

Characterization and variability studies in ridge gourd genotypes

By

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**DEPARTMENT OF VEGETABLE SCIENCE
COLLEGE OF AGRICULTURE
CCS HARYANA AGRICULTURAL UNIVERSITY
HISAR-125 004 (HARYANA)**

2023

CERTIFICATE-I

This is to certify that this dissertation entitled, “**Characterization and variability studies in ridge gourd genotypes**” submitted for the degree of **Doctor of Philosophy (Agriculture)** in the subject of **Horticulture-Vegetable Science** to the Chaudhary Charan Singh Haryana Agricultural University, Hisar, is a bonafide research work carried out by **Ms. Karande Priyanka Jalindar** Admission No. **2020A78D** under my supervision and that no part of this thesis has been submitted for any other degree.

All the assistance and help received during the course of investigation have been fully acknowledged.

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CONTENTS

CHAPTER No.	NAME OF THE CHAPTER	PAGE No.
I	INTRODUCTION	1-3
II	REVIEW OF LITERATURE	4-26
III	MATERIALS AND METHODS	27-46
IV	RESULTS	47-183
V	DISCUSSION	184-205
VI	SUMMARY AND CONCLUSION	206-210
	BIBLIOGRAPHY	i-v

LIST OF TABLES

TABLE No.	DESCRIPTION	PAGE No.
3.1	Weekly weather parameters during last week of February and second week of March, 2022	28
3.2	Weekly weather parameters during last week of February and second week of March, 2023	29
3.3	List of ridge gourd genotypes and their source of collection	34
3.4	The skeleton ANOVA table for RBD with treatments (t) and replications (r)	42
4.1.1	Categorization of ridge gourd genotypes with respect to the plant growth habit	48
4.1.2	Categorization of ridge gourd genotypes with respect to the leaf shape	49
4.1.3	Categorization of ridge gourd genotypes with respect to the leaf blade: Number of lobes	52
4.1.4	Categorization of ridge gourd genotypes with respect to the leaf pubescence	53
4.1.5	Categorization of ridge gourd genotypes with respect to the stem shape	54
4.1.6	Categorization of ridge gourd genotypes with respect to the stem pubescence	55
4.1.7	Categorization of ridge gourd genotypes with respect to the flower colour	56
4.1.8	Categorization of ridge gourd genotypes with respect to the fruit shape	57
4.1.9	Categorization of ridge gourd genotypes with respect to the fruit skin colour	58
4.1.10	Categorization of ridge gourd genotypes with respect to the fruit shape of blossom end	59
4.1.11	Categorization of ridge gourd genotypes with respect to the fruit shape at peduncle end	60
4.1.12	Categorization of ridge gourd genotypes with respect to the fruit skin luster	61
4.1.13	Categorization of ridge gourd genotypes with respect to the fruit ridge (rib) shape	62
4.1.14	Categorization of ridge gourd genotypes with respect to the flesh texture	63
4.1.15	Categorization of ridge gourd genotypes with respect to the flesh colour	64
4.2.1	Mean performance of days to 50% germination in ridge gourd genotypes	68
4.2.2	Mean performance of number of primary branches/vine in ridge gourd genotypes	69
4.2.3	Mean performance of vine length (m) at final harvest in ridge gourd genotypes	70
4.2.4	Mean performance of stem length of internodes (cm) in ridge gourd genotypes	73
4.2.5	Mean performance of leaf length (cm) in ridge gourd genotypes	74
4.2.6	Mean performance of leaf width (cm) in ridge gourd genotypes	75
4.2.7	Mean performance of petiole length (cm) in ridge gourd genotypes	76

4.2.8	Mean performance of days to first male flower opening in ridge gourd genotypes	79
4.2.9	Mean performance of days to first female flower opening in ridge gourd genotypes	80
4.2.10	Mean performance of nodes to first male flower in ridge gourd genotypes	81
4.2.11	Mean performance of nodes to first female flower in ridge gourd genotypes	82
4.2.12	Mean performance of days to first fruit harvest in ridge gourd genotypes	85
4.2.13	Mean performance of number of fruits per vine in ridge gourd genotypes	86
4.2.14	Mean performance of fruit length (cm) in ridge gourd genotypes	87
4.2.15	Mean performance of fruit diameter (cm) in ridge gourd genotypes	88
4.2.16	Mean performance of peduncle length (cm) in ridge gourd genotypes	91
4.2.17	Mean performance of average fruit weight (g) in ridge gourd genotypes	92
4.2.18	Mean performance of fruit yield per vine (kg) in ridge gourd genotypes	95
4.2.19	Mean performance of fruit yield (q/ha) in ridge gourd genotypes	96
4.2.20	Mean performance of number of seeds/fruit in ridge gourd genotypes	97
4.2.21	Mean performance of seed length (cm) in ridge gourd genotypes	98
4.2.22	Mean performance of weight of 100 seeds (g) in ridge gourd genotypes	99
4.3.1	Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Last week of February, 2022)	101
4.3.2	Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Last week of February, 2023)	102
4.3.3	Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Second week of March, 2022)	103
4.3.4	Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Second week of March, 2023)	104
4.4.1	Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Last week of February, 2022)	110
4.4.2	Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Last week of February, 2023)	111
4.4.3	Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Second week of March 2022)	117
4.4.4	Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Second week of March 2023)	118
4.5.1a	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)	122
4.5.1b	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)	123
4.5.2a	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)	124

4.5.2b	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)	125
4.5.3a	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)	131
4.5.3b	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)	132
4.5.4a	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)	133
4.5.4b	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)	134
4.5.5a	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)	139
4.5.5b	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)	140
4.5.6a	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)	141
4.5.6b	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)	142
4.5.7a	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)	148
4.5.7b	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)	149
4.5.8a	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)	150
4.5.8b	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)	151
4.6.1a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2022)	157
4.6.1b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2022)	158
4.6.2a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2023)	159
4.6.2b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2023)	160
4.6.3a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2022)	165
4.6.3b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2022)	166
4.6.4a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2023)	167
4.6.4b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2023)	168

4.6.5a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2022)	173
4.6.5b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2022)	174
4.6.6a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2023)	175
4.6.6b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2023)	176
4.6.7a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2022)	180
4.6.7b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2022)	181
4.6.8a	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2023)	182
4.6.8b	Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2023)	183

LIST OF FIGURES

Figure No.	Description	Page No.
3.1	Weather parameters for last week of February and second week of March, 2022	28
3.2	Weather parameters for last week of February and second week of March, 2023	29
3.3	Layout of the experimental field (Last week of February, 2022)	30
3.4	Layout of the experimental field (Second week of March, 2022)	31
3.5	Layout of the experimental field (Last week of February, 2023)	32
3.6	Layout of the experimental field (Second week of March, 2023)	33
4.5.1	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)	126
4.5.2	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)	126
4.5.3	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)	135
4.5.4	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)	135
4.5.5	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)	143
4.5.6	Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)	143
4.5.7	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)	152
4.5.8	Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)	152

LIST OF PLATES

Plate No.	Description	Page No.
1	Leaf shape of ridge gourd	37
2	Leaf blade: Number of lobes of ridge gourd	37
3	Flower colour (Light yellow) of ridge gourd	38
4	Fruit shape of ridge gourd	38
5	Fruit shape of blossom end and peduncle end of ridge gourd	39
6	Flesh colour (Cream) of ridge gourd	39
7a	Variability for leaf shape and leaf blade: Number in lobes of ridge gourd genotypes	50
7b	Variability for leaf shape and leaf blade: Number in lobes of ridge gourd genotypes	51
8a	Variability for fruit shape in ridge gourd genotypes	65
8b	Variability for fruit shape in ridge gourd genotypes	66

ABBREVIATIONS USED IN TEXT

%	Per cent
/	per
<	Lesser than
>	Greater than
°C	Degree celcius
ANOVA	Analysis of variance
b.s.	Broad sense
BSKKV	Balasaheb Sawant Konkan Krishi Vidyapeeth
C.V.	Co-efficient of variation
CCS HAU	Chaudhary Charan Singh Haryana Agricultural University
cm	Centimetre
DAS	Days after sowing
Df	Degrees of freedom
DUS	Distinctness, uniformity and stability
EMS	Error mean of square
ESS	Error sum of squares
<i>et al.,</i>	et alia (and others)
g	Gram
GA	Genetic advance
GAM	Genetic advance as per cent of mean
GCV	Genotypic co-efficient of variation
GV	Genotypic variance
h ²	Heritability
<i>i.e.,</i>	That is
IARI	Indian Agricultural Research Institute
IC	Indigenous collection
kg	Kilogram
m	Meter
M.S.D.	Minimum significant difference
mm	Millimeter
N	North latitude
NBPGR	National Bureau of Plant Genetic Resources
NS	Non-significant
PCV	Phenotypic co-efficient of variation
PDKV	Panjabrao Deshmukh Krishi Vidyapeeth
pp.	Pages
PPV&FRA	Protection of Plant Varieties and Farmers' Rights Authority
PV	Phenotypic variance
q/ha	Quintal per hectare
r	Replications
RBD	Randomized block design
RMS	Mean sum of squares due to replication
RSS	Replication sum of squares
SD	Standard deviation
SE	Standard error
t	Treatments
TMS	Mean sum of squares due to treatment
TSS	Treatment sum of squares
<i>viz.,</i>	(Videlicer) namely

CHAPTER I

INTRODUCTION

Ridge gourd (*Luffa acutangula* L.) is originated in India and belongs to the family Cucurbitaceae with $2n=2x=26$ chromosome number. It is commonly called as *Turai* or *turiya* or *heereka* or *beerakai*. It is also known as ribbed gourd, angled gourd, angled loofah, Chinese okra, silky gourd and vegetable gourd. It is an important tropical and subtropical cucurbitaceous vegetable (Bhat *et al.*, 2018). The genus includes seven species out of which only two are important commonly cultivated vegetables viz., ridge gourd and sponge gourd. Ridge gourd grown in the spring summer and rainy seasons.

