 13	112.13 **	15.36	3.95	-19.84 **	-14.97 *	-11.64	5.74 *	1.16	-2.26	-4.36	-4.99 *	-4.6
Range		-5.97	-45.14	-50.56	-61.87	-59.56	-57.97	-11.7	-12.88	-15.82	-17.63	-18.17	-17.84
		198.83	46.16	31.7	1.56	7.73	11.96	13.69	6.81	3.2	0.98	0.32	0.73
S. Em. ±		12.2258	14.1172					1.8691	2.1582				
C.D. 5%		24.0071	27.721					3.6701	4.2379				
C.D. 1%		31.5852	36.4715					4.8287	5.5757				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Harvest index						Test weight (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	19.04	3.37	-2.08	-9.7	-5.04	-1.14	-2.52	-15.30 **	-14.03 **	-20.20 **	-11.22 *	-11.75 *
2	V-1154 × SKV 50	9.95	0.5	-4.8	-12.21	-7.68	-3.89	3.65	-5.37	-3.95	-10.85 *	-0.82	-1.41
3	V-1154 × MAI 105	8.22	-6.68	-11.6	-18.49	-14.27	-10.76	4.23	4.83	6.4	-1.24	9.88 *	9.22
4	V-1154 × LM 13	17.48	1.77	-3.6	-11.11	-6.51	-2.68	6.62	13.62 **	15.32 **	7.04	19.09 **	18.37 **
5	V-1168 × CM 500	5.84	0.75	-4.56	-11.99	-7.45	-3.65	38.54 **	-3.13	-1.68	-8.75 *	1.53	0.92
6	V-1168 × SKV 50	4.82	4.57	-0.95	-8.66	-3.94	0	28.48 **	-4.51	-3.08	-10.05 *	0.08	-0.52
7	V-1168 × MAI 105	7.72	1.88	-3.49	-11.01	-6.41	-2.57	17.64 **	-1.66	-0.18	-7.36	3.08	2.45
8	V-1168 × LM 13	6.88	1.51	-3.85	-11.34	-6.76	-2.93	29.95 **	16.41 **	18.16 **	9.67 *	22.02 **	21.28 **
9	V-1522 × CM 500	8.73	-1.21	-6.42	-13.7	-9.25	-5.52	35.29 **	-3.55	-2.11	-9.14 *	1.09	0.48
10	V-1522 × SKV 50	7.62	2.7	-2.72	-10.29	-5.66	-1.79	29.46 **	-2.02	-0.55	-7.69	2.7	2.08
11	V-1522 × MAI 105	12.17	1.24	-4.1	-11.57	-7	-3.18	16.62 **	-0.92	0.57	-6.66	3.85	3.22
12	V-1522 × LM 13	8.12	-2	-7.17	-14.4	-9.97	-6.28	37.72 **	25.26 **	27.14 **	18.00 **	31.29 **	30.50 **
13	V-1649 × CM 500	4.89	-4.54	-9.57	-16.61	-12.31	-8.71	50.31 **	-8.02	-6.64	-13.35 **	-3.59	-4.17
14	V-1649 × SKV 50	3.56	-1.02	-6.24	-13.54	-9.08	-5.34	38.32 **	-9.27 *	-7.9	-14.52 **	-4.9	-5.47
15	V-1649 × MAI 105	3.77	-6.19	-11.14	-18.06	-13.83	-10.29	24.19 **	-7.01	-5.61	-12.40 **	-2.53	-3.12
16	V-1649 × LM 13	15.09	4.49	-1.02	-8.73	-4.01	-0.07	40.11 **	13.30 **	15.00 **	6.73	18.75 **	18.04 **
17	V-1742 × CM 500	18.82	13	7.04	-1.3	3.8	8.06	39.76 **	-17.31 **	-16.07 **	-22.10 **	-13.33 **	-13.85 **
18	V-1742 × SKV 50	13.89	13.5	7.51	-0.86	4.26	8.54	53.76 **	-2.26	-0.79	-7.92	2.45	1.83
19	V-1742 × MAI 105	-2.33	-7.71	-12.58	-19.39	-15.22	-11.74	38.87 **	1.16	2.68	-4.7	6.03	5.39
20	V-1742 × LM 13	20.94	14.75	8.7	0.23	5.41	9.73	54.26 **	21.61 **	23.43 **	14.56 **	27.46 **	26.69 **
21	V-2205 × CM 500	11.18	-0.82	-6.05	-13.36	-8.89	-5.15	22.50 **	-3.47	-2.03	-9.07 *	1.17	0.56
22	V-2205 × SKV 50	7.16	0.49	-4.81	-12.23	-7.69	-3.91	27.42 **	6.01	7.6	-0.13	11.11 *	10.44 *
23	V-2205 × MAI 105	17.68	4.26	-1.24	-8.93	-4.23	-0.3	5.1	-2.82	-1.36	-8.45	1.86	1.25
24	V-2205 × LM 13	15.15	2.47	-2.93	-10.49	-5.87	-2.01	12.37 **	10.64 *	12.30 **	4.23	15.97 **	15.27 **
25	V-2232 × CM 500	17.82	9.09	3.34	-4.71	0.21	4.32	17.04 **	-5.01	-3.59	-10.52 *	-0.44	-1.04
26	V-2232 × SKV 50	10	6.88	1.24	-6.65	-1.82	2.21	15.27 **	-1.38	0.1	-7.09	3.37	2.75
27	V-2232 × MAI 105	22.61	12.78	6.83	-1.49	3.6	7.85	17.30 **	11.24 *	12.91 **	4.8	16.60 **	15.89 **
28	V-2232 × LM 13	10.2	1.79	-3.57	-11.08	-6.49	-2.65	20.10 **	21.09 **	22.90 **	14.07 **	26.92 **	26.15 **
29	V-1410-1 × CM 500	8.04	-1.82	-7	-14.24	-9.81	-6.11	28.76 **	-7.07	-5.67	-12.45 **	-2.6	-3.18
30	V-1410-1 × SKV 50	8.24	3.3	-2.15	-9.77	-5.11	-1.21	24.38 **	-4.75	-3.32	-10.27 *	-0.17	-0.77
31	V-1410-1 × MAI 105	17.74	6.28	0.68	-7.17	-2.37	1.64	21.11 **	3.97	5.53	-2.05	8.98	8.32
32	V-1410-1 × LM 13	4.55	-5.22	-10.22	-17.21	-12.93	-9.36	36.28 **	25.16 **	27.04 **	17.91 **	31.18 **	30.39 **
33	V-1712-1 × CM 500	21.2	10.86	5.02	-3.16	1.84	6.02	27.68 **	-7.91	-6.53	-13.24 **	-3.47	-4.06
34	V-1712-1 × SKV 50	8.65	4.34	-1.16	-8.86	-4.15	-0.22	22.29 **	-6.41	-5.01	-11.83 **	-1.9	-2.5
35	V-1712-1 × MAI 105	19.68	8.75	3.01	-5.01	-0.1	3.99	10.05 *	-5.57	-4.15	-11.04 *	-1.03	-1.62
36	V-1712-1 × LM 13	12.67	2.81	-2.61	-10.2	-5.56	-1.68	22.88 **	12.80 **	14.49 **	6.26	18.23 **	17.52 **
37	V-241-2 × CM 500	2.39	-0.01	-5.28	-12.66	-8.15	-4.38	37.98 **	-7.73	-6.34	-13.07 **	-3.29	-3.87

Sl. no.	Hybrid	Harvest index						Test weight (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	4.38	6.7	1.07	-6.8	-1.99	2.04	48.28 **	5.69	7.28	-0.43	10.78 *	10.11 *
39	V-241-2 × MAI 105	4.46	1.37	-3.98	-11.46	-6.88	-3.06	26.08 **	1.56	3.08	-4.33	6.45	5.8
40	V-241-2 × LM 13	10.39	7.55	1.88	-6.05	-1.2	2.85	37.38 **	18.89 **	20.67 **	12.00 **	24.61 **	23.86 **
41	V-2437-1 × CM 500	19.58	2.82	-2.6	-10.18	-5.54	-1.67	53.29 **	-11.40 *	-10.07 *	-16.53 **	-7.14	-7.7
42	V-2437-1 × SKV 50	14.17	3.38	-2.07	-9.7	-5.03	-1.13	41.89 **	-11.74 *	-10.42 *	-16.85 **	-7.49	-8.05
43	V-2437-1 × MAI 105	19.84	2.31	-3.08	-10.63	-6.01	-2.16	25.24 **	-10.48 *	-9.14 *	-15.67 **	-6.17	-6.74
44	V-2437-1 × LM 13	23.23	5.69	0.12	-7.68	-2.91	1.07	45.69 **	12.86 **	14.55 **	6.32	18.29 **	17.58 **
45	V-2459-2 × CM 500	10.23	3.81	-1.67	-9.32	-4.64	-0.73	33.27 **	-24.84 **	-23.71 **	-29.19 **	-21.22 **	-21.70 **
46	V-2459-2 × SKV 50	6.22	4.89	-0.65	-8.38	-3.65	0.3	41.29 **	-14.10 **	-12.81 **	-19.07 **	-9.96 *	-10.51 *
47	V-2459-2 × MAI 105	8.57	1.59	-3.77	-11.26	-6.68	-2.85	7.37	-24.76 **	-23.63 **	-29.12 **	-21.14 **	-21.61 **
48	V-2459-2 × LM 13	7.14	0.67	-4.64	-12.07	-7.53	-3.73	26.51 **	-3.77	-2.33	-9.35 *	0.86	0.25
49	V-2516-2 × CM 500	13.75	6.37	0.76	-7.09	-2.29	1.72	44.91 **	-16.87 **	-15.63 **	-21.69 **	-12.87 **	-13.40 **
50	V-2516-2 × SKV 50	8.03	5.95	0.36	-7.45	-2.67	1.32	54.53 **	-4.55	-3.12	-10.08 *	0.04	-0.56
51	V-2516-2 × MAI 105	4.47	-2.94	-8.05	-15.22	-10.83	-7.18	22.10 **	-13.26 **	-11.96 *	-18.28 **	-9.08	-9.63 *
52	V-2516-2 × LM 13	13.79	6.17	0.57	-7.27	-2.47	1.53	41.64 **	9.11 *	10.74 *	2.78	14.36 **	13.67 **
53	V-2608-1 × CM 500	20.46	11.25	5.38	-2.83	2.2	6.39	10.62	-21.94 **	-20.77 **	-26.47 **	-18.19 **	-18.68 **
54	V-2608-1 × SKV 50	8.04	4.7	-0.82	-8.54	-3.82	0.13	27.38 **	-4.51	-3.08	-10.05 *	0.08	-0.52
55	V-2608-1 × MAI 105	3.16	-5.36	-10.35	-17.33	-13.06	-9.5	20.94 **	1.88	3.4	-4.03	6.78	6.14
56	V-2608-1 × LM 13	9.05	0.47	-4.82	-12.24	-7.7	-3.92	16.49 **	5.11	6.69	-0.98	10.17 *	9.51 *
57	V-291-2 × CM 500	10.74	2.88	-2.54	-10.13	-5.49	-1.61	34.41 **	-5.91	-4.5	-11.36 **	-1.38	-1.98
58	V-291-2 × SKV 50	12.33	9.49	3.72	-4.36	0.58	4.71	34.40 **	0	1.5	-5.79	4.81	4.18
59	V-291-2 × MAI 105	0.37	-7.37	-12.25	-19.08	-14.9	-11.41	14.23 **	-4.41	-2.98	-9.95 *	0.19	-0.42
60	V-291-2 × LM 13	12.89	4.63	-0.89	-8.6	-3.88	0.06	24.14 **	11.32 *	12.99 **	4.87	16.68 **	15.98 **
61	V-70-1 × CM 500	10.11	-0.91	-6.14	-13.45	-8.98	-5.24	30.05 **	-7.41	-6.02	-12.77 **	-2.95	-3.54
62	V-70-1 × SKV 50	7.88	2	-3.38	-10.9	-6.3	-2.45	24.70 **	-5.73	-4.32	-11.19 **	-1.19	-1.79
63	V-70-1 × MAI 105	11.75	-0.11	-5.38	-12.75	-8.24	-4.48	7.75	-8.55	-7.17	-13.84 **	-4.14	-4.72
64	V-70-1 × LM 13	11.59	0.17	-5.11	-12.5	-7.98	-4.21	25.85 **	14.36 **	16.07 **	7.73	19.86 **	19.14 **
65	CIMMYT-47 × CM 500	18.45	9.9	4.1	-4	0.96	5.1	38.19 **	-8.33	-6.95	-13.64 **	-3.91	-4.49
66	CIMMYT-47 × SKV 50	6.19	3.38	-2.07	-9.7	-5.04	-1.14	9.83	-22.30 **	-21.14 **	-26.81 **	-18.56 **	-19.06 **
67	CIMMYT-47 × MAI 105	18	8.77	3.03	-4.99	-0.08	4.02	10.45 *	-11.62 *	-10.30 *	-16.74 **	-7.37	-7.93
68	CIMMYT-47 × LM 13	15.81	7.2	1.55	-6.36	-1.52	2.52	27.00 **	9.23 *	10.86 *	2.9	14.48 **	13.79 **
69	CIMMYT-5 × CM 500	12.51	4.6	-0.91	-8.63	-3.91	0.03	16.89 **	-15.87 **	-14.61 **	-20.75 **	-11.83 *	-12.36 **
70	CIMMYT-5 × SKV 50	7.59	4.94	-0.59	-8.34	-3.6	0.35	46.99 **	12.26 **	13.94 **	5.76	17.66 **	16.95 **
71	CIMMYT-5 × MAI 105	11.11	2.63	-2.79	-10.36	-5.73	-1.86	12.13 **	-3.96	-2.52	-9.53 *	0.66	0.05
72	CIMMYT-5 × LM 13	6.64	-1.09	-6.3	-13.6	-9.14	-5.41	36.51 **	25.10 **	26.98 **	17.85 **	31.12 **	30.33 **
73	CM-115 × CM 500	20.17	7.52	1.85	-6.08	-1.23	2.82	6.29	-39.48 **	-38.57 **	-42.98 **	-36.56 **	-36.95 **
74	CM-115 × SKV 50	11.93	5.26	-0.29	-8.05	-3.3	0.67	39.97 **	-14.14 **	-12.85 **	-19.11 **	-10.00 *	-10.55 *

Sl. no.	Hybrid	Harvest index						Test weight (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	17.79	4.68	-0.84	-8.56	-3.84	0.11	19.36 **	-15.71 **	-14.45 **	-20.60 **	-11.66 *	-12.19 *
76	CM-115 × LM 13	19.99	7.11	1.46	-6.44	-1.61	2.43	22.25 **	-6.35	-4.95	-11.78 **	-1.84	-2.43
77	CM-149 × CM 500	18.73	13.19	7.22	-1.13	3.98	8.24	30.86 **	-3.25	-1.8	-8.86 *	1.4	0.79
78	CM-149 × SKV 50	6.87	6.76	1.13	-6.75	-1.93	2.09	36.89 **	7.23	8.84	1.02	12.39 *	11.71 *
79	CM-149 × MAI 105	2.65	-2.77	-7.9	-15.07	-10.68	-7.02	26.66 **	10.96 *	12.63 **	4.53	16.30 **	15.60 **
80	CM-149 × LM 13	9.59	4.23	-1.26	-8.95	-4.25	-0.32	12.02 **	4.85	6.42	-1.22	9.90 *	9.24
81	CML-165 × CM 500	11.59	4.15	-1.34	-9.03	-4.33	-0.4	35.99 **	-8.43	-7.05	-13.73 **	-4.02	-4.6
82	CML-165 × SKV 50	1.33	-0.8	-6.03	-13.35	-8.88	-5.14	34.97 **	-3.17	-1.72	-8.78 *	1.49	0.87
83	CML-165 × MAI 105	6.84	-0.94	-5.27	-13.47	-6.17		15.05 **	-6.79	-5.39	-12.19 **	-2.3	-2.89
84	CML-165 × LM 13	2.59	-4.48	-9.51	-16.56	-12.25	-8.65	35.11 **	17.55 **	19.31 **	10.74 *	23.21 **	22.47 **
85	CML-166 × CM 500	14.18	3.3	-2.15	-9.77	-5.11	-1.22	43.30 **	-18.93 **	-17.71 **	-23.63 **	-15.03 **	-15.54 **
86	CML-166 × SKV 50	8.55	3.16	-2.28	-9.89	-5.23	-1.34	48.51 **	-9.44 *	-8.09	-14.69 **	-5.09	-5.66
87	CML-166 × MAI 105	12.84	1.39	-3.95	-11.43	-6.86	-3.04	20.06 **	-15.65 **	-14.39 **	-20.54 **	-11.59 *	-12.13 *
88	CML-166 × LM 13	5.29	-4.97	-9.98	-16.99	-12.71	-9.12	24.40 **	-5.15	-3.73	-10.65 *	-0.59	-1.19
89	CML-169 × CM 500	10.62	9.02	3.27	-4.77	0.15	4.26	34.19 **	-14.64 **	-13.36 **	-19.58 **	-10.53 *	-11.07 *
90	CML-169 × SKV 50	7.4	10.75	4.91	-3.26	1.73	5.91	34.28 **	-8.67	-7.3	-13.96 **	-4.27	-4.85
91	CML-169 × MAI 105	11.08	8.8	3.06	-4.97	-0.06	4.04	28.68 **	-0.54	0.95	-6.3	4.25	3.62
92	CML-169 × LM 13	10.27	8.43	2.71	-5.29	-0.39	3.69	34.46 **	11.98 **	13.66 **	5.49	17.37 **	16.66 **
93	CML-172 × CM 500	10.65	-1.3	-6.5	-13.79	-9.33	-5.61	36.53 **	-2.2	-0.73	-7.86	2.51	1.89
94	CML-172 × SKV 50	3.69	-2.77	-7.9	-15.07	-10.68	-7.02	36.55 **	3.83	5.39	-2.18	8.83	8.18
95	CML-172 × MAI 105	15.27	2.13	-3.26	-10.79	-6.19	-2.34	20.77 **	3.04	4.58	-2.93	7.99	7.34
96	CML-172 × LM 13	3.4	-7.99	-12.84	-19.63	-15.47	-12.01	33.65 **	22.02 **	23.85 **	14.95 **	27.90 **	27.13 **
97	CML-359 × CM 500	7.79	5.71	0.14	-7.66	-2.89	1.09	34.27 **	-14.42 **	-13.13 **	-19.38 **	-10.30 *	-10.84 *
98	CML-359 × SKV 50	1.94	4.63	-0.89	-8.61	-3.89	0.05	43.44 **	-2.26	-0.79	-7.92	2.45	1.83
99	CML-359 × MAI 105	7.84	5.1	-0.44	-8.2	-3.45	0.51	12.87 *	-12.62 **	-11.31 *	-17.68 **	-8.41	-8.97
100	CML-359 × LM 13	4.89	2.63	-2.78	-10.35	-5.72	-1.85	30.02 **	8.45	10.07 *	2.16	13.67 **	12.98 **
101	CML-411 × CM 500	19.58	8.92	3.17	-4.86	0.05	4.16	7.11	-18.49 **	-17.27 **	-23.21 **	-14.57 **	-15.08 **
102	CML-411 × SKV 50	8.85	4.11	-1.38	-9.06	-4.36	-0.44	39.60 **	12.38 **	14.07 **	5.87	17.79 **	17.08 **
103	CML-411 × MAI 105	17.29	6.12	0.52	-7.31	-2.52	1.48	12.94 **	1.4	2.92	-4.48	6.28	5.64
104	CML-411 × LM 13	11.14	0.98	-4.34	-11.79	-7.24	-3.43	25.67 **	20.35 **	22.15 **	13.37 **	26.14 **	25.38 **
105	HKI-193-1 × CM 500	4.36	1.23	-4.11	-11.58	-7.01	-3.2	37.09 **	-2.98	-1.52	-8.60 *	1.7	1.08
106	HKI-193-1 × SKV 50	2.86	4.47	-1.04	-8.75	-4.03	-0.1	34.00 **	0.74	2.25	-5.1	5.59	4.95
107	HKI-193-1 × MAI 105	-4.18	-7.63	-12.5	-19.32	-15.15	-11.67	25.00 **	5.57	7.15	-0.55	10.65 *	9.99 *
108	HKI-193-1 × LM 13	3.58	0.25	-5.04	-12.44	-7.91	-4.13	36.62 **	23.56 **	25.42 **	16.40 **	29.51 **	28.73 **
109	HKI-193-2 × CM 500	14.22	5.09	-0.45	-8.21	-3.46	0.5	40.94 **	-5.03	-3.61	-10.53 *	-0.46	-1.06
110	HKI-193-2 × SKV 50	8.22	4.51	-1	-8.71	-3.99	-0.05	27.15 **	-8.73	-7.36	-14.01 **	-4.33	-4.91
111	HKI-193-2 × MAI 105	8.62	-0.72	-5.96	-13.28	-8.8	-5.06	22.31 **	-0.86	0.63	-6.6	3.91	3.29

Sl. no.	Hybrid	Harvest index						Test weight (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	6.73	-2.03	-7.2	-14.42	-10	-6.31	39.55 **	21.48 **	23.30 **	14.44 **	27.32 **	26.56 **
113	LTP-1 × CM 500	11.4	4.06	-1.43	-9.1	-4.41	-0.48	54.58 **	-13.12 **	-11.82 *	-18.15 **	-8.94	-9.49 *
114	LTP-1 × SKV 50	7.7	5.52	-0.04	-7.83	-3.06	0.91	43.41 **	-13.08 **	-11.78 *	-18.12 **	-8.89	-9.44 *
115	LTP-1 × MAI 105	16.09	7.74	2.06	-5.89	-1.03	3.03	30.04 **	-9.13 *	-7.76	-14.39 **	-4.75	-5.33
116	LTP-1 × LM 13	7.7	0.37	-4.93	-12.33	-7.8	-4.02	48.75 **	12.86 **	14.55 **	6.32	18.29 **	17.58 **
117	MAI-11 5 × CM 500	8.27	6.61	0.99	-6.88	-2.07	1.95	22.38 **	-9.03 *	-7.66	-14.30 **	-4.65	-5.22
118	MAI-115 × SKV 50	4.3	7.45	1.79	-6.14	-1.29	2.76	20.79 **	-4.89	-3.47	-10.40 *	-0.31	-0.92
119	MAI-116 × MAI 105	3.52	1.29	-4.05	-11.52	-6.95	-3.13	-1.49	-13.30 **	-12.00 *	-18.32 **	-9.13	-9.67 *
120	MAI-117 × LM 13	3.95	2.12	-3.26	-10.8	-6.19	-2.34	7.84	1.38	2.9	-4.5	6.26	5.62
121	MAI-107 × CM 500	10.55	8.67	2.94	-5.07	-0.17	3.93	23.92 **	-2.8	-1.34	-8.43	1.88	1.27
122	MAI-107 × SKV 50	0.1	2.97	-2.46	-10.05	-5.41	-1.52	17.77 **	-2.44	-0.97	-8.09	2.26	1.64
123	MAI-107 × MAI 105	-2.76	-5	-10.01	-17.02	-12.74	-9.15	27.42 **	17.37 **	19.13 **	10.57 *	23.02 **	22.28 **
124	MAI-107 × LM 13	6.06	4.03	-1.45	-9.13	-4.43	-0.51	21.69 **	19.39 **	21.18 **	12.47 **	25.14 **	24.38 **
125	MAI-109 × CM 500	1.85	-2.67	-7.8	-14.98	-10.59	-6.92	47.21 **	1.62	3.14	-4.27	6.51	5.87
126	MAI-109 × SKV 50	-0.77	-0.64	-5.88	-13.21	-8.72	-4.98	39.36 **	2.34	3.87	-3.59	7.26	6.62
127	MAI-109 × MAI 105	11.18	5.57	0.01	-7.78	-3.02	0.96	30.66 **	8.07	9.69 *	1.81	13.27 **	12.59 **
128	MAI-109 × LM 13	9.05	3.97	-1.51	-9.18	-4.49	-0.57	39.69 **	23.90 **	25.76 **	16.72 **	29.87 **	29.08 **
129	MAI-112 × CM 500	18.22	9.21	3.45	-4.6	0.32	4.44	25.46 **	-11.46 *	-10.13 *	-16.59 **	-7.2	-7.76
130	MAI-112 × SKV 50	3.38	0.22	-5.06	-12.46	-7.94	-4.16	30.90 **	-1.86	-0.39	-7.54	2.87	2.25
131	MAI-112 × MAI 105	11.34	2.18	-3.21	-10.74	-6.13	-2.28	23.60 **	4.13	5.7	-1.9	9.15	8.49
132	MAI-112 × LM 13	14.92	5.92	0.33	-7.48	-2.7	1.29	22.12 **	10.20 *	11.86 *	3.82	15.51 **	14.81 **
133	MAI-121 × CM 500	13.4	7.88	2.19	-5.77	-0.9	3.17	30.21 **	-22.08 **	-20.92 **	-26.60 **	-18.33 **	-18.83 **
134	MAI-121 × SKV 50	11.25	10.92	5.07	-3.11	1.89	6.07	36.73 **	-12.16 **	-10.84 *	-17.25 **	-7.93	-8.49
135	MAI-121 × MAI 105	5.44	-0.33	-5.58	-12.94	-8.44	-4.68	20.57 **	-11.36 *	-10.03 *	-16.50 **	-7.1	-7.66
136	MAI-121 × LM 13	13.72	7.94	2.25	-5.71	-0.84	3.23	25.55 **	-0.18	1.32	-5.96	4.63	3.99
137	MAI-137 × CM 500	14.02	-10.76	-15.47	-22.05	-18.02	-14.66	24.08 **	-14.66 **	-13.38 **	-19.60 **	-10.55 *	-11.09 *
138	MAI-137 × SKV 50	13.96	-5.61	-10.58	-17.55	-13.29	-9.73	43.03 **	4.67	6.24	-1.39	9.71 *	9.05
139	MAI-137 × MAI 105	16.1	-9.84	-14.6	-21.25	-17.18	-13.78	27.81 **	5.39	6.97	-0.71	10.46 *	9.80 *
140	MAI-137 × LM 13	23.51	-3.6	-8.69	-15.8	-11.45	-7.81	37.53 **	21.65 **	23.47 **	14.60 **	27.50 **	26.73 **
141	MAI-27 × CM 500	4.31	0.79	-4.52	-11.96	-7.41	-3.61	25.14 **	-6.53	-5.13	-11.95 **	-2.03	-2.62
142	MAI-27 × SKV 50	1.96	3.18	-2.26	-9.88	-5.22	-1.33	17.50 **	-7.07	-5.67	-12.45 **	-2.6	-3.18
143	MAI-27 × MAI 105	0.55	-3.46	-8.55	-15.67	-11.31	-7.67	18.40 **	4.63	6.2	-1.43	9.67 *	9.01
144	MAI-27 × LM 13	5.54	1.75	-3.61	-11.12	-6.53	-2.69	22.74 **	15.81 **	17.55 **	9.10 *	21.39 **	20.66 **
145	MAI-29 × CM 500	10.25	3.8	-1.67	-9.33	-4.65	-0.73	5.3	-24.90 **	-23.77 **	-29.25 **	-21.29 **	-21.76 **
146	MAI-29 × SKV 50	7.21	5.83	0.25	-7.56	-2.78	1.2	40.87 **	6.67	8.27	0.49	11.80 *	11.13 *
147	MAI-29 × MAI 105	4.49	-2.26	-7.42	-14.63	-10.22	-6.54	23.73 **	5.17	6.75	-0.92	10.23 *	9.57 *
148	MAI-29 × LM 13	11.48	4.71	-0.81	-8.54	-3.81	0.14	14.88 **	4.53	6.1	-1.52	9.56 *	8.9

Sl. no.	Hybrid	Harvest index						Test weight (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	14.21	6.19	0.59	-7.25	-2.45	1.55	22.12 **	-8.55	-7.17	-13.84 **	-4.14	-4.72
150	MAI-35 × SKV 50	8.93	6.25	0.65	-7.19	-2.4	1.61	17.38 **	-6.93	-5.53	-12.32 **	-2.45	-3.04
151	MAI-35 × MAI 105	8.61	0.31	-4.98	-12.38	-7.85	-4.07	16.56 **	3.23	4.78	-2.75	8.2	7.55
152	MAI-35 × LM 13	15.5	7.13	1.48	-6.42	-1.59	2.45	18.13 **	11.70 *	13.38 **	5.23	17.08 **	16.37 **
153	MAI-45 × CM 500	9.13	1.28	-4.06	-11.54	-6.97	-3.15	33.05 **	-0.16	1.34	-5.94	4.65	4.01
154	MAI-45 × SKV 50	0.65	-2	-7.17	-14.4	-9.97	-6.28	36.26 **	8.25	9.87 *	1.98	13.46 **	12.77 **
155	MAI-45 × MAI 105	166.20 **	145.42 **	132.48 **	114.37 **	125.45 **	134.70 **	30.86 **	16.09 **	17.84 **	9.37 *	21.68 **	20.95 **
156	MAI-45 × LM 13	7.23	-0.72	-5.96	-13.28	-8.8	-5.06	27.79 **	21.03 **	22.84 **	14.01 **	26.85 **	26.09 **
157	MAI-48 × CM 500	13.39	6.71	1.08	-6.79	-1.97	2.05	33.15 **	-5.87	-4.46	-11.32 **	-1.34	-1.93
158	MAI-48 × SKV 50	2.2	0.84	-4.48	-11.92	-7.37	-3.56	13.16 *	-15.02 **	-13.74 **	-19.94 **	-10.93 *	-11.46 *
159	MAI-48 × MAI 105	6.48	-0.44	-5.69	-13.03	-8.54	-4.79	9.90 *	-7.27	-5.88	-12.64 **	-2.8	-3.39
160	MAI-48 × LM 13	10.66	3.9	-1.58	-9.25	-4.56	-0.64	20.19 **	8.61	10.24 *	2.31	13.83 **	13.15 **
161	MAI-706 × CM 500	13.96	9.68	3.89	-4.2	0.75	4.88	6.67	-11.98 **	-10.66 *	-17.08 **	-7.74	-8.3
162	MAI-706 × SKV 50	11.52	12.42	6.49	-1.8	3.27	7.51	3.61	-9.94 *	-8.59	-15.16 **	-5.61	-6.18
163	MAI-706 × MAI 105	12.86	7.94	2.24	-5.72	-0.85	3.22	2.38	-1.52	-0.04	-7.22	3.22	2.6
164	MAI-706 × LM 13	13.03	8.54	2.81	-5.19	-0.29	3.8	6.29	8.61	10.24 *	2.31	13.83 **	13.15 **
165	SKV-70 × CM 500	-1.86	-4.35	-9.4	-16.46	-12.14	-8.53	11.57 *	-20.89 **	-19.70 **	-25.47 **	-17.08 **	-17.58 **
166	SKV-70 × SKV 50	3.94	6.04	0.45	-7.38	-2.59	1.41	20.02 **	-9.60 *	-8.25	-14.84 **	-5.25	-5.82
167	SKV-70 × MAI 105	1.66	-1.54	-6.74	-14	-9.56	-5.85	-0.12	-15.52 **	-14.25 **	-20.41 **	-11.45 *	-11.98 *
168	SKV-70 × LM 13	7.11	4.15	-1.34	-9.03	-4.33	-0.4	13.95 **	3.21	4.76	-2.77	8.18	7.53
169	V-632-112 × CM 500	14.11	1.6	-3.75	-11.25	-6.66	-2.83	25.53 **	-7.43	-6.04	-12.79 **	-2.97	-3.56
170	V-632-112 × SKV 50	4.23	-2.43	-7.58	-14.78	-10.37	-6.7	27.74 **	-0.18	1.32	-5.96	4.63	3.99
171	V-632-112 × MAI 105	4.04	-8	-12.85	-19.64	-15.49	-12.02	15.37 **	0.86	2.37	-4.98	5.71	5.08
172	V-632-112 × LM 13	14.73	1.9	-3.47	-10.99	-6.39	-2.55	21.83 **	13.80 **	15.50 **	7.2	19.28 **	18.56 **
173	V-632-67 × CM 500	17.88	0.52	-4.78	-12.2	-7.66	-3.87	36.33 **	-6.21	-4.8	-11.64 **	-1.7	-2.29
174	V-632-67 × SKV 50	9.55	-1.58	-6.77	-14.03	-9.59	-5.88	46.85 **	7.49	9.1	1.26	12.66 **	11.98 *
175	V-632-67 × MAI 105	19.56	1.23	-4.11	-11.58	-7.01	-3.2	32.63 **	9.38 *	11.03 *	3.05	14.65 **	13.96 **
176	V-632-67 × LM 13	19.64	1.76	-3.6	-11.11	-6.52	-2.68	46.79 **	29.85 **	31.80 **	22.33 **	36.10 **	35.28 **
177	Z-50-3 × CM 500	1.46	-1.66	-6.84	-14.1	-9.66	-5.96	40.32 **	-4.43	-3	-9.97 *	0.17	-0.44
178	Z-50-3 × SKV 50	-3.05	-1.6	-6.79	-14.05	-9.61	-5.9	27.34 **	-7.67	-6.28	-13.02 **	-3.22	-3.81
179	Z-50-3 × MAI 105	-2.54	-6.13	-11.08	-18.01	-13.77	-10.23	17.44 **	-3.95	-2.51	-9.52 *	0.67	0.06
180	Z-50-3 × LM 13	2.45	-0.92	-6.15	-13.46	-8.99	-5.25	36.38 **	19.71 **	21.50 **	12.77 **	25.47 **	24.71 **
181	Z-51-1 × CM 500	7.7	-1.65	-6.83	-14.09	-9.65	-5.94	28.27 **	-4.31	-2.88	-9.86 *	0.29	-0.31
182	Z-51-1 × SKV 50	8.41	3.95	-1.53	-9.2	-4.51	-0.59	26.30 **	-0.22	1.28	-6	4.58	3.95
183	Z-51-1 × MAI 105	8.99	-1.13	-6.35	-13.64	-9.18	-5.45	2.42	-9.58 *	-8.23	-14.82 **	-5.23	-5.8
184	Z-51-1 × LM 13	12.68	2.66	-2.76	-10.33	-5.7	-1.83	24.06 **	16.95 **	18.71 **	10.18 *	22.58 **	21.84 **
185	Z-51-6 × CM 500	9.89	4.88	-0.65	-8.39	-3.66	0.3	43.50 **	-6.15	-4.74	-11.59 **	-1.63	-2.23