Ridge gourd belongs to genus *Luffa* derives its name from the product loofah, which is used in bathing sponges, scrubber pads, door mats, pillows and mattress. The fibre has also been shown to be an effective insulator for a variety of applications. Dry fruits with good storability are sometimes utilized for decorative purposes as well. It is an emetic that has long been used to treat stomach ailments and fevers (Chakravarthy, 1959). Because of the secondary metabolite cucurbitacin, seeds are said to have purgative, emetic and anti-helminthic qualities (Robinson and Decker-Walters, 1997). Isolation of Ribosome Inactivating Proteins (RIPs) and luffaculin from ridge gourd seeds have received wide attention for their potential applications in medicine as they possess various pharmacological activities including abortifacient, anti-fungal, anti-tumor, anti-virus and HIV-1 integrase inhibitory properties (Hou *et al.*, 2006). It contains a gelatinous compound called luffein and also possess medicinal importance (Narasannavar *et al.*, 2014). Its green fruits at immature stage are cooked as vegetable. Ridge gourd fruits contain moisture (95.2 g), fat (0.1%), minerals (0.5 g), protein (0.5%), energy (17 kcal), calcium (18 mg), phosphorus (26 mg), carbohydrate (3%), iron (0.5 mg), carotene (33 mg) and vitamin C (5 mg) in per 100 g of edible marketable portion. Trypsin inhibitors are isolated from *Luffa acutangula* L. (Haldar *et al.*, 1996). Recently, this crop has been tested for its antioxidant (free radical scavenging-FRS) activity confirming the great interest of the nutraceutical science (Ansari *et al.*, 2005).

It is cultivated in countries such as India, Indonesia, Malaysia, Philippines, Myanmar, Sri Lanka and Taiwan *etc.* There is a lot of genetic variation for different morphological and fruit characters in different parts of India. Most cucurbitaceous vegetables are typically grown in small plots for local consumption, so statistical data on area and production are limited.

Ridge gourd is dicotyledonous annual climber with long tap root system. It is cross pollinated crop and monoecious in nature and also different sex form found in *luffa* i.e., hermaphrodite, androecious, andromonecious, gynoecious and gynomonoecious (Choudhary and Thakur, 1965). Leaves are pale green, simple and ovate with 6-7 lobes. In reproductive phase the nodes have potential of bearing six organs viz., leaf tendrils, branch, bract, solitary

pistillate flower, androecious raceme and adventitious root. Flowers are light yellow in colour and borne on axil of leaves. Staminate flowers are arranged in raceme, while pistillate flowers are solitary, short or long peduncle and also fragrant. Anthesis starts between 4-6 pm in the evening and remain throughout the night and are ready for selfing and pollination in the early morning or afternoon. Temperature and humidity control anthesis and dehiscence. The anthers are free and the pistil has three placentas with numerous ovules. Stigma is three and bilobate seeded. Fruits are club shaped and angled with ten prominent ridges and many seeded. Overripe fruits are inedible because they become hard and ridged. The seeds are flattened, wrinkled and black in colour. The one thousand seed weight about 150-170 g (Doijode, 2002).

Despite its economic and medicinal importance, adaptability and applications, this crop received less scientific attention in crop development programmes than other cucurbits. However, cultivation of ridge gourd has recently increased due to increased consumer knowledge of its anti-biotic and nutritional properties. There is a need to analyze genetic diversity and exploit it for crop development. Many novel varieties and hybrids have been generated as a result of the efforts of many vegetable breeders in crop improvement.

Variability in cucurbitaceous crops occurs in the form of land races, traditional cultivars, wild relatives form and related non edible wild weedy species. In India little attention has been given for the genetic improvement of ridge gourd by collecting diverse germplasm, their morphological characterization and assessing the variability parameters like co-efficient of variation, co-efficient of correlation and path analysis. The appropriate breeding methodologies for genetic improvement of this crop may be used to simultaneously improve different characters, information regarding mutual relationships among the characters and the direction of correlation analysis provide an effective mean of determining direct and indirect effect of association among variables.

The crop improvement work should be focused on selection of genotypes for better yield and quality. Selection is a basic part of all vegetable crop improvement programme and it is as old as cultivation itself. Morphological characteristics can be used to distinguish genotypes against highly heritable and stable phenotypes. Furthermore, every morphological parameter can be linked to desired qualities or yield components. It's important to identify a species, to classify the species into different group and to give an idea about the crop canopy.

Ridge gourd highly cross-pollinated vine vegetable crop with a broad range of variations were observed for most of the economically important traits. Fruit variations in shape, size and colour are considered to be the most noticeable. The majority of the ridge gourd hybrids released from India have very long sized fruits, which are not liked by consumers and reduce the ridge gourd's marketability as a vegetable. There is wide range of variability available among different ridge gourd genotypes for qualitative and quantitative characters. A critical assessment of variability is required for any efficient breeding effort and allows for the

identification of superior lines with desirable fruit production and quality. In terms of variability, it is the genetic portion of the observed variability that offers a degree of transmission of the variation under study and responds to selection. Genetic variability present in population is depend on the character association, cause and correlation, heritability and genetic advance, breeders can make effective selection in a breeding programme. One of the most important needs for improved cultivars is varietal homogeneity. Variability, on the other hand, is greatly wanted in germplasm collection and conservation efforts since genetic variation, whether existing or created, is the initial step in every crop development programme (Singh, 2000). Knowledge of genetic variation among existing cultivars of any crop is critical for long-term success in breeding programmes and maximization of germplasm resources (Belaj *et al.*, 2002).

The correlation co-efficient gives, an idea of the nature and intensity of association between two or more quantitative characters. It measures the common relationship between yield and yield contributing characters. Thus, correlation helps in the selection of superior genotypes from diverse genetic populations. The number of factors involved in correlation studies, their indirect association become more complex and confusing but path co-efficient analysis helps to avoid this complication by measuring the direct influence, if one character upon other as well as permit the partitioning of a given correlation co-efficients into its components of direct and indirect effects. The overall path co-efficient analysis studies specify the causes and measure the relative importance of each temporary factors. The path co-efficient analysis is also an effective means of analyzing direct and indirect causes of association and permit the critical examination of the specific that produce a given correlation. The path analysis provides information about magnitude and direction of direct and indirect effects of the yield's components, which cannot be provided by correlation.

Though the literature in respect of germplasm evaluation variability, correlation, path analysis and characterization studies in ridge gourd is not miserable but these are based on testing of limited number of genotypes. Furthermore, the results of previous studies on such topics are only applicable to the materials and conditions involved in the specific study and cannot be generalized. As a result, investigations on the above characteristics of the available genotype in the environment, where it is to be used are critical for the successful application of germplasm resources in the development of superior cultivars. Therefore, the present study entitled **“Characterization and variability studies in ridge gourd genotypes”** has been designed to carry out with a set of genotypes with the following objectives:

1. To characterize different ridge gourd genotypes on the basis of morphological and quantitative parameters
2. To study the extent of genetic variability among different genotypes of ridge gourd
3. To study the correlation and path co-efficient analysis of yield and its contributing traits

CHAPTER II

REVIEW OF LITERATURE

Ridge gourd is one of the most prominent cucurbitaceous vegetables growing in our country. This crop has grown in importance in terms of area, productivity and contribution to human nourishment. The primary goal of a vegetable breeder is to improve the plant's quantitative and morphological characteristics. To attain the specified objective, it is important for understanding the genetic architecture of the key characters as well as their inter-relationships.

The information in breeding materials on the nature and magnitudes of genetic variability as well as the extent of environmental influence on the traits, is extremely valuable in developing desirable genotypes. During the course of this investigation, the relevant and available literature on various aspects studied in ridge gourd and similar type of studies in other crops was reviewed briefly.

The current study attempted to investigate genetic variability, heritability, genetic advance, character association and path co-efficient analysis in genotypes of ridge gourd. Under the following section, the available literatures relating to the investigation are reviewed. Because the literature on ridge gourd was limited, attempts were made to acquire reviews on similar cucurbit crops.

2.1 Characterization of genotypes

2.2 Genetic variability

2.3 Heritability

2.4 Genetic advance (% of mean)

2.5 Genotypic and phenotypic correlation co-efficient

2.6 Path co-efficient analysis

2.1 Characterization of genotypes

Kalyanrao *et al.* (2016) conducted experiment on the bottle gourd with fifteen genotypes. Multivariate techniques applied for morphological data sets demonstrate that introducing a component of morphological characters of bottle gourd cultivar. A morphometric analysis of quantitative traits showed that variation was relatively high among the bottle gourd genotypes studied.

According to Rambabu *et al.* (2017), the results discovered that out of twenty-one genotypes of bottle gourd, the greatest variation in fruit traits was recorded, especially fruit colour and fruit shape for various traits studied.

Jahan *et al.* (2019) conducted experiment on the ridge gourd with 40 genotypes. The result revealed that the wide variation observed in the qualitative traits for leaf size, leaf shape, fruit shape and flesh texture among genotypes.

Sekerci *et al.* (2020) revealed that the high morphological variation among the 36 genotypes of ornamental pumpkin was noted in terms of plant, leaf and fruit traits.

In sponge gourd, Mavi *et al.* (2021) compared the thirty-five genotypes were in terms of forty-nine different morphological traits. However, no variations were identified between the genotypes for the observations made on these forty-nine traits regarding cotyledon colour, stem shape, tendrils, leaf margin, growth habit, sex type and peduncle separation from fruit.

Rahman *et al.* (2021) studied on fifteen genotypes of bitter gourd. The result revealed that the most of the diversity were found in leaf characters, flower, ovary length, fruit characters and seed characters among the genotypes.

2.2 Genetic variability

The degree of variation in the germplasm determines the success of a breeding programme. The extent of variation present among individuals of a population or species for one or more features at the genotypic or phenotypic levels is referred to as variability.

For all of the attributes studied, the estimates of genotypic co-efficient of variation were found to be lower than the estimates of phenotypic co-efficient of variation Singh *et al.* (2002). High phenotypic co-efficient of variation (PCV) and genotypic co-efficients of variation (GCV) were found for node number for initial male flower appearance, sex ratio on total vine, main axis and branches, fruits per vine, fruit weight, number of seeds per fruit and yield per vine. Genotypic co-efficients of variation (GCV) and phenotypic co-efficient of variation (PCV) values were nearly identical for the majority of ridge gourd characters.

Dey *et al.* (2005) studied 17 characteristics for 38 indigenous bitter gourd genotypes and discovered diversity in fruit weight, number of fruits per vine, flesh thickness, number of days from fruit set to maturity, fruit length and fruit diameter.

For thirty-six snake gourd genotypes, Narayanankutty *et al.* (2006) determined values for several genetical factors. The highest phenotypic and genotypic co-efficients of variation were observed in the seeds per fruit, fruit yield, fruit weight and fruits per vine. Considerable GCV values indicate high genetic variability among genotypes and the potential for improving these traits through simple selection.

Ram *et al.* (2006) discovered the highest phenotypic and genotypic co-efficients of variation for number of seeds per fruit (8.59). A moderate magnitude PCV was reported for the number of fruits per vine. Days to edible maturity from fruit set, number of fruits per vine, length of fruit and diameter of full-grown ridge gourd fruit all had moderate values.

Kumar *et al.* (2007) conducted a field experiment with 20 bottle gourd genotypes, which revealed a high level of variability among genotypes as PCV was higher than GCV. GCV were comparatively high for fruit yield per vine, vine length, number of branches per vine, node number of first female flower, node number of first male flower and weight of 100-seed, and PCV were comparatively high for fruit yield per vine.

The level of variability contained in 46 bitter gourd accessions was evaluated and the results revealed that the highest GCV values were observed for the number of primary branches per vine and fruit weight. GCV values were moderate for days to first female flower opening, days to first fruit harvesting, 100-seed weight and node to first female flower appearance. Fruit diameter had low GCV values, indicating that there was little room for improvement by selection Raja *et al.* (2007).

The higher PCV than GCV indicated that the environment played a greater effect in the manifestation of ridge gourd characteristics. According to Choudhary *et al.* (2008) the genotypic and phenotypic co-efficients of variation were highest for fruit weight (38.75 and 38.28), yield per vine (135.68 and 35.56), fruit length (25.89 and 24.44), node at which first female flower appears (25.39 and 23.41) and fruits per vine (22.00 and 20.26), respectively.

Khan *et al.* (2009) conducted an experiment with 24 accessions of pointed gourd. The results showed that the most genotypic variance was seen in fruits per vine (13141), followed by fruit yield (104) and fruit weight (73.41). However, there was significant phenotypic variation in fruit number (13646), yield (105), fruit weight (73.84) and pulp weight per fruit (79.14). Fruit length (0.76) and fruit diameter (0.76) had the lowest phenotypic variation (1.01). Number of fruits (5415%), fruit yield (410%), fruit weight (172%) and fruit weight per vine all showed moderately high GCV (162%). This indicated the presence of the greatest degree of genetic variation. Fruit number (5623%), yield (411%), fruit weight (173%) and fruit weight per vine all had high PCV (161%).

In ridge gourd, the maximum GCV (29.40) was found in the node to first female flower opening, followed by the number of marketable fruits per vine (25.48) and the highest PCV (32.29) was found in the node to first female flower opening Choudhary and Kumar (2011).

For genetic factors, a wide range of bottle gourd genotypes were investigated. Fruit yield per vine, fruit weight and number of fruit per vine all revealed significant GCV and PCV, however fruit diameter had a low genotypic co-efficient of variation reported by Husna *et al.* (2011). However, PCV was more than GCV for all characters, as is expected. Phenotypic differences were always more than genotypic differences.

According to Samadia (2011), the highest PCV and GCV estimates were found in ridge gourd fruit yield per vine, fruit weight and fruit length. The differences in phenotypic and genotypic co-efficients of variation were lower, indicating that environment had little influence on character expression. High GCV values indicate high genetic variability among genotypes, implying that there is more room for improvement of these traits through simple selection.

Rabbani *et al.* (2012) evaluated 60 ridge gourd landraces and found that the GCV was lower than the PCV for all of the characters, indicating that the environment had an effect on the expression of the characters to some extent. They also found a low difference between the GCV (58.0%) and the PCV (59.67%). The fruit yield per vine had the highest GCV and PCV.

Radha Rani (2012) studied 14 ridge gourd genotypes and discovered that the phenotypic co-efficient of variation was greater than the genotypic co-efficient of variation for the majority of the variables studied. Fruit length, number of fruits per vine and fruit yield all had rather large phenotypic and genotypic co-efficients of variation. Fruit length (18.25 cm) had the highest GCV estimate, followed by fruit yield per vine (15.54 kg) and number of fruits per vine (12.32). The fruit yield per vine (20.31), fruit length (19.54 cm) and number of nodes at first harvest all had high PCV (13.35).

According to Dubey *et al.* (2013), the PCV in ridge gourd vine length was highest (27.91%), followed by fruit length (26.12%), fruit yield per vine (21.91%) and fruit diameter (19.38%) in that order. A fairly moderate PCV was reported for days to first female flower anthesis (10.81%), fruit weight (11.46%), number of branches per vine (12.05%) and days to first male flower (12.37%). Fruit length (23.79%), vine length (22.89%) and fruit production per vine had the highest GCV estimates (20.52%).

According to Dubey *et al.* (2013a), the PCV and GCV were highest in fruit length (28.03 and 24.18, respectively), followed by fruit yield per vine (19.56 and 14.35), vine length (17.06 and 14.33), fruit diameter (19.38 and 16.12) and number of fruits per vine (18.65 and 16.07). Days to first harvest (5.06 and 4.02), days to first male flower anthesis (7.10 and 5.76) and days to first female flower anthesis (7.15 and 5.83), respectively, had comparatively low PCV and GCV, indicating less potential for ridge gourd development.

Kumar *et al.* (2013) investigated the performance of 20 sponge gourd genotypes. Total fruit yield per vine, number of seeds per fruit and average fruit weight all had high PCV and GCV values. The high magnitude of GCV demonstrated the wider extent of variability existing for the features, indicating good potential for improvement through crop selection.

Basumatary *et al.* (2014) conducted a field experiment with 15 local spine gourd germplasm. The highest GCV was observed in the number of primary branches (27.65%), followed by the node at which the first female flower appeared (20.77%), fruit yield per vine (20.37%) and fruit length (19.71%), respectively. Whereas, the highest PCV was observed in the number of primary branches (27.88%), node at which the first female flower appeared (20.92%), fruit yield per vine (20.90%) and fruit length (20.45%).

Choudhary *et al.* (2014) found that the PCV of ridge gourd was consistently greater than the comparable GCV due to environmental effect. They measured the magnitude of PCV and GCV in fruit length (25.39 and 24.56) and the node at which the first hermaphrodite flower appeared (24.70 and 21.83), respectively. In terms of days to first fruit harvest and number of fruits per vine, the difference between PCV and GCV was small, indicating that the environment had less influence on the expression of these traits.

Singh *et al.* (2014) discovered a higher degree of variation in phenotypic and genotypic variance among the bitter gourd characters evaluated. Fruit yield per vine showed the most

diversity, followed by fruit length. The range in branches per vine, vine height, fruit diameter, fruits per vine, fruit weight and seeds per fruit was low. In their investigation, all of the parameters except fruit weight revealed narrow variances in GCV and PCV values, demonstrating variability due to genetic constitution.

The PCV increased for all ridge gourd characters and the genetic variability did not demonstrate any coherent pattern of change. PCV and GCV were low in the days to first female flower opening, days to 50% flowering, days to first harvest and days to last harvest. PCV and GCV were moderate in fruit diameter. A greater PCV and moderate GCV were found in a few of branches at 45 DAS. The provided materials' high variability available for biochemical parameters such as chlorophyll, number of branches at 90 DAS and fruit yield per vine would be very valuable for selection. Koppad *et al.* (2015) discovered this finding.

According to Khatoon *et al.* (2016), the phenotypic and genotypic variations in ridge gourd were highest for vine length (5682.80 and 3769.73), respectively and lowest for fruit yield per vine (0.73 and 0.49). PCV and GCV were highest for fruit yield per vine (27.62 and 22.52%). Crop duration, on the other hand, had the lowest (8.79 and 5.92%).

Bhargava *et al.* (2017) concluded that in ridge gourd genotypes, the GCV and PCV were high for number of node to anthesis of first male flower followed by number of node to anthesis of first female flower, days to anthesis of first male flower, days to anthesis of first female flower, average fruit length (cm), days to first fruit harvest, vine length (cm), number of nodes per vine, number of primary branches per vine, fruit diameter (cm), number of fruit per vine, fruit weight (g) and marketable fruit yields per vine (kg).

Ananthan and Krishnamoorthy (2017) investigated ridge gourd genetic variability. The genotypes had a higher percentage of genotypic co-efficient variability, phenotypic co-efficient variability and genetic advance with fruit yield per vine (31.55, 32.86 and 62.39), respectively.

Sharma *et al.* (2017) assessed 15 sponge gourd genotypes and found that PCV was higher than GCV for all characteristics, including number of nodes to first male flower, vine length at 15 DAS, number of nodes to first female flower and number of leaves per vine at 15 DAS.