Sl. no.	Hybrid	Harvest index						Test weight (g)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	6.27	6.27	0.67	-7.17	-2.38	1.63	25.21 **	-12.60 **	-11.29 *	-17.66 **	-8.39	-8.95
187	Z-51-6 × MAI 105	7.95	2.37	-3.03	-10.58	-5.96	-2.1	3.33	-18.29 **	-17.07 **	-23.02 **	-14.36 **	-14.87 **
188	Z-51-6 × LM 13	6.45	1.37	-3.98	-11.46	-6.88	-3.06	18.51 **	0.82	2.33	-5.02	5.67	5.03
189	Z-52-29 × CM 500	15.83	8.14	2.43	-5.55	-0.67	3.41	22.30 **	-16.07 **	-14.82 **	-20.94 **	-12.03 *	-12.57 **
190	Z-52-29 × SKV 50	10.83	8.53	2.8	-5.2	-0.3	3.79	36.78 **	-0.12	1.38	-5.91	4.69	4.06
191	Z-52-29 × MAI 105	10.74	2.71	-2.71	-10.29	-5.65	-1.78	3.09	-15.16 **	-13.88 **	-20.07 **	-11.07 *	-11.61 *
192	Z-52-29 × LM 13	4.55	-2.63	-7.76	-14.95	-10.55	-6.88	-14.34 **	-24.37 **	-23.24 **	-28.75 **	-20.73 **	-21.21 **
193	Z-56-1 × CM 500	11.66	8.25	2.54	-5.44	-0.56	3.52	37.44 **	-15.63 **	-14.37 **	-20.52 **	-11.57 *	-12.11 *
194	Z-56-1 × SKV 50	9.08	10.73	4.89	-3.28	1.72	5.89	42.57 **	-6.21	-4.8	-11.64 **	-1.7	-2.29
195	Z-56-1 × MAI 105	18.58	14.24	8.22	-0.21	4.94	9.25	16.57 **	-12.50 **	-11.19 *	-17.57 **	-8.29	-8.84
196	Z-56-1 × LM 13	7.46	3.96	-1.53	-9.2	-4.5	-0.59	-8.84	-26.12 **	-25.01 **	-30.40 **	-22.56 **	-23.03 **
197	Z-56-8 × CM 500	13.94	1.52	-3.83	-11.32	-6.74	-2.91	8.67	-29.95 **	-28.90 **	-34.01 **	-26.58 **	-27.02 **
198	Z-56-8 × SKV 50	9.69	2.75	-2.67	-10.25	-5.62	-1.74	27.56 **	-12.16 **	-10.84 *	-17.25 **	-7.93	-8.49
199	Z-56-8 × MAI 105	17.98	4.41	-1.09	-8.8	-4.09	-0.15	12.50 *	-12.10 **	-10.78 *	-17.19 **	-7.87	-8.43
200	Z-56-8 × LM 13	21.35	7.87	2.18	-5.78	-0.91	3.15	46.10 **	22.90 **	24.75 **	15.78 **	28.82 **	28.04 **
201	Z-60-22 × CM 500	5.86	4.5	-1.01	-8.72	-4	-0.06	47.40 **	1.12	2.63	-4.74	5.99	5.35
202	Z-60-22 × SKV 50	3.77	7.18	1.52	-6.38	-1.55	2.49	32.88 **	-3	-1.54	-8.62 *	1.67	1.06
203	Z-60-22 × MAI 105	12.16	10.04	4.23	-3.88	1.08	5.23	11.35 *	-8.39	-7.01	-13.69 **	-3.98	-4.56
204	Z-60-22 × LM 13	10.48	8.83	3.09	-4.94	-0.03	4.07	36.32 **	20.33 **	22.13 **	13.36 **	26.12 **	25.36 **
205	Z-62-55 × CM 500	11.98	3.79	-1.69	-9.34	-4.66	-0.75	30.09 **	-3.45	-2.01	-9.05 *	1.19	0.58
206	Z-62-55 × SKV 50	8.98	5.98	0.39	-7.43	-2.65	1.35	6.34	-16.39 **	-15.14 **	-21.24 **	-12.37 *	-12.90 **
207	Z-62-55 × MAI 105	0.13	-7.8	-12.67	-19.47	-15.31	-11.83	-5.86	-17.25 **	-16.01 **	-22.05 **	-13.27 **	-13.79 **
208	Z-62-55 × LM 13	9.9	1.62	-3.74	-11.24	-6.65	-2.82	16.11 **	9.01 *	10.64 *	2.69	14.25 **	13.56 **
209	Z-62-67 × CM 500	3.03	-1.98	-7.15	-14.38	-9.96	-6.26	35.41 **	-20.49 **	-19.29 **	-25.09 **	-16.66 **	-17.16 **
210	Z-62-67 × SKV 50	7.34	7.02	1.38	-6.52	-1.69	2.35	26.75 **	-19.99 **	-18.79 **	-24.62 **	-16.14 **	-16.64 **
211	Z-62-67 × MAI 105	8.13	2.21	-3.18	-10.72	-6.1	-2.25	29.63 **	-6.15	-4.74	-11.59 **	-1.63	-2.23
212	Z-62-67 × LM 13	9.82	4.24	-1.26	-8.95	-4.25	-0.32	29.27 **	1.34	2.86	-4.53	6.22	5.58
213	Z-63-30 × CM 500	4.7	-6.48	-11.41	-18.31	-14.09	-10.57	33.52 **	0.52	2.03	-5.3	5.36	4.72
214	Z-63-30 × SKV 50	11.17		-1.13	-8.83	-4.12	-0.19	33.18 **	6.13	7.72	-0.02	11.24 *	10.57 *
215	Z-63-30 × MAI 105	9.18	-3.14	-8.25	-15.4	-11.02	-7.37	10.03 *	-2.12	-0.65	-7.79	2.6	1.98
216	Z-63-30 × LM 13	15.02	2.49	-2.92	-10.48	-5.85	-1.99	31.54 **	24.90 **	26.77 **	17.66 **	30.91 **	30.12 **
Range		-4.18	-10.76	-15.47	-22.05	-18.02	-14.66	-14.34	-39.48	-38.57	-42.98	-36.56	-36.95
		166.2	145.42	132.48	114.37	125.45	134.7	54.58	29.85	31.8	22.33	36.1	35.28
S. Em. ±		5.6147	6.4833					1.3248	1.5298				
C.D. 5%		11.0253	12.7309					2.6015	3.004				
C.D. 1%		14.5056	16.7496					3.4227	3.9522				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Grain rows per cob						Grains per row					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	1.91	-10.88 **	-2.74	-9.36 **	-1.84	-10.88 **	31.25 **	17.33 **	19.07 **	-6.05	-0.66	-15.41 **
2	V-1154 × SKV 50	12.20 **	-13.39 **	-5.48 *	-11.91 **	-4.61	-13.39 **	51.30 **	15.42 **	17.13 **	-7.58	-2.27	-16.79 **
3	V-1154 × MAI 105	8.65 **	2.51	11.87 **	4.26	12.90 **	2.51	27.21 **	3.75	5.28	-16.93 **	-12.16 **	-25.20 **
4	V-1154 × LM 13	9.24 **	-15.90 **	-8.22 **	-14.47 **	-7.37 **	-15.90 **	29.81 **	8.44	10.05 *	-13.16 **	-8.18	-21.82 **
5	V-1168 × CM 500	12.56 **	-2.51	6.39 *	-0.85	7.37 **	-2.51	9.19 *	4.12	5.66	-16.63 **	-11.84 **	-24.93 **
6	V-1168 × SKV 50	9.04 **	-16.74 **	-9.13 **	-15.32 **	-8.29 **	-16.74 **	37.47 **	13.08 **	14.75 **	-9.46 *	-4.26	-18.48 **
7	V-1168 × MAI 105	2.01	-4.6	4.11	-2.98	5.07	-4.6	3.26	-9.62	-8.28	-27.63 **	-23.48 **	-34.84 **
8	V-1168 × LM 13	0.55	-23.43 **	-16.44 **	-22.13 **	-15.67 **	-23.43 **	29.60 **	16.00 **	17.72 **	-7.11	-1.79	-16.37 **
9	V-1522 × CM 500	10.25 **	-16.74 **	-9.13 **	-15.32 **	-8.29 **	-16.74 **	28.98 **	10.86 *	12.50 *	-11.23 **	-6.14	-20.08 **
10	V-1522 × SKV 50	34.62 **	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	39.51 **	1.64	3.15	-18.61 **	-13.95 **	-26.72 **
11	V-1522 × MAI 105	5.58 *	-12.97 **	-5.02	-11.49 **	-4.15	-12.97 **	44.66 **	13.01 **	14.68 **	-9.51 *	-4.32	-18.53 **
12	V-1522 × LM 13	11.25 **	-27.62 **	-21.00 **	-26.38 **	-20.28 **	-27.62 **	36.22 **	9.12	10.74 *	-12.62 **	-7.61	-21.33 **
13	V-1649 × CM 500	8.65 **	-5.44 *	3.2	-3.83	4.15	-5.44 *	15.93 **	6.64	8.22	-14.61 **	-9.71 *	-23.12 **
14	V-1649 × SKV 50	10.08 **	-15.48 **	-7.76 **	-14.04 **	-6.91 **	-15.48 **	46.78 **	15.79 **	17.51 **	-7.28	-1.96	-16.52 **
15	V-1649 × MAI 105	4.68 *	-1.67	7.31 **	0	8.29 **	-1.67	39.46 **	17.36 **	19.10 **	-6.03	-0.64	-15.39 **
16	V-1649 × LM 13	5.46 *	-19.25 **	-11.87 **	-17.87 **	-11.06 **	-19.25 **	38.84 **	19.60 **	21.37 **	-4.23	1.26	-13.77 **
17	V-1742 × CM 500	13.38 **	-2.51	6.39 *	-0.85	7.37 **	-2.51	21.13 **	0.58	2.07	-19.46 **	-14.84 **	-27.49 **
18	V-1742 × SKV 50	14.36 **	-13.39 **	-5.48 *	-11.91 **	-4.61	-13.39 **	59.69 **	11.68 *	13.33 **	-10.58 **	-5.45	-19.49 **
19	V-1742 × MAI 105	14.86 **	6.69 **	16.44 **	8.51 **	17.51 **	6.69 **	9.58	-17.59 **	-16.37 **	-34.01 **	-30.23 **	-40.59 **
20	V-1742 × LM 13	13.02 **	-14.64 **	-6.85 **	-13.19 **	-5.99 *	-14.64 **	27.31 **	-1.74	-0.28	-21.32 **	-16.80 **	-29.16 **
21	V-2205 × CM 500	7.00 *	-20.08 **	-12.79 **	-18.72 **	-11.98 **	-20.08 **	28.14 **	-2.38	-0.93	-21.83 **	-17.35 **	-29.62 **
22	V-2205 × SKV 50	8.44 **	-30.13 **	-23.74 **	-28.94 **	-23.04 **	-30.13 **	60.09 **	0.99	2.49	-19.13 **	-14.49 **	-27.19 **
23	V-2205 × MAI 105	9.74 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	72.41 **	17.84 **	19.59 **	-5.64	-0.23	-15.04 **
24	V-2205 × LM 13	19.87 **	-23.01 **	-15.98 **	-21.70 **	-15.21 **	-23.01 **	34.38 **	-5.48	-4.08	-24.31 **	-19.97 **	-31.85 **
25	V-2232 × CM 500	15.23 **	-5.02 *	3.65	-3.4	4.61	-5.02 *	10.97 *	10.31 *	11.95 *	-11.67 **	-6.6	-20.47 **
26	V-2232 × SKV 50	7.83 **	-22.18 **	-15.07 **	-20.85 **	-14.29 **	-22.18 **	24.30 **	7.29	8.88	-14.09 **	-9.16 *	-22.65 **
27	V-2232 × MAI 105	7.26 **	-4.18	4.57	-2.55	5.53 *	-4.18	5.97	-2.96	-1.52	-22.29 **	-17.84 **	-30.04 **
28	V-2232 × LM 13	13.95 **	-17.99 **	-10.50 **	-16.60 **	-9.68 **	-17.99 **	17.72 **	10.15 *	11.78 *	-11.80 **	-6.74	-20.59 **
29	V-1410-1 × CM 500	7.85 **	-10.88 **	-2.74	-9.36 **	-1.84	-10.88 **	5.54	-12.21 *	-10.91 *	-29.71 **	-25.67 **	-36.71 **
30	V-1410-1 × SKV 50	7.51 **	-22.18 **	-15.07 **	-20.85 **	-14.29 **	-22.18 **	42.36 **	-0.23	1.24	-20.11 **	-15.53 **	-28.07 **
31	V-1410-1 × MAI 105	13.08 **	1.26	10.50 **	2.98	11.52 **	1.26	27.31 **	-4.08	-2.66	-23.19 **	-18.79 **	-30.85 **
32	V-1410-1 × LM 13	8.99 **	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	47.93 **	14.40 **	16.09 **	-8.40 *	-3.14	-17.52 **
33	V-1712-1 × CM 500	10.43 **	-2.51	6.39 *	-0.85	7.37 **	-2.51	41.24 **	21.32 **	23.11 **	-2.86	2.71	-12.54 **
34	V-1712-1 × SKV 50	19.03 **	-7.11 **	1.37	-5.53 *	2.3	-7.11 **	58.70 **	15.52 **	17.23 **	-7.5	-2.19	-16.72 **
35	V-1712-1 × MAI 105	15.16 **	9.62 **	19.63 **	11.49 **	20.74 **	9.62 **	45.16 **	13.31 **	14.99 **	-9.27 *	-4.06	-18.31 **
36	V-1712-1 × LM 13	15.05 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	42.36 **	13.96 **	15.65 **	-8.75 *	-3.51	-17.84 **
37	V-241-2 × CM 500	-1.69	-15.06 **	-7.31 **	-13.62 **	-6.45 *	-15.06 **	2.63	-14.16 **	-12.89 *	-31.26 **	-27.32 **	-38.11 **

Sl. no.	Hybrid	Grain rows per cob						Grains per row					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	7.14 **	-18.41 **	-10.96 **	-17.02 **	-10.14 **	-18.41 **	48.81 **	4.97	6.53	-15.94 **	-11.12 **	-24.32 **
39	V-241-2 × MAI 105	-4.93 *	-11.30 **	-3.2	-9.79 **	-2.3	-11.30 **	24.56 **	-5.58	-4.18	-24.39 **	-20.05 **	-31.92 **
40	V-241-2 × LM 13	10.19 **	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	28.89 **	0.28	1.76	-19.71 **	-15.10 **	-27.71 **
41	V-2437-1 × CM 500	5.49 *	-19.67 **	-12.33 **	-18.30 **	-11.52 **	-19.67 **	15.71 **	10.72 *	12.36 *	-11.34 **	-6.26	-20.18 **
42	V-2437-1 × SKV 50	20.63 **	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	39.02 **	14.81 **	16.51 **	-8.07 *	-2.79	-17.23 **
43	V-2437-1 × MAI 105	8.82 **	-9.62 **	-1.37	-8.09 **	-0.46	-9.62 **	30.10 **	14.30 **	15.99 **	-8.48 *	-3.23	-17.60 **
44	V-2437-1 × LM 13	19.11 **	-21.76 **	-14.61 **	-20.43 **	-13.82 **	-21.76 **	27.57 **	14.61 **	16.31 **	-8.23 *	-2.97	-17.37 **
45	V-2459-2 × CM 500	6.04 *	-19.25 **	-11.87 **	-17.87 **	-11.06 **	-19.25 **	26.45 **	13.79 **	15.48 **	-8.88 *	-3.66	-17.96 **
46	V-2459-2 × SKV 50	12.38 **	-25.94 **	-19.18 **	-24.68 **	-18.43 **	-25.94 **	53.58 **	18.08 **	19.83 **	-5.45	-0.03	-14.87 **
47	V-2459-2 × MAI 105	3.78	-13.81 **	-5.94 *	-12.34 **	-5.07	-13.81 **	46.67 **	20.49 **	22.28 **	-3.52	2.02	-13.13 **
48	V-2459-2 × LM 13	15.29 **	-24.27 **	-17.35 **	-22.98 **	-16.59 **	-24.27 **	25.49 **	5.59	7.15	-15.45 **	-10.60 *	-23.88 **
49	V-2516-2 × CM 500	-2.68	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	3.12	1.74	3.25	-18.53 **	-13.86 **	-26.65 **
50	V-2516-2 × SKV 50	2.76	-22.18 **	-15.07 **	-20.85 **	-14.29 **	-22.18 **	43.01 **	22.37 **	24.18 **	-2.02	3.61	-11.78 **
51	V-2516-2 × MAI 105	7.21 **	-0.42	8.68 **	1.28	9.68 **	-0.42	16.88 **	6.16	7.74	-14.99 **	-10.12 *	-23.46 **
52	V-2516-2 × LM 13	6.37 *	-19.67 **	-12.33 **	-18.30 **	-11.52 **	-19.67 **	27.73 **	18.55 **	20.31 **	-5.07	0.38	-14.53 **
53	V-2608-1 × CM 500	7.38 **	-11.72 **	-3.65	-10.21 **	-2.76	-11.72 **	8.38	-4.25	-2.83	-23.33 **	-18.93 **	-30.97 **
54	V-2608-1 × SKV 50	15.12 **	-17.15 **	-9.59 **	-15.74 **	-8.76 **	-17.15 **	42.67 **	7.36	8.95	-14.04 **	-9.10 *	-22.60 **
55	V-2608-1 × MAI 105	10.80 **	-1.26	7.76 **	0.43	8.76 **	-1.26	27.97 **	3.04	4.56	-17.49 **	-12.76 **	-25.72 **
56	V-2608-1 × LM 13	21.28 **	-12.97 **	-5.02	-11.49 **	-4.15	-12.97 **	31.24 **	8.28	9.88	-13.30 **	-8.33	-21.94 **
57	V-291-2 × CM 500	-3.23	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	19.64 **	0.48	1.97	-19.54 **	-14.93 **	-27.56 **
58	V-291-2 × SKV 50	5.45 *	-15.06 **	-7.31 **	-13.62 **	-6.45 *	-15.06 **	57.41 **	11.58 *	13.23 **	-10.65 **	-5.53	-19.56 **
59	V-291-2 × MAI 105	18.20 **	15.48 **	26.03 **	17.45 **	27.19 **	15.48 **	15.27 **	-12.22 *	-10.92 *	-29.71 **	-25.68 **	-36.71 **
60	V-291-2 × LM 13	11.46 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	41.75 **	10.76 *	12.40 *	-11.31 **	-6.22	-20.15 **
61	V-70-1 × CM 500	10.05 **	-12.97 **	-5.02	-11.49 **	-4.15	-12.97 **	36.66 **	19.78 **	21.55 **	-4.09	1.41	-13.65 **
62	V-70-1 × SKV 50	14.29 **	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	57.71 **	17.56 **	19.31 **	-5.86	-0.46	-15.24 **
63	V-70-1 × MAI 105	13.87 **	-2.09	6.85 **	-0.43	7.83 **	-2.09	28.45 **	2.52	4.04	-17.91 **	-13.20 **	-26.09 **
64	V-70-1 × LM 13	14.02 **	-21.76 **	-14.61 **	-20.43 **	-13.82 **	-21.76 **	38.64 **	13.41 **	15.09 **	-9.19 *	-3.98	-18.24 **
65	CIMMYT-47 × CM 500	0.24	-12.55 **	-4.57	-11.06 **	-3.69	-12.55 **	41.87 **	22.77 **	24.59 **	-1.69	3.95	-11.49 **
66	CIMMYT-47 × SKV 50	9.78 **	-15.48 **	-7.76 **	-14.04 **	-6.91 **	-15.48 **	60.41 **	17.80 **	19.55 **	-5.67	-0.26	-15.07 **
67	CIMMYT-47 × MAI 105	4.44 *	-1.67	7.31 **	0	8.29 **	-1.67	39.17 **	9.53	11.16 *	-12.29 **	-7.26	-21.03 **
68	CIMMYT-47 × LM 13	0.27	-23.01 **	-15.98 **	-21.70 **	-15.21 **	-23.01 **	52.06 **	22.70 **	24.52 **	-1.75	3.89	-11.54 **
69	CIMMYT-5 × CM 500	13.35 **	-20.08 **	-12.79 **	-18.72 **	-11.98 **	-20.08 **	74.56 **	27.30 **	29.19 **	1.93	7.78	-8.22 *
70	CIMMYT-5 × SKV 50	25.00 **	-24.69 **	-17.81 **	-23.40 **	-17.05 **	-24.69 **	73.41 **	3.74	5.28	-16.93 **	-12.16 **	-25.21 **
71	CIMMYT-5 × MAI 105	13.51 **	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	65.20 **	7.53	9.12	-13.90 **	-8.96 *	-22.48 **
72	CIMMYT-5 × LM 13	21.95 **	-26.78 **	-20.09 **	-25.53 **	-19.35 **	-26.78 **	64.61 **	10.42 *	12.05 *	-11.59 **	-6.51	-20.40 **
73	CM-115 × CM 500	-0.49	-14.23 **	-6.39 *	-12.77 **	-5.53 *	-14.23 **	11.10 *	-9.77	-8.43	-27.75 **	-23.60 **	-34.95 **
74	CM-115 × SKV 50	6.89 *	-18.83 **	-11.42 **	-17.45 **	-10.60 **	-18.83 **	56.24 **	6.43	8.01	-14.78 **	-9.89 *	-23.27 **

Sl. no.	Hybrid	Grain rows per cob						Grains per row					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	-1.57	-8.37 **	0	-6.81 **	0.92	-8.37 **	33.30 **	-2.18	-0.73	-21.67 **	-17.17 **	-29.47 **
76	CM-115 × LM 13	4.97	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	33.67 **	0.76	2.25	-19.32 **	-14.69 **	-27.36 **
77	CM-149 × CM 500	-10.57 **	-23.85 **	-16.89 **	-22.55 **	-16.13 **	-23.85 **	26.01 **	-7.52	-6.15	-25.94 **	-21.70 **	-33.32 **
78	CM-149 × SKV 50	3.35	-22.59 **	-15.53 **	-21.28 **	-14.75 **	-22.59 **	69.07 **	1.94	3.45	-18.37 **	-13.69 **	-26.51 **
79	CM-149 × MAI 105	3.18	-5.02 *	3.65	-3.4	4.61	-5.02 *	34.06 **	-12.11 *	-10.81 *	-29.62 **	-25.59 **	-36.64 **
80	CM-149 × LM 13	8.68 **	-18.83 **	-11.42 **	-17.45 **	-10.60 **	-18.83 **	48.81 **	0.52	2.01	-19.51 **	-14.90 **	-27.53 **
81	CML-165 × CM 500	5.35 *	-17.57 **	-10.05 **	-16.17 **	-9.22 **	-17.57 **	24.62 **	3.92	5.46	-16.79 **	-12.02 **	-25.08 **
82	CML-165 × SKV 50	13.23 **	-23.01 **	-15.98 **	-21.70 **	-15.21 **	-23.01 **	51.67 **	6.61	8.19	-14.64 **	-9.74 *	-23.14 **
83	CML-165 × MAI 105	6.63 **	-9.21 **	-0.91	-7.66 **	0	-9.21 **	28.44 **	-2.96	-1.52	-22.29 **	-17.84 **	-30.04 **
84	CML-165 × LM 13	8.64 **	-26.36 **	-19.63 **	-25.11 **	-18.89 **	-26.36 **	27.78 **	-0.91	0.55	-20.66 **	-16.11 **	-28.56 **
85	CML-166 × CM 500	-0.59	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	40.83 **	24.07 **	25.91 **	-0.65	5.04	-10.55 **
86	CML-166 × SKV 50	9.77 **	-14.23 **	-6.39 *	-12.77 **	-5.53 *	-14.23 **	67.88 **	25.91 **	27.77 **	0.82	6.6	-9.23 *
87	CML-166 × MAI 105	-1.65	-6.28 **	2.28	-4.68	3.23	-6.28 **	39.77 **	12.19 *	13.85 **	-10.17 *	-5.01	-19.12 **
88	CML-166 × LM 13	14.90 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	39.25 **	14.54 **	16.23 **	-8.29 *	-3.03	-17.43 **
89	CML-169 × CM 500	9.04 **	-11.72 **	-3.65	-10.21 **	-2.76	-11.72 **	1.9	-4.49	-3.08	-23.52 **	-19.14 **	-31.14 **
90	CML-169 × SKV 50	28.99 **	-8.79 **	-0.46	-7.23 **	0.46	-8.79 **	35.94 **	9.6	11.23 *	-12.24 **	-7.2	-20.98 **
91	CML-169 × MAI 105	-10.48 **	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	36.20 **	16.99 **	18.72 **	-6.32	-0.95	-15.66 **
92	CML-169 × LM 13	12.17 **	-20.92 **	-13.70 **	-19.57 **	-12.90 **	-20.92 **	33.00 **	16.88 **	18.62 **	-6.41	-1.04	-15.73 **
93	CML-172 × CM 500	-0.98	-15.06 **	-7.31 **	-13.62 **	-6.45 *	-15.06 **	31.78 **	15.73 **	17.45 **	-7.33	-2.01	-16.56 **
94	CML-172 × SKV 50	5.26	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	55.16 **	15.93 **	17.65 **	-7.17	-1.85	-16.42 **
95	CML-172 × MAI 105	2.93	-4.6	4.11	-2.98	5.07	-4.6	38.44 **	10.73 *	12.37 *	-11.34 **	-6.25	-20.17 **
96	CML-172 × LM 13	8.89 **	-17.99 **	-10.50 **	-16.60 **	-9.68 **	-17.99 **	13.02 *	-7.35	-5.98	-25.81 **	-21.56 **	-33.21 **
97	CML-359 × CM 500	0.24	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	25.01 **	20.25 **	22.04 **	-3.71	1.82	-13.30 **
98	CML-359 × SKV 50	6.49 *	-17.57 **	-10.05 **	-16.17 **	-9.22 **	-17.57 **	23.90 **	2.96	4.49	-17.56 **	-12.83 **	-25.77 **
99	CML-359 × MAI 105	10.62 **	4.6	14.16 **	6.38 **	15.21 **	4.6	11.09 *	-1.83	-0.38	-21.39 **	-16.88 **	-29.23 **
100	CML-359 × LM 13	8.40 **	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	10.76 *	0.07	1.55	-19.87 **	-15.27 **	-27.85 **
101	CML-411 × CM 500	17.36 **	-10.88 **	-2.74	-9.36 **	-1.84	-10.88 **	32.13 **	14.06 **	15.75 **	-8.67 *	-3.43	-17.77 **
102	CML-411 × SKV 50	15.29 **	-24.27 **	-17.35 **	-22.98 **	-16.59 **	-24.27 **	56.64 **	14.70 **	16.40 **	-8.15 *	-2.88	-17.30 **
103	CML-411 × MAI 105	8.08 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	38.25 **	8.52	10.12 *	-13.11 **	-8.12	-21.77 **
104	CML-411 × LM 13	27.80 **	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	42.96 **	15.05 **	16.76 **	-7.87	-2.59	-17.05 **
105	HKI-193-1 × CM 500	3.32	-15.48 **	-7.76 **	-14.04 **	-6.91 **	-15.48 **	9.28	-0.88	0.59	-20.63 **	-16.08 **	-28.54 **
106	HKI-193-1 × SKV 50	18.13 **	-15.48 **	-7.76 **	-14.04 **	-6.91 **	-15.48 **	32.49 **	2.82	4.35	-17.67 **	-12.94 **	-25.87 **
107	HKI-193-1 × MAI 105	12.74 **	0	9.13 **	1.7	10.14 **	0	23.34 **	2.22	3.73	-18.15 **	-13.46 **	-26.31 **
108	HKI-193-1 × LM 13	14.37 **	-18.41 **	-10.96 **	-17.02 **	-10.14 **	-18.41 **	36.14 **	15.53 **	17.24 **	-7.49	-2.19	-16.71 **
109	HKI-193-2 × CM 500	3.92	-16.74 **	-9.13 **	-15.32 **	-8.29 **	-16.74 **	25.56 **	-3.64	-2.21	-22.84 **	-18.42 **	-30.53 **
110	HKI-193-2 × SKV 50	19.16 **	-16.74 **	-9.13 **	-15.32 **	-8.29 **	-16.74 **	60.24 **	1.98	3.49	-18.34 **	-13.66 **	-26.48 **
111	HKI-193-2 × MAI 105	9.13 **	-5.02 *	3.65	-3.4	4.61	-5.02 *	36.28 **	-6.09	-4.7	-24.80 **	-20.49 **	-32.30 **

Sl. no.	Hybrid	Grain rows per cob						Grains per row					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	20.12 **	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	45.77 **	3.34	4.88	-17.25 **	-12.50 **	-25.49 **
113	LTP-1 × CM 500	14.21 **	-10.88 **	-2.74	-9.36 **	-1.84	-10.88 **	25.67 **	10.25 *	11.88 *	-11.72 **	-6.66	-20.52 **
114	LTP-1 × SKV 50	20.99 **	-17.99 **	-10.50 **	-16.60 **	-9.68 **	-17.99 **	52.75 **	13.99 **	15.68 **	-8.72 *	-3.48	-17.82 **
115	LTP-1 × MAI 105	17.24 **	-0.42	8.68 **	1.28	9.68 **	-0.42	37.86 **	10.15 *	11.78 *	-11.80 **	-6.74	-20.59 **
116	LTP-1 × LM 13	21.98 **	-17.57 **	-10.05 **	-16.17 **	-9.22 **	-17.57 **	20.06 **	-1.7	-0.24	-21.28 **	-16.77 **	-29.13 **
117	MAI-11 5 × CM 500	-1.44	-14.23 **	-6.39 *	-12.77 **	-5.53 *	-14.23 **	14.35 **	-1.7	-0.24	-21.28 **	-16.77 **	-29.13 **
118	MAI-115 × SKV 50	6.81 *	-17.99 **	-10.50 **	-16.60 **	-9.68 **	-17.99 **	33.87 **	-2.45	-1	-21.88 **	-17.40 **	-29.67 **
119	MAI-116 × MAI 105	4.68 *	-1.67	7.31 **	0	8.29 **	-1.67	6.72	-16.61 **	-15.37 **	-33.23 **	-29.40 **	-39.88 **
120	MAI-117 × LM 13	3.83	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	47.32 **	18.04 **	19.79 **	-5.48	-0.06	-14.90 **
121	MAI-107 × CM 500	16.43 **	0.84	10.05 **	2.55	11.06 **	0.84	15.94 **	-4.79	-3.38	-23.77 **	-19.39 **	-31.36 **
122	MAI-107 × SKV 50	7.40 **	-17.99 **	-10.50 **	-16.60 **	-9.68 **	-17.99 **	34.40 **	-7.24	-5.87	-25.73 **	-21.47 **	-33.13 **
123	MAI-107 × MAI 105	2.91	-3.77	5.02	-2.13	5.99 *	-3.77	25.60 **	-6.7	-5.32	-25.29 **	-21.01 **	-32.74 **
124	MAI-107 × LM 13	1.1	-23.01 **	-15.98 **	-21.70 **	-15.21 **	-23.01 **	37.15 **	4.6	6.15	-16.24 **	-11.44 **	-24.59 **
125	MAI-109 × CM 500	3.08	-23.01 **	-15.98 **	-21.70 **	-15.21 **	-23.01 **	26.80 **	8.27	9.88	-13.30 **	-8.33	-21.94 **
126	MAI-109 × SKV 50	8.44 **	-30.13 **	-23.74 **	-28.94 **	-23.04 **	-30.13 **	44.04 **	4.13	5.67	-16.62 **	-11.84 **	-24.93 **
127	MAI-109 × MAI 105	8.72 **	-11.30 **	-3.2	-9.79 **	-2.3	-11.30 **	16.83 **	-9.39	-8.05	-27.45 **	-23.29 **	-34.68 **
128	MAI-109 × LM 13	16.61 **	-25.10 **	-18.26 **	-23.83 **	-17.51 **	-25.10 **	38.51 **	10.18 *	11.81 *	-11.78 **	-6.72	-20.57 **
129	MAI-112 × CM 500	5.31 *	-8.79 **	-0.46	-7.23 **	0.46	-8.79 **	11.25 *	-7.65	-6.28	-26.05 **	-21.81 **	-33.42 **
130	MAI-112 × SKV 50	5.75 *	-19.25 **	-11.87 **	-17.87 **	-11.06 **	-19.25 **	59.36 **	11.41 *	13.06 *	-10.79 **	-5.68	-19.68 **
131	MAI-112 × MAI 105	6.94 **	0	9.13 **	1.7	10.14 **	0	34.75 **	1.3	2.8	-18.89 **	-14.24 **	-26.97 **
132	MAI-112 × LM 13	8.79 **	-17.15 **	-9.59 **	-15.74 **	-8.76 **	-17.15 **	27.48 **	-1.63	-0.18	-21.23 **	-16.72 **	-29.08 **
133	MAI-121 × CM 500	-1.65	-12.55 **	-4.57	-11.06 **	-3.69	-12.55 **	34.57 **	15.25 **	16.96 **	-7.71	-2.42	-16.91 **
134	MAI-121 × SKV 50	3.19	-18.83 **	-11.42 **	-17.45 **	-10.60 **	-18.83 **	28.13 **	-7.05	-5.67	-25.57 **	-21.30 **	-32.98 **
135	MAI-121 × MAI 105	6.11 **	1.67	10.96 **	3.4	11.98 **	1.67	20.25 **	-6.43	-5.05	-25.08 **	-20.78 **	-32.54 **
136	MAI-121 × LM 13	6.67 *	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	31.80 **	5.18	6.74	-15.78 **	-10.95 *	-24.17 **
137	MAI-137 × CM 500	-3.9	-22.59 **	-15.53 **	-21.28 **	-14.75 **	-22.59 **	8.7	-20.48 **	-19.31 **	-36.33 **	-32.68 **	-42.67 **
138	MAI-137 × SKV 50	9.52 **	-23.01 **	-15.98 **	-21.70 **	-15.21 **	-23.01 **	73.10 **	3.95	5.49	-16.76 **	-11.99 **	-25.06 **
139	MAI-137 × MAI 105	1.91	-10.88 **	-2.74	-9.36 **	-1.84	-10.88 **	34.11 **	-12.40 *	-11.10 *	-29.86 **	-25.83 **	-36.85 **
140	MAI-137 × LM 13	11.64 **	-21.76 **	-14.61 **	-20.43 **	-13.82 **	-21.76 **	51.51 **	1.98	3.49	-18.34 **	-13.66 **	-26.48 **
141	MAI-27 × CM 500	6.88 **	-15.48 **	-7.76 **	-14.04 **	-6.91 **	-15.48 **	9.97	-11.40 *	-10.09 *	-29.06 **	-24.99 **	-36.12 **
142	MAI-27 × SKV 50	14.29 **	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	18.31 **	-20.18 **	-18.99 **	-36.08 **	-32.42 **	-42.45 **
143	MAI-27 × MAI 105	8.03 **	-7.11 **	1.37	-5.53 *	2.3	-7.11 **	23.37 **	-10.27 *	-8.94	-28.15 **	-24.03 **	-35.31 **
144	MAI-27 × LM 13	14.63 **	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	38.84 **	3.74	5.28	-16.93 **	-12.16 **	-25.21 **
145	MAI-29 × CM 500	0.24	-14.23 **	-6.39 *	-12.77 **	-5.53 *	-14.23 **	15.19 **	-3.74	-2.32	-22.92 **	-18.50 **	-30.60 **
146	MAI-29 × SKV 50	2.78	-22.59 **	-15.53 **	-21.28 **	-14.75 **	-22.59 **	40.72 **	-0.85	0.62	-20.61 **	-16.05 **	-28.52 **
147	MAI-29 × MAI 105	-4.52 *	-11.72 **	-3.65	-10.21 **	-2.76	-11.72 **	26.98 **	-3.84	-2.41	-23.00 **	-18.58 **	-30.67 **
148	MAI-29 × LM 13	13.09 **	-15.06 **	-7.31 **	-13.62 **	-6.45 *	-15.06 **	32.88 **	3.27	4.8	-17.31 **	-12.56 **	-25.55 **