In ridge gourd, Manoj *et al.* (2018) found that the genotypic co-efficient of variation (GCV) was low relative to the phenotypic co-efficient of variation (PCV) for all traits. GCV and PCV values were highest for male female flower ratio, leaf area index, leaf area, fruit yield per vine and fruit yield per hectare.

In sponge gourd, according to Abhijeet *et al.* (2018), the highest phenotypic (PCV) and genotypic (GCV) co-efficient of variation was observed in the case of number of node to anthesis of first male flower (PCV=40.09) and (GCV=36.20), followed by number of node to anthesis of first female flower (PCV=31.82) and (GCV=30.26), average fruit weight (g) (PCV=27.07) and (GCV=25.59), number of fruits per vine (PCV=26.05) and (GCV=25.10)

and fruit length (cm) (PCV=24.87) and (GCV=23.78), whereas, Days to first marketable fruit harvest had the lowest PCV and GCV (PCV=8.89) and (GCV=7.07) followed by days to anthesis of first female flower (PCV=10.09) and (GCV=8.56).

Harshitha *et al.* (2019) indicated significant variability among the ridge gourd genotypes with high PCV and GCV were recorded for parameters like number of primary branches, vine length, number of nodes per vine, internodal length, number of nodes to first staminate and pistillate flower, number of fruits per vine, fruit yield per vine, total chlorophyll content, crude protein, vitamin C, seed yield per vine and number of seeds per fruit, indicating that high extent of variability was present in the genotypes for these characters, thus specifying scope for improvement of these characters through simple selection.

Kannan *et al.* (2019) investigated ridge gourd genotypes from two crosses, Virudhunagar Local x Periyakottai Local ($L_3 \times T_1$) and Virudhunagar Local x Alathur Local ($L_3 \times T_2$), along with their parents, in a randomised block design (RBD) with two replications. The results revealed selection for vine length in crosses $L_3 \times T_1$ and $L_3 \times T_2$, days to first female flowering in crosses $L_3 \times T_1$ and $L_3 \times T_2$, node to first male flower in crosses $L_3 \times T_1$ and $L_3 \times T_2$, sex ratio in crosses $L_3 \times T_1$ and $L_3 \times T_2$, days to first harvest in crosses $L_3 \times T_1$ and $L_3 \times T_2$, fruit diameter in crosses $L_3 \times T_1$ and $L_3 \times T_2$ and rind thickness in crosses $L_3 \times T_2$ would not be effective due to low PCV and GCV values.

Kumar *et al.* (2019) discovered that among 45 sponge gourd genotypes with range of all parameters, there was a wide variation among the genotypes collected. Fruit weight (74.96 to 184.29 g) had the highest range of variance, followed by fruit length (11.37 to 25.54 cm). The seed index had the lowest range (10.73 to 13.01). The PCV were higher than the corresponding GCV, which is expected depending on environmental influence. PCV and GCV were found greater magnitude (>20.01%) in the number of primary branches (24.56%, 24.94%), number of fruiting nodes on main stem (34.46%, 34.67%), sex ratio (22.29%, 24.35%), fruits per vine (22.97%, 23.61%) and yield per vine (44.16%, 46.66%).

Akhila and Singh (2020) discovered that in eighteen ridge gourd genotypes, the genotypic and phenotypic co-efficients of variation revealed that the highest magnitude of genotypic co-efficient of variation (GCV) was recorded for fruit yield per ha (29.50), average fruit weight (9.50) and fruit length (27.18) and node to first female flower (20.13). Fruit yield per ha (30.08), average fruit weight (30.08), fruit length (27.53) and node to first female flower (20.01) had the highest magnitude of phenotypic co-efficient of variation (PCV).

Vijayakumar *et al.* (2020) revealed that in ridge gourd, the low percentage phenotypic co-efficient of variation (PCV) and genotypic co-efficient of variation (GCV) were recorded in traits such as days to first staminate flower opening (6.40; 4.62), days to first pistillate flower opening (9.57; 7.54), node to first staminate flower (7.83; 5.19), node to first pistillate flower (8.28; 3.62), male-female flower ratio (6.11; 5.73), vine length (6.57; 4.22), days to first harvest

(6.47; 4.72), number of fruits per vine (6.51; 5.16), fruit weight (9.38; 7.77), fruit diameter (cm) (8.47; 7.03), rind thickness (10.93; 5.21) and flesh thickness (9.22; 8.10).

Kumar *et al.* (2020) discovered that, despite the wide range of genetic variability in the material, the mean sum squares attributed to genotypes were significant for all characters in 30 sponge gourd genotypes. For all traits studied, the phenotypic co-efficient of variation (PCV) was higher than the genotypic co-efficient of variation (GCV). The genotypic and phenotypic co-efficients of variation were moderate to low for all characters except vine length (39.53, 40.09%) followed by node number to anthesis of first male flower (33.12, 34.13%) and lower value days to anthesis of first male flower (12.57, 13.69%) and days to anthesis of first female flower (13.69, 14.78%).

Chinthalapudi *et al.* (2021) discovered in ridge gourd that the node of first male flower, node of first pistillate flower, number of staminate flowers per vine, male-female flower ratio, fruit set percentage, fruit weight, rind thickness, number of seeds per fruit, number of fruits per vine and fruit yield per vine had high phenotypic co-efficients of variation (PCV) and genotypic co-efficients of variation (GCV).

In ridge gourd, Vinitha *et al.* (2021) studied that highest GCV was observed for fruit weight (55.85) followed by fruit length (38.29) and yield per vine (24.99). Moderate GCV was observed for traits like number of fruits per vine (15.83), days to first fruit harvest (15.66), node at which first pistillate flower appear (13.63), vine length (cm) (13.32) and fruit girth (12.28). Highest PCV was observed for fruit weight (58.19), fruit length (39.61), number of fruits per vine (30.02) and yield per vine (27.37). Days to first fruit harvest contributed a PCV range of 18.29, vine length with 13.88, node at which first pistillate flower appear with 14.85 and fruit girth (12.85) possess moderate range of PCV. The values of PCV were slightly greater than the GCV.

Panda *et al.* (2022) revealed that in ridge gourd genotypes, the high GCV and PCV were reported for number of fruit per vine and fruit yield per vine indicating high variability available in the genotypes for these characters for further improvement.

2.3 Heritability

Heritability refers to the ability of traits to be passed down from parents to offspring. The effectiveness of genotypes selection is determined by heredity. The genetic component of variation is significant in crop development, since it is the sole component that is passed down to the following generation. Heritability is defined as the genotypic variance divided by the phenotypic variance. The heritability is referred to as broad sense heritability and it is a useful tool in the breeder's selection process. Several studies on ridge gourd heredity for growth, quality, yield and yield components have been published. The following is a review of the heritability literature for several characters.

Singh *et al.* (2002) recorded high heritability for node number for appearance of first male and female flower (90.48 and 93.5), respectively, length of main axis (98.98), number of primary branches (83.87), sex ratio (94.39), fruit set (67.57%), fruit length (88.10), fruit weight (94.18), seeds per fruit (98.89), 100-seed weight and fruit yield per vine (86.64) in ridge gourd.

Narayanankutty *et al.* (2006) discovered a high level of genetic variation in germplasm collections after studying the genetic components of thirty-six snake gourd genotypes. Fruit yield, fruit weight and seeds per fruit all revealed high heritability and genetic gain values, indicating that additive gene effects are important in affecting these variables.

Ram *et al.* (2006) showed the highest heritability value (%) in *Luffa* for the number of seeds per fruit (96.8), followed by fruit yield per hectare (95.1) and average fruit weight (94.0), while the lowest value was obtained for 100-seed weight (62.6). Because of the high heritability, traits may be driven by additive gene action and phenotypic value may provide a reasonable and reliable measure of genotypic variance in ridge gourd crop improvement.

The experiment was carried out using 46 bitter gourd genotypes Raja *et al.* (2007). Except for fruit diameter, the data revealed that the magnitude of heritability was far higher for all of the traits. Fruit weight yield per plot, fruit length, number of fruits per plot and number of female flowers per vine all had a high heritability percentage.

In ridge gourd, the high heritability in broad sense were obtained by Choudhary *et al.* (2008) for all the characters except internodal length, vine length and number of primary branches per vine. The high heritability was obtained for fruit weight (97.6), days to first fruit harvest (91.0) fruit length (89.1) and yield per vine (88.51).

In ridge gourd, Choudhary and Kumar (2011) showed that heritability were high for all parameters except number of branches per vine, days to first female bloom and days to first fruit harvest.

Husna *et al.* (2011) investigated broad sense heritability among several characteristics of thirty-three bottle gourd genotypes. High heritability were recorded for yield per vine and fruit weight (91.6%), followed by sex ratio (89.39%), fruit length (88.71%) and fruit weight (87.97%) demonstrating the presence of additive genes effect and indicating that selection for genetic improvement for this trait would be effective and the remaining traits show moderate heritability.

In this study, Samadia (2011) concluded strong heritability for fruit length, fruit weight, fruit yield per vine, mature fruit length, days to anthesis of first staminate and pistillate flower, days to first harvest and number of seeds per fruit on ridge gourd, however it is moderate for number of fruits per vine.

Mladenovic *et al.* (2012) observed in bottle gourd that heritability for vine height, fruit weight, fruit length, fruit diameter and number of seeds per fruit were high (>90%). Other bottle gourd character, such as fruit length and seed length, had heritability values ranging from

83.55% to 86.43%. The heritability of 100-seed weight, on the other hand, was found to be slightly lower (78.29%).

Rabbani *et al.* (2012) investigated sixty genotypes of ridge gourd and discovered that the high heritability (94.16%) indicated a low influence of environment to the phenotypic. Five of the 14 investigated traits were shown to be highly heritable (above 80%), including sex ratio, 100 seed weight, number of fruits per vine, average fruit weight and fruit yield per vine, while the others exhibited moderate heritability (50-80%).

Dubey *et al.* (2013) found that high heritability (b.s.) for fruit yield per vine (87.7%), fruit length (82.95%), days to first male flower anthesis (81.55%), days to first fruit harvest (81.50%), days to first female flower anthesis (77.88%), number of fruits per vine (71.27%) and fruit diameter (69.22%,) indicated negligible environmental effect in the appearances of these traits. These characteristics can be given special consideration in ridge gourd selections.

Dubey *et al.* (2013a) concluded the high heritability (in the broad sense) for fruit length (74.45%), number of fruits per vine (74.32%), number of branches per vine (70.06%) and fruit diameter (69.22%) suggested negligible environmental influence in ridge gourd expression of these traits. Fruit yield per vine (53.80) had the lowest heritability, followed by average fruit weight (55.29).

To determine heredity, a field experiment was undertaken in sponge gourd Kumar *et al.* (2013). High heritability ranged from 78.72% (days to maturity) to 98.17% for all 14 traits investigated (number of seeds/fruit). Out of the 14 characters investigated, the number of seeds/fruit (98.17%), average fruit weight (97.60%), number of primary branches/vine (92.47%), number of fruits/vine (91.54%) and Total yield/vine (97.13%) exhibited high heritability, indicating that these two characters had additive gene effects and are thus more trustworthy for effective selection.

Choudhary *et al.* (2014) discovered that heritability (in the broad sense) was significant (>70%) for ridge gourd fruit length (93.5%) and node at which first hermaphrodite flower occurred (78.0%), indicating that there is enough chances for varietal improvement through selection.

Singh *et al.* (2014) assessed the broad sense heritability of 25 bitter gourd genotypes. The heritability was quite high for all of the qualities investigated, demonstrating that environment had little influence on the expression of these traits, implying the presence of additive gene effects. Days to first male and female flower anthesis had the highest heritability estimates, followed by fruit yield per vine, branches per vine, fruit diameter, fruit length, fruits per vine and average fruit weight.

The heritability of the number of branches at 45 DAS is low (7%). On the other hand, the number of fruits per vine has a high heritability (73%). Days to 50 percent flowering (100%), days to harvest (87%), vine length (88%) and number of branches at 90 DAS (90%)

also have high heritability. Fruit yield per vine (62%), average fruit weight (58%), days to last harvest (56%) and fruit length (67%) all have considerable heredity. In the case of ridge gourd, Koppad *et al.* (2015) showed that the biochemical trait chlorophyll has a high heritability of 98% and is under the control of additive gene activity.

In ridge gourd, Khatoon *et al.* (2016) found that vine length, number of nodes per vine, number of nodes to first female flower, days to first male flower anthesis, days to first female flower anthesis, days to first fruit harvest, fruit length, fruit diameter, number of fruits per vine and fruit yield per vine had high heritability.

Bhargava *et al.* (2017) examined the heritability in 29 distinct ridge gourd genotypes. Except for weight per fruit, all of the traits had a high value of broad sense heredity. Node number to anthesis of first male flower (95.1%), followed by node number to anthesis of first female flower (91.1%), days to anthesis of first male flower (71.4%), number of nodes per vine (68.1%), average fruit length (64.8%), days to anthesis of first female flower (62.3%), vine length (55.3%), average fruit weight (54.2%), days to first fruit harvest (46.8%), average fruit diameter (43.4%), number of primary branches per vine (42.9%), number of fruit per vine (41.1%) and marketable fruit yields per vine (84.8%).

Manoj *et al.* (2018) studied in 35 ridge gourd genotypes that the high heritability coupled with high genetic advance as per cent mean observed for sex ratio, leaf area, chlorophyll content, leaf area index, fruit length, fruit set (%), fruits weight, rind thickness, flesh thickness, days to first harvest, fruit yield per vine and fruit yield per hectare.

Abhijeet *et al.* (2018) discovered high heritability with high genetic advance in per cent of mean were observed for number of node to anthesis of first female flower (90.4 and 59.27), number of node to anthesis of first male flower (81.5 and 67.33), average fruit weight (89.4 and 49.85) and number of fruits per vine (92.8 and 49.83) exhibiting additive gene effect and selection for these traits is reliable for developing high yielding cultivar of sponge gourd.

Harshitha *et al.* (2019) recorded heritability mixed with genetic gain (GAM) are more useful than heredity alone in projecting the resulting effect for selecting the best individuals. High GAM was found for the number of primary branches per vine, vine length, number of nodes per vine, days to anthesis of first male flower and number of nodes to first male and female flower, indicating that the characters were governed by additive genes and that selection will be beneficial for improving such characters.

In sponge gourd Kumar *et al.* (2019) found high heritability (>60%) and genetic advance as a percentage of mean (>20%) estimates for vine length, number of primary branches, number of fruiting nodes on main stem, sex ratio, fruits per vine, yield per vine, days to pistillate flower opening, days to 50% flowering, node at first female flower, fruit length, fruit diameter, fruit weight and number of seeds per fruit, respectively.

Kannan *et al.* (2019) was selected ridge gourd genotypes from two crosses: Virudhunagar Local x Periyakottai Local ($L_3 \times T_1$) and Virudhunagar Local x Alathur Local ($L_3 \times T_2$). Both crossings shown high heritability and genetic advance for the characteristic's node to first male flower, node to first female flower, number of fruits per vine, flesh thickness, fruit length in both crosses and rind thickness and fruit weight in cross $L_3 \times T_1$.

Kumar *et al.* (2020) reported that in 30 sponge gourd genotypes, high heritability coupled with high genetic advance was estimated for most of the characteristics, including vine length (97.24, 80.31%), number of node to anthesis of first male flower (94.21, 66.23%) and number of fruits per vine (92.49, 45.65%) indicating that these characteristics showed additive gene effect and are more dependable for effective selection.

In ridge gourd, Akhila and Singh (2020) found that the heritability estimate was high (>60) for almost all of the characters, including vine length at 90 DAS (94.90), days to first pistillate flower (75.80), days to first staminate flower (78.70), node to first staminate flower (99.10), node to first pistillate flower (91.80), days to 50% flowering (83.20), days to first harvest (77.30), days to last harvest (89.40), fruit length (97.40), fruit diameter (96.50), rind thickness (94.50), flesh thickness (95.20), number of fruits per vine (87.40), average fruit weight (91.70), fruit yield per vine (92.40) and fruit yield per ha (91.70).

In ridge gourd, Vijayakumar *et al.* (2020) the results revealed that high heritability along with high genetic advance as percentage of mean recorded for the character fruit length (13.14, 14.06% and 87.44, 25.32%), respectively. Whereas, low heritability along with low genetic advance was recorded for the character node to first female flowering (3.62, 8.28% and 19.15%, 3.26%) and rind thickness (5.21, 9.93% and 22.74, 5.12%).

Chinthalapudi *et al.* (2021) studied in ridge gourd that the high heritability coupled with high genetic advance were observed for node of first staminate flower (61.84%), node of first pistillate flower (95.74%), number of staminate flowers per vine (99.93%), number of pistillate flowers per vine (98.80%), sex ratio (99.28%), fruit set (98.77%), fruit length (98.46%), fruit girth (96.95%), average fruit weight (99.70%), rind thickness (99.88%), flesh thickness (90.75%), number of seeds per fruit (99.89%), number of fruits per vine (96.39%) and fruit yield per vine (99.37%) indicating these characters are governed by additive gene action.

Vinitha *et al.* (2021) observed in ridge gourd, the degree of heredity ranges from 27.80 to 93.44 per cent. Fruit length had the highest heritability (93.44%), followed by vine length (92.12%), fruit weight (92.08%), fruit girth (91.35%), node at which first pistillate flower opening (84.21%), yield per vine (83.39%) and days to first harvest (73.31%). The number of fruits per vine had a low heritability (27.08%).

2.4 Genetic advance (% of mean)

The term "genetic advance" refers to the amount of progress that can be made by using selection in a population. Since heritability estimates provide no indication of the amount of progress expected from selection, they are most useful when combined with evaluations of genetic progression. High genetic progress combined with high heritability indicated stronger additive gene action Panse and Sukhatme (1967).

Several researchers have reported genetic advances in ridge gourd and allied crops for growth, morphology, quality, yield and yield characters. The reviews of literature on genetic advance as a percentage of mean for several characters are shown below.

Singh *et al.* (2002) observed in ridge gourd, that the high heritability coupled with high genetic advance (%) was observed for number of node to first staminate and pistillate flower, length of main axis, number of primary branches, sex ratio, fruits per vine, fruit set, fruit length, fruit weight, seeds per fruit, 100-seed weight and yield per vine indicating greater scope of improvement in ridge gourd through selection.

Evaluations of genetic advance of thirty-six snake gourd genotypes indicated that heritability combination with genetic advance are more useful in selecting superior genotypes. Narayanankutty *et al.* (2006) reported high heritability with high genetic advance was observed for fruit yield, fruit weight and seeds per fruit.

Ram *et al.* (2006) discovered in twenty-four accessions of *Luffa hermaphrodita* were evaluated for 12 economic characters to study genetic advance. The result showed that genetic advance values varied from 0.64 for diameter of full-grown fruit to 65.22 for number of seeds per fruit. The GAM ranges from 15.78 for 100 seed weight to 89.38 for number of seeds per fruit.

In ridge gourd Choudhary *et al.* (2008) fruit weight showed the maximum genetic advance (63.47) followed by fruit length (8.65), days to first fruit harvest (7.96) and fruits per vine (7.661). High heritability along with high genetic advance was observed for fruit weight and fruit length.