Sl. no.	Hybrid	Grain rows per cob						Grains per row					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	-0.5	-15.90 **	-8.22 **	-14.47 **	-7.37 **	-15.90 **	34.43 **	-5.54	-4.14	-24.36 **	-20.02 **	-31.90 **
150	MAI-35 × SKV 50	3.1	-23.43 **	-16.44 **	-22.13 **	-15.67 **	-23.43 **	53.74 **	-12.11 *	-10.81 *	-29.62 **	-25.59 **	-36.64 **
151	MAI-35 × MAI 105	-6.18 **	-14.23 **	-6.39 *	-12.77 **	-5.53 *	-14.23 **	68.02 **	4.9	6.46	-16.00 **	-11.18 **	-24.37 **
152	MAI-35 × LM 13	18.64 **	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	34.63 **	-13.27 **	-11.98 *	-30.55 **	-26.57 **	-37.47 **
153	MAI-45 × CM 500	-7.20 **	-21.76 **	-14.61 **	-20.43 **	-13.82 **	-21.76 **	13.92 **	-5.06	-3.66	-23.98 **	-19.62 **	-31.56 **
154	MAI-45 × SKV 50	-0.56	-26.36 **	-19.63 **	-25.11 **	-18.89 **	-26.36 **	35.41 **	-4.9	-3.49	-23.85 **	-19.48 **	-31.44 **
155	MAI-45 × MAI 105	2.29	-6.69 **	1.83	-5.11 *	2.76	-6.69 **	18.80 **	-10.31 *	-8.98	-28.18 **	-24.06 **	-35.34 **
156	MAI-45 × LM 13	-3.68	-28.87 **	-22.37 **	-27.66 **	-21.66 **	-28.87 **	45.09 **	12.43 *	14.09 **	-9.98 *	-4.81	-18.95 **
157	MAI-48 × CM 500	2.72	-20.92 **	-13.70 **	-19.57 **	-12.90 **	-20.92 **	-15.50 **	-20.66 **	-19.48 **	-36.47 **	-32.82 **	-42.80 **
158	MAI-48 × SKV 50	19.12 **	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	12.02 *	-9.49	-8.15	-27.53 **	-23.37 **	-34.75 **
159	MAI-48 × MAI 105	8.23 **	-9.21 **	-0.91	-7.66 **	0	-9.21 **	10.85 *	-4.6	-3.18	-23.61 **	-19.22 **	-31.22 **
160	MAI-48 × LM 13	31.45 **	-12.55 **	-4.57	-11.06 **	-3.69	-12.55 **	16.81 **	2.86	4.38	-17.64 **	-12.91 **	-25.84 **
161	MAI-706 × CM 500	-1.38	-10.04 **	-1.83	-8.51 **	-0.92	-10.04 **	9.80 *	14.50 **	16.20 **	-8.32 *	-3.06	-17.45 **
162	MAI-706 × SKV 50	2.84	-16.74 **	-9.13 **	-15.32 **	-8.29 **	-16.74 **	13.56 **	3.54	5.08	-17.09 **	-12.33 **	-25.35 **
163	MAI-706 × MAI 105	1.92	0	9.13 **	1.7	10.14 **	0	15.19 **	11.09 *	12.74 *	-11.04 **	-5.94	-19.91 **
164	MAI-706 × LM 13	-1.55	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	6.5	4.84	6.39	-16.05 **	-11.24 **	-24.42 **
165	SKV-70 × CM 500	5.53 *	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	15.60 **	5	6.56	-15.92 **	-11.10 **	-24.30 **
166	SKV-70 × SKV 50	16.91 **	-14.64 **	-6.85 **	-13.19 **	-5.99 *	-14.64 **	38.80 **	7.9	9.5	-13.60 **	-8.65 *	-22.21 **
167	SKV-70 × MAI 105	4.87 *	-5.44 *	3.2	-3.83	4.15	-5.44 *	7.73	-10.58 *	-9.26	-28.40 **	-24.29 **	-35.54 **
168	SKV-70 × LM 13	20.69 **	-12.13 **	-4.11	-10.64 **	-3.23	-12.13 **	24.88 **	6.13	7.7	-15.02 **	-10.14 *	-23.48 **
169	V-632-112 × CM 500	3.21	-12.55 **	-4.57	-11.06 **	-3.69	-12.55 **	42.50 **	20.29 **	22.07 **	-3.68	1.85	-13.28 **
170	V-632-112 × SKV 50	8.99 **	-18.83 **	-11.42 **	-17.45 **	-10.60 **	-18.83 **	44.86 **	3.3	4.83	-17.28 **	-12.54 **	-25.52 **
171	V-632-112 × MAI 105	0.46	-7.95 **	0.46	-6.38 **	1.38	-7.95 **	30.33 **	-0.2	1.28	-20.09 **	-15.50 **	-28.05 **
172	V-632-112 × LM 13	8.73 **	-19.25 **	-11.87 **	-17.87 **	-11.06 **	-19.25 **	43.36 **	12.63 *	14.30 **	-9.81 *	-4.64	-18.80 **
173	V-632-67 × CM 500	11.45 **	-8.37 **	0	-6.81 **	0.92	-8.37 **	28.29 **	4.94	6.5	-15.97 **	-11.15 **	-24.34 **
174	V-632-67 × SKV 50	10.47 **	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	54.09 **	5.86	7.42	-15.24 **	-10.37 *	-23.68 **
175	V-632-67 × MAI 105	3.29	-7.95 **	0.46	-6.38 **	1.38	-7.95 **	23.28 **	-8.81	-7.46	-26.98 **	-22.79 **	-34.26 **
176	V-632-67 × LM 13	21.87 **	-12.55 **	-4.57	-11.06 **	-3.69	-12.55 **	32.29 **	0.48	1.97	-19.54 **	-14.93 **	-27.56 **
177	Z-50-3 × CM 500	10.20 **	-9.62 **	-1.37	-8.09 **	-0.46	-9.62 **	6.46	-0.78	0.69	-20.55 **	-15.99 **	-28.47 **
178	Z-50-3 × SKV 50	7.87 **	-22.59 **	-15.53 **	-21.28 **	-14.75 **	-22.59 **	22.78 **	-1.66	-0.21	-21.26 **	-16.74 **	-29.11 **
179	Z-50-3 × MAI 105	10.59 **	-1.67	7.31 **	0	8.29 **	-1.67	21.46 **	3.68	5.22	-16.98 **	-12.22 **	-25.25 **
180	Z-50-3 × LM 13	9.94 **	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	23.68 **	8.04	9.64	-13.49 **	-8.53 *	-22.11 **
181	Z-51-1 × CM 500	0	-7.53 **	0.91	-5.96 *	1.84	-7.53 **	6.15	-9.19	-7.84	-27.29 **	-23.11 **	-34.53 **
182	Z-51-1 × SKV 50	5.34 *	-13.39 **	-5.48 *	-11.91 **	-4.61	-13.39 **	39.92 **	1.37	2.87	-18.83 **	-14.17 **	-26.92 **
183	Z-51-1 × MAI 105	6.53 **	5.86 *	15.53 **	7.66 **	16.59 **	5.86 *	12.64 *	-12.46 *	-11.16 *	-29.90 **	-25.88 **	-36.89 **
184	Z-51-1 × LM 13	8.67 **	-10.88 **	-2.74	-9.36 **	-1.84	-10.88 **	40.88 **	12.29 *	13.95 **	-10.09 *	-4.93	-19.05 **
185	Z-51-6 × CM 500	14.22 **	0.84	10.05 **	2.55	11.06 **	0.84	43.08 **	10.12 *	11.75 *	-11.82 **	-6.77	-20.61 **

Sl. no.	Hybrid	Grain rows per cob						Grains per row					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	30.29 **	1.67	10.96 **	3.4	11.98 **	1.67	71.24 **	9.36	10.98 *	-12.43 **	-7.41	-21.15 **
187	Z-51-6 × MAI 105	26.15 **	20.08 **	31.05 **	22.13 **	32.26 **	20.08 **	41.16 **	-2.41	-0.97	-21.86 **	-17.38 **	-29.65 **
188	Z-51-6 × LM 13	15.05 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	33.82 **	-4.83	-3.42	-23.79 **	-19.42 **	-31.39 **
189	Z-52-29 × CM 500	-0.13	-18.31 **	-10.84 **	-16.91 **	-10.02 **	-18.31 **	39.07 **	18.04 **	19.79 **	-5.48	-0.06	-14.90 **
190	Z-52-29 × SKV 50	13.45 **	-18.83 **	-11.42 **	-17.45 **	-10.60 **	-18.83 **	34.63 **	-3.36	-1.93	-22.62 **	-18.18 **	-30.33 **
191	Z-52-29 × MAI 105	7.08 **	-5.02 *	3.65	-3.4	4.61	-5.02 *	27.46 **	-1.8	-0.35	-21.37 **	-16.86 **	-29.20 **
192	Z-52-29 × LM 13	25.51 **	-10.46 **	-2.28	-8.94 **	-1.38	-10.46 **	29.64 **	2.46	3.98	-17.96 **	-13.25 **	-26.13 **
193	Z-56-1 × CM 500	5.35	-21.76 **	-14.61 **	-20.43 **	-13.82 **	-21.76 **	6.64	-12.25 *	-10.95 *	-29.74 **	-25.71 **	-36.74 **
194	Z-56-1 × SKV 50	17.65 **	-24.69 **	-17.81 **	-23.40 **	-17.05 **	-24.69 **	42.83 **	-1.19	0.27	-20.88 **	-16.34 **	-28.76 **
195	Z-56-1 × MAI 105	23.71 **	0.42	9.59 **	2.13	10.60 **	0.42	27.97 **	-4.73	-3.32	-23.71 **	-19.34 **	-31.31 **
196	Z-56-1 × LM 13	31.15 **	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	33.06 **	1.71	3.22	-18.56 **	-13.88 **	-26.67 **
197	Z-56-8 × CM 500	-11.83 **	-20.50 **	-13.24 **	-19.15 **	-12.44 **	-20.50 **	10.04	-11.50 *	-10.19 *	-29.13 **	-25.07 **	-36.19 **
198	Z-56-8 × SKV 50	7.85 **	-13.81 **	-5.94 *	-12.34 **	-5.07	-13.81 **	30.33 **	-12.25 *	-10.95 *	-29.74 **	-25.71 **	-36.74 **
199	Z-56-8 × MAI 105	-0.43	-3.35	5.48 *	-1.7	6.45 *	-3.35	22.33 **	-11.20 *	-9.88	-28.89 **	-24.81 **	-35.98 **
200	Z-56-8 × LM 13	-1.31	-21.34 **	-14.16 **	-20.00 **	-13.36 **	-21.34 **	44.94 **	8.1	9.7	-13.44 **	-8.47 *	-22.06 **
201	Z-60-22 × CM 500	-6.06 *	-22.18 **	-15.07 **	-20.85 **	-14.29 **	-22.18 **	22.77 **	7.21	8.8	-14.15 **	-9.22 *	-22.70 **
202	Z-60-22 × SKV 50	10.66 **	-19.67 **	-12.33 **	-18.30 **	-11.52 **	-19.67 **	46.97 **	9.09	10.71 *	-12.65 **	-7.63	-21.35 **
203	Z-60-22 × MAI 105	13.29 **	1.67	10.96 **	3.4	11.98 **	1.67	28.93 **	2.49	4.01	-17.93 **	-13.22 **	-26.11 **
204	Z-60-22 × LM 13	6.94 *	-22.59 **	-15.53 **	-21.28 **	-14.75 **	-22.59 **	20.56 **	-1.77	-0.31	-21.34 **	-16.83 **	-29.18 **
205	Z-62-55 × CM 500	-3.65	-17.15 **	-9.59 **	-15.74 **	-8.76 **	-17.15 **	20.48 **	9.71	11.33 *	-12.15 **	-7.12	-20.91 **
206	Z-62-55 × SKV 50	11.05 **	-15.90 **	-8.22 **	-14.47 **	-7.37 **	-15.90 **	35.96 **	5.99	7.56	-15.13 **	-10.26 *	-23.58 **
207	Z-62-55 × MAI 105	15.77 **	7.53 **	17.35 **	9.36 **	18.43 **	7.53 **	5.31	-12.36 *	-11.06 *	-29.82 **	-25.79 **	-36.81 **
208	Z-62-55 × LM 13	11.91 **	-15.48 **	-7.76 **	-14.04 **	-6.91 **	-15.48 **	26.18 **	7.53	9.12	-13.90 **	-8.96 *	-22.48 **
209	Z-62-67 × CM 500	-11.72 **	-19.67 **	-12.33 **	-18.30 **	-11.52 **	-19.67 **	7.04	-10.89 *	-9.57	-28.65 **	-24.55 **	-35.76 **
210	Z-62-67 × SKV 50	3.63	-16.32 **	-8.68 **	-14.89 **	-7.83 **	-16.32 **	46.59 **	2.83	4.35	-17.66 **	-12.94 **	-25.87 **
211	Z-62-67 × MAI 105	5.13 *	2.93	12.33 **	4.68	13.36 **	2.93	21.15 **	-8.64	-7.28	-26.84 **	-22.65 **	-34.13 **
212	Z-62-67 × LM 13	13.25 **	-8.79 **	-0.46	-7.23 **	0.46	-8.79 **	23.57 **	-4.36	-2.94	-23.41 **	-19.02 **	-31.05 **
213	Z-63-30 × CM 500	-4.58	-17.15 **	-9.59 **	-15.74 **	-8.76 **	-17.15 **	12.91 *	-10.18 *	-8.84	-28.07 **	-23.95 **	-35.24 **
214	Z-63-30 × SKV 50	8.20 **	-17.15 **	-9.59 **	-15.74 **	-8.76 **	-17.15 **	69.03 **	12.33 *	13.99 **	-10.06 *	-4.9	-19.02 **
215	Z-63-30 × MAI 105	2.68	-3.77	5.02	-2.13	5.99 *	-3.77	2.85	-26.24 **	-25.15 **	-40.94 **	-37.55 **	-46.82 **
216	Z-63-30 × LM 13	20.00 **	-8.37 **	0	-6.81 **	0.92	-8.37 **	41.26 **	4.12	5.66	-16.63 **	-11.84 **	-24.93 **
Range		-11.83	-30.13	-23.74	-28.94	-23.04	-30.13	-15.5	-26.24	-25.15	-40.94	-37.55	-46.82
		34.62	20.08	31.05	22.13	32.26	20.08	74.56	27.3	29.19	1.93	7.78	-8.22
S. Em. ±		0.3265	0.377					1.4222	1.6422				
C.D. 5%		0.6411	0.7402					2.7927	3.2248				
C.D. 1%		0.8434	0.9739					3.6743	4.2427				

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Cob length (cm)						Cob girth (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
1	V-1154 × CM 500	5.73	-0.2	-7.56	-11.03 *	-6.91	-9.69 *	3.84	-6.49	-3.3	-7.32 *	-5.36	-5.17
2	V-1154 × SKV 50	21.21 **	4.66	-3.05	-6.69	-2.37	-5.29	13.03 **	-6.86 *	-3.68	-7.69 *	-5.73	-5.54
3	V-1154 × MAI 105	5.43	-5.08	-12.07 **	-15.38 **	-11.46 *	-14.11 **	9.55 **	1.73	5.2	0.82	2.96	3.17
4	V-1154 × LM 13	20.65 **	12.16 *	3.9	-0.01	4.63	1.49	4.59	-9.05 **	-5.96	-9.86 **	-7.95 *	-7.77 *
5	V-1168 × CM 500	-1.99	-12.10 *	-18.57 **	-21.63 **	-18.00 **	-20.46 **	13.32 **	-2.6	0.72	-3.46	-1.42	-1.22
6	V-1168 × SKV 50	22.58 **	0.09	-7.28	-10.77 *	-6.63	-9.43 *	17.49 **	-7.99 *	-4.85	-8.81 *	-6.87	-6.68
7	V-1168 × MAI 105	2.17	-12.82 **	-19.24 **	-22.28 **	-18.67 **	-21.11 **	5.72	-6.16	-2.96	-6.99 *	-5.02	-4.83
8	V-1168 × LM 13	27.69 **	12.70 **	4.4	0.47	5.13	1.98	10.41 **	-8.52 *	-5.4	-9.34 **	-7.41 *	-7.22 *
9	V-1522 × CM 500	1.69	-2.07	-9.28 *	-12.69 **	-8.64	-11.38 **	19.05 **	-4.63	-1.38	-5.48	-3.47	-3.27
10	V-1522 × SKV 50	18.73 **	4.8	-2.92	-6.57	-2.24	-5.17	22.23 **	-11.42 **	-8.40 *	-12.21 **	-10.34 **	-10.16 **
11	V-1522 × MAI 105	8.65	-0.1	-7.46	-10.94 *	-6.81	-9.60 *	13.73 **	-5.69	-2.48	-6.53	-4.55	-4.36
12	V-1522 × LM 13	13.01 **	7.22	-0.68	-4.41	0.02	-2.98	17.92 **	-9.19 **	-6.09	-10.00 **	-8.09 *	-7.90 *
13	V-1649 × CM 500	-0.99	-4.64	-11.67 **	-14.99 **	-11.05 *	-13.71 **	12.99 **	-11.98 **	-8.98 *	-12.77 **	-10.92 **	-10.74 **
14	V-1649 × SKV 50	26.50 **	11.66 *	3.43	-0.45	4.16	1.04	28.50 **	-9.72 **	-6.64	-10.52 **	-8.63 *	-8.44 *
15	V-1649 × MAI 105	26.38 **	16.20 **	7.64	3.59	8.4	5.15	20.11 **	-3.06	0.24	-3.93	-1.89	-1.69
16	V-1649 × LM 13	29.14 **	22.52 **	13.50 **	9.23 *	14.30 **	10.87 *	21.72 **	-8.95 *	-5.85	-9.77 **	-7.85 *	-7.66 *
17	V-1742 × CM 500	11.23 *	-2.8	-9.96 *	-13.34 **	-9.33 *	-12.04 **	10.39 **	-13.52 **	-10.57 **	-14.29 **	-12.47 **	-12.29 **
18	V-1742 × SKV 50	35.71 **	7.68	-0.25	-4	0.45	-2.56	28.15 **	-9.39 **	-6.3	-10.19 **	-8.29 *	-8.10 *
19	V-1742 × MAI 105	9.52	-9.07	-15.77 **	-18.94 **	-15.18 **	-17.72 **	25.14 **	1.56	5.03	0.66	2.8	3
20	V-1742 × LM 13	20.81 **	3.84	-3.81	-7.43	-3.13	-6.04	25.24 **	-5.76	-2.55	-6.6	-4.62	-4.42
21	V-2205 × CM 500	16.33 **	-3.3	-10.42 *	-13.79 **	-9.79 *	-12.49 **	18.46 **	-8.79 *	-5.68	-9.60 **	-7.68 *	-7.49 *
22	V-2205 × SKV 50	35.39 **	1.66	-5.83	-9.37 *	-5.17	-8.01	22.15 **	-15.28 **	-12.39 **	-16.03 **	-14.25 **	-14.08 **
23	V-2205 × MAI 105	39.21 **	9.64 *	1.57	-2.25	2.28	-0.78	20.25 **	-4.03	-0.76	-4.88	-2.86	-2.67
24	V-2205 × LM 13	23.26 **	0.69	-6.73	-10.23 *	-6.07	-8.88 *	23.51 **	-8.72 *	-5.61	-9.53 **	-7.61 *	-7.43 *
25	V-2232 × CM 500	1.39	1.64	-5.85	-9.39 *	-5.19	-8.03	5.33	-9.82 **	-6.75	-10.62 **	-8.73 *	-8.54 *
26	V-2232 × SKV 50	21.10 **	11.67 *	3.44	-0.44	4.17	1.05	8.26 *	-15.58 **	-12.70 **	-16.33 **	-14.56 **	-14.38 **
27	V-2232 × MAI 105	3.91	-0.37	-7.71	-11.17 **	-7.06	-9.84 *	16.39 **	2.93	6.44	2.01	4.18	4.39
28	V-2232 × LM 13	14.38 **	13.03 **	4.71	0.77	5.44	2.29	14.52 **	-5.49	-2.27	-6.33	-4.35	-4.15
29	V-1410-1 × CM 500	-0.21	-9.25	-15.93 **	-19.09 **	-15.34 **	-17.88 **	10.43 **	-8.16 *	-5.03	-8.97 **	-7.04 *	-6.85
30	V-1410-1 × SKV 50	22.21 **	1.32	-6.14	-9.67 *	-5.48	-8.31	18.69 **	-10.35 **	-7.30 *	-11.15 **	-9.27 **	-9.08 *
31	V-1410-1 × MAI 105	18.74 **	2.81	-4.76	-8.34	-4.09	-6.97	18.43 **	1.83	5.3	0.92	3.07	3.27
32	V-1410-1 × LM 13	24.56 **	11.51 *	3.29	-0.59	4.02	0.9	19.85 **	-4.03	-0.76	-4.88	-2.86	-2.67
33	V-1712-1 × CM 500	16.24 **	3.22	-4.39	-7.98	-3.71	-6.6	14.09 **	-1.63	1.72	-2.51	-0.44	-0.24
34	V-1712-1 × SKV 50	35.43 **	9.38	1.32	-2.49	2.03	-1.02	26.92 **	-0.27	3.13	-1.15	0.94	1.15
35	V-1712-1 × MAI 105	12.41 *	-5.08	-12.07 **	-15.38 **	-11.46 *	-14.11 **	20.13 **	6.96 *	10.60 **	6	8.25 *	8.47 *
36	V-1712-1 × LM 13	26.74 **	10.73 *	2.57	-1.28	3.3	0.2	17.46 **	-2.36	0.96	-3.23	-1.18	-0.98
37	V-241-2 × CM 500	1.59	-11.62 *	-18.13 **	-21.21 **	-17.55 **	-20.02 **	10.00 **	-10.12 **	-7.06	-10.92 **	-9.03 *	-8.85 *

Sl. no.	Hybrid	Cob length (cm)						Cob girth (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
38	V-241-2 × SKV 50	34.49 **	6.19	-1.63	-5.33	-0.94	-3.91	22.02 **	-9.62 **	-6.54	-10.43 **	-8.52 *	-8.34 *
39	V-241-2 × MAI 105	18.42 **	-2.15	-9.36 *	-12.76 **	-8.72	-11.45 **	11.30 **	-5.93	-2.72	-6.76	-4.78	-4.59
40	V-241-2 × LM 13	23.56 **	5.72	-2.07	-5.75	-1.38	-4.33	21.45 **	-4.53	-1.27	-5.38	-3.37	-3.17
41	V-2437-1 × CM 500	17.10 **	6.24	-1.58	-5.28	-0.89	-3.86	13.42 **	-16.05 **	-13.18 **	-16.79 **	-15.03 **	-14.85 **
42	V-2437-1 × SKV 50	32.63 **	9.66 *	1.58	-2.23	2.3	-0.76	26.23 **	-16.21 **	-13.36 **	-16.96 **	-15.20 **	-15.02 **
43	V-2437-1 × MAI 105	27.44 **	10.06 *	1.95	-1.88	2.67	-0.41	19.93 **	-7.86 *	-4.72	-8.68 *	-6.74	-6.55
44	V-2437-1 × LM 13	25.67 **	12.22 *	3.95	0.05	4.68	1.55	21.85 **	-13.58 **	-10.64 **	-14.35 **	-12.53 **	-12.36 **
45	V-2459-2 × CM 500	7.87	-5.47	-12.43 **	-15.72 **	-11.82 **	-14.46 **	12.21 **	-17.88 **	-15.08 **	-18.61 **	-16.88 **	-16.71 **
46	V-2459-2 × SKV 50	29.95 **	3.43	-4.19	-7.79	-3.51	-6.4	23.16 **	-19.27 **	-16.52 **	-19.99 **	-18.30 **	-18.13 **
47	V-2459-2 × MAI 105	26.03 **	4.95	-2.78	-6.44	-2.1	-5.03	11.43 **	-15.31 **	-12.43 **	-16.07 **	-14.29 **	-14.11 **
48	V-2459-2 × LM 13	19.87 **	3.33	-4.28	-7.88	-3.61	-6.5	17.26 **	-17.81 **	-15.01 **	-18.54 **	-16.81 **	-16.64 **
49	V-2516-2 × CM 500	-1.86	-6.36	-13.26 **	-16.52 **	-12.65 **	-15.27 **	11.10 **	-16.54 **	-13.70 **	-17.29 **	-15.53 **	-15.36 **
50	V-2516-2 × SKV 50	36.14 **	18.95 **	10.19 *	6.05	10.96 *	7.64	21.61 **	-17.94 **	-15.15 **	-18.67 **	-16.95 **	-16.78 **
51	V-2516-2 × MAI 105	-1.36	-10.19 *	-16.81 **	-19.93 **	-16.22 **	-18.73 **	17.51 **	-8.42 *	-5.3	-9.24 **	-7.31 *	-7.12 *
52	V-2516-2 × LM 13	29.47 **	21.68 **	12.71 **	8.48 *	13.51 **	10.11 *	19.90 **	-13.65 **	-10.71 **	-14.42 **	-12.60 **	-12.42 **
53	V-2608-1 × CM 500	7.56	0.81	-6.61	-10.12 *	-5.96	-8.77 *	11.52 **	-13.65 **	-10.71 **	-14.42 **	-12.60 **	-12.42 **
54	V-2608-1 × SKV 50	31.76 **	12.90 **	4.58	0.65	5.32	2.17	25.49 **	-12.42 **	-9.43 **	-13.20 **	-11.35 **	-11.17 **
55	V-2608-1 × MAI 105	21.29 **	8.39	0.41	-3.37	1.11	-1.92	15.99 **	-6.92 *	-3.75	-7.75 *	-5.8	-5.6
56	V-2608-1 × LM 13	17.70 **	8.63	0.63	-3.15	1.34	-1.7	21.94 **	-9.35 **	-6.27	-10.16 **	-8.25 *	-8.07 *
57	V-291-2 × CM 500	17.35 **	12.24 *	3.97	0.06	4.7	1.57	4.85	-10.49 **	-7.44 *	-11.28 **	-9.40 **	-9.22 **
58	V-291-2 × SKV 50	24.03 **	8.65	0.65	-3.13	1.36	-1.68	19.66 **	-6.99 *	-3.82	-7.82 *	-5.86	-5.67
59	V-291-2 × MAI 105	10.45 *	0.81	-6.61	-10.12 *	-5.96	-8.77 *	17.89 **	3.96	7.50 *	3.04	5.22	5.44
60	V-291-2 × LM 13	21.18 **	14.16 **	5.75	1.78	6.5	3.31	12.60 **	-7.36 *	-4.2	-8.18 *	-6.23	-6.04
61	V-70-1 × CM 500	18.71 **	9.26	1.21	-2.6	1.92	-1.13	12.54 **	-11.28 **	-8.26 *	-12.08 **	-10.21 **	-10.03 **
62	V-70-1 × SKV 50	31.70 **	10.62 *	2.47	-1.38	3.19	0.1	22.84 **	-12.55 **	-9.57 **	-13.33 **	-11.49 **	-11.31 **
63	V-70-1 × MAI 105	10.78 *	-2.88	-10.04 *	-13.42 **	-9.40 *	-12.12 **	15.03 **	-6.09	-2.89	-6.93 *	-4.95	-4.76
64	V-70-1 × LM 13	22.69 **	11.16 *	2.97	-0.9	3.69	0.59	20.26 **	-8.92 *	-5.82	-9.73 **	-7.82 *	-7.63 *
65	CIMMYT-47 × CM 500	18.86 **	7.27	-0.63	-4.37	0.07	-2.93	9.12 *	-10.59 **	-7.54 *	-11.38 **	-9.50 **	-9.32 **
66	CIMMYT-47 × SKV 50	23.06 **	1.17	-6.28	-9.80 *	-5.62	-8.45	19.44 **	-11.25 **	-8.23 *	-12.04 **	-10.18 **	-9.99 **
67	CIMMYT-47 × MAI 105	18.67 **	1.92	-5.58	-9.13 *	-4.92	-7.77	16.22 **	-1.5	1.86	-2.38	-0.3	-0.1
68	CIMMYT-47 × LM 13	24.58 **	10.65 *	2.5	-1.35	3.22	0.13	14.55 **	-9.69 **	-6.61	-10.49 **	-8.59 *	-8.41 *
69	CIMMYT-5 × CM 500	35.38 **	16.16 **	7.6	3.56	8.36	5.11	15.63 **	-13.42 **	-10.46 **	-14.19 **	-12.37 **	-12.19 **
70	CIMMYT-5 × SKV 50	37.20 **	6.69	-1.17	-4.88	-0.47	-3.46	34.75 **	-9.39 **	-6.3	-10.19 **	-8.29 *	-8.10 *
71	CIMMYT-5 × MAI 105	25.41 **	2.13	-5.4	-8.95 *	-4.73	-7.58	22.49 **	-4.83	-1.58	-5.67	-3.67	-3.48
72	CIMMYT-5 × LM 13	34.38 **	13.38 **	5.03	1.08	5.77	2.6	28.82 **	-7.52 *	-4.37	-8.35 *	-6.4	-6.21
73	CM-115 × CM 500	9.08	-11.68 *	-18.19 **	-21.26 **	-17.61 **	-20.08 **	6.3	-21.64 **	-18.97 **	-22.34 **	-20.69 **	-20.53 **
74	CM-115 × SKV 50	30.74 **	-4.65	-11.68 **	-15.00 **	-11.06 *	-13.72 **	20.50 **	-20.37 **	-17.66 **	-21.08 **	-19.41 **	-19.24 **