Choudhary and Kumar (2011) indicated that high genetic advance and high genetic advance as per cent of mean for node to first female flower (8.04 and 55.14), fruit length (8.93 and 42.84), marketable fruits per vine (10.17 and 47.54) and fruit weight (38.12 and 45.27), respectively, indicating the presence of additive gene action among ridge gourd genotypes.

Samadia (2011) found that high genetic advance as percentage of mean was observed for fruit length, fruit weight, fruit yield per vine, mature fruit length and number of seeds per fruit, whereas, it is moderate for number of fruits per vine. Low genetic advance was observed for days to anthesis of first male and female flower and days to first harvest. Since, these characters are governed by non-additive gene action hybridization followed by selection may be used for ridge gourd crop improvement.

Estimates of expected genetic advance as per cent of mean ranged from 9.03 for vine length to 35.11 for fruit length of ridge gourd Radha Rani (2012). High heritability values were associated with high values of expected genetic advance as per cent of mean for fruit length, number of fruits per vine, node number at first fruit harvested and moderate values for fruit diameter.

Ten ridge gourd accessions were evaluated to estimate genetic advance Dubey *et al.* (2013). The high GAM was observed for fruit length (44.63) followed by fruit yield per vine (39.58) and vine length (38.66). In sponge gourd Kumar *et al.* (2013) revealed that out of 14 characters studied, number of seeds per fruit and average weight of fruit showed high heritability coupled with high genetic advance.

Dubey *et al.* (2013a) reported high genetic advance for vine length (43.25) followed by average fruit weight (40.62) and low GA was observed for number of branches (0.98) and fruit yield per vine (0.76) in ridge gourd genotypes.

Choudhary *et al.* (2014) conducted research to conclude genetic advance in ridge gourd. Fruit weight had the highest genetic advance and GAM (6.39 and 23.59), followed by fruit length (5.91 and 48.88), respectively.

Singh *et al.* (2014) indicated high heritability coupled with high genetic advance as per cent of mean was observed for fruit length (93.53), yield per vine (81.25), fruit diameter (67.36), fruit weight (65.07), number of branch per vine (62.04) and seeds per fruit (53.77) indicating the possible role of additive gene action in bitter gourd.

In ridge gourd, Koppad *et al.* (2015a) reported that the genetic advance (GA) was the high for fruit yield per vine (515.39%) and the lowest for flesh thickness (0.23%) followed by average fruit weight (0.26%). The GAM was highest for fruit yield per vine (41.30) and lowest was observed for fruit diameter (6.42).

Khatoon *et al.* (2016) reported high genetic advance for vine length (103.01%). However, a low value was observed in fruit yield per vine (1.17%). This study on mean performance found that vine length, pedicel length, number of fruits per vine, fruit length, fruit diameter and average fruit weight were the most relevant traits for enhancing genotypes for higher yield and could be used for selection in ridge gourd.

The highest genetic advance was recorded for number of nodes per vine (12.00%) followed by days to anthesis of first staminate flower (9.65%), number of node to anthesis of first staminate flower (8.24%), days to anthesis of first pistillate flower (7.49%), number of node to anthesis of first pistillate flower (7.22%), average fruit length (8.14%), average fruit diameter (0.57%) days to first fruit harvest (5.74%), average fruit weight (8.18%), number of primary branches per vine (3.37%), vine length (0.54%), number of fruit per vine (2.01%) and marketable fruit yields per vine (0.97%) Bhargava *et al.* (2017).

Akhila and Singh (2020) discovered this in various ridge gourd genotypes. At 90 DAS, the mean genetic advance was highest for vine length (72.22) and fruit yield per vine (51.50). Genetic advance as per cent of mean was highest for vine length at 90 DAS (27.24), node to first staminate flower (32.36), node to first pistillate flower (39.73), fruit length (55.26), fruit diameter (29.00), rind thickness (37.10), flesh thickness (38.21), number of fruits per vine (28.63), average fruit weight (58.19), fruit yield per vine (37.24) and fruit yield per hectare (58.20).

Genetic advance as the percentage of mean estimated for several traits. The values ranged from (17.20% to 110.39%). No. of fruits per vine (17.20%) recorded lowest GAM. Higher degrees of GAM were recorded for node at which first female flower appear (25.76%), fruit weight (110.39%) followed by fruit length (76.25%), fruit girth (24.18%), yield per vine (47.03%), days to first harvest (27.63%) and vine length (26.33%) were observed by Vinitha *et al.* (2021).

In ridge gourd, Panda *et al.* (2022) discovered that the high heritability coupled with high genetic advance as per cent of mean was reported for fruit length, fruit weight, node to first female flower, seed per fruit, vine length and fruit weight.

2.5 Genotypic and phenotypic correlation co-efficient

Yield is a complex trait that is controlled by a polygenic system. Furthermore, it is highly influenced by environmental changes. Correlation analysis measures the natural relationship between different characters and aids in determining the component characters on which yield enhancement may be built. The correlation co-efficient measures the degree of relationship, either positive or negative. The observable correlation between two variables that includes both genotypic and environmental effects is known as phenotypic correlation. Genotypic correlation, on the other hand, is an inherent association between two variables that can be caused by pleiotropic gene action, linkage or both.

The expression of characters in a plant is the result of a chain of inter-relationships between characters, either directly or indirectly. Character correlations may be attributable to genetic linkage Harland (1939). Correlation co-efficient analysis reveals the components on which selection might be based for improvement by measuring the mutual relationship between distinct plant traits. The following is a review of the literature on correlation studies at both the phenotypic and genotypic levels.

Shah and Kale (2002) conducted a study on the correlation co-efficient analysis of yield components of 55 ridge gourd genotypes. The fruit weight per vine was found to be positively and strongly connected with the number of fruits per vine, average fruit weight and vine length, demonstrating that yield is closely tied to and dependent on these characteristics. Among 15 quantitative variables in ridge gourd, the magnitude of genotypic correlation co-efficients was greater than phenotypic correlation co-efficients for all traits tested Prasanna *et al.* (2002).

In bitter gourd, Dey *et al.* (2005) discovered that genotypic values were greater than phenotypic values. Fruit weight had the highest positive correlation with yield, followed by fruits per vine, fruit length and fruit diameter.

Narayanankutty *et al.* (2006) found a significant positive correlation between yield per vine and fruit weight, fruits per vine, fruit diameter, fruit length, days to first harvest and days to first female flower opening at both the genotypic and phenotypic levels. The number of fruits per vine, fruit length, fruit diameter and fruit weight all have a significant positive relationship with snake gourd yield. Number of seeds per fruit had a significant and positive correlation with snake gourd fruit diameter and weight, as well as days to first male flower opening and days to first female flower opening.

Ram *et al.* (2006) evaluated twenty-four *Luffa hermaphrodita* accessions and discovered that fruit weight and number of fruits per vine were positively and significantly associated with fruit yield, whereas, vine length and individual fruit weight were positively and significantly associated with days to first harvesting, while diameter of fruit and 100-seed weight were positively correlated with fruit yield. Fruit length was found to be positively related to the number of fruits per vine, the number of seeds per fruit and the seed weight per fruit. The fruit diameter has no positive or significant correlation with any of the characteristics studied.

According to Suchitra and Haribabu (2006), the association between fruit length, fruit weight, number of fruits per vine and number of seeds per fruit is positive and significant at both phenotypic and genotypic levels, *i.e.*, as the length of the fruit increases fruit weight and number of seeds also increases significantly. Vine length showed a positive and significant correlation with most of the characters except for fruit length and number of fruits per vine.

Choudhary *et al.* (2008) discovered that the genotypic correlation co-efficient was higher than the phenotypic correlation co-efficient for most ridge gourd characters except vine length, inter-nodal length and fruits per vine and that the yield had a positive and significant correlation with fruit length (0.513, 0.436) and fruit weight (0.875, 0.845), respectively at both the genotypic and phenotypic levels.

Khan *et al.* (2009) assessed twenty four pointed gourd accessions. According to the correlation co-efficient, the number of nodes at first harvest exhibited a positive relationship with single fruit weight, number of fruits per vine and fruit yield per hectare. However, the number of nodes at first harvest had a negative correlation with fruit length and fruit weight per vine. Days to first flowering were positively related to fruit diameter, number of fruits per vine, weight of fruit per vine and fruit yield. The number of fruits per vine had a significant positive correlation with the weight of fruits per vine (0.915) and fruit yield (0.813).

To learn more about the relationship between 14 quantitative characters in ridge gourd, the genotypic and phenotypic correlation co-efficient were evaluated Hanumegowda *et al.*

(2012). Fruit yield per vine was found to have a positive and significant correlation with the number of fruits per vine (0.889), average fruit weight (0.871), fruit yield per hectare (0.821), fruit length (0.795), fruit diameter (0.726), per cent fruit set (0.702), 100 seed weight (0.652) and seed yield per fruit (0.547) at the genotypic level. At the phenotypic level, the number of fruits per vine (0.862), average fruit weight (0.858), fruit yield per hectare (0.807), fruit length (0.784), fruit diameter (0.683), number of seeds per fruit (0.630), seed yield per fruit (0.643), per cent fruit set (0.540) and 100 seed weight (0.480) were recorded higher positive correlation with fruit yield.

The most significant association of yield per vine with reproductive characters was found in bottle gourd correlation studies, followed by fruit weight at the genotypic and phenotypic levels Husna *et al.* (2011). However, at both the genotypic and phenotypic levels, the number of male flowers had a significant and negative association with the ratio of male and female flower and fruit length.

According to Choudhary and Kumar (2011), the degree of genotypic correlation co-efficients was greater than the respective phenotypic correlation co-efficients in ridge gourd, were marketable fruits yield per vine had a positive and significant correlation with fruit weight (0.786) and fruit length (0.448) at phenotypic level. At the phenotypic level days to first fruit harvest had a positive and very significant association with days to first female flowering opening (0.850) and node to first female flower (0.469).