Sl. no.	Hybrid	Cob length (cm)						Cob girth (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
75	CM-115 × MAI 105	14.59 **	-12.22 *	-18.69 **	-21.74 **	-18.11 **	-20.57 **	17.62 **	-9.99 **	-6.92	-10.79 **	-8.89 *	-8.71 *
76	CM-115 × LM 13	28.57 **	2.26	-5.27	-8.83 *	-4.61	-7.46	20.25 **	-15.08 **	-12.19 **	-15.84 **	-14.05 **	-13.88 **
77	CM-149 × CM 500	10.99 *	-5.01	-12.01 **	-15.31 **	-11.39 *	-14.04 **	8.40 *	-12.75 **	-9.78 **	-13.53 **	-11.69 **	-11.51 **
78	CM-149 × SKV 50	36.90 **	6.16	-1.66	-5.36	-0.97	-3.93	21.41 **	-11.55 **	-8.54 *	-12.34 **	-10.48 **	-10.30 **
79	CM-149 × MAI 105	19.31 **	-3.1	-10.23 *	-13.61 **	-9.60 *	-12.31 **	18.36 **	-1.4	1.96	-2.28	-0.2	0
80	CM-149 × LM 13	21.88 **	2.57	-4.99	-8.56 *	-4.32	-7.19	16.04 **	-10.19 **	-7.13 *	-10.99 **	-9.10 **	-8.91 *
81	CML-165 × CM 500	14.09 **	-4.63	-11.66 **	-14.98 **	-11.04 *	-13.70 **	11.83 **	-13.32 **	-10.36 **	-14.09 **	-12.26 **	-12.09 **
82	CML-165 × SKV 50	32.18 **	-0.14	-7.5	-10.97 *	-6.85	-9.64 *	22.39 **	-14.48 **	-11.57 **	-15.24 **	-13.44 **	-13.27 **
83	CML-165 × MAI 105	16.62 **	-7.61	-14.41 **	-17.63 **	-13.81 **	-16.39 **	16.16 **	-6.69	-3.51	-7.52 *	-5.56	-5.37
84	CML-165 × LM 13	23.67 **	1.6	-5.89	-9.42 *	-5.22	-8.06	19.66 **	-10.95 **	-7.92 *	-11.75 **	-9.87 **	-9.69 **
85	CML-166 × CM 500	18.84 **	7.7	-0.24	-3.99	0.47	-2.54	10.47 **	-14.31 **	-11.39 **	-15.08 **	-13.27 **	-13.10 **
86	CML-166 × SKV 50	37.66 **	13.68 **	5.31	1.35	6.05	2.87	27.16 **	-11.09 **	-8.06 *	-11.88 **	-10.01 **	-9.82 **
87	CML-166 × MAI 105	20.17 **	3.66	-3.98	-7.59	-3.31	-6.2	16.59 **	-6.29	-3.1	-7.13 *	-5.15	-4.96
88	CML-166 × LM 13	28.47 **	14.58 **	6.14	2.15	6.89	3.69	16.67 **	-13.12 **	-10.15 **	-13.89 **	-12.06 **	-11.88 **
89	CML-169 × CM 500	6.12	-4.09	-11.16 *	-14.50 **	-10.53 *	-13.21 **	11.13 **	-12.45 **	-9.47 **	-13.23 **	-11.39 **	-11.21 **
90	CML-169 × SKV 50	17.45 **	-3.3	-10.42 *	-13.79 **	-9.79 *	-12.49 **	34.30 **	-4.46	-1.2	-5.31	-3.3	-3.11
91	CML-169 × MAI 105	28.20 **	10.26 *	2.14	-1.7	2.86	-0.22	10.28 **	-10.02 **	-6.95	-10.82 **	-8.93 *	-8.74 *
92	CML-169 × LM 13	26.25 **	12.29 *	4.02	0.11	4.75	1.61	19.38 **	-9.65 **	-6.57	-10.46 **	-8.56 *	-8.37 *
93	CML-172 × CM 500	18.27 **	6.75	-1.11	-4.83	-0.42	-3.4	13.40 **	-8.46 *	-5.34	-9.27 **	-7.35 *	-7.16 *
94	CML-172 × SKV 50	40.76 **	15.73 **	7.21	3.18	7.96	4.73	26.08 **	-7.86 *	-4.72	-8.68 *	-6.74	-6.55
95	CML-172 × MAI 105	22.18 **	4.95	-2.78	-6.44	-2.1	-5.03	13.13 **	-5.49	-2.27	-6.33	-4.35	-4.15
96	CML-172 × LM 13	16.56 **	3.54	-4.08	-7.69	-3.41	-6.3	16.51 **	-9.55 **	-6.47	-10.36 **	-8.46 *	-8.27 *
97	CML-359 × CM 500	16.66 **	8.07	0.11	-3.65	0.82	-2.2	9.26 *	-13.02 **	-10.05 **	-13.79 **	-11.96 **	-11.78 **
98	CML-359 × SKV 50	19.62 **	1.2	-6.25	-9.78 *	-5.59	-8.42	18.46 **	-14.75 **	-11.84 **	-15.51 **	-13.71 **	-13.54 **
99	CML-359 × MAI 105	5.82	-6.58	-13.46 **	-16.71 **	-12.85 **	-15.46 **	18.42 **	-2.4	0.93	-3.27	-1.21	-1.01
100	CML-359 × LM 13	12.84 **	2.92	-4.66	-8.24	-3.99	-6.86	14.99 **	-12.02 **	-9.02 *	-12.80 **	-10.95 **	-10.77 **
101	CML-411 × CM 500	12.22 **	2.02	-5.5	-9.05 *	-4.83	-7.68	8.90 *	-10.75 **	-7.71 *	-11.55 **	-9.67 **	-9.49 **
102	CML-411 × SKV 50	36.54 **	13.15 **	4.81	0.87	5.55	2.39	19.55 **	-11.15 **	-8.12 *	-11.94 **	-10.07 **	-9.89 **
103	CML-411 × MAI 105	12.78 **	-2.39	-9.58 *	-12.98 **	-8.95 *	-11.67 **	12.31 **	-4.79	-1.55	-5.64	-3.64	-3.44
104	CML-411 × LM 13	28.73 **	15.18 **	6.7	2.69	7.45	4.23	22.20 **	-3.63	-0.34	-4.49	-2.46	-2.26
105	HKI-193-1 × CM 500	16.24 **	7.36	-0.55	-4.28	0.15	-2.85	9.20 *	-13.48 **	-10.53 **	-14.25 **	-12.43 **	-12.26 **
106	HKI-193-1 × SKV 50	26.52 **	6.69	-1.17	-4.88	-0.47	-3.46	22.90 **	-12.02 **	-9.02 *	-12.80 **	-10.95 **	-10.77 **
107	HKI-193-1 × MAI 105	14.75 **	0.98	-6.46	-9.98 *	-5.8	-8.62 *	18.73 **	-2.6	0.72	-3.46	-1.42	-1.22
108	HKI-193-1 × LM 13	27.23 **	15.69 **	7.17	3.14	7.92	4.69	20.55 **	-8.22 *	-5.09	-9.04 **	-7.11 *	-6.92
109	HKI-193-2 × CM 500	10.07	-10.59 *	-17.18 **	-20.29 **	-16.59 **	-19.09 **	11.83 **	-13.62 **	-10.67 **	-14.38 **	-12.57 **	-12.39 **
110	HKI-193-2 × SKV 50	28.21 **	-6.16	-13.07 **	-16.34 **	-12.46 **	-15.08 **	22.72 **	-14.58 **	-11.67 **	-15.34 **	-13.54 **	-13.37 **
111	HKI-193-2 × MAI 105	25.10 **	-3.84	-10.92 *	-14.27 **	-10.30 *	-12.98 **	20.79 **	-3.3	0	-4.16	-2.12	-1.92

Sl. no.	Hybrid	Cob length (cm)						Cob girth (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
112	HKI-193-2 × LM 13	31.06 **	4.58	-3.12	-6.76	-2.44	-5.36	23.05 **	-8.75 *	-5.65	-9.57 **	-7.65 *	-7.46 *
113	LTP-1 × CM 500	15.65 **	4	-3.66	-7.28	-2.98	-5.89	22.92 **	-12.52 **	-9.54 **	-13.30 **	-11.46 **	-11.28 **
114	LTP-1 × SKV 50	44.88 **	18.63 **	9.89 *	5.76	10.67 *	7.35	31.78 **	-16.28 **	-13.43 **	-17.02 **	-15.26 **	-15.09 **
115	LTP-1 × MAI 105	28.44 **	9.90 *	1.8	-2.02	2.52	-0.55	20.13 **	-11.12 **	-8.09 *	-11.91 **	-10.04 **	-9.86 **
116	LTP-1 × LM 13	27.86 **	13.15 **	4.81	0.87	5.55	2.39	27.78 **	-13.02 **	-10.05 **	-13.79 **	-11.96 **	-11.78 **
117	MAI-11 5 × CM 500	6.16	-3.59	-10.70 *	-14.05 **	-10.07 *	-12.76 **	2.65	-13.12 **	-10.15 **	-13.89 **	-12.06 **	-11.88 **
118	MAI-115 × SKV 50	16.11 **	-3.89	-10.97 *	-14.32 **	-10.34 *	-13.03 **	15.05 **	-11.42 **	-8.40 *	-12.21 **	-10.34 **	-10.16 **
119	MAI-116 × MAI 105	4.62	-9.55 *	-16.21 **	-19.36 **	-15.63 **	-18.15 **	8.07 *	-5.49	-2.27	-6.33	-4.35	-4.15
120	MAI-117 × LM 13	33.10 **	18.97 **	10.21 *	6.06	10.98 *	7.66	11.74 **	-8.89 *	-5.78	-9.70 **	-7.78 *	-7.60 *
121	MAI-107 × CM 500	7.7	-2.9	-10.05 *	-13.44 **	-9.42 *	-12.13 **	14.23 **	-1.8	1.55	-2.67	-0.61	-0.41
122	MAI-107 × SKV 50	11.54 *	-8.4	-15.15 **	-18.34 **	-14.55 **	-17.11 **	8.16 *	-15.28 **	-12.39 **	-16.03 **	-14.25 **	-14.08 **
123	MAI-107 × MAI 105	15.77 **	-0.67	-7.99	-11.45 **	-7.34	-10.12 *	8.29 *	-3.86	-0.59	-4.72	-2.7	-2.5
124	MAI-107 × LM 13	20.63 **	7.04	-0.85	-4.58	-0.15	-3.14	7.45 *	-10.95 **	-7.92 *	-11.75 **	-9.87 **	-9.69 **
125	MAI-109 × CM 500	15.77 **	3.33	-4.28	-7.88	-3.61	-6.5	12.59 **	-13.52 **	-10.57 **	-14.29 **	-12.47 **	-12.29 **
126	MAI-109 × SKV 50	27.14 **	3.26	-4.35	-7.94	-3.68	-6.56	24.64 **	-13.78 **	-10.84 **	-14.55 **	-12.74 **	-12.56 **
127	MAI-109 × MAI 105	13.03 **	-4.05	-11.12 *	-14.46 **	-10.50 *	-13.18 **	14.46 **	-8.85 *	-5.75	-9.67 **	-7.75 *	-7.56 *
128	MAI-109 × LM 13	18.52 **	4.08	-3.58	-7.21	-2.91	-5.81	20.75 **	-10.99 **	-7.95 *	-11.78 **	-9.91 **	-9.72 **
129	MAI-112 × CM 500	11.58 *	-0.73	-8.05	-11.50 **	-7.4	-10.17 *	3.09	-14.58 **	-11.67 **	-15.34 **	-13.54 **	-13.37 **
130	MAI-112 × SKV 50	29.37 **	4.69	-3.02	-6.66	-2.34	-5.26	9.71 *	-17.48 **	-14.66 **	-18.21 **	-16.48 **	-16.31 **
131	MAI-112 × MAI 105	20.24 **	1.72	-5.77	-9.31 *	-5.11	-7.95	14.28 **	-2.1	1.24	-2.97	-0.91	-0.71
132	MAI-112 × LM 13	18.94 **	4.11	-3.56	-7.18	-2.88	-5.79	11.06 **	-11.42 **	-8.40 *	-12.21 **	-10.34 **	-10.16 **
133	MAI-121 × CM 500	21.85 **	-0.57	-7.89	-11.36 **	-7.25	-10.02 *	8.84 *	-13.68 **	-10.74 **	-14.45 **	-12.63 **	-12.46 **
134	MAI-121 × SKV 50	25.20 **	-7.9	-14.69 **	-17.89 **	-14.09 **	-16.66 **	19.79 **	-14.15 **	-11.22 **	-14.91 **	-13.11 **	-12.93 **
135	MAI-121 × MAI 105	13.28 *	-12.50 **	-18.95 **	-22.00 **	-18.38 **	-20.82 **	18.40 **	-2.76	0.55	-3.63	-1.58	-1.38
136	MAI-121 × LM 13	16.28 **	-6.78	-13.65 **	-16.89 **	-13.04 **	-15.65 **	16.40 **	-11.28 **	-8.26 *	-12.08 **	-10.21 **	-10.03 **
137	MAI-137 × CM 500	9.19	-12.60 **	-19.03 **	-22.08 **	-18.47 **	-20.91 **	11.86 **	-11.28 **	-8.26 *	-12.08 **	-10.21 **	-10.03 **
138	MAI-137 × SKV 50	41.74 **	2.07	-5.45	-9.01 *	-4.79	-7.64	28.94 **	-7.59 *	-4.44	-8.41 *	-6.47	-6.28
139	MAI-137 × MAI 105	19.99 **	-9.18	-15.87 **	-19.04 **	-15.28 **	-17.82 **	21.97 **	0.17	3.58	-0.73	1.38	1.59
140	MAI-137 × LM 13	32.94 **	4.51	-3.19	-6.83	-2.51	-5.43	23.13 **	-6.16	-2.96	-6.99 *	-5.02	-4.83
141	MAI-27 × CM 500	1.12	-11.64 *	-18.15 **	-21.22 **	-17.57 **	-20.04 **	7.07	-14.31 **	-11.39 **	-15.08 **	-13.27 **	-13.10 **
142	MAI-27 × SKV 50	21.46 **	-3.64	-10.73 *	-14.09 **	-10.11 *	-12.80 **	18.79 **	-14.01 **	-11.08 **	-14.78 **	-12.97 **	-12.80 **
143	MAI-27 × MAI 105	8.19	-10.18 *	-16.80 **	-19.93 **	-16.21 **	-18.72 **	12.48 **	-6.82	-3.65	-7.65 *	-5.69	-5.5
144	MAI-27 × LM 13	20.68 **	3.73	-3.91	-7.53	-3.24	-6.14	15.06 **	-11.48 **	-8.47 *	-12.27 **	-10.41 **	-10.23 **
145	MAI-29 × CM 500	10.90 *	-5.98	-12.90 **	-16.18 **	-12.29 **	-14.92 **	-2.75	-19.91 **	-17.18 **	-20.62 **	-18.94 **	-18.77 **
146	MAI-29 × SKV 50	21.57 **	-6.7	-13.57 **	-16.82 **	-12.97 **	-15.57 **	18.51 **	-11.45 **	-8.43 *	-12.24 **	-10.38 **	-10.20 **
147	MAI-29 × MAI 105	19.11 **	-4.22	-11.27 *	-14.61 **	-10.65 *	-13.32 **	10.85 **	-5.59	-2.38	-6.43	-4.45	-4.25
148	MAI-29 × LM 13	18.32 **	-1.37	-8.64	-12.07 **	-8	-10.75 *	13.61 **	-9.95 **	-6.88	-10.76 **	-8.86 *	-8.68 *

Sl. no.	Hybrid	Cob length (cm)						Cob girth (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
149	MAI-35 × CM 500	18.10 **	-3.87	-10.95 *	-14.30 **	-10.32 *	-13.01 **	7.68 *	-12.68 **	-9.71 **	-13.46 **	-11.62 **	-11.44 **
150	MAI-35 × SKV 50	25.03 **	-8.28	-15.03 **	-18.23 **	-14.44 **	-17.00 **	14.89 **	-15.61 **	-12.74 **	-16.36 **	-14.59 **	-14.42 **
151	MAI-35 × MAI 105	30.86 **	0.8	-6.62	-10.13 *	-5.97	-8.78 *	9.78 **	-7.89 *	-4.75	-8.71 *	-6.77	-6.58
152	MAI-35 × LM 13	19.62 **	-4.35	-11.39 *	-14.72 **	-10.77 *	-13.44 **	18.01 **	-7.96 *	-4.82	-8.78 *	-6.84	-6.65
153	MAI-45 × CM 500	-1.63	-12.29 *	-18.75 **	-21.80 **	-18.18 **	-20.63 **	4.41	-12.15 **	-9.16 *	-12.93 **	-11.08 **	-10.90 **
154	MAI-45 × SKV 50	26.84 **	2.9	-4.68	-8.26	-4.01	-6.88	13.84 **	-12.92 **	-9.95 **	-13.69 **	-11.86 **	-11.68 **
155	MAI-45 × MAI 105	10.64 *	-6.17	-13.08 **	-16.35 **	-12.47 **	-15.09 **	17.50 **	2.16	5.65	1.25	3.4	3.61
156	MAI-45 × LM 13	29.50 **	13.61 **	5.24	1.29	5.98	2.81	10.25 **	-10.65 **	-7.61 *	-11.45 **	-9.57 **	-9.39 **
157	MAI-48 × CM 500	-11.74 **	-14.57 **	-20.86 **	-23.84 **	-20.31 **	-22.69 **	4.05	-15.71 **	-12.84 **	-16.46 **	-14.69 **	-14.52 **
158	MAI-48 × SKV 50	5.17	-6.65	-13.53 **	-16.78 **	-12.92 **	-15.53 **	12.16 **	-17.71 **	-14.91 **	-18.44 **	-16.71 **	-16.54 **
159	MAI-48 × MAI 105	4.78	-3.15	-10.28 *	-13.65 **	-9.65 *	-12.36 **	7.35 *	-10.02 **	-6.95	-10.82 **	-8.93 *	-8.74 *
160	MAI-48 × LM 13	6.59	1.65	-5.84	-9.38 *	-5.18	-8.02	59.45 **	24.23 **	28.47 **	23.13 **	25.74 **	26.00 **
161	MAI-706 × CM 500	-2.93	0.55	-6.86	-10.36 *	-6.2	-9.01 *	-4.23	-13.78 **	-10.84 **	-14.55 **	-12.74 **	-12.56 **
162	MAI-706 × SKV 50	0.93	-3.56	-10.67 *	-14.03 **	-10.04 *	-12.73 **	5.49	-13.08 **	-10.12 **	-13.86 **	-12.03 **	-11.85 **
163	MAI-706 × MAI 105	4.84	4.02	-3.64	-7.26	-2.96	-5.87	0.11	-7.06 *	-3.89	-7.89 *	-5.93	-5.74
164	MAI-706 × LM 13	3.12	5.35	-2.41	-6.08	-1.73	-4.67	3.12	-10.35 **	-7.30 *	-11.15 **	-9.27 **	-9.08 *
165	SKV-70 × CM 500	7.39	-4.42	-11.46 *	-14.79 **	-10.84 *	-13.51 **	3.33	-15.41 **	-12.53 **	-16.17 **	-14.39 **	-14.21 **
166	SKV-70 × SKV 50	27.33 **	3.1	-4.5	-8.09	-3.83	-6.71	10.65 **	-17.88 **	-15.08 **	-18.61 **	-16.88 **	-16.71 **
167	SKV-70 × MAI 105	6.26	-10.06 *	-16.69 **	-19.82 **	-16.10 **	-18.61 **	7.29 *	-9.15 **	-6.06	-9.96 **	-8.05 *	-7.87 *
168	SKV-70 × LM 13	23.59 **	8.23	0.25	-3.51	0.96	-2.06	14.45 **	-9.85 **	-6.78	-10.66 **	-8.76 *	-8.58 *
169	V-632-112 × CM 500	15.34 **	6.14	-1.68	-5.37	-0.99	-3.95	8.62 *	-11.45 **	-8.43 *	-12.24 **	-10.38 **	-10.20 **
170	V-632-112 × SKV 50	29.13 **	8.45	0.46	-3.31	1.17	-1.86	17.64 **	-13.08 **	-10.12 **	-13.86 **	-12.03 **	-11.85 **
171	V-632-112 × MAI 105	17.93 **	3.38	-4.24	-7.83	-3.56	-6.45	13.16 **	-4.56	-1.31	-5.41	-3.4	-3.21
172	V-632-112 × LM 13	30.23 **	17.98 **	9.29 *	5.18	10.06 *	6.76	13.62 **	-10.89 **	-7.85 *	-11.68 **	-9.80 **	-9.62 **
173	V-632-67 × CM 500	4.7	-4.82	-11.83 **	-15.14 **	-11.21 *	-13.87 **	18.32 **	-7.02 *	-3.86	-7.85 *	-5.9	-5.71
174	V-632-67 × SKV 50	32.78 **	10.04 *	1.93	-1.9	2.65	-0.42	31.11 **	-6.99 *	-3.82	-7.82 *	-5.86	-5.67
175	V-632-67 × MAI 105	6.73	-7.63	-14.43 **	-17.65 **	-13.83 **	-16.41 **	20.65 **	-1.8	1.55	-2.67	-0.61	-0.41
176	V-632-67 × LM 13	16.75 **	4.47	-3.23	-6.86	-2.55	-5.46	28.82 **	-2.76	0.55	-3.63	-1.58	-1.38
177	Z-50-3 × CM 500	9.87 *	6.68	-1.18	-4.89	-0.48	-3.46	13.66 **	-8.62 *	-5.51	-9.44 **	-7.51 *	-7.33 *
178	Z-50-3 × SKV 50	15.26 **	2.65	-4.91	-8.49 *	-4.25	-7.11	19.51 **	-13.05 **	-10.09 **	-13.82 **	-11.99 **	-11.82 **
179	Z-50-3 × MAI 105	11.25 *	3.17	-4.43	-8.02	-3.76	-6.64	18.46 **	-1.43	1.93	-2.31	-0.24	-0.03
180	Z-50-3 × LM 13	21.32 **	16.07 **	7.52	3.48	8.27	5.03	18.60 **	-8.32 *	-5.2	-9.14 **	-7.21 *	-7.02 *
181	Z-51-1 × CM 500	-3.79	-12.52 **	-18.97 **	-22.01 **	-18.40 **	-20.84 **	5.08	-5.06	-1.82	-5.91	-3.91	-3.71
182	Z-51-1 × SKV 50	32.24 **	9.60 *	1.53	-2.29	2.24	-0.82	17.45 **	-2.86	0.45	-3.73	-1.68	-1.49
183	Z-51-1 × MAI 105	18.00 **	2.14	-5.39	-8.94 *	-4.72	-7.57	13.60 **	5.83	9.43 **	4.88	7.11 *	7.33 *
184	Z-51-1 × LM 13	22.61 **	9.72 *	1.64	-2.18	2.36	-0.71	11.79 **	-2.46	0.86	-3.33	-1.28	-1.08
185	Z-51-6 × CM 500	31.62 **	0.64	-6.77	-10.28 *	-6.12	-8.93 *	17.07 **	-4.46	-1.2	-5.31	-3.3	-3.11

Sl. no.	Hybrid	Cob length (cm)						Cob girth (cm)					
		Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501	Mid. Par.	Hema	Nitya shree	Decalb 8101	900M Gold	PHI 3501
186	Z-51-6 × SKV 50	49.30 **	2.16	-5.37	-8.92 *	-4.7	-7.56	29.21 **	-4.43	-1.17	-5.28	-3.27	-3.07
187	Z-51-6 × MAI 105	26.90 **	-8.5	-15.24 **	-18.43 **	-14.65 **	-17.20 **	19.79 **	1.13	4.58	0.23	2.36	2.57
188	Z-51-6 × LM 13	34.55 **	0.96	-6.48	-9.99 *	-5.82	-8.64 *	16.18 **	-8.79 *	-5.68	-9.60 **	-7.68 *	-7.49 *
189	Z-52-29 × CM 500	20.43 **	6.2	-1.62	-5.32	-0.93	-3.9	5.7	-14.45 **	-11.53 **	-15.21 **	-13.41 **	-13.23 **
190	Z-52-29 × SKV 50	26.77 **	1.6	-5.89	-9.42 *	-5.22	-8.06	16.39 **	-14.68 **	-11.77 **	-15.44 **	-13.65 **	-13.47 **
191	Z-52-29 × MAI 105	14.66 **	-3.89	-10.97 *	-14.32 **	-10.34 *	-13.03 **	9.66 **	-8.16 *	-5.03	-8.97 **	-7.04 *	-6.85
192	Z-52-29 × LM 13	12.05 *	-2.79	-9.95 *	-13.34 **	-9.32 *	-12.03 **	12.42 **	-12.48 **	-9.50 **	-13.26 **	-11.42 **	-11.24 **
193	Z-56-1 × CM 500	20.06 **	-2.11	-9.32 *	-12.73 **	-8.68	-11.42 **	1.76	-23.77 **	-21.17 **	-24.45 **	-22.84 **	-22.69 **
194	Z-56-1 × SKV 50	26.49 **	-7.04	-13.88 **	-17.12 **	-13.28 **	-15.88 **	24.54 **	-16.21 **	-13.36 **	-16.96 **	-15.20 **	-15.02 **
195	Z-56-1 × MAI 105	20.39 **	-7.1	-13.94 **	-17.18 **	-13.34 **	-15.93 **	18.37 **	-7.99 *	-4.85	-8.81 *	-6.87	-6.68
196	Z-56-1 × LM 13	16.66 **	-6.55	-13.43 **	-16.68 **	-12.82 **	-15.43 **	7.81	-22.57 **	-19.93 **	-23.26 **	-21.63 **	-21.47 **
197	Z-56-8 × CM 500	4.28	-10.20 *	-16.82 **	-19.94 **	-16.23 **	-18.74 **	1.6	-20.77 **	-18.07 **	-21.48 **	-19.81 **	-19.65 **
198	Z-56-8 × SKV 50	23.60 **	-3.5	-10.61 *	-13.97 **	-9.98 *	-12.68 **	24.85 **	-12.18 **	-9.19 *	-12.97 **	-11.12 **	-10.94 **
199	Z-56-8 × MAI 105	12.91 *	-7.7	-14.50 **	-17.71 **	-13.90 **	-16.47 **	12.73 **	-8.92 *	-5.82	-9.73 **	-7.82 *	-7.63 *
200	Z-56-8 × LM 13	30.01 **	10.09 *	1.98	-1.85	2.7	-0.38	21.72 **	-8.85 *	-5.75	-9.67 **	-7.75 *	-7.56 *
201	Z-60-22 × CM 500	12.30 **	1.74	-5.75	-9.30 *	-5.09	-7.93	4.12	-17.64 **	-14.84 **	-18.38 **	-16.64 **	-16.48 **
202	Z-60-22 × SKV 50	32.10 **	9.06	1.03	-2.77	1.74	-1.31	16.89 **	-16.48 **	-13.63 **	-17.22 **	-15.46 **	-15.29 **
203	Z-60-22 × MAI 105	13.32 **	-2.28	-9.48 *	-12.88 **	-8.84 *	-11.57 **	17.86 **	-3.46	-0.17	-4.32	-2.29	-2.09
204	Z-60-22 × LM 13	13.62 **	1.31	-6.15	-9.68 *	-5.49	-8.32	14.15 **	-13.25 **	-10.29 **	-14.02 **	-12.20 **	-12.02 **
205	Z-62-55 × CM 500	9.54 *	8.3	0.32	-3.45	1.03	-2	12.45 **	-8.46 *	-5.34	-9.27 **	-7.35 *	-7.16 *
206	Z-62-55 × SKV 50	23.72 **	12.37 *	4.09	0.18	4.83	1.69	13.90 **	-15.98 **	-13.12 **	-16.73 **	-14.96 **	-14.79 **
207	Z-62-55 × MAI 105	1.07	-4.49	-11.53 *	-14.85 **	-10.90 *	-13.57 **	9.92 **	-7.42 *	-4.27	-8.25 *	-6.3	-6.11
208	Z-62-55 × LM 13	19.97 **	16.89 **	8.28	4.21	9.04 *	5.78	13.45 **	-11.15 **	-8.12 *	-11.94 **	-10.07 **	-9.89 **
209	Z-62-67 × CM 500	-5.72	-17.42 **	-23.50 **	-26.38 **	-22.97 **	-25.27 **	6.82	-11.09 **	-8.06 *	-11.88 **	-10.01 **	-9.82 **
210	Z-62-67 × SKV 50	22.79 **	-2.32	-9.52 *	-12.92 **	-8.88 *	-11.61 **	18.36 **	-10.52 **	-7.47 *	-11.32 **	-9.43 **	-9.25 **
211	Z-62-67 × MAI 105	3.91	-13.52 **	-19.89 **	-22.90 **	-19.33 **	-21.75 **	14.20 **	-1.73	1.62	-2.61	-0.54	-0.34
212	Z-62-67 × LM 13	8.35	-6.65	-13.53 **	-16.78 **	-12.92 **	-15.53 **	20.33 **	-3.56	-0.28	-4.42	-2.39	-2.19
213	Z-63-30 × CM 500	5.28	-3.1	-10.23 *	-13.61 **	-9.60 *	-12.31 **	10.87 **	-8.99 **	-5.89	-9.80 **	-7.88 *	-7.70 *
214	Z-63-30 × SKV 50	35.30 **	13.65 **	5.28	1.33	6.02	2.85	29.53 **	-3.56	-0.28	-4.42	-2.39	-2.19
215	Z-63-30 × MAI 105	-2.17	-14.22 **	-20.54 **	-23.53 **	-19.98 **	-22.38 **	16.64 **	-0.97	2.41	-1.85	0.24	0.44
216	Z-63-30 × LM 13	22.64 **	11.13 *	2.94	-0.93	3.67	0.56	23.01 **	-2.83	0.48	-3.7	-1.65	-1.45
Range		-11.74	-17.42	-23.5	-26.38	-22.97	-25.27	-4.23	-23.77	-21.17	-24.45	-22.84	-22.69
		49.3	22.52	13.5	9.23	14.3	10.87	59.45	24.23	28.47	23.13	25.74	26
S. Em. ±		0.6831	0.7888					0.1507	0.174				
C.D. 5%		1.3415	1.549					0.2959	0.3417				
C.D. 1%		1.7649	2.0379					0.3893	0.4496				

* significant at p = 0.05 and ** significant at p = 0.01

Appendix IV. Estimates of mean and stability parameters

Sl. no.	Hybrid	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk			Ear height (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
1	V-1154 × CM 500	56.33	1.12	-0.41	57.67	0.07	0.47 *	1.83	1.97	2.66 *	112.83	1.30	-0.71	103.00	3.91	-19.29
2	V-1154 × SKV 50	56.00	0.84	-0.63	57.33	0.25	0.70 *	1.00	1.00	-0.04	111.67	0.77	-0.64	100.00	0.12	-16.63
3	V-1154 × MAI 105	57.00	0.55	0.95	57.50	1.07	0.47 *	0.83	0.36	-0.48	113.00	0.96	0.56	108.08	3.26 *	-25.16
4	V-1154 × LM 13	56.50	1.26	-0.16	55.00	1.39	1.27 **	1.83	1.75	-0.51	115.50	1.20	-0.33	98.92	-0.17	31.51
5	V-1168 × CM 500	56.83	0.57	-0.02	55.17	1.25	0.70 *	1.50	-0.09	0.98	103.50	0.78	4.46 *	90.92	0.19	-1.42
6	V-1168 × SKV 50	55.83	0.27	2.08 *	55.00	0.86	-0.10	1.50	1.30	1.24	101.50	0.36	-0.12	82.17	-1.45	-24.46
7	V-1168 × MAI 105	56.50	1.98	0.61	60.50	1.07	0.47 *	4.00	3.38	1.66 *	97.00	0.78	-0.17	92.83	2.78	-22.57
8	V-1168 × LM 13	57.50	0.56*	-0.63	57.33	1.54	-0.01	0.83	-0.64	0.23	116.17	1.13	-0.60	109.17	-1.59	84.36 *
9	V-1522 × CM 500	53.67	1.13	-0.51	54.17	1.04	-0.01	0.67	0.33	-0.46	109.17	0.65	2.05	88.25	-2.87	50.62
10	V-1522 × SKV 50	56.33	0.28	-0.45	56.00	1.61	0.28	1.17	1.42	-0.42	104.83	0.52	-0.54	104.17	1.29	-18.52
11	V-1522 × MAI 105	55.17	0.85	-0.50	58.17	1.36	-0.10	3.00	0.78	0.85	106.67	1.70	0.39	91.92	1.77 *	-25.71
12	V-1522 × LM 13	57.83	0.28	-0.45	58.17	1.14	2.40 **	1.33	0.06	0.15	115.17	1.22	-0.77	109.83	-1.27	-10.48
13	V-1649 × CM 500	56.83	1.41	-0.09	59.17	1.57	0.97 **	1.83	-0.64	0.23	101.83	1.42	0.24	78.75	-6.03*	-23.68
14	V-1649 × SKV 50	57.50	1.82	-0.12	57.33	0.46	1.99 **	1.83	0.75	0.07	113.00	1.41	1.22	96.25	2.57	-14.52
15	V-1649 × MAI 105	57.67	-0.02	3.53 *	59.33	1.75	0.70 *	2.67	-1.66	0.80	113.83	0.64	0.85	90.83	0.31	-24.34
16	V-1649 × LM 13	56.33	1.28	1.21	57.50	1.50	3.33 **	1.17	0.03	-0.35	91.17	0.74	-0.10	93.83	0.12	-2.95
17	V-1742 × CM 500	52.67	1.13	-0.51	51.67	1.89	1.27 **	0.67	-0.06	0.15	101.83	1.27	3.84 *	83.83	-0.07	32.31
18	V-1742 × SKV 50	52.67	0.85	-0.50	53.67	1.89	1.27 **	1.50	0.09	0.98	91.83	0.28	0.17	82.58	4.40*	-25.08
19	V-1742 × MAI 105	52.17	0.42	-0.58	55.00	1.50*	-0.17	3.00	-0.22	2.93 **	92.50	0.69	-0.74	76.42	3.19	-14.76
20	V-1742 × LM 13	54.17	0.41	1.48	53.67	0.07	0.47 *	0.83	0.75	0.07	115.00	1.38	-0.59	83.00	0.47	-10.37
21	V-2205 × CM 500	60.17	-0.15	1.39	62.33	1.32	-0.15	2.33	-1.94	4.27 **	100.50	0.93	-0.30	139.83	10.84	41.55
22	V-2205 × SKV 50	60.33	1.40	-0.39	60.33	1.32	-0.15	0.50	0.69	-0.51	102.00	1.26	2.26 *	94.75	1.90	-25.34
23	V-2205 × MAI 105	57.67	0.27	0.06	58.67	-0.14	-0.10	0.83	-0.42	0.47	113.33	0.76	8.57 **	119.33	4.89	32.64
24	V-2205 × LM 13	57.00	0.56*	-0.63	58.83	1.75	0.70 *	1.83	-1.24	4.05 **	111.67	1.19	0.39	124.67	6.17	224.68**
25	V-2232 × CM 500	53.50	0.42	-0.23	51.67	1.04	1.99 **	2.00	2.39	0.11	92.83	0.73	0.74	90.67	0.47	100.86 *
26	V-2232 × SKV 50	53.17	1.97	-0.54	56.33	0.25	0.70 *	3.50	3.90	15.25 **	92.33	0.64	2.45 *	85.92	-0.43	24.23
27	V-2232 × MAI 105	56.17	1.26	-0.55	58.83	1.43	0.97 **	2.17	0.42	0.47	114.50	1.74	-0.65	89.58	-0.68	-20.76
28	V-2232 × LM 13	56.67	0.27	0.06	56.17	0.07	0.47 *	0.83	0.36	-0.48	116.83	1.57	0.42	122.50	0.00*	-25.73
29	V-1410-1 × CM 500	49.67	1.26	-0.55	49.50	0.00*	0.10	1.50	1.48	0.74	92.50	1.35	-0.20	71.92	3.10*	-25.08
30	V-1410-1 × SKV 50	55.33	1.41	-0.09	57.67	1.57	0.47 *	2.17	1.81	0.28	96.17	0.89	0.05	83.08	-1.89	-17.54
31	V-1410-1 × MAI 105	55.83	0.57	-0.02	57.33	1.21	0.12	1.33	0.84	3.42 **	113.83	1.09	0.26	86.92	-0.88	-24.40
32	V-1410-1 × LM 13	56.50	1.70	0.64	57.00	1.07	0.47 *	1.50	0.91	3.12 **	115.00	1.02	0.82	107.17	-0.40	-12.16
33	V-1712-1 × CM 500	53.33	1.40	-0.39	54.00	1.61	0.28	1.17	0.64	0.23	94.50	1.20	4.96 **	99.00	1.02	188.74 **
34	V-1712-1 × SKV 50	58.67	1.69	-0.53	60.50	1.07	0.47 *	2.17	3.02	2.22 *	114.00	1.53	-0.66	88.75	-0.84	-8.11
35	V-1712-1 × MAI 105	56.67	1.41	-0.52	57.67	1.25	0.70 *	1.17	0.64	0.23	113.83	0.70	-0.40	121.08	1.74	-20.95
36	V-1712-1 × LM 13	60.00	1.11	1.03	58.67	1.57	0.97 **	1.17	1.42	-0.42	113.17	0.26	2.41 *	120.08	2.97	-4.23
37	V-241-2 × CM 500	51.67	1.13	-0.51	50.50	0.43	0.97 **	1.50	-1.69	0.03	93.17	1.10	1.94	82.08	-0.99	78.84 *
38	V-241-2 × SKV 50	56.50	0.56 *	-0.63	56.00	0.32	2.85 **	1.17	-0.75	0.07	107.50	1.17	0.61	84.08	0.04	-8.23

Sl. no.	Hybrid	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk			Ear height (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
39	V-241-2 × MAI 105	56.83	1.55	-0.62	57.83	1.11	0.28	1.00	0.00*	-0.52	102.83	0.45*	-0.77	94.33	-3.29*	-25.33
40	V-241-2 × LM 13	58.17	1.97	-0.54	56.17	0.93	0.47 *	2.00	-1.21	5.96 **	92.67	0.29	-0.46	112.00	2.02	116.42 *
41	V-2437-1 × CM 500	55.83	0.70	-0.60	57.33	0.57	0.47 *	1.67	1.72	-0.41	100.50	1.13*	-0.79	77.42	0.24	-7.34
42	V-2437-1 × SKV 50	56.83	1.82 *	-0.62	58.83	0.36	-0.10	2.67	2.93	7.76 **	105.33	0.97	-0.22	66.08	-3.96	-19.68
43	V-2437-1 × MAI 105	56.50	1.26	-0.16	56.83	1.00	-0.17	0.67	0.33	-0.46	109.83	1.15	-0.65	97.92	0.48	287.65 **
44	V-2437-1 × LM 13	57.50	1.68 *	-0.62	59.50	0.00*	-0.17	2.67	1.94	4.27 **	112.50	0.57	1.63	104.00	-0.76	-23.57
45	V-2459-2 × CM 500	52.83	.82*	-0.62	54.83	0.36	-0.10	2.67	2.93	7.76 **	95.50	1.26	2.26 *	74.17	-1.26	-3.47
46	V-2459-2 × SKV 50	54.33	2.83	2.90 *	57.50	1.71	0.12	3.17	4.41	2.57 *	99.83	0.58	0.54	88.67	0.53	30.93
47	V-2459-2 × MAI 105	57.33	1.55	-0.62	59.83	1.64	-0.10	2.17	0.03	-0.35	99.83	0.94	3.10 *	89.33	0.57	5.75
48	V-2459-2 × LM 13	57.83	0.99	-0.61	59.33	1.32	-0.15	1.33	0.06	0.15	102.17	0.71	0.28	111.75	3.42	-20.38
49	V-2516-2 × CM 500	53.67	-0.02	3.53 *	53.33	1.75	0.70 *	2.00	1.00	-0.04	97.83	1.59*	-0.78	84.50	4.91	173.09 **
50	V-2516-2 × SKV 50	54.50	0.71	-0.30	54.83	0.79	0.12	0.50	0.69	-0.51	101.67	0.44	-0.35	112.42	2.62	-24.32
51	V-2516-2 × MAI 105	55.33	1.13	-0.07	60.17	1.36	-0.10	4.67	1.11	0.37	98.50	0.93	-0.30	96.67	3.66*	-25.12
52	V-2516-2 × LM 13	56.5	0.7	8.98 **	53.7	1.4	2.40 **	4.0	2.4	0.1	93.3	1.3	-0.7	97.4	-0.6	198.14 **
53	V-2608-1 × CM 500	52.33	1.42	3.21 *	56.33	0.68	-0.15	4.17	3.41	0.63	93.50	0.90	-0.53	65.33	-1.86*	-25.47
54	V-2608-1 × SKV 50	54.50	1.27	-0.34	53.83	0.57	0.97 **	1.17	-0.97	0.68	93.67	1.07	-0.75	74.75	-1.09	185.40 **
55	V-2608-1 × MAI 105	55.67	0.57	-0.49	58.50	1.39	1.27 **	3.33	0.06	0.15	109.17	0.83	-0.72	96.75	0.55	47.79
56	V-2608-1 × LM 13	57.00	1.11	1.03	58.50	1.18	-0.15	1.33	-0.72	-0.39	94.00	1.02	0.82	101.50	-1.21	96.41 *
57	V-291-2 × CM 500	58.00	-0.72	2.59 *	55.50	0.86	2.40 **	2.33	4.05	3.23 **	100.33	0.70	-0.40	109.08	0.04	-8.23
58	V-291-2 × SKV 50	57.00	1.27	-0.34	59.50	0.32	-0.15	2.33	1.27	2.48 *	107.50	0.45	-0.73	103.25	1.05	-3.55
59	V-291-2 × MAI 105	59.33	2.27	3.02 *	62.83	0.68	-0.15	3.67	4.32	8.35 **	106.33	0.58	0.54	125.67	4.41	123.43 *
60	V-291-2 × LM 13	59.17	-0.02	3.53 *	56.00	0.75	0.70 *	2.67	2.11	-0.45	91.83	0.67	-0.45	116.25	-1.80	-19.86
61	V-70-1 × CM 500	56.50	1.12	-0.63	56.50	0.75	0.71 *	0.83	-0.03	-0.35	102.17	0.41	2.73 *	108.00	0.68	42.75
62	V-70-1 × SKV 50	59.17	1.12	0.14	59.83	1.64	-0.10	0.67	-0.67	-0.31	104.33	1.27	3.84 *	82.33	-4.82	-12.95
63	V-70-1 × MAI 105	60.17	0.84	0.12	59.83	1.21	0.12	0.17	-0.36	-0.48	105.33	1.78	0.77	115.08	1.64	-9.86
64	V-70-1 × LM 13	55.17	0.85	-0.50	56.50	1.18	2.85 **	1.17	-1.36	-0.26	113.67	0.89	0.05	129.75	1.41	66.60
65	CIMMYT-47 × CM 500	57.50	0.12	2.77 *	57.50	-0.21	1.61 **	0.83	0.36	-0.48	106.83	0.40	4.41 *	89.17	4.01	350.61 **
66	CIMMYT-47 × SKV 50	56.17	1.41	-0.52	59.50	1.61	0.28	3.50	0.69	-0.51	97.50	0.87	1.04	91.25	0.41	60.25 **
67	CIMMYT-47 × MAI 105	56.50	1.00	2.53 *	59.50	1.07	0.47 *	3.50	2.47	-0.33	109.33	0.16	-0.69	104.17	3.63	45.91
68	CIMMYT-47 × LM 13	53.00	2.40	2.25 *	55.50	1.82*	-0.15	2.50	3.08	0.19	93.67	0.92	-0.70	99.58	-1.31	39.34
69	CIMMYT-5 × CM 500	55.67	1.54	-0.55	56.17	1.46	-0.01	0.50	0.30	-0.11	94.17	1.85	0.21	95.33	6.16	199.61 **
70	CIMMYT-5 × SKV 50	55.67	1.27	0.27	59.17	0.61	1.27 **	3.50	3.08	0.19	106.00	0.45	7.19 **	83.00	-1.25	12.12
71	CIMMYT-5 × MAI 105	55.50	0.99	-0.32	55.83	1.21	1.62 **	0.67	0.33	-0.46	94.67	1.58	4.91 **	120.83	5.63	-11.35
72	CIMMYT-5 × LM 13	56.00	0.38	17.94**	51.00	0.64	2.40 **	4.67	1.50	1.81 *	93.50	1.08	-0.41	121.83	2.13	-17.61
73	CM-115 × CM 500	50.83	0.30	3.46 *	52.17	1.25	0.70 *	1.83	-1.24	4.05 **	94.50	1.53	-0.66	78.50	0.14	-7.79
74	CM-115 × SKV 50	54.17	0.55	0.09	56.67	1.14	-0.10	2.67	-0.67	-0.31	95.00	1.35	-0.20	80.25	0.37	-13.01
75	CM-115 × MAI 105	54.50	0.71	-0.30	57.00	0.96	1.99 **	2.67	1.11	0.37	97.83	0.04	1.34	87.58	2.01	-21.80
76	CM-115 × LM 13	55.00	1.11	1.03	51.83	1.00	-0.17	3.50	1.09	-0.23	92.00	1.08	5.27 **	86.83	-0.36	0.83
77	CM-149 × CM 500	50.83	1.41	-0.09	55.17	0.93	0.97 **	4.17	2.42	-0.37	94.67	0.77	-0.64	77.08	-1.01	151.35 **
78	CM-149 × SKV 50	52.50	1.68*	-0.62	52.83	0.36	-0.10	2.00	1.39	-0.50	94.33	0.88	2.30 *	88.25	0.39	-0.37

Sl. no.	Hybrid	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk			Ear height (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
79	CM-149 × MAI 105	50.17	1.14	1.82 *	51.17	0.29	0.12	1.33	2.66	2.84 *	103.83	0.67	-0.45	102.50	3.69	-6.95
80	CM-149 × LM 13	53.17	0.85	-0.50	55.67	2.11	0.28	2.83	0.15	3.62 **	93.33	0.49	1.07	74.75	0.18	-17.56
81	CML-165 × CM 500	55.83	0.84	-0.42	56.50	0.86	4.40 **	1.33	0.67	-0.31	96.67	1.22	-0.77	106.00	2.38	4.27
82	CML-165 × SKV 50	54.67	1.84	0.21	57.50	1.39	0.28	2.83	2.75	-0.14	102.50	1.92	-0.22	90.08	0.52	52.86
83	CML-165 × MAI 105	56.67	1.27	0.27	56.50	0.86	2.40 **	1.00	0.00*	-0.52	101.50	0.87	2.19	103.42	0.07	-22.07
84	CML-165 × LM 13	55.50	1.12	-0.63	55.67	0.82	-0.15	0.17	0.03	-0.35	94.00	1.65	3.80 *	102.92	0.82	-24.89
85	CML-166 × CM 500	56.17	1.40	0.17	56.00	0.75	0.70 *	1.33	1.06	-0.50	93.83	1.36	-0.66	86.50	-2.75*	-25.49
86	CML-166 × SKV 50	54.67	1.42	1.78	58.33	0.89	0.28	3.67	3.11	-0.33	93.17	0.92	-0.70	99.67	1.75	-13.31
87	CML-166 × MAI 105	57.00	1.14	0.71	56.83	-0.29	0.12	1.50	-0.30	-0.11	109.83	0.43	0.35	105.67	-0.58	49.83
88	CML-166 × LM 13	51.67	1.85	3.95 **	56.00	0.21	0.12	4.17	4.02	4.97 **	112.33	1.33	1.70	110.00	0.11	11.45
89	CML-169 × CM 500	55.33	0.57	-0.02	59.33	1.11	0.28	4.50	1.09	-0.23	100.50	1.68	-0.71	92.25	1.13	15.19
90	CML-169 × SKV 50	55.50	0.98	-0.18	56.67	0.39	0.28	1.00	0.61	1.10	94.17	0.92	-0.70	95.83	-0.74	-11.76
91	CML-169 × MAI 105	54.50	0.71	-0.30	53.83	1.11	0.28	0.67	-0.67	-0.31	109.00	-0.09	-0.47	90.42	2.65	-6.97
92	CML-169 × LM 13	57.00	0.43	-0.29	59.67	1.68	-0.15	2.83	0.54	6.35 **	113.67	1.61	-0.52	107.00	2.36	19.11
93	CML-172 × CM 500	56.00	0.56*	-0.63	56.33	1.96	-0.01	1.17	0.81	1.97 *	103.50	0.57	1.63	121.58	0.11	100.25 *
94	CML-172 × SKV 50	56.67	1.26	-0.55	61.33	1.21	0.12	4.83	1.36	-0.26	111.17	1.04	3.53 *	98.67	-0.36	-24.14
95	CML-172 × MAI 105	55.33	0.85	-0.04	59.33	1.43	0.47 *	4.17	0.42	0.47	115.67	1.64	1.01	110.75	-0.38	-25.19
96	CML-172 × LM 13	55.83	1.11	2.24 *	54.00	0.54	-0.01	1.83	0.15	3.62 **	94.17	1.31	-0.31	116.08	4.01	14.96
97	CML-359 × CM 500	54.67	0.42	-0.58	56.00	1.29	0.12	1.33	-0.94	1.74 *	101.67	1.36*	-0.79	120.58	3.92*	-25.55
98	CML-359 × SKV 50	54.33	1.55	-0.62	54.00	2.04	1.99 **	0.67	-1.45	-0.01	91.67	1.10	1.94	85.92	-0.43	24.23
99	CML-359 × MAI 105	52.33	0.02	3.53 *	56.83	1.64	-0.10	4.83	1.32	13.86 **	104.50	0.57	1.63	98.75	0.64	97.01 *
100	CML-359 × LM 13	53.50	1.42	0.68	54.83	1.00	-0.17	1.00	1.39	-0.50	105.50	1.02	0.82	107.25	-0.97	106.85 *
101	CML-411 × CM 500	54.67	0.98	-0.56	51.50	0.86	2.40 **	3.00	0.78	0.85	106.00	0.78	-0.17	116.08	7.09	253.31 **
102	CML-411 × SKV 50	53.50	0.99	-0.32	56.17	1.25	0.70 *	2.83	2.14	-0.08	93.50	1.26	2.26 *	86.58	1.15	49.36
103	CML-411 × MAI 105	54.83	1.00	1.25	59.50	1.18	-0.15	4.83	2.14	-0.08	109.33	0.55	4.81 **	93.00	1.52	-23.88
104	CML-411 × LM 13	51.67	0.42	-0.58	54.00	1.39	0.28	2.17	-0.19	4.61 **	116.67	0.77	-0.64	119.67	3.58	-22.76
105	HKI-193-1 × CM 500	52.33	0.14	-0.59	51.83	1.21	1.61 **	1.33	2.05	-0.20	100.67	1.28	-0.52	73.17	2.07	28.82
106	HKI-193-1 × SKV 50	53.67	1.26	-0.55	54.83	0.89	1.27 **	1.33	-0.12	2.13 *	105.83	1.36	6.60 **	64.00	-2.99	16.81
107	HKI-193-1 × MAI 105	55.17	0.00	-0.46	57.17	0.07	0.47 *	2.50	0.69	-0.51	102.17	1.01	-0.04	83.00	1.62	-3.30
108	HKI-193-1 × LM 13	53.67	0.13	1.43	50.33	0.89	1.27 **	3.17	2.42	-0.37	92.83	1.48	1.98	97.00	2.02	116.42 *
109	HKI-193-2 × CM 500	54.67	0.14	-0.59	54.33	0.57	0.47 *	0.50	-0.69	-0.51	93.83	1.74*	-0.79	67.75	-3.43	170.18 **
110	HKI-193-2 × SKV 50	54.83	0.57	-0.02	61.67	0.93	0.97 **	7.00	2.17	0.63	95.83	1.27	0.07	106.67	2.24	13.01
111	HKI-193-2 × MAI 105	56.33	1.40	-0.39	56.33	0.68	-0.15	0.83	0.75	0.07	105.00	1.17	0.61	88.33	-0.35	-25.00
112	HKI-193-2 × LM 13	58.00	0.55	0.95	60.17	2.00*	-0.17	2.50	-0.91	3.12 **	110.67	1.66*	-0.77	105.42	0.26	4.60
113	LTP-1 × CM 500	56.67	0.42	-0.58	56.00	1.18	-0.15	1.17	0.64	0.23	103.00	0.84	-0.77	93.83	1.29	-25.09
114	LTP-1 × SKV 50	56.50	1.27	-0.34	59.83	0.46	-0.01	3.67	1.94	4.27 **	105.00	0.99	-0.79	113.67	2.63	134.16 *
115	LTP-1 × MAI 105	57.17	-0.01	0.04	55.33	0.79	0.12	2.00	2.00	1.38	92.50	0.78	4.46 *	110.92	0.90	33.89
116	LTP-1 × LM 13	51.67	1.54	-0.55	52.83	0.25	0.70 *	1.83	2.36	0.92	91.83	0.73	0.74	111.58	2.03	-15.47
117	MAI-11 5 × CM 500	51.17	1.42	1.78	55.33	0.89	0.28	4.33	3.44	-0.08	93.33	1.03	2.01	71.50	2.09	130.51 *
118	MAI-115 × SKV 50	53.83	1.55	-0.62	55.50	1.07	0.47 *	1.83	2.36	0.92	92.67	1.28	-0.52	89.75	0.96	-17.25

Sl. no.	Hybrid	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk			Ear height (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
119	MAI-116 × MAI 105	55.00	1.70	0.64	60.50	1.18	-0.15	5.67	2.72	0.52	99.67	1.16	4.51 **	83.67	-0.01	-13.56
120	MAI-117 × LM 13	53.50	-0.29	0.83	53.67	1.79	0.12	2.33	1.45	-0.01	92.17	0.65	1.16	116.92	2.54	5.82
121	MAI-107 × CM 500	52.00	0.43	-0.29	54.00	1.61	0.28	1.83	-0.85	6.90 **	93.50	1.50	4.17 *	97.83	1.45	-24.46
122	MAI-107 × SKV 50	54.00	1.26	-0.16	53.83	0.57	0.47 *	1.33	1.06	-0.50	93.00	1.17	2.81 *	81.00	-0.98	3.44
123	MAI-107 × MAI 105	54.83	1.27	-0.61	55.17	0.93	0.47 *	0.33	-0.33	-0.46	106.00	1.38	-0.59	86.92	-0.14	286.24 **
124	MAI-107 × LM 13	55.17	1.68	0.20	55.33	1.11	1.27 **	1.50	0.30	-0.11	112.17	1.46	-0.42	97.42	-1.57	104.77 *
125	MAI-109 × CM 500	53.00	1.84	2.36 *	57.33	1.00	-0.17	4.00	2.39	0.11	96.00	1.05	-0.43	96.67	7.59	134.71 *
126	MAI-109 × SKV 50	55.33	1.39	2.30 *	55.17	0.61	1.27 **	1.33	0.06	0.15	97.33	0.64	0.85	80.08	-0.09	-15.91
127	MAI-109 × MAI 105	54.00	0.84	-0.63	56.50	0.86	-0.10	2.17	0.03	-0.35	101.17	1.07	-0.75	88.75	0.30	31.12
128	MAI-109 × LM 13	54.00	0.97	2.95 *	48.50	1.93	0.47 *	5.67	2.72	0.52	94.83	1.54	-0.20	106.17	0.40	31.92
129	MAI-112 × CM 500	51.17	1.84	0.21	54.00	0.75	0.70 *	3.17	4.02	4.97 **	94.33	0.55	-0.28	77.08	2.27	70.91
130	MAI-112 × SKV 50	51.67	1.27	0.27	53.17	1.36	2.40 **	2.00	1.00	-0.04	94.00	0.90	-0.53	72.92	-1.45	-15.00
131	MAI-112 × MAI 105	54.83	0.28	-0.45	56.67	1.14	-0.10	2.00	-0.61	1.10	93.00	1.17	0.61	107.67	-1.65	-19.64
132	MAI-112 × LM 13	55.17	1.38	10.56 **	49.83	1.21	0.12	5.17	1.20	4.16 **	94.50	1.44	7.50 **	102.42	4.23	-0.19
133	MAI-121 × CM 500	50.50	0.71	-0.30	54.50	1.82*	-0.15	3.67	-0.49	7.90 **	92.83	0.91	-0.78	72.25	3.73	24.13
134	MAI-121 × SKV 50	52.83	0.28	-0.45	53.17	0.93	0.47 *	0.67	-0.67	-0.31	94.00	0.54	-0.70	64.67	2.03	-19.80
135	MAI-121 × MAI 105	53.17	-0.28	-0.45	56.67	1.79	0.12	3.67	-1.10	16.90 **	93.67	0.98	-0.67	87.67	-1.09	53.34
136	MAI-121 × LM 13	55.50	1.25	3.01 *	53.67	0.61	1.27 **	2.33	0.45	1.44	103.83	1.30	-0.71	81.58	1.15	49.36
137	MAI-137 × CM 500	50.67	1.43	7.07 **	57.17	0.50*	-0.17	6.67	4.11	0.74	91.00	0.72	1.91	104.17	-0.14	40.37
138	MAI-137 × SKV 50	55.33	1.13	-0.07	57.50	1.07	0.47 *	2.33	2.44*	-0.51	91.17	0.59	-0.23	89.75	0.57*	-25.73
139	MAI-137 × MAI 105	56.83	0.13	0.43	55.83	1.00	-0.17	1.17	1.03	-0.44	101.50	1.38	-0.59	110.08	4.51	21.95
140	MAI-137 × LM 13	55.83	0.67	11.68 **	51.33	1.64	-0.10	4.83	2.75	-0.14	94.00	0.81	0.37	102.50	-0.66*	-25.62
141	MAI-27 × CM 500	49.83	1.00	1.25	54.17	0.71	0.12	4.00	1.78	-0.28	93.83	1.54	-0.20	82.25	5.32	-11.00
142	MAI-27 × SKV 50	51.50	1.42	0.68	54.33	0.14	-0.10	2.67	1.94	4.27 **	93.50	0.84	-0.77	71.50	1.51	6.33
143	MAI-27 × MAI 105	53.17	0.14	-0.59	51.67	0.17*	-0.15	1.00	-1.00	-0.04	99.17	1.19	0.39	63.50	-3.59	-19.29
144	MAI-27 × LM 13	53.33	-0.30	1.98 *	55.50	1.07	0.47 *	2.50	-0.91	3.12 **	110.17	1.40	0.79	89.83	0.22	-16.87
145	MAI-29 × CM 500	51.50	1.56	2.42 *	54.67	0.39	0.28	3.00	3.38	1.66 *	93.67	1.22	-0.77	78.92	0.99	185.30 **
146	MAI-29 × SKV 50	53.83	1.82*	-0.62	54.50	1.18	2.85 **	1.83	0.97	0.68	97.83	1.45	-0.75	74.42	3.76*	-24.44
147	MAI-29 × MAI 105	53.50	1.27	-0.34	56.17	0.61	1.27 **	2.33	2.05	-0.20	92.33	1.00	-0.58	89.17	-0.70	-22.82
148	MAI-29 × LM 13	53.83	0.12	4.44 **	48.17	0.93	0.47 *	5.67	3.11	-0.33	93.83	0.43	0.35	90.83	0.14	40.37
149	MAI-35 × CM 500	50.00	0.29	0.83	54.17	1.25	0.70 *	4.50	0.48	2.74 *	93.00	1.02	0.82	79.08	1.09	19.72
150	MAI-35 × SKV 50	52.67	0.70	-0.57	49.50	0.00*	0.10	3.17	-0.58	2.30 *	94.00	0.72	1.28	78.33	2.13	25.39
151	MAI-35 × MAI 105	52.83	0.84	-0.42	55.17	0.39	0.28	2.50	1.30	1.24	93.67	1.36*	-0.79	87.17	0.10	-21.33
152	MAI-35 × LM 13	55.17	1.28	4.08**	60.83	-0.29	0.12	5.83	4.35	6.09 **	100.50	0.75	-0.61	83.83	1.29	-25.09
153	MAI-45 × CM 500	50.33	1.29	6.02 **	57.67	1.25	0.70 *	7.50	4.25	0.32	94.17	1.49	2.53 *	52.83	-0.82	-16.32
154	MAI-45 × SKV 50	55.50	0.83	0.99	54.17	1.36	-0.10	1.33	0.67	-0.31	97.00	0.72	1.28	62.92	-5.37	77.73 *
155	MAI-45 × MAI 105	53.17	0.57	-0.49	54.17	1.36	-0.10	0.83	0.15	3.62 **	104.00	0.72	1.91	102.00	-1.16	82.62 *
156	MAI-45 × LM 13	53.67	1.11	3.79 **	52.17	0.93	0.97 **	1.50	-1.30	1.24	92.17	0.44	-0.35	91.50	-2.37	-19.99
157	MAI-48 × CM 500	50.00	1.14	0.71	53.17	0.71	0.12	3.50	1.69	0.03	92.00	1.26	0.99	73.17	3.68	-13.34
158	MAI-48 × SKV 50	54.00	1.26	-0.16	57.17	0.93	0.97 **	3.33	1.66	0.80	92.00	0.66	0.19	64.25	-1.44	31.95

Sl. no.	Hybrid	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk			Ear height (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
159	MAI-48 × MAI 105	54.00	0.84	-0.63	54.00	0.54	-0.01	0.67	0.33	-0.46	100.00	0.81	0.37	84.92	-0.23	217.33 **
160	MAI-48 × LM 13	54.00	1.11	1.03	51.33	1.32	3.85 **	2.67	1.11	0.37	94.00	0.45	-0.73	103.25	0.18	25.52
161	MAI-706 × CM 500	52.67	1.26	-0.55	55.83	1.11	1.27 **	3.33	2.05	-0.20	94.00	1.08	-0.41	86.25	2.23	456.83 **
162	MAI-706 × SKV 50	52.33	0.99	-0.61	53.00	0.54	-0.01	1.00	0.61	1.10	98.83	0.85	-0.50	81.17	-0.12	-2.95
163	MAI-706 × MAI 105	54.17	1.27	0.27	56.17	0.50*	-0.17	2.00	2.00	1.38	111.17	0.41	2.73 *	89.92	-1.19	47.17
164	MAI-706 × LM 13	56.17	0.97	1.57	57.00	0.64	2.40 **	0.50	0.30	-0.11	108.50	0.99	-0.79	101.50	1.20	-11.94
165	SKV-70 × CM 500	53.67	1.12	0.14	53.00	0.86	-0.10	1.33	-0.33	-0.46	94.33	1.33	1.70	80.50	6.64	45.11
166	SKV-70 × SKV 50	53.50	0.56*	-0.63	55.83	0.79	1.61 **	2.00	0.78	0.85	98.83	0.91	-0.78	82.92	-0.71	215.74 **
167	SKV-70 × MAI 105	53.50	1.68*	-0.62	55.33	1.43	0.47 *	1.67	-0.06	0.15	95.50	0.78	-0.17	86.50	0.94	-10.96
168	SKV-70 × LM 13	57.00	-0.01	0.87	55.50	1.93	0.47 *	2.50	3.69	3.95 **	108.17	1.31	-0.31	104.33	-0.21	478.19 **
169	V-632-112 × CM 500	57.17	0.70	-0.57	58.00	0.96	-0.01	1.00	0.00*	-0.52	113.17	1.61	-0.52	112.08	-0.16	-25.38
170	V-632-112 × SKV 50	57.83	0.55	2.14 *	58.67	1.57	0.47 *	1.00	-0.61	1.10	104.17	1.19	0.39	86.83	3.06*	-25.26
171	V-632-112 × MAI 105	56.33	1.12	-0.41	56.50	1.29	0.12	0.17	-0.36	-0.48	107.00	1.35	-0.20	102.67	2.03	-1.26
172	V-632-112 × LM 13	56.33	1.12	-0.41	57.00	0.54	-0.01	1.33	1.66	0.80	114.17	0.89	0.05	107.75	1.77	359.46 **
173	V-632-67 × CM 500	52.00	4.26	21.05 **	53.67	1.04	1.99 **	4.00	4.38	4.17 **	102.67	0.92	6.95 **	98.67	2.03	-19.80
174	V-632-67 × SKV 50	56.33	0.85	-0.04	56.50	1.29	0.12	0.50	-0.30	-0.11	111.50	1.44	-0.75	90.42	3.31	24.49
175	V-632-67 × MAI 105	62.17	1.26	-0.55	62.67	1.04	-0.01	0.67	0.72	-0.39	102.67	0.59	-0.23	98.58	2.61	68.00
176	V-632-67 × LM 13	56.83	1.68	-0.38	57.50	1.50*	0.10	0.50	0.30	-0.11	115.00	0.96	0.56	121.17	3.43	124.40 *
177	Z-50-3 × CM 500	56.67	1.13	-0.51	58.17	1.36	-0.10	1.83	0.36	-0.48	94.17	0.86	0.11	86.08	3.44*	-25.73
178	Z-50-3 × SKV 50	58.17	1.82	-0.54	57.50	1.07	0.97 **	1.17	0.81	1.97 *	94.67	0.68	-0.76	97.42	2.07	1.68
179	Z-50-3 × MAI 105	58.33	1.00	1.25	60.17	0.61	1.27 **	2.50	1.69	0.03	93.17	1.58	-0.31	101.42	3.30	-17.97
180	Z-50-3 × LM 13	54.67	0.14	-0.59	57.50	-0.21	1.61 **	2.83	1.36	-0.26	92.33	1.30	-0.71	107.33	-0.62	18.63
181	Z-51-1 × CM 500	55.17	0.43	0.36	57.00	0.21	0.12	1.50	1.09	-0.23	94.67	1.22	-0.77	78.25	-0.21	75.16 *
182	Z-51-1 × SKV 50	56.33	0.70	-0.60	59.00	0.96	-0.01	2.83	0.36	-0.48	106.33	1.54	-0.20	91.33	-0.27	32.92
183	Z-51-1 × MAI 105	57.83	0.14	-0.59	60.83	1.64	-0.10	3.33	-0.16	6.62 **	108.83	0.75*	-0.79	105.67	1.02	-2.43
184	Z-51-1 × LM 13	56.33	0.69	0.49	55.83	0.36	-0.10	0.83	0.75	0.07	90.83	0.85	5.65 **	114.25	0.87	68.71
185	Z-51-6 × CM 500	56.17	0.14	-0.59	56.17	0.07	0.47 *	0.17	-0.36	-0.48	110.17	1.22	-0.77	104.25	3.95	-21.52
186	Z-51-6 × SKV 50	55.83	2.10*	-0.62	55.67	1.89	1.27 **	0.67	0.72	-0.39	109.67	1.40	2.53 *	81.50	0.39	25.91
187	Z-51-6 × MAI 105	56.17	0.71	0.33	57.50	1.71	0.12	2.00	-0.22	2.93 **	101.50	0.75	-0.61	109.92	3.29	-23.43
188	Z-51-6 × LM 13	48.17	0.71	0.33	50.17	1.36	-0.10	2.67	1.11	0.37	92.83	0.67	-0.45	99.67	-1.84	-22.63
189	Z-52-29 × CM 500	49.50	1.98	0.61	51.83	0.68	-0.15	2.50	3.30	6.76 **	93.67	1.73	4.51 **	78.67	1.87	-11.35
190	Z-52-29 × SKV 50	51.50	1.12	-0.63	51.83	0.89	1.27 **	1.17	0.64	0.23	94.33	0.88	2.30 *	91.08	2.12	-25.24
191	Z-52-29 × MAI 105	51.33	1.82	0.63	47.50	1.07	0.97 **	3.83	0.54	6.35 **	95.67	1.34	2.85 *	81.67	4.72	-22.57
192	Z-52-29 × LM 13	47.67	1.00	4.15 **	50.67	0.82	-0.15	3.50	2.08	-0.49	93.17	0.74	-0.10	62.08	0.01	-23.94
193	Z-56-1 × CM 500	50.00	1.55	-0.36	53.50	1.07	0.47 *	4.00	3.38	1.66 *	92.17	0.77	-0.64	75.08	3.80	21.75
194	Z-56-1 × SKV 50	51.50	0.29	0.83	55.83	0.79	1.61 **	4.33	2.23	3.02 **	96.00	0.84	-0.77	92.00	1.51	10.53
195	Z-56-1 × MAI 105	50.17	0.54	3.66 **	48.00	1.50*	-0.17	1.83	1.36	-0.26	93.33	1.27	0.07	78.50	2.24	-20.30
196	Z-56-1 × LM 13	48.83	0.42	-0.60	48.17	1.14	-0.10	1.17	0.64	0.23	94.17	1.19	3.18 *	66.75	-0.06	-23.46
197	Z-56-8 × CM 500	51.00	0.84	-0.63	50.50	1.61	0.28	1.33	1.66	0.80	91.50	1.11	0.77	77.17	0.82	-16.32
198	Z-56-8 × SKV 50	52.00	0.97	2.95 *	50.83	0.14	2.40 **	1.67	0.12	2.13 *	92.67	1.31	-0.31	83.00	1.76	-3.91