Mladenovic *et al.* (2012) discovered a significant association between vine height and fruit length ($r=0.33$) in bottle gourd. All other variables had a positive connection with fruit weight ($r=0.22$ to 0.59). The relationship between fruit weight and 100 seed weight was also found to be positive.

Correlation co-efficient analysis revealed a highly significant positive association between yield per vine ($r=0.874$), average fruit weight ($r=0.707$), vine length at harvest ($r=0.359$) and fruit length ($r=0.334$). The sex ratio and fruit diameter, on the other hand, had a negative relationship with ridge gourd yield Rabbani *et al.* (2012).

In ridge gourd, Radha Rani (2012) investigated that yield per vine was significantly and positively correlated with number of fruits per vine at both the genotypic and phenotypic levels. At the genotypic level, vine length was positively and significantly correlated with node number at first fruit harvest and number of fruits per vine. Vine length, average fruit weight and fruit length were found to be non-significant but positively associated to yield at both the genotypic and phenotypic levels.

Fruit yield per vine showed a positive and significant correlation with number of fruits per vine (0.963), fruit length (0.892), fruit weight (0.835) and vine length (0.614) at the genotypic level and with number of fruits per vine (0.854), fruit length (0.721), fruit weight (0.577) and vine length (0.349) at the phenotypic level in ridge gourd Dubey *et al.* (2013).

Dubey *et al.* (2013a) found a high genotypic co-efficient of variation in ridge gourd for fruit length, fruit diameter, number of fruits per vine and number of branches per vine. Days to first male flower anthesis, days to first female flower anthesis and days to first harvest all had low genotypic co-efficients of variation. Fruit yield per vine was positively associated with vine length, number of branches per vine, fruit diameter and number of fruits per vine.

For all of the sponge gourd traits, genotypic correlation were slightly greater than the corresponding phenotypic correlations. At both the genotypic and phenotypic levels, total yield per vine had a significant and positive correlation with the number of fruits per vine, average weight of fruit and number of seeds per fruit. Furthermore, average fruit weight was significantly and positively associated to the number of seeds per fruit, total yield per vine, average fruit length and number of fruits per vine Kumar *et al.* (2013).

In ridge gourd Choudhary *et al.* (2014) a significant positive correlation was found between fruit yield per vine and fruit weight (0.877), number of fruits per cluster (0.590) and fruit length (0.356), while a significant negative and desirable correlation was found between fruit yield per vine and days to first fruit harvest (-0.403), days to first hermaphrodite flower (-0.337) and node at which first hermaphrodite flower appeared (-0.315) at the phenotypic level.

Choudhary *et al.* (2014a) at the phenotypic level, the marketable yield per vine in ridge gourd showed a positive and highly significant correlation with fruit weight (0.834) and number of marketable fruits per vine (0.624).

Basumatary *et al.* (2014) discovered a highly significant and positive correlation between the number of primary branches, internode length, fruits per vine, fruit diameter and single fruit weight. Total soluble sugar (%) had a significant positive correlation with days to 50% flowering. In spine gourd, the relationship between single fruit weight, fruit yield, 100 seed weight and vitamin C content was significantly positive.

In ridge gourd, Narasannavar *et al.* (2014) discovered that fruit yield per vine was highly significant and positively correlated with the number of fruits per vine ($G=0.951$, $P=0.450$), fruit length ($G=0.600$, $P=0.547$) and the number of branches at 90 DAS ($G=0.407$, $P=0.362$). At the genotypic level, average fruit weight ($G=0.425$) and vine length at 90 DAS ($G=0.332$) are found to be significant.

Singh *et al.* (2014) found that the genotypic correlation was higher than the corresponding phenotypes for all bitter gourd parameters studied. Vine height, fruit diameter, fruit length and seeds per fruit all had a significant positive relationship with yield per vine. Fruit weight demonstrated a significant positive correlation with fruit diameter, fruit length and fruits per vine. Fruit length had a significant positive correlation with vine length and fruit diameter, whereas, fruit diameter had a significant positive correlation with vine height and days to first flower anthesis. Vine length correlated significantly positively with days to first flower anthesis, whereas, edible fruit maturity correlated significantly positively with days to first flower anthesis.

Koppad *et al.* (2015a) conducted a field experiment to determine the relationship between the various characteristics of ridge gourd, which revealed that fruit yield per vine had a positive and significant correlation with the number of fruits (0.97), average fruit weight (0.93), fruit length (0.74) and fruit diameter (0.63).

Khatoon *et al.* (2016) observed that fruit yield per vine was positively and significantly correlated with vine length, number of nodes per vine, internode length, crop duration, fruit length, fruit diameter, number of fruits per vine and average fruit weight in ridge gourd. However, at both the phenotypic and genotypic levels, there was a negative and significant correlation between fruit yield per vine with days to first staminate and pistillate flower anthesis and days to first fruit harvest.

Fruit yield had a positive and significant correlation with average fruit weight, number of primary branches, number of fruits per vine, vine length, fruit length and length of seed in ridge gourd, Gautam *et al.* (2017) character association studies, however fruit yield had a negative significant correlation with number of node of first female or hermaphrodite flower, days of first female or hermaphrodite flower anthesis and days of first fruit harvesting.

Fruit yield per vine has a highly significant and positive correlation with number of leaves per vine at 45 days after sowing, number of branches per vine, number of fruits per vine, fruit length and average fruit weight in sponge gourd, according to Sharma *et al.* (2017). However, there were negative and significant relationships of fruit yield with number of node to first male flower, number of node to first female flower and days to first harvesting.

Ananthan and Krishnamoorthy (2017) investigated correlation studies in ridge gourd. The genotypic and phenotypic correlation co-efficients revealed that fruit weight (0.72 and 0.68), fruit diameter (0.43 and 0.39), number of fruits per vine (0.50 and 0.48) and first female flower node were significantly contributed to fruit yield per vine (0.47 and 0.43).

In Ridge gourd, Ramesh *et al.* (2018) carried out an experiment with 14 genotypes for 18 different characters. To investigate the relationship between various fruit yield characteristics. Fruit yield was found to be positively and significantly correlated with fruit per cent, number of fruits per vine, fruit length, average fruit weight, fruit diameter, vine length at 90 days, sex ratio and rind thickness when selecting good hybrids for increasing ridge gourd yield.

Mitu *et al.* (2018) correlation co-efficient analysis proved a highly significant positive association between fruit yield per vine and fruit length ($r_g=0.43^*$, $r_p=0.40^*$) and individual fruit weight ($r_g=0.69^{**}$, $r_p=0.67^{**}$). In general, genotypic correlation co-efficients were larger than phenotypic correlation co-efficients, indicating that environmental influence decreases the correlation between ridge gourd fruit yield and yield contributing characters, whereas, vine length, fruit diameter and fruit thickness, on the other hand, had a negative correlation with yield.

According to Harshitha *et al.* (2019a) character association studies in ridge gourd, genotypic correlations are higher than phenotypic correlations for all characters. Fruit yield per vine showed a positive and significant correlation with vine length, number of nodes per vine, number of nodes to first female flower, days to first and last harvest, per cent fruit set, number of fruits per vine, fruit weight and fruit length at both the genotypic and phenotypic levels. A negative correlation was established through sex ratio, indicating that as sex ratio decreases, fruit yield per vine increases.

Singh *et al.* (2019) found a positive and very significant correlation between marketable yield per vine and fruit length, average fruit weight and number of fruits per vine in ridge gourd. Fruit length was showed to be positively and significantly correlated to the number of fruits per vine, whereas, average fruit weight was found to be significantly correlated to vine length.

Kumar *et al.* (2019) studied on sponge gourd and the result of correlation studies revealed a positive and highly significant relationship between yield per vine and the number of primary branches, fruiting nodes on the main stem, fruit length, fruit weight, fruits per vine, seeds per fruit and 100 seed weight.

Kannan *et al.* (2019) discovered a significant and positive correlation between days to first male flower, node to first male flower, flesh thickness and number of fruits per vine in an $L_3 \times T_1$ cross, as well as a significant and positive correlation between days to first female flower and number of fruits per vine and sex ratio. Fruit diameter correlated significantly and positively with flesh thickness, rind thickness, total number of fruits per vine and sex ratio in the crosses $L_3 \times T_1$ and $L_3 \times T_2$.

In ridge gourd, genotypic correlation co-efficient analysis discovered that fruit yield per vine showed positive significant association with fruit length, fruit diameter, rind thickness, flesh thickness, number of fruits per vine, vine length at 90 DAS and average fruit weight at genotypic level. Whereas, phenotypic correlation co-efficient analysis discovered that fruit yield per vine showed positive significant association with fruit length, fruit diameter, rind thickness, flesh thickness, number of fruits per vine, average fruit weight and vine length at 90 DAS at phenotypic level Akhila and Singh (2020).

Vijayakumar *et al.* (2020) revealed that in ridge gourd, days to first staminate flower showed significant and positive correlation with days to first pistillate flower (0.69), node to first staminate flower (0.73), fruit length (0.71) and days to first harvest (0.62). Days to first pistillate flower showed significant and positive correlation with node to first pistillate flower (0.71), node to first staminate flower (0.91) and days to first harvest (0.91).

Srikanth *et al.* (2021) an experiment was undertaken with 57 genotypes to explore the correlation of between different traits on fruit yield in ridge gourd. While selecting suitable hybrids for increasing ridge gourd fruit yield, the overall study showed that fruit yield was

positively and significantly correlated with days to first fruit harvest, number of fruits per vine, fruit diameter, fruit length, fruit flesh thickness and average fruit weight.

Vinitha *et al.* (2021) discovered that in ridge gourd, a positive and significant correlation between node at which first female flower appear and days to first harvest at both genotypic and phenotypic level (0.58 and 0.46). Correlation analysis revealed that the number of fruits per vine had the highest significant and positive correlation with yield attribute, followed by vine length and fruit weight.