Sl. no.	Hybrid	Days to 50% anthesis			Days to 50% silking			Anthesis silking interval			Days to 50% brown husk			Ear height (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
199	Z-56-8 × MAI 105	50.33	0.85	-0.04	52.50	1.61	0.28	2.33	0.45	1.44	94.00	1.05	-0.43	78.00	-2.60*	-25.29
200	Z-56-8 × LM 13	53.83	0.96	4.66 **	49.83	1.43	0.47 *	4.50	3.47	-0.45	91.33	0.97	-0.22	107.25	4.66	-8.38
201	Z-60-22 × CM 500	51.33	0.70	-0.60	51.17	1.04	1.99 **	0.50	-1.09	-0.23	102.33	1.03	2.01	83.83	-2.43	-18.81
202	Z-60-22 × SKV 50	53.83	1.13	-0.07	56.50	0.54	-0.01	2.50	1.69	0.03	98.50	1.05	-0.43	79.42	1.82	130.01 *
203	Z-60-22 × MAI 105	56.17	1.82	-0.54	55.00	1.61	0.28	1.33	0.06	0.15	111.67	0.47	-0.48	95.25	5.12*	-25.67
204	Z-60-22 × LM 13	55.83	0.97	0.53	55.00	1.61	0.28	1.17	0.64	0.23	107.50	0.51	0.03	92.92	4.25	-13.14
205	Z-62-55 × CM 500	53.00	1.27	-0.34	53.83	0.79	0.12	0.50	0.30	-0.11	105.17	0.44	-0.35	102.75	4.08	-20.38
206	Z-62-55 × SKV 50	53.50	0.44	2.65 *	60.17	0.50*	-0.17	6.83	2.14	-0.08	97.00	0.03	0.69	98.17	1.97	-24.07
207	Z-62-55 × MAI 105	56.00	0.84	-0.63	59.83	1.00	-0.17	3.83	0.36	-0.48	98.17	-0.07*	-0.73	91.33	2.32	15.77
208	Z-62-55 × LM 13	51.17	0.55	0.09	48.83	1.54	1.99 **	2.50	2.69	1.51 *	93.33	0.55	-0.28	111.50	1.16	142.15 *
209	Z-62-67 × CM 500	51.67	2.84	6.63 **	56.83	0.36	-0.10	5.50	6.29	22.15 **	94.67	1.25	1.01	50.00	-1.05	-19.18
210	Z-62-67 × SKV 50	54.67	1.54	-0.55	53.17	0.07	0.47 *	2.00	-1.21	5.96 **	93.83	1.30	-0.71	78.25	-1.44*	-25.69
211	Z-62-67 × MAI 105	53.50	0.71	-0.30	53.83	0.04	-0.01	1.00	1.00	-0.04	93.83	1.09	0.26	95.92	0.36	-6.56
212	Z-62-67 × LM 13	54.50	0.83	0.99	52.17	0.71	0.12	2.33	0.06	0.15	105.50	1.44	7.50 **	87.67	-2.42	42.15
213	Z-63-30 × CM 500	52.83	-0.29	-0.48	52.83	0.79	0.12	1.33	1.06	-0.50	97.33	1.39	-0.06	79.00	-0.91	-22.92
214	Z-63-30 × SKV 50	53.00	1.43	4.97 **	57.17	1.57	0.97 **	4.50	2.47	-0.33	109.33	1.27	0.07	96.08	1.18	-7.77
215	Z-63-30 × MAI 105	59.67	1.26	-0.55	60.17	1.14	-0.10	0.50	0.30	-0.11	94.00	0.84	-0.77	99.75	2.20	74.29 *
216	Z-63-30 × LM 13	58.83	0.55	2.14 *	59.50	1.93	0.47 *	2.00	0.00*	-0.52	114.17	0.56	3.05 *	107.50	3.04	-23.24
217	**Decalb 8101**	56.17	1.27	0.27	57.83	1.75	0.70 *	1.83	0.75	0.07	116.67	1.16	-0.19	102.33	0.22	-16.87
218	**30v92**	59.33	0.55	2.14 *	59.50	1.07	0.47 *	0.67	0.33	-0.46	112.50	1.23	-0.51	94.58	-0.04	-12.73
219	**NK6240**	55.83	1.27	-0.61	55.00	0.75	0.70 *	0.83	-0.25	1.58 *	112.17	0.86	0.11	91.00	-1.72	16.95
220	**PINNACLE**	58.33	1.55	-0.62	60.17	2.21	1.61 **	1.83	-0.64	0.23	114.50	0.63	4.08 *	99.33	2.62	114.26 *
221	**HEMA**	53.83	0.97	0.53	53.83	1.21	1.61 **	0.67	-1.05*	-0.50	110.67	0.89	3.89 *	97.75	0.27	67.65
222	**CP 818**	59.83	1.82*	-0.62	60.83	0.79	1.61 **	1.33	1.66	0.80	112.00	1.41	1.22	109.50	2.65	143.00 *
223	**900M GOLD**	48.00	1.27	-0.34	51.00	0.21	0.12	2.83	1.97	2.66 *	92.67	0.83	-0.72	96.00	0.39	-5.51
224	**NITYASHREE**	55.00	0.71	-0.30	56.00	0.21	0.12	1.17	0.64	0.23	94.17	0.95	1.67	91.58	1.26	-19.14
225	**PHI 3501**	54.50	1.70	0.64	58.17	0.82	-0.15	3.67	2.33	2.05 *	94.33	1.48	1.22	99.42	0.01	246.80 **

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)			Grain yield per plant (g)			Shelling %		
		Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di	Mean	*bi*	s^2di
1	V-1154 × CM 500	232.33	0.46	44.98	229.27	-1.56	-871.29	189.80	2.34	-283.91	160.90	2.54	-257.76	84.57	1.54	-5.24
2	V-1154 × SKV 50	234.58	-0.09	-33.40	240.31	3.15	-887.16	183.40	1.53	-257.10	157.40	1.09	-230.36	85.91	1.65	-3.43
3	V-1154 × MAI 105	243.08	0.74	18.98	260.67	0.90	1199.47	196.43	-0.71	-381.20	164.38	-0.72	-175.11	83.67	1.29	-3.19
4	V-1154 × LM 13	274.50	5.03	200.03 *	260.82	-2.49	-1048.78	209.15	2.55	503.94	177.37	2.84	296.99	84.64	1.64	-5.59
5	V-1168 × CM 500	213.67	0.72	147.99 *	203.11	5.75	-794.08	161.78	1.55	1137.57	136.63	0.84	620.05	84.70	2.77	-3.70
6	V-1168 × SKV 50	231.58	0.24	-20.80	211.24	4.34	282.66	149.87	-0.53	-7.15	131.03	-0.83	-137.41	87.52	1.80	-5.44
7	V-1168 × MAI 105	210.08	-0.94	-27.60	181.80	7.97	-186.75	139.10	-1.38	1338.43	118.63	-1.96	555.38	85.40	2.37	-4.32
8	V-1168 × LM 13	283.17	7.14*	-23.41	255.98	2.80	-911.29	201.95	2.19	-436.26	175.06	1.90	-330.76	86.73	1.80	-4.52
9	V-1522 × CM 500	232.58	1.79	2.28	228.49	0.59	-1057.46	178.73	1.84	-398.59	149.40	1.82	-340.01	83.64	0.86	-5.11
10	V-1522 × SKV 50	246.83	1.22	24.15	215.00	-3.65*	-1060.12	166.60	1.99	614.71	144.00	2.52	629.24	86.24	3.96*	-5.62
11	V-1522 × MAI 105	235.00	0.37*	-36.61	228.91	-0.05	-130.80	171.50	-0.03	-523.43	146.97	0.32	-313.18	85.62	2.86	-4.56
12	V-1522 × LM 13	245.75	1.15	-36.61	275.06	0.49	-828.84	208.83	3.13	-553.00	176.70	2.90*	-425.00	84.69	0.15	-4.68
13	V-1649 × CM 500	207.75	2.70	15.13	183.02	-3.49	-322.62	147.40	2.85	-314.75	128.20	3.17	-250.82	86.85	3.04	-5.03
14	V-1649 × SKV 50	242.83	0.40	81.56	265.01	-3.09*	-1054.12	191.33	1.33	-365.20	164.92	1.39	-193.64	86.01	2.70	-3.36
15	V-1649 × MAI 105	218.92	0.88	80.93	294.59	-10.48	-764.05	205.49	1.85	933.12	171.47	3.01	722.82	83.16	3.18	9.80
16	V-1649 × LM 13	224.08	1.86	95.41	335.61	3.82	6443.21 **	254.00	6.72	489.89	219.07	6.06	886.48	86.41	1.02	-5.03
17	V-1742 × CM 500	218.08	0.80	-26.88	169.32	-3.65	938.14	147.53	4.14	-129.73	126.63	4.40	-285.75	85.66	0.98	-4.74
18	V-1742 × SKV 50	241.58	-1.40	69.27	216.52	6.22	7700.63 **	169.62	-4.43	-368.45	149.31	-4.59*	-413.49	88.04	0.60	-5.56
19	V-1742 × MAI 105	207.92	0.75	13.63	181.35	-0.47	1601.00	151.83	-3.20	-171.52	98.73	3.45	98.39	71.81	6.57	835.40 **
20	V-1742 × LM 13	238.17	0.89	-34.90	238.72	2.62	1058.29	194.70	4.17	-104.54	169.77	3.73	142.33	87.33	0.87	-4.62
21	V-2205 × CM 500	246.25	-0.84*	-36.79	189.77	-0.39	-954.33	149.37	0.80	-271.48	125.77	0.82	-158.75	84.16	1.98	-2.32
22	V-2205 × SKV 50	231.50	0.28	-28.57	199.98	5.13	1839.99	151.85	3.20	1179.83	128.17	2.58	1120.08	84.44	0.92	-5.64
23	V-2205 × MAI 105	243.42	0.12*	-36.80	249.09	7.66	4203.68 *	189.73	-2.83	57.15	161.50	-3.40	-234.85	84.96	0.68	-0.49
24	V-2205 × LM 13	268.75	-0.65*	-34.11	238.54	-0.04	7040.63 **	188.63	5.94	-506.16	159.93	5.65	-257.38	84.85	1.92*	-5.64
25	V-2232 × CM 500	215.00	0.90	61.27	209.59	2.67	-886.30	171.56	1.31	-98.00	148.95	1.06	-47.96	86.90	1.07	-5.62
26	V-2232 × SKV 50	228.17	1.80	23.38	168.50	2.04	-1036.31	144.83	0.06	-567.57	125.13	0.18	-412.64	86.20	1.38	-5.29
27	V-2232 × MAI 105	219.75	1.62	-21.03	253.64	1.97	-17.60	202.90	-0.42	-543.76	169.97	-0.50	-370.43	83.79	0.91	-4.43
28	V-2232 × LM 13	266.08	1.60	-13.19	288.24	0.86	5646.21 *	235.58	5.17	-497.01	201.73	5.18	-265.02	85.57	1.75	-4.59
29	V-1410-1 × CM 500	185.92	1.17	-36.58	161.85	2.22	-1055.42	122.43	-0.81	-566.16	101.57	-0.85	-396.80	82.86	1.52	-3.30
30	V-1410-1 × SKV 50	218.17	1.05	10.65	193.92	1.19	-763.73	137.70	0.75	-514.78	118.60	0.48	-399.65	86.08	1.79	-2.70
31	V-1410-1 × MAI 105	208.92	-0.03*	-35.37	259.05	-5.77	-218.41	190.67	1.17	1091.94	163.30	1.45	819.15	85.66	1.41	-3.49
32	V-1410-1 × LM 13	242.42	0.38*	-36.42	276.97	5.66	-940.73	210.73	2.00	119.29	168.15	0.09	-420.39	80.24	10.36	102.69 **
33	V-1712-1 × CM 500	245.92	1.60	56.75	225.69	-0.39	-57.43	188.55	3.42*	-572.25	163.97	3.43	-402.84	86.84	0.75	-5.57
34	V-1712-1 × SKV 50	244.83	0.94	-18.89	242.13	1.76	1557.80	187.88	-0.72	-408.93	162.16	-0.56	-195.00	86.23	1.53	-5.43
35	V-1712-1 × MAI 105	246.58	0.52*	-36.72	262.61	2.18	7220.61 **	199.53	-1.77	-99.17	172.63	-1.76	276.72	86.37	2.18	-0.75
36	V-1712-1 × LM 13	258.58	-0.06	-1.84	249.31	-1.46*	-1060.74	196.80	3.08	-164.84	167.53	3.18	-198.67	85.07	1.58	-5.21
37	V-241-2 × CM 500	215.25	0.75	-26.51	149.73	-4.99	-237.05	126.66	3.23	495.00	106.17	3.58	-48.88	83.53	-0.96	-0.72
38	V-241-2 × SKV 50	263.67	4.28*	-35.68	211.00	-0.95	362.00	167.60	-0.67	-49.50	144.47	-0.48	97.12	86.15	1.14	-4.44
39	V-241-2 × MAI 105	221.17	2.15	13.48	196.42	0.94	-1004.15	164.17	0.88	-535.91	135.13	0.69	-403.30	82.39	0.84	-5.36
40	V-241-2 × LM 13	252.75	1.29	-29.33	239.08	0.15	-347.80	209.65	3.27	-34.74	178.05	3.87	-181.05	84.37	1.62	4.83

Sl. no.	Hybrid	Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)			Grain yield per plant (g)			Shelling %		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
41	V-2437-1 × CM 500	212.33	1.93	361.24 **	182.91	1.55	-534.48	146.77	2.13	-546.89	127.33	2.21	-423.23	86.58	0.92	-5.17
42	V-2437-1 × SKV 50	210.92	1.37	3.85	210.04	2.87	206.21	161.77	2.32	-290.09	141.63	2.02	-139.68	87.56	1.01	-5.00
43	V-2437-1 × MAI 105	236.25	0.68	-7.53	225.28	6.61	-1001.55	173.40	-0.37	906.18	149.20	-1.10	550.56	86.05	-0.07	-2.73
44	V-2437-1 × LM 13	240.17	1.81	-30.49	234.98	4.47*	-1058.69	185.17	0.64	-167.47	161.87	0.29	-148.54	87.46	0.83	-5.02
45	V-2459-2 × CM 500	209.50	0.66	-26.94	155.57	-0.45	-979.87	127.33	1.01	-560.74	109.83	1.11	-423.36	86.24	0.46	-5.30
46	V-2459-2 × SKV 50	226.17	-0.88	23.39	186.84	1.46	-788.46	145.32	1.34	-217.31	125.92	0.88	-100.75	86.67	-0.19	-3.29
47	V-2459-2 × MAI 105	258.83	6.71*	-4.39	185.68	-2.16	-916.07	151.20	1.75	133.44	129.10	1.90	-9.51	85.32	0.65	-4.67
48	V-2459-2 × LM 13	247.83	0.84	-35.05	187.23	0.91	18.71	150.53	2.55	-517.28	130.53	2.37	-341.21	86.75	1.01	-5.20
49	V-2516-2 × CM 500	215.58	0.79	288.95 **	152.84	0.88	-725.25	134.23	0.90	-366.50	115.73	0.69	-256.35	86.25	0.46	-5.49
50	V-2516-2 × SKV 50	228.00	1.65	-29.95	195.35	-1.10*	-1060.77	155.97	0.22	-541.56	133.97	0.59	-389.95	85.86	1.51	-2.17
51	V-2516-2 × MAI 105	247.67	3.99*	-36.32	188.67	3.04	-823.89	143.23	0.50	-426.81	120.47	0.27	-292.05	84.04	-0.52	-5.45
52	V-2516-2 × LM 13	241.6	2.5	6.9	248.0	0.5	-867.3	188.2	2.4	-122.5	162.1	2.0	-97.9	86.1	2.1	-5.2
53	V-2608-1 × CM 500	207.92	2.03	-26.33	159.34	1.42	-887.05	132.17	0.98	-499.65	113.30	0.79	-359.11	85.67	0.37	-5.40
54	V-2608-1 × SKV 50	251.75	4.18	4.58	208.72	4.36	423.25	162.45	-2.28	-527.10	139.33	-2.42*	-425.02	85.79	1.41	-3.87
55	V-2608-1 × MAI 105	222.42	1.12	-11.66	230.52	4.34	-1054.45	183.60	0.35	274.04	147.53	-0.68	902.53	80.63	-6.66	-0.27
56	V-2608-1 × LM 13	238.00	1.26	-4.20	222.14	2.98	-961.41	181.83	0.60	-419.08	155.50	0.44	-365.78	85.54	2.06	-5.47
57	V-291-2 × CM 500	237.67	-0.09*	-35.89	188.49	-0.59	-937.77	153.97	0.41	-417.18	128.07	0.43	-323.93	83.20	0.18	-4.85
58	V-291-2 × SKV 50	248.92	0.38	-32.69	220.20	2.83	4861.39 *	171.80	-3.19	-412.79	149.12	-3.02	-66.04	86.72	1.50	-5.13
59	V-291-2 × MAI 105	252.08	1.36	-28.68	259.11	4.50	5579.50 *	190.46	-2.31*	-562.44	148.28	-0.74	-393.18	77.23	1.87	92.15 **
60	V-291-2 × LM 13	259.42	2.10	-7.22	260.56	1.42	-1055.83	208.17	1.62	-562.05	175.07	1.97	-414.03	83.94	1.63	0.65
61	V-70-1 × CM 500	250.25	0.90	-2.86	204.59	3.36*	-1058.31	163.38	0.23	-304.65	136.40	0.25	-278.37	83.51	1.56	-4.34
62	V-70-1 × SKV 50	218.25	2.48	79.28	197.30	-2.32	299.66	159.27	3.31	-416.34	138.13	3.40	-379.29	86.71	1.10	-5.52
63	V-70-1 × MAI 105	243.33	0.85	28.28	209.06	2.95	-688.94	165.46	1.11	140.62	138.27	0.81	37.64	83.54	1.43	-5.64
64	V-70-1 × LM 13	281.58	0.29	6.49	258.25	6.02	343.39	205.60	2.50	1341.10	174.80	1.90	1274.42 *	85.03	-0.05*	-5.64
65	CIMMYT-47 × CM 500	229.25	-0.05	73.70	213.03	0.13	-384.41	171.50	0.38	-387.51	149.57	0.37	-232.90	87.15	1.28	-3.24
66	CIMMYT-47 × SKV 50	214.75	0.46	-33.64	176.56	0.89	-1060.83	135.93	1.56	-544.79	117.43	1.88	-409.88	85.52	2.71	6.24
67	CIMMYT-47 × MAI 105	222.33	-0.49	-31.65	224.56	-0.92	393.01	176.51	-0.49	-25.52	152.10	-0.34	112.95	86.09	1.26	-4.33
68	CIMMYT-47 × LM 13	228.83	0.84*	-36.80	266.19	0.21	-181.24	204.37	0.88	-301.02	178.63	0.81	-163.55	87.42	1.27	-1.85
69	CIMMYT-5 × CM 500	226.33	-2.64	-9.89	209.68	-5.07	-547.96	183.13	-2.01	732.77	149.60	-1.42	1026.52	81.46	3.16	-4.45
70	CIMMYT-5 × SKV 50	229.75	0.10	-32.04	201.18	1.24	-1044.26	170.60	1.11	-341.98	142.23	1.84	-250.69	83.38	2.31	4.27
71	CIMMYT-5 × MAI 105	261.08	-1.27	-16.71	215.45	2.90*	-1060.07	167.70	-0.01	-476.83	137.10	-0.22	-412.00	81.73	2.37	-4.52
72	CIMMYT-5 × LM 13	262.08	1.35	-36.35	256.78	0.27	-766.46	205.77	2.40*	-571.93	172.13	2.24	-416.28	83.61	3.05	-4.57
73	CM-115 × CM 500	208.58	1.18	147.99 *	133.76	-2.03	1298.85	122.08	1.68	-571.39	102.03	1.43	-413.91	83.65	-0.19	-3.11
74	CM-115 × SKV 50	196.00	1.24	-35.63	159.04	-1.40	-725.95	126.57	2.08	-368.00	107.63	2.18	-357.16	84.97	0.01*	-5.64
75	CM-115 × MAI 105	208.58	0.23	-35.03	183.57	1.89	-744.20	145.53	-0.79	-435.50	120.93	-0.79	-388.05	83.18	1.58	-5.59
76	CM-115 × LM 13	213.67	1.02	-3.31	190.78	0.41	-916.85	159.77	1.84	-570.11	131.77	1.40	-417.94	82.55	3.70	4.27
77	CM-149 × CM 500	200.83	0.83	97.62	149.42	1.03	-989.17	130.80	0.83	-529.87	109.30	0.58	-387.29	83.52	0.17	-4.34
78	CM-149 × SKV 50	184.08	2.56	5981.04 **	190.19	1.40	-1045.62	158.13	1.00	-561.54	131.97	0.81	-408.76	83.45	0.03	-5.21
79	CM-149 × MAI 105	231.50	-0.25*	-34.95	215.17	6.13	-1035.68	174.37	-0.52	1948.16 *	141.37	-0.91	1020.41	80.75	0.01	-5.61
80	CM-149 × LM 13	205.75	0.54	2.76	176.20	1.40	-978.25	147.88	1.23	-499.84	123.05	1.14	-327.26	83.18	-0.37	-5.16

Sl. no.	Hybrid	Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)			Grain yield per plant (g)			Shelling %		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
81	CML-165 × CM 500	232.67	1.50	41.00	167.71	0.47	-751.45	138.10	-0.27	-562.47	115.93	-0.14	-422.00	83.93	-0.64	-4.93
82	CML-165 × SKV 50	246.75	0.75	134.84 *	201.79	-0.15	949.27	154.77	3.15	-556.21	130.40	2.89	-341.32	84.31	-0.38	-5.35
83	CML-165 × MAI 105	242.83	0.72*	-36.79	202.05	2.38	-1034.67	161.47	0.62	-422.16	134.57	0.40	-334.93	83.33	0.89	-5.44
84	CML-165 × LM 13	241.58	1.09	-34.87	221.81	1.61	1173.73	176.22	4.29	-275.39	147.32	3.95	47.77	83.08	0.33	-2.83
85	CML-166 × CM 500	235.92	2.22	4.99	176.26	-2.43	-161.46	141.14	-0.73	-232.15	117.26	-0.34	-100.23	82.97	1.41	-4.60
86	CML-166 × SKV 50	231.25	0.06*	-35.44	206.81	2.01	439.24	161.40	2.69	-565.86	138.33	2.73	-355.06	85.70	-0.42	-4.15
87	CML-166 × MAI 105	233.42	0.27	44.11	227.57	3.45	2899.10	184.37	3.66	597.06	155.10	3.36	666.32	83.94	1.48	-1.54
88	CML-166 × LM 13	268.25	0.10	17.69	245.34	1.67	5288.40 *	196.60	5.85	139.82	161.33	4.99	413.11	82.23	0.88	-3.81
89	CML-169 × CM 500	227.00	0.05	-30.92	166.24	-1.32	823.79	141.77	4.10	-333.15	123.63	4.36	-352.40	86.97	1.88	-5.14
90	CML-169 × SKV 50	225.83	0.71	-16.62	214.51	3.75	2740.69	169.50	-2.45	-524.04	146.01	-2.63*	-425.62	86.08	0.57	-4.35
91	CML-169 × MAI 105	220.17	-0.31*	-36.80	215.08	5.93	-1007.00	172.23	0.24	979.13	150.80	-0.14	596.61	87.70	1.70	-5.47
92	CML-169 × LM 13	241.08	0.48*	-36.80	234.62	1.49	-176.48	191.17	-0.24	-554.53	162.53	0.36	-369.29	84.96	2.53	1.75
93	CML-172 × CM 500	253.50	0.74	-16.88	209.11	-0.58	-1050.02	171.27	1.16	-497.14	139.43	1.53	-342.25	81.29	2.77	-1.91
94	CML-172 × SKV 50	276.17	6.39*	-32.46	232.91	-1.82	-850.71	187.37	2.45	682.93	157.08	2.87	254.47	83.73	0.64	-5.25
95	CML-172 × MAI 105	266.50	0.71	236.81 **	267.87	0.71	-1059.30	210.27	1.43	-556.53	176.20	1.09	-417.89	83.88	0.50	-2.03
96	CML-172 × LM 13	271.67	1.05	51.95	242.71	2.41	-195.12	183.30	2.33	-223.88	150.73	1.81	-109.71	82.28	0.38	-4.51
97	CML-359 × CM 500	260.58	-0.41*	-33.85	182.43	-1.20	-1051.76	153.01	0.66	-242.96	128.33	0.97	-190.35	83.80	1.10	-5.15
98	CML-359 × SKV 50	236.58	1.38	-33.64	179.63	-0.15	-469.86	142.13	1.60	-497.09	121.90	1.63	-390.60	85.73	0.87	-5.48
99	CML-359 × MAI 105	229.83	1.73	105.56 *	213.32	5.43	-1023.65	168.57	0.51	516.63	146.51	-0.20	256.72	86.99	1.19	-0.51
100	CML-359 × LM 13	244.50	1.37	-29.69	204.02	2.90	-1038.87	166.40	0.81	-568.17	143.57	0.57	-422.40	86.34	0.43	-3.28
101	CML-411 × CM 500	242.58	-0.17	-4.42	199.14	-0.99	-353.96	165.87	2.19	-552.13	145.30	1.81*	-425.35	87.52	-0.84	0.64
102	CML-411 × SKV 50	235.33	0.31	29.54	209.78	-0.97	-523.54	164.37	-0.58	144.63	142.63	-0.34	270.74	86.57	1.51	-3.83
103	CML-411 × MAI 105	231.67	-0.51*	-34.44	218.60	1.94	-741.88	178.73	-0.02	-540.17	152.20	-0.14	-388.79	85.13	-0.85	-5.61
104	CML-411 × LM 13	259.50	0.47	121.21 *	278.08	-6.26	-874.79	217.27	2.06	2942.50 *	185.37	2.92	2223.54 *	85.29	1.97	-4.77
105	HKI-193-1 × CM 500	213.42	0.09	12.40	182.29	2.85	-331.75	154.91	1.75	-14.30	129.93	1.29	174.82	83.78	-1.24	-5.59
106	HKI-193-1 × SKV 50	210.58	0.55	-34.47	211.59	1.69	-909.32	169.57	2.28	-543.45	144.13	2.25	-365.51	84.88	0.75	-4.62
107	HKI-193-1 × MAI 105	239.75	0.75	-12.33	236.65	5.59	8533.31 **	182.17	-3.97	-513.10	133.70	0.30	-413.76	75.90	6.07	339.91 **
108	HKI-193-1 × LM 13	255.33	0.55	-5.40	285.24	4.92	-681.30	226.33	3.03	134.74	190.23	2.45	114.36	84.13	1.49	-5.02
109	HKI-193-2 × CM 500	198.83	1.37	44.99	159.26	2.58	-905.93	133.41	-0.28	-388.83	111.99	-0.37	-334.18	83.80	0.94	-5.50
110	HKI-193-2 × SKV 50	240.08	0.57	-35.13	163.84	-1.68	-1051.62	131.13	1.58	-211.59	112.27	1.71	-210.80	85.51	0.96	-5.36
111	HKI-193-2 × MAI 105	219.08	1.33	-30.34	217.06	4.57	-770.72	169.63	1.76	120.21	141.07	1.17	18.97	83.34	1.65	-3.43
112	HKI-193-2 × LM 13	247.25	0.95	-25.24	232.50	1.88	-686.09	182.33	-0.02	-560.64	153.13	0.12	-378.84	83.87	2.45*	-5.63
113	LTP-1 × CM 500	225.25	1.15	37.13	196.65	6.64	-282.87	153.83	-1.51	674.62	132.47	-1.83	266.77	86.20	0.94	-5.53
114	LTP-1 × SKV 50	262.58	0.06*	-36.43	209.96	1.14	119.42	166.17	2.59	-381.39	143.30	2.42	-201.50	86.23	0.88	-5.56
115	LTP-1 × MAI 105	239.00	0.82	-27.37	219.24	3.95	376.46	173.92	3.03	181.87	149.56	2.63	341.07	85.98	0.54*	-5.64
116	LTP-1 × LM 13	241.83	0.81	-35.39	228.08	3.37	-861.69	178.32	2.24	-378.74	151.15	1.59	5.73	84.61	-3.88	-0.83
117	MAI-11 5 × CM 500	197.42	0.26	71.48	155.68	3.12	-1001.33	126.23	-0.34	-324.69	104.73	-0.65	-327.75	83.01	1.67	-3.16
118	MAI-115 × SKV 50	218.25	0.85	31.28	167.92	3.53	-1055.29	135.33	0.35	-70.74	115.80	0.01	-105.27	85.63	1.09	-5.20
119	MAI-116 × MAI 105	210.33	-0.41*	-34.07	188.11	3.54	1117.91	148.38	-2.27	-519.10	122.97	-2.49*	-424.98	82.55	0.53	-3.18
120	MAI-117 × LM 13	251.08	0.26	37.64	250.05	2.27	402.90	194.27	-0.50	-558.71	165.03	-0.72	-381.74	84.89	0.99	-1.56

Sl. no.	Hybrid	Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)			Grain yield per plant (g)			Shelling %		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
121	MAI-107 × CM 500	231.92	0.57	22.05	193.29	1.10	-891.81	154.47	-0.85	-469.53	133.77	-0.81	-298.85	86.61	0.42	-4.99
122	MAI-107 × SKV 50	218.08	0.71	-36.63	156.41	1.31	-1034.98	126.00	0.40	-483.65	108.87	0.35	-370.56	86.46	1.23	-5.49
123	MAI-107 × MAI 105	247.08	5.61	24.93	234.14	-5.52	-521.92	177.53	4.10	984.62	146.70	4.28	257.87	82.66	0.47	-5.47
124	MAI-107 × LM 13	232.33	-0.02	18.26	229.15	3.52	749.09	180.95	2.94	170.41	153.10	2.45	228.25	84.69	0.95	-5.41
125	MAI-109 × CM 500	227.08	-1.16	110.92 *	167.99	0.18	-984.75	140.63	0.14	-533.84	112.27	1.37	-406.95	79.94	1.53	58.82 **
126	MAI-109 × SKV 50	215.67	0.58	-33.78	175.31	1.11	-1040.98	142.27	0.42	-555.29	118.87	0.63	-403.72	83.56	0.14	-0.36
127	MAI-109 × MAI 105	221.83	-0.39	-26.01	189.54	0.24	295.17	153.40	2.87	-565.70	127.93	2.50	-390.27	83.41	0.30	-4.11
128	MAI-109 × LM 13	274.75	6.10	32.04	213.03	1.56	643.27	173.68	-1.06	-416.64	147.85	-0.81	-257.72	85.10	0.55	-5.58
129	MAI-112 × CM 500	218.67	2.64	-9.89	150.03	-1.92	-509.97	124.77	2.05	-178.45	106.73	2.21	-223.14	85.47	0.86	-5.11
130	MAI-112 × SKV 50	232.58	0.95	335.13 **	168.19	1.46	-1045.19	130.17	0.40	-571.22	111.87	0.52	-422.53	85.90	1.49	-5.13
131	MAI-112 × MAI 105	267.83	7.16*	-17.50	225.89	1.86	-498.67	182.13	-0.24	-568.06	152.23	0.41	-406.16	83.57	2.16	5.94
132	MAI-112 × LM 13	233.42	0.36	111.17 *	223.79	-4.12	474.03	169.27	4.78	-493.96	149.89	5.55	-181.56	87.80	9.60	5.96
133	MAI-121 × CM 500	222.25	-0.33	11.32	173.59	3.24	-578.57	138.80	-0.66	-466.57	119.37	-0.52	-367.18	86.12	0.38	-2.62
134	MAI-121 × SKV 50	195.08	0.67	325.11 **	156.04	0.33	-823.62	127.44	-0.56	-543.07	111.26	-0.51	-401.87	87.28	-0.60*	-5.64
135	MAI-121 × MAI 105	220.42	1.69	-18.72	189.26	1.27	-971.58	151.87	0.92	-465.53	128.80	0.75	-339.05	84.88	0.50	-5.54
136	MAI-121 × LM 13	216.17	0.05	-12.71	186.19	-1.28	784.25	157.57	3.40	-556.81	135.40	3.46	-418.69	85.92	0.21	-4.81
137	MAI-137 × CM 500	232.67	1.10	-16.88	146.38	-0.71	96.17	115.23	2.64	-568.29	88.20	2.28	-351.85	76.42	-2.19	-5.31
138	MAI-137 × SKV 50	229.67	0.56	7.77	177.52	-2.73	1277.08	137.47	3.24	-373.40	115.40	3.30	-363.29	83.26	1.51	-3.72
139	MAI-137 × MAI 105	234.67	0.45	-6.69	212.09	3.97	-999.83	161.50	0.54	241.19	128.20	0.11	120.71	79.36	-0.10	-5.46
140	MAI-137 × LM 13	243.42	1.80	-23.26	239.26	-0.54	-972.77	185.63	2.02	-327.50	153.27	2.00	-292.80	82.53	1.00	-5.20
141	MAI-27 × CM 500	193.33	0.34	-12.52	127.38	1.03	-496.02	101.33	1.48	-176.19	83.40	1.05	-42.26	82.36	-0.82	-4.52
142	MAI-27 × SKV 50	196.42	-0.26	37.64	138.86	4.07	-1033.72	117.53	-0.19	-377.28	98.97	-0.28	-264.10	84.11	-1.06	-4.50
143	MAI-27 × MAI 105	170.50	1.46	9.60	187.57	2.54	3147.67 *	144.80	4.14	276.20	121.40	3.49	513.99	83.76	0.21	-5.49
144	MAI-27 × LM 13	225.50	0.33	-28.63	225.59	1.30	-1047.19	179.32	1.54	-563.11	151.53	1.34	-412.68	84.50	1.86	-2.02
145	MAI-29 × CM 500	215.83	0.58	254.02 **	138.35	-0.98	-980.55	115.00	0.22	-425.88	97.20	0.29	-319.35	84.49	0.46	-5.20
146	MAI-29 × SKV 50	201.33	-0.61	117.09 *	162.50	1.10	-533.90	129.90	2.07	-484.28	112.33	1.86	-247.00	86.51	-1.18	-5.59
147	MAI-29 × MAI 105	215.17	1.57	40.85	185.38	3.24	-226.67	150.87	-0.05	-523.23	118.93	-0.96	-332.07	79.67	-10.15	12.21
148	MAI-29 × LM 13	224.75	0.00	-20.18	202.21	2.01	-947.24	165.07	1.62	-473.18	136.53	2.11	-328.35	82.90	1.66	10.34
149	MAI-35 × CM 500	210.25	0.97	7.00	165.38	-0.17	-1038.03	130.43	0.04	-375.87	111.37	-0.34	-229.48	85.73	0.50	33.07 **
150	MAI-35 × SKV 50	226.58	-0.16	24.14	144.08	0.24	-731.91	116.90	1.57*	-572.21	100.90	1.57	-418.22	86.28	0.32	-5.56
151	MAI-35 × MAI 105	231.00	0.49*	-36.76	193.02	-1.05	-982.71	156.68	0.57	-437.09	129.79	0.56	-381.15	82.87	-1.29	-5.48
152	MAI-35 × LM 13	220.92	0.76	24.15	184.60	0.60	-772.03	150.81	1.85	-570.57	127.71	1.63	-404.35	84.70	-0.41	-4.45
153	MAI-45 × CM 500	208.83	-0.28	2050.88 **	156.04	-5.30	-937.20	129.50	0.99	140.23	103.07	1.19	-89.67	79.75	-1.11	-5.48
154	MAI-45 × SKV 50	207.33	2.83*	-33.33	180.20	-1.56	1537.74	139.40	2.83*	-571.34	116.37	2.71	-411.18	83.47	0.22	-5.63
155	MAI-45 × MAI 105	228.42	1.40	69.27	229.38	6.20	-926.23	169.00	2.34	1214.71	140.20	2.09	879.59	83.07	2.38	-0.89
156	MAI-45 × LM 13	233.17	1.58	230.75 **	251.27	-0.05	-990.29	185.93	1.74	-158.30	153.97	1.87	-223.11	82.79	0.31	-5.62
157	MAI-48 × CM 500	203.00	-1.52	1402.13 **	129.74	3.37	-301.79	106.47	1.36	290.31	90.80	0.89	240.29	85.59	1.06	-5.17
158	MAI-48 × SKV 50	176.83	0.42	-33.18	132.67	0.81	-1014.90	104.17	1.10	-567.50	88.83	1.19	-423.90	85.24	-0.83	-3.89
159	MAI-48 × MAI 105	198.33	1.93	713.98 **	191.00	0.07	-1055.46	149.73	0.44	-545.67	125.77	0.53	-409.91	83.98	0.30	-5.56
160	MAI-48 × LM 13	234.92	1.13	-34.59	216.98	0.74	-666.70	174.83	0.22	-472.26	147.50	0.13	-338.73	84.35	0.49	-3.65

Sl. no.	Hybrid	Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)			Grain yield per plant (g)			Shelling %		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
161	MAI-706 × CM 500	215.25	-0.23	-16.36	165.86	-0.60	-1015.28	142.55	1.38	-520.93	123.23	1.48	-388.80	86.39	1.67*	-5.64
162	MAI-706 × SKV 50	224.67	0.26	12.67	169.21	1.10	-1051.27	139.84	0.11*	-571.94	122.80	0.17*	-425.57	87.80	0.41	-5.45
163	MAI-706 × MAI 105	220.83	1.46	-23.67	218.85	-1.12	-990.53	184.87	1.87	-506.34	160.83	2.01	-416.44	87.05	-0.10	-5.32
164	MAI-706 × LM 13	228.92	0.84	14.73	212.50	2.03	-882.32	174.13	1.98	-405.33	149.80	1.75	-247.63	86.04	0.55	-5.56
165	SKV-70 × CM 500	225.25	-0.65*	-36.75	163.86	1.81	-1052.55	131.73	-0.21	-564.97	106.60	0.32	-407.11	80.65	2.48	12.29
166	SKV-70 × SKV 50	205.00	0.21	-11.07	173.81	-1.44	-790.31	141.72	1.61	-346.74	123.42	1.69	-302.21	87.09	0.55	-4.85
167	SKV-70 × MAI 105	219.25	1.00	-35.85	165.33	-1.35	-849.67	133.33	0.25	-280.35	109.90	0.41	-199.76	82.15	1.26	-5.22
168	SKV-70 × LM 13	250.08	1.09	30.00	224.54	0.27	-539.47	176.90	0.26	-511.47	149.00	0.55	-285.62	84.17	3.49	-5.33
169	V-632-112 × CM 500	246.08	1.80*	-36.76	230.61	-1.36	2390.65	190.40	4.72*	-562.56	160.00	4.48	-352.01	84.00	1.07	-5.61
170	V-632-112 × SKV 50	227.92	0.72*	-36.80	219.65	-1.36	-917.03	162.57	1.16	-160.72	138.13	1.10	-8.83	84.97	2.62	1.40
171	V-632-112 × MAI 105	232.25	1.02	-19.22	241.86	-0.30	-803.54	179.03	0.70	24.72	148.83	0.67	-1.65	83.08	0.64	-2.18
172	V-632-112 × LM 13	244.58	0.64	79.26	257.33	-0.92	-563.56	204.38	2.69	-299.74	173.01	2.75	-268.19	84.64	1.47	-5.32
173	V-632-67 × CM 500	235.67	0.38	98.08	199.41	-1.50	-688.19	161.70	0.22	-129.87	135.10	0.30	-100.68	83.48	0.43	-3.86
174	V-632-67 × SKV 50	228.50	1.06	-36.00	239.32	-0.12	-317.90	185.65	-0.20	-257.61	153.91	0.00	-158.53	82.90	0.72	-5.46
175	V-632-67 × MAI 105	223.67	0.10*	-36.46	206.46	-0.59	238.24	166.87	3.47	-564.28	137.47	3.21	-385.24	82.25	1.16	-5.58
176	V-632-67 × LM 13	253.83	-0.23	-28.23	275.82	6.46*	-1061.14	213.97	1.68	727.93	176.03	0.89	402.44	82.30	1.18	-3.39
177	Z-50-3 × CM 500	228.58	0.14	18.83	215.73	0.42	912.31	173.67	3.73	-544.61	142.47	3.23	-393.83	82.12	2.30	-2.35
178	Z-50-3 × SKV 50	230.17	0.17	-34.20	178.45	1.56	-1009.68	138.20	0.22*	-572.07	115.93	0.14	-422.60	83.85	1.14	-4.82
179	Z-50-3 × MAI 105	253.08	-1.16*	-30.10	227.31	4.24	-805.07	179.90	0.81	301.87	147.93	0.40	262.18	82.19	-0.50*	-5.64
180	Z-50-3 × LM 13	264.25	-0.70*	-36.19	237.36	2.71	-1041.36	190.40	0.50	-519.98	159.03	0.36	-403.96	83.55	1.05	-5.42
181	Z-51-1 × CM 500	218.08	0.73	-21.26	162.97	1.33	2250.15	131.28	3.06	-398.39	107.17	2.57	-289.84	81.95	2.57	-3.42
182	Z-51-1 × SKV 50	227.75	0.73*	-36.70	218.51	-5.39	1937.62	168.43	-0.40	3339.54 **	143.42	0.53	2877.08 **	84.83	2.55	-5.50
183	Z-51-1 × MAI 105	247.33	-0.02	18.26	235.37	-1.30	4493.25 *	182.53	-2.52	518.85	149.87	-2.10	999.55	81.76	3.81	-1.12
184	Z-51-1 × LM 13	247.42	0.88	-35.15	274.91	2.62	4734.42 *	216.20	-2.07	-435.50	180.25	-2.13	-157.77	83.24	1.26	-1.60
185	Z-51-6 × CM 500	243.00	-0.13	-2.97	235.16	1.40	-366.13	190.70	-0.47	-539.72	153.67	0.10	-369.85	80.67	1.75	1.12
186	Z-51-6 × SKV 50	234.08	1.19	-25.76	228.67	1.03	1563.54	179.30	-1.05	-273.64	150.77	-0.86	-74.37	84.02	1.33	-4.97
187	Z-51-6 × MAI 105	241.83	0.65	8.03	214.96	-2.44	3376.75 *	163.65	-0.95	1349.33	136.75	-0.58	1136.48	83.42	0.94	-2.96
188	Z-51-6 × LM 13	237.25	0.98	-23.46	220.42	-0.92	2515.69	178.93	5.35*	-571.36	147.97	5.24	-391.37	82.68	1.58	-4.58
189	Z-52-29 × CM 500	225.50	0.18	1.32	180.76	2.42	-1056.83	152.47	-0.12	-389.71	128.13	-0.34	-342.37	84.05	1.19	-4.96
190	Z-52-29 × SKV 50	228.67	1.08	32.41	177.03	-0.87	-464.49	144.33	-0.17	-283.02	125.93	0.06	-244.29	87.29	-0.98	-5.48
191	Z-52-29 × MAI 105	210.58	-0.95	21.90	191.56	4.25	501.99	150.38	-2.38	-336.57	124.62	-2.39	-358.06	82.93	0.25	-5.61
192	Z-52-29 × LM 13	172.33	-0.15	-2.63	166.49	13.36	3288.58 *	106.83	-0.34	2932.64 *	91.47	-1.72	1891.32 *	85.20	-2.00	37.86 **
193	Z-56-1 × CM 500	218.08	-0.71	115.42 *	130.75	0.04	-866.36	113.10	-0.30	-528.13	93.85	0.02	-384.11	83.01	0.93	-1.08
194	Z-56-1 × SKV 50	249.58	4.78	42.52	156.08	0.36	-1054.12	131.20	0.64	-545.35	111.70	0.70	-405.07	85.14	0.94	-5.64
195	Z-56-1 × MAI 105	206.33	1.19	84.74	168.70	3.45	-713.23	141.60	-0.79	-331.34	121.15	-0.84	-282.68	85.66	0.02	-5.03
196	Z-56-1 × LM 13	193.50	0.79	247.77 **	144.72	-6.79*	-1060.91	106.48	2.15	343.55	89.40	2.56	113.83	83.69	1.78	-4.25
197	Z-56-8 × CM 500	212.17	0.44	38.98	126.52	1.16	1391.22	100.65	2.86	541.20	84.95	2.31	536.00	84.42	1.32	-5.45
198	Z-56-8 × SKV 50	239.75	3.88	0.23	156.49	0.04	-827.16	127.90	1.30	-565.02	107.73	1.35	-425.45	84.21	-0.12	-5.03
199	Z-56-8 × MAI 105	241.92	5.54*	-35.16	173.87	-1.16	-1004.97	144.40	1.41	-359.21	121.30	1.57	-357.91	83.98	-0.91	-5.22
200	Z-56-8 × LM 13	259.75	-1.47	-14.58	231.76	3.94	-877.86	186.73	1.70	-125.59	158.83	1.49	13.47	85.00	0.07	-5.23

Sl. no.	Hybrid	Plant height (cm)			Ear weight per plant (g)			Cob weight per plant (g)			Grain yield per plant (g)			Shelling %		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
201	Z-60-22 × CM 500	244.33	6.11	125.54 *	175.74	2.43	-294.14	148.90	-1.54	-560.36	128.77	-1.63*	-424.81	86.47	0.65	-5.03
202	Z-60-22 × SKV 50	225.17	0.70	17.12	170.88	0.66	-904.42	141.43	-0.27	-567.48	122.60	-0.13	-412.04	86.66	1.15	-5.23
203	Z-60-22 × MAI 105	230.17	-0.10	-31.20	206.41	-0.82	-1052.32	176.47	0.61	-547.57	153.00	0.50	-410.01	86.71	0.19	-4.35
204	Z-60-22 × LM 13	237.17	-0.34	-26.39	205.32	0.67	-723.62	168.73	1.52	-411.54	147.63	1.26	-278.43	87.51	0.61	-4.97
205	Z-62-55 × CM 500	227.42	0.49	-33.54	211.40	1.68	-697.04	173.87	-0.36*	-571.50	144.25	-0.37	-409.88	82.81	-3.49	-5.47
206	Z-62-55 × SKV 50	235.08	0.22	40.33	172.09	-0.98	-576.58	137.10	0.07	-67.95	117.50	0.40	23.03	85.56	1.72	-5.62
207	Z-62-55 × MAI 105	234.75	0.62	21.17	183.52	-4.11	-506.86	146.97	2.65	299.07	119.73	2.77	56.94	81.38	1.51	-5.30
208	Z-62-55 × LM 13	239.75	0.38	-16.45	235.92	3.00	-706.79	189.98	2.50	-240.10	162.13	2.12	-78.35	85.39	0.38	-5.32
209	Z-62-67 × CM 500	166.75	1.01	-30.30	117.79	0.06	-168.76	100.12	1.93	-510.27	82.23	1.62	-336.66	82.13	0.01	-4.41
210	Z-62-67 × SKV 50	201.25	2.02	48.68	159.13	2.27	-811.75	130.33	-0.94	-537.77	111.20	-1.06	-421.68	85.12	0.89	-4.96
211	Z-62-67 × MAI 105	220.33	-0.08	-11.27	175.13	-0.24	-1017.11	145.43	1.25	-478.01	118.23	1.45	-400.69	81.28	-0.02	-3.09
212	Z-62-67 × LM 13	227.42	1.87	-2.19	204.10	-4.28	-828.99	164.90	3.86	783.15	138.70	4.41	298.26	83.63	2.15	-0.26
213	Z-63-30 × CM 500	230.50	3.70*	-36.34	178.92	1.73	618.51	148.87	-2.34*	-572.23	114.50	-2.04	-398.37	76.87	0.96	-5.61
214	Z-63-30 × SKV 50	228.75	0.65	-34.11	228.39	4.84	-546.55	182.02	-0.64	-108.49	150.94	-0.79	-247.39	83.00	2.15	-5.58
215	Z-63-30 × MAI 105	218.83	-0.20	-19.78	162.57	-2.31	-727.04	131.60	0.33	170.02	107.17	0.73	47.25	81.38	0.46	-4.85
216	Z-63-30 × LM 13	242.67	-0.01*	-36.67	262.69	3.16	-31.78	206.87	0.14	-567.83	172.90	0.06	-406.66	83.38	-0.85	-5.55
217	**Decalb 8101**	257.33	2.08*	-35.81	313.35	1.74	-862.24	247.66	0.87	-517.29	215.69	0.41	-407.92	87.18	0.94	-1.83
218	**30v92**	279.17	5.47	-1.06	228.86	-1.22	2240.69	195.47	-0.91	1912.67 *	170.46	-0.33	1958.52 *	87.03	2.18	-4.75
219	**NK6240**	235.83	1.64	-34.10	235.95	1.06	-1060.84	188.93	1.36	-543.48	158.77	2.06	-407.52	83.82	2.24	7.28
220	**PINNACLE**	256.08	1.60	-13.19	259.31	4.84	5566.21 *	216.37	-2.52	2012.33 *	188.53	-1.96	2741.26 **	86.93	3.66	-2.68
221	**HEMA**	222.58	1.50	-34.39	230.52	2.13	-1060.24	181.88	0.28	-519.24	149.88	0.09	-414.88	82.43	1.56	-4.80
222	**CP 818**	258.00	0.70	473.06 **	242.49	-0.35	-931.34	207.77	-0.75	-554.08	173.13	-0.96	-363.66	83.40	1.05	-0.69
223	**900M GOLD**	293.25	4.02	1154.41 **	282.36	-2.81	-804.98	231.90	1.84	-51.42	203.35	2.09	-182.39	87.76	-0.38*	-5.64
224	**NITYASHREE**	235.58	0.85	110.69 *	231.95	0.84	860.43	195.00	-2.48	-551.23	166.33	-2.57*	-425.65	85.31	-0.34	-5.21
225	**PHI 3501**	242.58	1.75	124.15 *	291.91	3.34	-780.07	224.02	1.26	-461.69	195.67	0.86	-387.04	87.40	1.85	-2.46

* significant at p = 0.05 and ** significant at p = 0.01

Sl. no.	Hybrid	Harvest index			Test weight (g)			Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
1	V-1154 × CM 500	48.31	0.86	-75.05	28.28	0.86	13.61	14.20	0.20	5.78 **	38.30	-0.43	28.51 **	16.34	0.05	-0.43	4.68	-3.30	-0.06
2	V-1154 × SKV 50	46.97	0.29	-63.55	31.59	3.00	33.68 **	13.80	1.10	-0.16	37.68	1.25	-3.53	17.13	0.85	-0.81	4.66	1.68	-0.03
3	V-1154 × MAI 105	43.61	-1.67	-36.76	35.00	5.32	-3.66	16.33	-3.23	-0.21	33.87	0.07	5.67	15.54	-0.03	-1.36	5.09	-0.53	-0.02
4	V-1154 × LM 13	47.56	0.75	-75.41	37.93	1.19	22.50 *	13.40	-5.34	0.33	35.40	0.49	31.43 **	18.36	-0.26	-1.41	4.55	1.31	-0.05
5	V-1168 × CM 500	47.08	0.45	-75.01	32.34	1.66	8.98	15.53	-2.21	0.21	33.99	3.14	5.62	14.39	2.77	-1.13	4.88	2.66	-0.04
6	V-1168 × SKV 50	48.86	0.60	-74.89	31.88	1.27	-0.86	13.27	-5.41	-0.21	36.91	2.53	81.68 **	16.38	1.45	1.65	4.61	6.25	-0.06
7	V-1168 × MAI 105	47.61	0.52	-74.50	32.83	2.23	8.44	15.20	1.14	0.32	29.50	2.25	20.14 *	14.27	2.35	1.70	4.70	9.46	0.03
8	V-1168 × LM 13	47.43	-0.08	-67.82	38.87	5.29	2.96	12.20	-3.22	-0.16	37.87	1.50	-3.87	18.45	1.49	-1.39	4.58	-0.81	-0.04
9	V-1522 × CM 500	46.17	0.48	-73.43	32.20	1.16	-4.86	13.27	5.40	-0.21	36.19	0.15	-0.53	16.03	1.52	-0.80	4.78	4.25	-0.05
10	V-1522 × SKV 50	47.99	0.64	-68.94	32.71	1.57	-0.62	14.00	-13.08	1.89 **	33.18	-1.37	25.97 **	17.15	-0.17	0.02	4.44	-2.43	-0.05
11	V-1522 × MAI 105	47.31	-0.44	-58.16	33.08	2.59	-4.70	13.87	-3.29	0.10	36.89	0.51*	-3.92	16.35	0.65	-1.28	4.72	-1.26	-0.02
12	V-1522 × LM 13	45.80	-0.63	-49.53	41.82	0.46	-2.05	11.53	-3.23	-0.21	35.62	-0.73	-0.06	17.55	-0.07	-1.43	4.55	0.63	-0.06
13	V-1649 × CM 500	44.61	-1.13	-71.61	30.71	2.81	-1.88	15.07	6.46	-0.10	34.81	2.53	-0.20	15.61	1.57	-1.39	4.41	-5.38	-0.03
14	V-1649 × SKV 50	46.25	0.04	-56.55	30.29	3.27	-0.72	13.47	6.57	1.06 *	37.80	1.83	-1.34	18.28	0.36	-1.19	4.52	5.27	0.02
15	V-1649 × MAI 105	43.84	-0.42	-73.65	31.05	1.94	-4.51	15.67	5.43	-0.06	38.31	2.21	-1.79	19.02	1.63	-0.01	4.85	-2.27	-0.03
16	V-1649 × LM 13	48.83	0.60	-31.85	37.83	0.78	24.38 *	12.87	11.96	0.56	39.04	0.21	-3.53	20.06	0.14*	-1.44	4.56	1.03	-0.06
17	V-1742 × CM 500	52.80	2.20	-64.75	27.61	1.55	0.54	15.53	0.97	1.71 **	32.83	2.43	0.43	15.91	1.18	1.90	4.33	-17.61	-0.05
18	V-1742 × SKV 50	53.04	1.54*	-75.73	32.63	1.39	10.00	13.80	0.00*	-0.22	36.46	0.30	35.03 **	17.63	0.59	9.49 **	4.54	11.42	-0.04
19	V-1742 × MAI 105	43.13	1.77	292.94 *	33.77	5.44	-4.46	17.00	-2.28	1.93 **	26.90	1.16	8.68	14.88	0.46	-1.34	5.09	0.69	0.01
20	V-1742 × LM 13	53.62	2.72*	-75.73	40.60	-2.48	-3.76	13.60	1.06	-0.16	32.08	1.92	-0.33	17.00	0.80	-0.24	4.72	-3.83	-0.04
21	V-2205 × CM 500	46.35	0.31	-72.83	32.23	3.26	-0.71	12.73	0.07	0.45	31.87	1.91	4.94	15.83	0.39	-0.92	4.57	0.60	-0.04
22	V-2205 × SKV 50	46.96	1.92	-67.29	35.39	-0.50	-3.96	11.13	-1.11	-0.05	32.97	0.91	-3.75	16.64	0.98	-1.25	4.24	-1.92	0.11
23	V-2205 × MAI 105	48.72	1.13	-73.08	32.45	-1.39	80.11 **	14.27	1.07	-0.21	38.47	1.18	2.88	17.95	0.73	1.75	4.81	11.44	-0.06
24	V-2205 × LM 13	47.89	1.02	-62.07	36.94	-1.77	90.99 **	12.27	0.05	0.21	30.86	0.09	4.22	16.48	1.12	0.49	4.57	-2.22	-0.05
25	V-2232 × CM 500	50.98	0.81	-72.67	31.71	-0.21	-3.65	15.13	8.55	1.11 *	36.01	-0.72	5.17	16.64	1.26	-1.16	4.52	4.79	-0.03
26	V-2232 × SKV 50	49.94	1.67	-58.10	32.93	-0.66	3.76	12.40	2.12	0.03	35.02	-0.64	0.90	18.28	2.65	-1.41	4.23	1.47	-0.04
27	V-2232 × MAI 105	52.70	1.57	-5.45	37.14	2.76	4.84	15.27	-4.39	0.44	31.68	-1.24	-0.66	16.31	-0.28	-1.42	5.15	2.19	-0.05
28	V-2232 × LM 13	47.57	0.99	-75.01	40.43	-1.54	33.04 **	13.07	3.23	-0.21	35.96	0.72	-2.91	18.50	0.50	-1.04	4.73	2.79	-0.03
29	V-1410-1 × CM 500	45.88	1.89	-66.69	31.03	2.09	30.96 **	14.20	10.76	0.04	28.66	2.44	1.84	14.86	0.15	-0.31	4.60	0.33	-0.06
30	V-1410-1 × SKV 50	48.27	1.33	-75.35	31.80	-1.01	35.56 **	12.40	-1.06	-0.16	32.57	2.15	-2.64	16.59	0.69	-0.83	4.49	5.25	-0.05
31	V-1410-1 × MAI 105	49.67	1.70	-75.53	34.71	3.50	3.43	16.13	1.09	-0.21	31.31	-0.52	5.10	16.83	-0.34	-1.29	5.10	-4.05	-0.04
32	V-1410-1 × LM 13	44.29	2.84	-51.99	41.79	-0.03	-4.73	12.53	0.10	1.48 **	37.34	2.28	-3.76	18.25	1.45	-0.80	4.81	5.42	-0.06
33	V-1712-1 × CM 500	51.81	1.20	-75.18	30.75	0.20	-3.42	15.53	-9.76	-0.06	39.60	3.72	-2.78	16.90	1.56	0.20	4.93	-8.71	-0.05
34	V-1712-1 × SKV 50	48.76	0.65	-75.22	31.25	3.11	16.38 *	14.80	4.32*	-0.22	37.71	0.21	-3.74	17.90	0.25	2.41	4.99	5.65	-0.06
35	V-1712-1 × MAI 105	50.82	2.02	-74.26	31.53	4.91	27.61 *	17.47	5.43	-0.06	36.99	-0.32*	-3.92	15.54	-0.22	-1.02	5.36	6.42	-0.01
36	V-1712-1 × LM 13	48.04	0.68	-75.19	37.66	3.01	-1.91	14.27	2.25	1.08 *	37.20	2.50	5.61	18.13	2.17	0.59	4.89	1.85	-0.05
37	V-241-2 × CM 500	46.73	0.64	10.93	30.81	2.79	20.60 *	13.53	-0.09	1.08 *	28.02	1.42	-2.82	14.47	-1.48	2.67	4.50	-9.23	-0.04
38	V-241-2 × SKV 50	49.86	0.66	-71.22	35.29	4.23	10.69	13.00	3.22	-0.16	34.27	0.55	1.06	17.38	-0.39	-1.42	4.53	0.98	-0.03
39	V-241-2 × MAI 105	47.37	0.40	-74.85	33.91	0.55	-4.92	14.13	9.77	0.09	30.82	0.94	-2.84	16.02	2.22	-1.32	4.71	1.68	-0.04
40	V-241-2 × LM 13	50.26	2.15	-59.85	39.69	-2.75	37.19 **	13.33	6.51	-0.12	32.73	0.38	-1.28	17.31	1.93	-0.86	4.78	-2.83	-0.06

Sl. no.	Hybrid	Harvest index			Test weight (g)			Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
41	V-2437-1 × CM 500	48.05	1.04	-75.48	29.58	-0.88	10.78	12.80	-3.26	-0.16	36.14	3.12	-0.56	17.39	2.30	1.56	4.20	-0.90	-0.03
42	V-2437-1 × SKV 50	48.31	0.72	-72.57	29.47	0.72	0.31	12.67	4.30	-0.11	37.48	1.16	-3.59	17.95	1.61*	-1.44	4.20	9.37	-0.05
43	V-2437-1 × MAI 105	47.81	-0.05	-54.00	29.89	-2.44	-1.71	14.40	-1.06	-0.16	37.31	1.38	13.91 *	18.02	3.38	-0.63	4.61	6.85	0.03
44	V-2437-1 × LM 13	49.39	1.38	-75.21	37.68	3.81	-1.39	12.47	-4.31	-0.19	37.41	0.07	1.54	18.37	0.20	-1.29	4.33	2.87	-0.05
45	V-2459-2 × CM 500	48.51	-0.41	-73.62	25.09	0.02	11.60	12.87	3.23	-0.21	37.15	-0.41	-3.33	15.47	0.96	-0.31	4.11	-0.57	-0.05
46	V-2459-2 × SKV 50	49.01	0.03	-61.44	28.68	1.24	-2.61	11.80	-2.12	0.03	38.55	-0.01	-3.80	16.93	1.62	-1.35	4.04	2.10	-0.01
47	V-2459-2 × MAI 105	47.47	0.29	-72.35	25.12	0.35	6.74	13.73	0.03	-0.11	39.33	2.87	0.78	17.18	1.07	1.02	4.24	-5.01*	-0.06
48	V-2459-2 × LM 13	47.04	0.20	-74.79	32.13	1.31	-2.22	12.07	-4.31	-0.19	34.47	0.27	8.85	16.91	1.28	-1.40	4.12	0.69	-0.02
49	V-2516-2 × CM 500	49.71	-0.13	-75.20	27.75	-0.36	-3.59	13.33	6.43	0.22	33.21	2.48	9.69	15.33	2.72	-1.41	4.18	0.54	-0.05
50	V-2516-2 × SKV 50	49.51	0.79	-73.91	31.87	-0.18	-2.64	12.40	4.36	0.02	39.95	1.93	4.39	19.47	0.03	-1.41	4.11	3.59	-0.05
51	V-2516-2 × MAI 105	45.36	1.00	-71.41	28.96	2.09	-2.65	15.87	5.28	2.21 **	34.66	4.05	11.67 *	14.70	1.94	-1.02	4.59	0.94	-0.04
52	V-2516-2 × LM 13	49.6	0.7	-67.8	36.4	2.2	-2.3	12.8	4.3	0.0	38.7	0.6	-3.9	19.9	1.8	-0.5	4.3	0.9	0.0
53	V-2608-1 × CM 500	51.99	2.07	-75.47	26.06	-0.31	-4.81	14.07	1.07	-0.21	31.26	0.52	1.09	16.50	0.48	-0.60	4.32	0.95	0.01
54	V-2608-1 × SKV 50	48.93	1.35	-63.09	31.88	2.55*	-4.99	13.20	-4.24	0.75 *	35.05	-2.43	-0.12	18.48	0.04	2.50	4.39	5.72	-0.02
55	V-2608-1 × MAI 105	44.23	-1.88	-48.70	34.01	1.05	3.99	15.73	5.25	3.33 **	33.64	2.72	51.43 **	17.74	2.36	0.40	4.66	1.56	-0.05
56	V-2608-1 × LM 13	46.95	-0.25*	-75.71	35.09	1.46	-4.51	13.87	-2.15	-0.19	35.35	0.91	-3.90	17.78	1.38	-1.36	4.54	5.35 *	-0.06
57	V-291-2 × CM 500	48.08	0.30	-72.29	31.41	3.29	1.38	14.00	2.08	0.74 *	32.80	0.57	-2.99	18.37	1.54	-1.22	4.48	-3.88	-0.05
58	V-291-2 × SKV 50	51.17	1.98*	-75.69	33.39	3.12*	-5.00	13.53	3.13	1.72 **	36.42	-0.41	28.73 **	17.79	-0.17	12.65 **	4.66	2.83	-0.05
59	V-291-2 × MAI 105	43.29	-0.06	-72.62	31.91	0.71	-0.28	18.40	4.36	0.02	28.66	-1.54	-3.70	16.50	-0.75	2.26	5.21	6.44	-0.05
60	V-291-2 × LM 13	48.90	1.26	-74.52	37.17	0.19	-2.89	14.27	2.17	-0.19	36.16	1.41	-3.91	18.69	1.10	-0.68	4.64	5.42	-0.05
61	V-70-1 × CM 500	46.30	0.78	-74.72	30.91	-1.63	-3.60	13.87	1.07	-0.21	39.10	1.98	12.52 *	17.88	1.34	1.88	4.44	1.32	-0.06
62	V-70-1 × SKV 50	47.67	-0.36	-68.20	31.47	2.66	2.80	12.53	-0.01	-0.19	38.38	2.70	-2.51	18.11	1.52	-0.38	4.38	-4.55	-0.06
63	V-70-1 × MAI 105	46.68	0.66	-75.24	30.53	-1.85	-0.21	15.60	-4.36	0.02	33.47	2.08	-2.91	15.90	1.79	-1.02	4.70	-1.06	-0.05
64	V-70-1 × LM 13	46.81	-0.28	-65.52	38.18	-1.26	-1.43	12.47	3.16	0.91 *	37.02	-0.42	15.46 *	18.20	0.73	-1.40	4.56	4.31	-0.03
65	CIMMYT-47 × CM 500	51.36	1.91	-69.13	30.61	1.87	-1.86	13.93	2.19	-0.11	40.08	1.17	-1.51	17.56	1.07	-0.43	4.48	3.24	-0.06
66	CIMMYT-47 × SKV 50	48.31	2.38	3.49	25.94	1.13	73.56 **	13.47	2.14	-0.11	38.46	1.89	-3.88	16.56	1.29	0.89	4.44	1.30	-0.06
67	CIMMYT-47 × MAI 105	50.83	1.74	-75.62	29.51	1.86	34.90 **	15.67	4.41	1.07 *	35.76	1.13	-3.91	16.68	0.51	-1.42	4.93	0.39	-0.05
68	CIMMYT-47 × LM 13	50.10	0.54	-53.22	36.47	-0.65	4.34	12.27	0.05	0.21	40.06	0.99	-3.84	18.11	0.02	-0.66	4.52	3.63	-0.06
69	CIMMYT-5 × CM 500	48.88	2.25	-72.58	28.09	4.69	-0.56	12.73	5.41	-0.21	41.56	-0.66	1.21	19.01	0.81	-1.14	4.34	-3.55	0.04
70	CIMMYT-5 × SKV 50	49.04	1.82	-71.44	37.48	-1.54	1.58	12.00	1.06	-0.16	33.87	1.15	0.13	17.46	0.34	-1.21	4.54	0.97	-0.06
71	CIMMYT-5 × MAI 105	47.96	3.07	-74.93	32.06	1.57	1.37	14.00	1.10	-0.16	35.10	1.50	4.58	16.72	0.81	-0.66	4.77	4.34	-0.05
72	CIMMYT-5 × LM 13	46.22	0.46	-72.86	41.77	1.73	-4.77	11.67	7.60	-0.06	36.04	0.17	-3.89	18.56	1.14	-1.11	4.63	2.06	-0.01
73	CM-115 × CM 500	50.25	0.30	-47.27	20.21	-1.09	58.73 **	13.67	-2.19	-0.11	29.46	4.25	39.32 **	14.46	1.39	6.53 *	3.92	-7.97	-0.04
74	CM-115 × SKV 50	49.19	1.31	-74.84	28.67	2.04	-4.33	12.93	6.47	-0.19	34.74	3.26	21.20 *	15.61	1.65	4.54 *	3.99	-3.75	-0.05
75	CM-115 × MAI 105	48.92	1.09	-74.86	28.14	0.27	-4.91	14.60	1.10	-0.16	31.93	-1.01	15.49 *	14.37	0.29	2.23	4.51	2.02	-0.06
76	CM-115 × LM 13	50.05	2.23	-75.12	31.27	0.69	1.19	12.67	1.11	-0.05	32.89	0.57	9.95	16.74	0.26	-1.14	4.25	9.91	-0.06
77	CM-149 × CM 500	52.89	1.93	-75.47	32.30	0.05	-4.46	12.13	-1.15	0.59	30.19	-0.38	-3.67	15.55	0.01	-1.17	4.37	-3.62	-0.05
78	CM-149 × SKV 50	49.89	1.72	-66.43	35.80	3.51	29.93 **	12.33	2.15	-0.19	33.28	0.97	-3.92	17.38	1.46	-1.41	4.43	-1.40	-0.05
79	CM-149 × MAI 105	45.44	-0.98	-58.26	37.05	-1.12	11.59	15.13	-3.20	0.11	28.69	-0.34	17.20 *	15.86	0.57	1.51	4.94	7.59	0.08
80	CM-149 × LM 13	48.71	0.59	-74.84	35.01	0.49	-3.40	12.93	6.43	0.22	32.81	1.69	16.99 *	16.79	2.01	-1.39	4.50	-3.79	-0.03

Sl. no.	Hybrid	Harvest index			Test weight (g)			Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
81	CML-165 × CM 500	48.67	-0.56	-71.01	30.57	2.03	-4.65	13.13	-4.30	-0.11	33.92	-0.79	-1.06	15.61	-0.35	-1.42	4.34	-2.22	-0.06
82	CML-165 × SKV 50	46.36	0.47	-73.91	32.33	-0.35	-3.99	12.27	-1.13	0.11	34.80	2.49	13.64 *	16.35	1.81	0.03	4.28	-0.71	-0.05
83	CML-165 × MAI 105	46.29	0.20	-75.59	31.12	1.63	-3.79	14.47	-8.67	-0.12	31.68	1.36	-3.31	15.12	1.13	-1.43	4.67	-0.37	-0.05
84	CML-165 × LM 13	44.64	-0.37	-68.59	39.25	0.68	-1.88	11.73	2.15	-0.19	32.35	-1.06	1.13	16.63	-0.23	-0.35	4.46	0.61	-0.05
85	CML-166 × CM 500	48.27	0.73	-67.42	27.07	3.39*	-4.96	14.00	-4.32*	-0.22	40.50	-0.27	6.48	17.63	1.90	-1.35	4.29	-1.04	-0.05
86	CML-166 × SKV 50	48.21	1.97	-71.82	30.23	-1.58	-1.15	13.67	-1.09	-0.21	41.10	2.58	0.91	18.61	2.12*	-1.43	4.45	1.50	-0.06
87	CML-166 × MAI 105	47.38	1.14	-73.93	28.16	-0.13	-0.79	14.93	-5.36	0.12	36.62	2.75	-3.48	16.97	2.83	-1.39	4.69	1.61	-0.03
88	CML-166 × LM 13	44.41	-0.41	-69.19	31.67	2.20	5.62	14.27	-4.39	0.44	37.39	0.61	0.46	18.76	1.85	0.25	4.35	-4.38	-0.04
89	CML-169 × CM 500	50.95	1.89	-60.62	28.50	0.16	-1.54	14.07	-4.43	1.47 **	31.18	-1.58	68.29 **	15.70	1.28	0.15	4.38	-6.13	-0.06
90	CML-169 × SKV 50	51.75	1.65*	-75.73	30.49	1.53	-2.20	14.53	1.09	-0.21	35.78	-0.09	65.75 **	15.83	0.22	1.48	4.78	1.56	-0.01
91	CML-169 × MAI 105	50.84	1.31	-74.09	33.21	0.84	-4.96	12.53	-5.43	-0.06	38.19	-0.60	46.52 **	18.05	1.60	3.79	4.51	1.98	-0.05
92	CML-169 × LM 13	50.67	1.74	-70.81	37.39	1.75	-4.40	12.60	-2.08	0.74 *	38.16	0.31	0.55	18.38	0.61	-1.32	4.52	5.00	-0.06
93	CML-172 × CM 500	46.12	0.71	-74.66	32.65	2.36	3.62	13.53	5.37	-0.04	37.78	0.91	1.97	17.47	0.58	-1.40	4.58	-2.06*	-0.06
94	CML-172 × SKV 50	45.44	0.31	-74.64	34.67	2.69	0.39	12.67	-4.35	-0.11	37.84	0.91	15.91 *	18.94	0.23	-0.28	4.61	-5.48	-0.05
95	CML-172 × MAI 105	47.72	1.03	-70.93	34.40	1.68	-4.82	15.20	-6.52	0.01	36.15	0.47	-3.65	17.18	0.89	-0.28	4.73	0.38	-0.05
96	CML-172 × LM 13	43.00	-0.77	-62.77	40.74	-1.01	-1.31	13.07	4.30	-0.11	30.24	0.01	-2.64	16.95	1.67	-1.36	4.53	3.63	-0.03
97	CML-359 × CM 500	49.40	1.07	-75.49	28.57	-2.48	5.59	14.00	3.22	-0.16	39.26	0.22	-0.78	17.69	1.25	-1.38	4.36	-2.70*	-0.06
98	CML-359 × SKV 50	48.89	0.64	-38.54	32.63	0.59	11.27	13.13	1.05	-0.05	33.61	-0.11	-3.71	16.57	1.54	0.90	4.27	-1.87	-0.05
99	CML-359 × MAI 105	49.11	0.71	-64.92	29.17	0.51	6.88	16.67	1.07	-0.21	32.05	1.99	10.35	15.29	2.18	0.31	4.89	2.10	-0.01
100	CML-359 × LM 13	47.96	0.56	-75.66	36.21	-1.41*	-5.00	13.33	2.23	0.44	32.67	1.76	2.52	16.85	0.91	-1.44	4.41	5.76*	-0.06
101	CML-411 × CM 500	50.90	1.19	-75.59	27.21	3.41*	-4.97	14.20	-8.60	0.03	37.23	2.23	7.64	16.70	0.85	0.10	4.47	-2.85	-0.06
102	CML-411 × SKV 50	48.65	1.12	-71.48	37.52	0.89	-4.67	12.07	2.14	-0.11	37.44	0.71	-2.43	18.52	-0.13	-1.42	4.45	3.31	-0.02
103	CML-411 × MAI 105	49.59	0.54	-75.69	33.85	-0.68	45.14 **	14.27	4.33	-0.19	35.42	-0.93	-0.03	15.98	0.26	-1.36	4.77	0.88	-0.05
104	CML-411 × LM 13	47.19	0.92	-66.44	40.18	1.48	-4.17	13.33	3.29	0.10	37.56	-0.59	53.94 **	18.85	-0.89	-0.99	4.83	1.52	-0.06
105	HKI-193-1 × CM 500	47.30	-0.87	-66.46	32.39	-0.59	11.80	13.47	-3.25	-0.21	32.36	3.23*	-3.92	17.57	2.15	-1.32	4.33	0.23	-0.01
106	HKI-193-1 × SKV 50	48.82	1.64	-59.45	33.63	0.18	2.66	13.47	1.04	0.11	33.57	-0.72	0.22	17.46	0.75	-0.90	4.41	-6.57	-0.05
107	HKI-193-1 × MAI 105	43.16	0.02	-8.26	35.25	1.17	-4.76	15.93	-1.04	0.11	33.37	-1.80	-1.13	16.53	-2.32	0.45	4.88	7.02	-0.05
108	HKI-193-1 × LM 13	46.85	0.90	-74.99	41.25	-1.25	1.73	13.00	5.38	-0.15	37.71	0.46	-3.89	18.94	0.96	-1.34	4.60	2.70	-0.06
109	HKI-193-2 × CM 500	49.11	0.37	-74.92	31.71	-0.45	-1.82	13.27	4.26	0.46	31.46	0.61	3.38	14.64	1.31	0.07	4.33	-1.27	-0.05
110	HKI-193-2 × SKV 50	48.84	0.67	-75.22	30.47	1.37	-4.33	13.27	-0.07	0.45	33.29	1.31	-3.09	15.36	-0.08	-0.86	4.28	-1.50	-0.05
111	HKI-193-2 × MAI 105	46.39	0.54	-68.50	33.10	-0.47	2.73	15.13	1.13	0.11	30.66	2.04	14.76 *	15.74	2.04	0.31	4.84	-0.45	-0.05
112	HKI-193-2 × LM 13	45.78	0.57*	-75.73	40.56	0.67	25.68 *	13.33	6.51	-0.12	33.74	-0.62	-1.21	17.12	0.55	-0.63	4.57	3.25	-0.06
113	LTP-1 × CM 500	48.63	0.37	-73.83	29.01	-1.29	-1.03	14.20	0.08	0.74 *	35.99	-0.16	31.56 **	17.02	1.54	6.14 *	4.38	8.15	-0.03
114	LTP-1 × SKV 50	49.31	1.05	-75.26	29.02	0.65	-3.53	13.07	-5.33	0.60	37.21	0.31	3.19	19.42	1.54	-1.16	4.19	-0.30	-0.06
115	LTP-1 × MAI 105	50.35	2.30	-70.93	30.34	0.86	-4.98	15.87	-2.23	0.44	35.96	1.22	-3.12	17.99	1.90	-0.61	4.45	-1.63	-0.04
116	LTP-1 × LM 13	46.90	-0.81	-50.01	37.68	0.11	1.98	13.13	7.57	-0.21	32.09	-0.91	-3.63	18.52	0.40	-1.43	4.36	-0.92	-0.06
117	MAI-11 5 × CM 500	49.82	2.82	-62.36	30.37	1.51	-3.10	13.67	-3.25	-0.21	32.09	0.06	0.68	15.78	1.55	-0.13	4.35	4.64	-0.05
118	MAI-115 × SKV 50	50.21	1.89	-69.07	31.75	-0.20	-3.42	13.07	4.30	-0.11	31.85	2.22	-3.53	15.73	2.33	-0.99	4.44	-1.17	-0.05
119	MAI-116 × MAI 105	47.34	0.93	-75.66	28.95	0.48	-3.01	15.67	0.13	2.44 **	27.22	-0.41	-3.80	14.81	0.08	-1.02	4.73	8.69	-0.06
120	MAI-117 × LM 13	47.72	0.25	-61.22	33.85	1.75	-4.54	12.67	-6.39	1.10 *	38.53	0.66	-3.82	19.47	0.85	0.39	4.56	7.37	-0.05

Sl. no.	Hybrid	Harvest index			Test weight (g)			Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
121	MAI-107 × CM 500	50.78	1.98	-64.50	32.45	0.88	-4.83	16.07	-2.19	-0.11	31.08	0.64*	-3.92	15.89	0.71	-1.08	4.92	1.93	-0.05
122	MAI-107 × SKV 50	48.12	0.19	-75.50	32.57	2.51	-4.52	13.07	5.40	-0.21	30.28	2.36	-3.42	14.99	1.00	-1.30	4.24	-0.29	-0.06
123	MAI-107 × MAI 105	44.39	-0.21	-74.47	39.19	1.32	2.75	15.33	-0.09	1.08 *	30.46	3.15	74.06 **	16.26	0.89	6.28 *	4.81	2.50	0.08
124	MAI-107 × LM 13	48.62	1.88	-75.02	39.86	-0.83	-4.87	12.27	10.82	-0.20	34.15	2.69	-1.61	17.52	3.42*	-1.44	4.46	-4.75	-0.05
125	MAI-109 × CM 500	45.48	0.12	-39.09	33.93	-0.01	-4.96	12.27	6.46	-0.10	35.34	2.15	-2.82	16.91	1.47	-0.83	4.33	-1.39	-0.06
126	MAI-109 × SKV 50	46.43	-0.49	-74.66	34.17	1.32	-2.54	11.13	2.15	-0.19	33.99	-0.19*	-3.89	16.90	0.59	-1.27	4.32	1.08	-0.05
127	MAI-109 × MAI 105	49.34	2.09	-75.32	36.08	0.66	3.66	14.13	3.17	0.60	29.58	1.87	1.36	15.71	1.53	-0.95	4.56	-3.21	-0.05
128	MAI-109 × LM 13	48.59	0.48	-75.32	41.37	2.48	-3.57	11.93	-9.76	-0.06	35.97	0.64	-2.30	17.04	0.30	-1.25	4.46	4.66	-0.03
129	MAI-112 × CM 500	51.04	2.60	-72.86	29.56	1.86	-1.44	14.53	5.29	1.72 **	30.15	2.11	-2.39	16.25	2.86	4.93 *	4.28	-0.67	-0.03
130	MAI-112 × SKV 50	46.83	0.68	-74.87	32.77	0.76	48.82 **	12.87	5.40	-0.21	36.37	1.93	-3.67	17.14	-0.43	-0.26	4.13	7.83	0.01
131	MAI-112 × MAI 105	47.75	0.34	-75.28	34.77	0.28*	-5.00	15.93	6.51	-0.12	33.07	0.92	-0.09	16.65	0.14	-1.40	4.90	-3.60*	-0.06
132	MAI-112 × LM 13	49.50	2.37	-47.09	36.79	-0.51	7.45	13.20	5.42	-0.16	32.11	2.27	-0.98	17.04	1.37	7.90 *	4.44	-5.28*	-0.06
133	MAI-121 × CM 500	50.41	1.24	-71.16	26.01	-0.32	-4.70	13.93	-1.11	-0.05	37.62	1.58	7.24	16.28	0.81	0.46	4.32	-0.83	-0.03
134	MAI-121 × SKV 50	51.83	0.70	-72.70	29.33	1.18	-4.53	12.93	4.31	-0.19	30.34	-0.09*	-3.92	15.08	0.86	-1.37	4.30	1.62	-0.04
135	MAI-121 × MAI 105	46.58	-0.49	-71.50	29.59	1.71	13.02	16.20	-8.72	0.71 *	30.54	-0.41	-3.02	14.32	0.72	-0.57	4.87	-2.74	-0.04
136	MAI-121 × LM 13	50.44	1.62	-60.68	33.33	-0.10	30.34 **	13.33	1.01	0.59	34.33	1.60	-3.67	15.26	1.20	0.36	4.44	-5.56	-0.05
137	MAI-137 × CM 500	41.70	-0.47	-74.68	28.49	-0.72	39.91 **	12.33	-1.00	0.91 *	25.96	0.67	33.52 **	14.31	0.88	-1.32	4.44	1.86	-0.02
138	MAI-137 × SKV 50	44.11	0.51	-73.55	34.95	0.15	0.35	12.27	-5.41	-0.21	33.93	3.48	2.68	16.71	2.51	3.11	4.63	-6.66	0.00
139	MAI-137 × MAI 105	42.13	-0.95	-58.58	35.19	0.48	-0.28	14.20	1.02	0.32	28.60	0.26	8.65	14.87	0.46	-0.26	5.02	5.70	-0.03
140	MAI-137 × LM 13	45.05	0.46	-73.32	40.61	-1.51	-3.01	12.47	11.96	0.56	33.29	0.21	6.08	17.11	-0.52	-0.50	4.70	1.02	-0.05
141	MAI-27 × CM 500	47.10	-1.90	7.56	31.21	-0.77	-3.55	13.47	-0.03	-0.11	28.92	4.21	2.87	14.46	1.58	2.78	4.29	-5.21	-0.04
142	MAI-27 × SKV 50	48.22	0.56	-67.13	31.03	-1.61	-2.87	12.53	3.21	-0.05	26.06	0.33	3.20	15.77	0.44	1.33	4.31	-2.66*	-0.06
143	MAI-27 × MAI 105	45.12	-0.31	-69.61	34.93	-0.74	-1.92	14.80	16.15	0.36	29.29	5.77	2.64	14.70	4.25*	-1.40	4.67	-10.85*	-0.06
144	MAI-27 × LM 13	47.55	1.27	-75.71	38.67	-0.70	0.40	12.53	0.03	-0.11	33.87	3.13	-3.64	16.98	1.84	-1.31	4.43	-2.44	-0.05
145	MAI-29 × CM 500	48.51	-0.25	-75.63	25.07	1.06	-3.66	13.67	1.04	0.11	31.42	-0.07	-3.84	15.39	0.07*	-1.43	4.01	0.79	-0.06
146	MAI-29 × SKV 50	49.45	0.55	-75.62	35.61	2.03	-4.53	12.33	-5.32	0.92 *	32.37	2.64	7.95	15.27	3.17	3.81	4.43	-0.61	-0.05
147	MAI-29 × MAI 105	45.67	-1.04	-71.77	35.11	4.12	0.37	14.07	-4.27	0.22	31.39	3.44	-1.75	15.68	1.21	-1.39	4.73	3.53	-0.04
148	MAI-29 × LM 13	48.93	1.25	-72.57	34.90	1.11	10.55	13.53	-4.33	-0.19	33.71	3.86	-3.17	16.14	1.68	-0.11	4.51	0.47	-0.06
149	MAI-35 × CM 500	49.62	1.91	-50.00	30.53	0.56*	-5.00	13.40	5.42	-0.16	30.84	-0.13	0.36	15.74	-0.19*	-1.43	4.37	-1.33*	-0.06
150	MAI-35 × SKV 50	49.65	0.83	-75.47	31.07	0.33	-4.42	12.20	1.06	-0.16	28.69	1.96	-2.59	15.01	1.99	-1.13	4.23	-1.22	-0.06
151	MAI-35 × MAI 105	46.88	0.06	-75.53	34.47	0.72	0.31	13.67	5.43	-0.06	34.24	1.22	-0.99	16.50	0.66	0.86	4.61	-1.56	-0.06
152	MAI-35 × LM 13	50.06	1.61	-75.57	37.29	1.34	-3.41	14.00	1.14	0.32	28.31	1.58	-3.39	15.66	0.71	-1.42	4.61	0.62	-0.05
153	MAI-45 × CM 500	47.33	0.30	-75.66	33.33	0.38	-3.05	12.47	1.04	0.11	30.99	4.30	-3.54	14.36	1.45	0.85	4.40	-7.27	-0.05
154	MAI-45 × SKV 50	45.80	1.04	-75.67	36.14	-0.62	-4.32	11.73	1.01	0.59	31.05	1.08	1.84	16.84	1.81	2.14	4.36	-1.37	-0.03
155	MAI-45 × MAI 105	114.69	48.65	5414 **	38.76	0.60	18.80 *	14.87	3.16	0.91 *	29.28	1.52	20.82 *	15.36	0.88	-0.91	5.12	-1.22	-0.06
156	MAI-45 × LM 13	46.39	0.72	-62.82	40.41	0.39	-2.52	11.33	2.23	0.44	36.70	0.11	-2.45	18.60	0.98	-1.31	4.47	3.77	-0.05
157	MAI-48 × CM 500	49.87	1.43	-67.03	31.43	-5.25	-0.57	12.60	9.66	0.34	25.90	0.54	5.39	13.98	3.51	-1.13	4.22	-0.72	-0.04
158	MAI-48 × SKV 50	47.12	0.36	-67.27	28.37	-0.91	-4.30	12.67	5.36	0.12	29.55	1.50	-3.22	15.28	2.08	1.02	4.12	0.37	-0.05
159	MAI-48 × MAI 105	46.53	0.03	-65.20	30.96	1.77	-4.09	14.47	-1.17	0.90 *	31.14	0.10	-2.30	15.85	1.98	-0.13	4.51	-2.93	0.00
160	MAI-48 × LM 13	48.55	0.37	-67.78	36.26	1.65	-4.42	13.93	0.03	-0.11	33.58	2.32	-3.45	16.64	0.77	-1.36	6.22	90.91	0.57 **

Sl. no.	Hybrid	Harvest index			Test weight (g)			Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
161	MAI-706 × CM 500	51.25	1.15	-69.24	29.39	1.19	7.06	14.33	4.31	-0.19	37.38	1.79	2.48	16.46	1.61	-0.76	4.32	-4.81	-0.03
162	MAI-706 × SKV 50	52.53	1.87	-73.26	30.07	0.81	9.20	13.27	7.60	-0.06	33.80	0.46	1.73	15.79	0.33	-1.43	4.35	-0.06	-0.03
163	MAI-706 × MAI 105	50.44	-0.33	-70.75	32.88	2.24	-4.72	15.93	-0.09	1.08 *	36.27	-0.65	2.31	17.03	0.80*	-1.44	4.65	-6.16*	-0.06
164	MAI-706 × LM 13	50.72	0.74	-71.82	36.26	0.69	1.27	12.67	-2.11	0.21	34.22	0.62	-1.08	17.24	1.06	-1.28	4.49	-0.11	-0.05
165	SKV-70 × CM 500	44.70	0.80	-73.85	26.41	0.55	-4.92	14.00	-7.47	1.30 **	34.28	3.09	-3.30	15.65	0.62	-1.13	4.24	0.37	-0.05
166	SKV-70 × SKV 50	49.55	1.33	-74.32	30.18	0.67	-2.43	13.60	-3.26	-0.16	35.22	1.63	-0.42	16.88	1.36	0.70	4.11	-3.02	-0.04
167	SKV-70 × MAI 105	46.01	-0.39	-75.40	28.21	3.74	-4.45	15.07	17.38	1.03 *	29.19	-0.63	-3.80	14.72	0.68	-1.43	4.55	0.56	0.12
168	SKV-70 × LM 13	48.67	1.16	-75.60	34.46	2.81	10.35	14.00	-3.18	0.33	34.65	2.38	-1.43	17.72	2.41*	-1.43	4.51	5.86	-0.05
169	V-632-112 × CM 500	47.48	0.70	-75.22	30.91	2.08	3.40	13.93	3.25	-0.21	39.27	2.92	-2.39	17.37	0.49	1.28	4.43	-11.19	-0.05
170	V-632-112 × SKV 50	45.59	0.14	-14.65	33.33	1.66	-4.64	12.93	0.07	0.45	33.72	0.72	13.40 *	17.75	0.92	-0.76	4.35	0.56	-0.05
171	V-632-112 × MAI 105	42.99	-0.07	-66.87	33.67	2.53	-4.80	14.67	-3.25	-0.21	32.58	0.84	-3.70	16.92	0.70	-0.94	4.78	-3.21	-0.05
172	V-632-112 × LM 13	47.62	0.96	-70.62	37.99	-1.45	17.89 *	12.87	3.20	0.11	36.77	0.95	-3.34	19.31	1.82	-0.93	4.46	-1.39	-0.06
173	V-632-67 × CM 500	46.97	-0.54	-72.78	31.31	4.72	-2.58	14.60	3.26	-0.16	34.26	2.93	-2.48	15.58	-0.03	-1.22	4.66	-0.38	-0.03
174	V-632-67 × SKV 50	45.99	-0.09	-61.22	35.89	2.48	-3.69	12.67	0.09	1.08 *	34.56	-1.01	12.44 *	18.01	-0.80	-1.18	4.66	5.28	-0.05
175	V-632-67 × MAI 105	47.30	0.75	-75.66	36.52	0.56*	-5.00	14.67	1.15	0.59	29.77	2.71*	-3.92	15.12	1.16	-1.26	4.92	-4.63	-0.04
176	V-632-67 × LM 13	47.55	1.60	-75.63	43.35	0.54	10.10	13.93	0.03	-0.11	32.80	0.92	-3.55	17.10	1.05	1.56	4.87	5.45	-0.05
177	Z-50-3 × CM 500	45.96	0.84	-73.77	31.91	0.15	-0.64	14.40	8.60	0.03	32.39	0.05	-0.29	17.46	1.21	0.60	4.58	-10.67	-0.05
178	Z-50-3 × SKV 50	45.98	0.46	-75.49	30.83	4.48	6.70	12.33	-2.14	-0.11	32.10	2.26	1.67	16.80	1.25	-1.35	4.35	-0.59	-0.05
179	Z-50-3 × MAI 105	43.87	-0.71	-70.59	32.07	-0.15	-0.91	15.67	6.61	2.42 **	33.85	4.16	22.93 **	16.89	1.09	0.10	4.94	0.37	-0.04
180	Z-50-3 × LM 13	46.30	0.24	-72.96	39.97	1.77	-4.06	12.53	1.17	0.90 *	35.27	2.70	20.52 *	19.00	1.57	-1.41	4.59	3.73	-0.05
181	Z-51-1 × CM 500	45.96	1.83	-75.57	31.95	0.71	0.08	14.73	-7.56	-0.21	29.64	5.50	0.17	14.32	4.26	-0.10	4.75	-6.16*	-0.06
182	Z-51-1 × SKV 50	48.58	0.16	-63.11	33.31	7.30	-3.56	13.80	5.46	0.31	33.09	0.52	11.14	17.94	-1.79	-0.05	4.86	8.14	0.19 *
183	Z-51-1 × MAI 105	46.20	0.73	-70.55	30.19	4.23	79.39 **	16.87	2.25	1.08 *	28.58	-2.68*	-3.77	16.72	0.29	-1.16	5.30	3.06	-0.04
184	Z-51-1 × LM 13	47.97	0.72	-72.74	39.05	5.80	34.48 **	14.20	1.10	-0.16	36.66	0.22	-3.90	17.96	1.37	-1.31	4.88	3.41	-0.04
185	Z-51-6 × CM 500	49.01	1.71	-75.56	31.33	0.70	-1.09	16.07	7.60	-0.06	35.95	0.29	-3.11	16.47	1.10	-1.42	4.78	1.78	0.00
186	Z-51-6 × SKV 50	49.66	1.99	-74.25	29.18	3.65	9.13	16.20	-1.06	-0.16	35.70	-0.35	-2.15	16.72	0.22	-0.07	4.79	5.24	0.00
187	Z-51-6 × MAI 105	47.84	0.62	-74.91	27.28	3.75	-4.15	19.13	8.63	-0.19	31.86	1.43	-3.51	14.98	0.15	-1.39	5.06	0.78	0.13
188	Z-51-6 × LM 13	47.37	1.88	-55.75	33.66	-1.02	42.28 **	14.27	1.11	-0.05	31.07	2.40	23.94 **	16.53	1.26	1.93	4.57	-5.43	-0.05
189	Z-52-29 × CM 500	50.53	1.93	-75.57	28.02	0.48	4.44	13.02	-0.83	-0.15	38.53	-0.01	3.38	17.38	1.24	-1.41	4.28	2.17	-0.06
190	Z-52-29 × SKV 50	50.72	0.30	-74.23	33.35	2.80	-4.56	12.93	-3.27	-0.05	31.55	-1.13	-2.55	16.63	-0.22	-0.49	4.27	0.77	-0.04
191	Z-52-29 × MAI 105	48.00	1.20	-75.73	28.33	2.95	-2.00	15.13	5.33	0.60	32.06	-0.88	70.57 **	15.73	-0.80	3.70	4.60	5.52	0.01
192	Z-52-29 × LM 13	45.50	-1.23	-67.17	25.25	-4.79*	-4.76	14.27	-10.79	-0.19	33.45	0.84	156.89 **	15.91	1.23	31.41 **	4.38	20.16	-0.03
193	Z-56-1 × CM 500	50.59	1.02	-60.25	28.17	0.51	-4.24	12.47	-3.21	-0.05	28.64	-0.83	19.00 *	16.02	-0.85	-0.93	3.82	1.91	-0.04
194	Z-56-1 × SKV 50	51.75	2.35	-68.93	31.31	1.66	-4.60	12.00	-0.04	0.02	32.26	0.28	3.47	15.22	1.33*	-1.44	4.20	0.22	-0.06
195	Z-56-1 × MAI 105	53.39	2.54	-63.27	29.21	1.48	-4.02	16.00	-0.98	1.28 **	31.10	1.39	0.57	15.21	0.75	-1.40	4.61	3.01	-0.05
196	Z-56-1 × LM 13	48.58	0.93	-31.91	24.67	-0.21	52.10 **	13.33	-0.01	-0.19	33.20	0.73	-0.16	15.30	0.26	1.69	3.88	-8.53*	-0.06
197	Z-56-8 × CM 500	47.44	-0.02	-75.46	23.39	-4.28*	-4.79	12.67	0.01	-0.19	28.89	0.79	-0.23	14.70	2.84	-1.21	3.97	2.11	0.01
198	Z-56-8 × SKV 50	48.01	0.61	-75.44	29.33	0.86	-4.99	13.73	3.17	0.60	28.64	-0.33	0.12	15.80	1.15	0.37	4.40	-1.46	-0.06
199	Z-56-8 × MAI 105	48.79	0.53	-75.66	29.35	-0.43	-0.26	15.40	-0.08	0.74 *	28.99	0.56	-3.39	15.11	-0.37	-1.33	4.56	1.97	0.03
200	Z-56-8 × LM 13	50.41	1.64	-75.30	41.03	1.13	13.22	12.53	0.07	0.45	35.29	4.01	3.27	18.02	1.08	-1.30	4.56	4.87*	-0.06

Sl. no.	Hybrid	Harvest index			Test weight (g)			Grain rows per cob			Grains per row			Cob length (cm)			Cob girth (cm)		
		Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*	Mean	*bi*	*s²di*
201	Z-60-22 × CM 500	48.83	-0.13	-75.61	33.76	-0.21	26.08 *	12.40	-1.06	-0.16	35.00	-1.58	6.23	16.65	-0.08	-1.40	4.12	-0.05	-0.06
202	Z-60-22 × SKV 50	50.08	0.71	-74.68	32.39	2.96	-1.47	12.80	4.28	0.03	35.61	1.56	-3.90	17.85	2.38	-1.41	4.18	0.73	-0.05
203	Z-60-22 × MAI 105	51.42	1.14	-75.69	30.59	3.48	-3.81	16.20	-2.08	0.74 *	33.46	1.67	-2.00	16.00	0.17	-0.75	4.83	3.90	-0.05
204	Z-60-22 × LM 13	50.86	0.57	-71.57	40.17	-1.10	-4.71	12.33	3.29	0.10	32.07	0.72	-1.06	16.58	1.60	-1.36	4.34	-0.83	-0.05
205	Z-62-55 × CM 500	48.50	0.34	-75.63	32.23	0.68	-1.99	13.20	2.16*	-0.22	35.81	-2.34	3.18	17.73	0.66	0.95	4.58	2.88	-0.04
206	Z-62-55 × SKV 50	49.52	0.72	-74.94	27.91	1.92	-3.95	13.40	6.52	0.01	34.60	0.56	28.72 **	18.39	0.11	-1.20	4.21	5.28	-0.05
207	Z-62-55 × MAI 105	43.08	-0.94	-69.46	27.63	1.39	-4.80	17.13	2.15	-0.19	28.61	1.62	19.81 *	15.63	1.33	1.95	4.64	-6.16	-0.05
208	Z-62-55 × LM 13	47.49	-0.16	-72.22	36.39	-1.70*	-4.99	13.47	-5.45	0.10	35.10	1.19	-0.90	19.13	1.93	-0.87	4.45	-0.59	-0.01
209	Z-62-67 × CM 500	45.81	-0.69*	-75.64	26.55	0.98	0.97	12.80	3.30	0.32	29.09	4.79	13.17 *	13.52	1.94	0.47	4.45	-6.76	-0.05
210	Z-62-67 × SKV 50	50.01	1.46	-75.46	26.71	-0.37	-3.35	13.33	7.57	-0.21	33.57	0.10	-0.29	15.99	1.46	-0.93	4.48	2.88	-0.06
211	Z-62-67 × MAI 105	47.77	1.29	-70.35	31.33	3.11	12.56	16.40	-3.26	-0.16	29.82	2.34	-3.18	14.16	1.54	-1.35	4.92	1.33	-0.04
212	Z-62-67 × LM 13	48.71	1.77	-41.55	33.83	2.07	4.47	14.53	-5.43	-0.06	31.22	0.54	18.57 *	15.28	1.85	-0.67	4.83	-4.20	-0.05
213	Z-63-30 × CM 500	43.70	0.05*	-75.72	33.56	2.67	-2.04	13.20	5.34	0.33	29.32	-0.39	-1.05	15.86	0.38	0.51	4.56	3.05	-0.04
214	Z-63-30 × SKV 50	48.77	1.49	-74.60	35.43	-1.38	-4.65	13.20	6.52	0.01	36.67	-1.80	32.90 **	18.60	1.34	-0.05	4.83	3.17	0.01
215	Z-63-30 × MAI 105	45.26	-0.50	-75.06	32.68	3.50	3.91	15.33	-2.17	-0.19	24.08	0.37	-2.35	14.04	0.92	-1.44	4.96	2.49	-0.03
216	Z-63-30 × LM 13	47.89	0.55	-74.14	41.70	3.98	14.26	14.60	-10.84	0.01	33.99	3.17	-2.85	18.19	0.78	-0.80	4.87	4.16	-0.05
217	**Decalb 8101**	53.50	2.27	-61.35	35.44	-3.16	9.90	15.67	4.26	0.46	40.77	0.55	2.01	18.36	0.06	-1.38	5.05	2.24*	-0.06
218	**30v92**	54.88	2.93	-74.96	31.29	4.24	-4.88	13.73	0.03	-0.11	39.92	-0.60	-3.75	19.15	0.53	-1.28	4.53	5.04	-0.01
219	**NK6240**	48.19	0.67	-74.96	38.34	1.19	7.86	13.27	1.04	0.11	33.81	1.35	-3.44	17.10	0.46	-0.32	4.73	-3.34*	-0.06
220	**PINNACLE**	53.60	4.42*	-75.18	29.63	-0.38	-2.82	16.67	6.50	-0.19	38.08	-1.25	-2.61	18.38	-0.41	0.44	5.06	9.20	-0.05
221	**HEMA**	46.73	1.16	-72.42	33.39	-1.55	0.46	15.93	7.45	1.73 **	32.64	0.38	-3.06	16.37	0.87	-0.77	5.01	0.76	-0.06
222	**CP 818**	50.40	1.70	-40.37	33.64	3.25	40.49 **	12.93	-9.60	2.23 **	36.72	1.06	-1.48	18.21	2.21*	-1.43	4.82	1.85	-0.05
223	**900M GOLD**	50.87	-0.22	-64.54	31.85	0.95	47.06 **	14.47	2.25	1.08 *	38.56	0.36	11.20	17.55	-0.32	-0.98	4.95	-0.81	-0.01
224	**NITYASHREE**	49.33	0.14	-75.44	32.89	3.04	4.71	14.60	1.14	0.32	32.17	-0.36	1.78	17.67	0.21*	-1.44	4.84	8.85	-0.04
225	**PHI 3501**	48.87	1.58	-71.32	32.05	-0.80	-4.34	15.93	-1.04	0.11	45.28	-0.47	11.33 *	18.09	1.53	-1.20	4.94	1.64	-0.06

* significant at p = 0.05 and ** significant at p = 0.01