2.6 Path co-efficient analysis

When used as a standard for high fruit yield selection, the correlation co-efficient alone can be misleading. As a result, a character may have a direct correlation with yield but may also be dependent on other characters. Yield is a complex character that is determined by the number of components. A correlation study determines the degree of relationship between any two characters. However, the direct and indirect effects of yield components are not shown by this analysis. The indirect contribution becomes more complex and becomes mixed when additional variables are included in the study. Dewey and Lu (1959) introduced the application of this technique for plant selection in crested wheat grass. The significance of correlation studies becomes clearer, when the number of various factors contributing to correlation is considered.

Path analysis is a type of standardized partial regression co-efficient that divides the correlation co-efficient into assessments of the direct and indirect effects of a set of independent variables on the dependent variable. The overall correlation should be split into direct and indirect impacts for an effective selection programme. If the correlation co-efficient is positive but the direct effect is negative or negligible, it appears that the indirect effects are the reason of the correlation. In such cases, the indirect contributing factors must be examined simultaneously for selection. In such cases, a restricted simultaneous selection model has to be utilized, in which limitations are applied to reduce the undesirable indirect effects, so that the direct effects can be used.

According to Dey *et al.* (2005) fruit weight has the positive significant direct effect on yield, followed by fruits per vine and fruit length. Ascorbic acid and total carotenoids had a very low and insignificant direct effect, but they had a large negative indirect influence on characters such as fruit weight, fruit length and fruit diameter, they can be used to improve nutritional qualities in bitter gourd.

Suchitra and Haribabu (2006) observed that average fruit weight, number of fruits per vine and vine length all had a positive direct effect on yield in bottle gourd, indicating that there are significant yield contributing characteristics in bottle gourd. Fruit diameter, fruit length, fruit flesh thickness and number of fruits per vine had the greatest positive indirect influence on fruit yield. Positive indirect effects of other characters, such as fruit length and fruit weight, were also detected through the number of fruits per vine.

Fruit weight, number of fruit, days to first harvest, number of seeds per fruit and 100 seed weight all had significant positive direct effects. Fruit weight had the highest positive direct effect on yield per vine. Fruits per vine had the next highest positive effect on snake gourd yield. As a result, the higher positive value of the direct effect was removed out by the negative indirect effect of fruit weight and fruit number Narayanankutty *et al.* (2006).

Choudhary *et al.* (2008) found that in ridge gourd, days to first female flower opening (0.557), number fruits per vine (0.575) and fruit weight (1.136), had the highest direct effect on yield, and followed by number of primary branches per vine (0.015). These characters should be examined in ridge gourd breeding programmes to improve yield.

The path analysis results revealed that in bottle gourd, the number of fruits per vine had the highest direct effect (0.680), followed by fruit weight (0.453), fruit length (0.087) and sex ratio (0.042). Husna *et al.* (2011).

Radha Rani (2012) conducted path co-efficient analysis and discovered that the number of fruits per vine (1.427) had the highest direct effect on yield at the genotypic level, followed by fruit diameter (1.407) and average fruit weight (0.869). Also, the number of fruits per vine had the most positive direct effect on yield. At the phenotypic level, average fruit weight (0.607), number of fruits per vine (0.580) and vine length (0.201) had the highest positive direct effects, while vine length had the positive and significant indirect effect on yield (0.238) via number of fruits per vine in the case of ridge gourd.

Rabbani *et al.* (2012) also discovered that direct selection for days to 50% flowering, diameter of fruit, fruits per vine, fruit per branch and length of the vine of ridge gourd might increase yield.

At the genotypic level, path analysis revealed that the number of fruits per vine and average fruit weight had the most positive direct effect on fruit yield per vine. Days to first male flower anthesis had the most direct negative impact on fruit yield per vine. A low residual effect at the genotypic level revealed that component characteristics of ridge gourd could explain more than 99.99 per cent of variability Dubey *et al.* (2013a).

According to Kumar *et al.* (2013), path analysis revealed that among 14 bitter gourd characteristics, a few traits, namely fruit diameter (5.93), number of primary branches (2.46), average fruit weight (0.97) and number of fruits per vine (0.81), had positive direct effects on fruit yield per vine. Total yield per vine was found to be negatively correlated with days to maturity (-2.97), number of seeds per fruit (-2.22), node to first pistillate flower (-2.17) and days to anthesis of first pistillate flower (-2.16).

Path co-efficient study in *Luffa* revealed that the fruit weight and number of fruits per vine had the most positive direct effect on fruit yield per vine at the genotypic level. Days to first male flower anthesis had the most direct negative effect on fruit yield per vine Dubey *et al.* (2013).

Choudhary *et al.* (2014) studied 35 different ridge gourd genotypes. Fruit weight (0.850) and number of fruits per vine (0.334) had the highest direct effect on fruit yield per vine at the phenotypic level, according to their findings. Days to first fruit harvest (-0.057) reduced fruit yield per vine significantly. Fruit weight had a negative direct impact on fruit yield per vine but a positive and significant association with fruit yield per vine through a positive indirect effect, which was days to first fruit harvest (0.001) and number of fruits per cluster (0.003).

Fruit yield per plot ($G=0.760$, $P=0.390$), fruit length ($G=0.669$, $P=0.558$) and number of branches ($G=0.163$, $P=0.424$) exhibited a significant positive and direct effects on fruit yield per vine at both the genotypic and phenotypic levels, indicating their true positive significant association with fruit yield per vine. Narasannavar *et al.* (2014) reported this result in ridge gourd.

In ridge gourd, Khatoun *et al.* (2016) discovered that average fruit weight, fruit length and days to first staminate flower anthesis had the most positive direct effect on fruit yield per vine. According to path co-efficient analysis, the number of fruits per vine and average fruit weight (0.4656) had the greatest positive direct effect (0.7192) on yield.

Sharma *et al.* (2017) investigated 15 sponge gourd genotypes. Days to first harvest after sowing, number of fruits per vine, days to first female flowering, number of branches per vine at 45 days after sowing, vine length at 45 DAS, number of nodes at which first appearance of male flower, number of leaves per vine at 45 DAS, sex ratio and number of nodes at which first appearance of female flower all had a significant positive direct effect on fruit yield per vine in the path analysis.

In ridge gourd, Ananthan and Krishnamoorthy (2017) discovered that the number of fruits per vine had a significant positive direct effect on yield per vine (1.4792), followed by fruit weight (0.9346) directly and indirectly (0.7220).

Mitu *et al.* (2018) discovered that the number of fruits per vine and individual fruit weight both had a positive direct effect (0.7040 and 0.8462, respectively) on yield per vine by path analysis. Number of fruits per vine had a negligible positive indirect effect on the number of days to first pistillate flower opening and the weight of 100 seeds. Individual fruit weight had a significant positive indirect effect on ridge gourd through vine height, days to first staminate flower opening, fruit diameter, fruit length and rind thickness.

Harshitha *et al.* (2019a) discovered in ridge gourd that among the 12 traits selected for path analysis, no. of primary branches per vine (0.629), vine length (0.641), no. of nodes per vine (0.591), no. of nodes to first pistillate flower (0.505), days to last harvest (0.422), fruit set percentage (0.806), no. of fruits per vine (0.937), fruit weight (0.412) and fruit length (0.471) had significant correlation with fruit yield at both phenotypic and genotypic level. Among these viz., no. of primary branches per vine, vine length, days to anthesis of first female flower, days

to last harvest, sex ratio, no. of fruits per vine, fruit weight and fruit length all had a positive direct effect, indicating a true positive and significant positive association with yield.

Kumar *et al.* (2019) discovered 45 sponge gourd genotypes, path co-efficient analysis revealed that the number of seeds per fruit (0.6833) and fruits per vine (0.7013) had the greatest positive direct effect on yield per vine.

Path co-efficient analysis in ridge gourd Kannan *et al.* (2019) revealed that fruit length in the $L_3 \times T_1$ cross contributed the most positive direct effect. Fruit diameter in the $L_3 \times T_2$ cross gave the most positive direct effect.

Path co-efficient analysis in ridge gourd Vijayakumar *et al.* (2020) revealed a positive direct effect on vine length, days to first harvest, fruit weight, fruit length, rind thickness and number of fruits per vine. Fruit weight had the most positive direct effect on yield of any of these characteristics.

Vinitha *et al.* (2021) reported that in ridge gourd, path analysis revealed a strong direct and positive effect on yield in number of fruits per vine (0.4858), followed by fruit diameter (0.0692), vine length (0.0688) and fruit weight (0.0682). As a result, such characteristics can be given more weight in order to increase yield.

The present investigation entitled "**Characterization and variability studies in ridge gourd genotypes**" was carried out at Research Farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar during last week of February and second week of March (summer season), 2022 and 2023. The material used for this study and statistical methods adopted in the investigation are presented below in this chapter:

3. Details of experiments

3.1 Location of experimental site

The experiment was conducted at Research Farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar, which is located at latitude of 29° 10' North, longitude of 75° 46' East and at an altitude of 215.2 meters above mean sea level on South Western border of the Rajasthan state and at a distance of about 175 km in West of the National capital city, New Delhi.

3.2 Climate and weather conditions

Hisar has a semi-arid climate with hot and dry summers, extremely cold winters, low rainfall and extremes temperature. The year is divided into four seasons: from July to September is the warm and humid rainy season, from October to November is the post-monsoon season, from December to February is the *winter* season and from March to June is the dry summer season. During summer, the mean maximum day temperature varies between 40 to 48°C with hot desiccating winds, while the minimum temperature ranges between 1.2 to 4.0°C or even below 0°C accompanied by frost during *winter*. Hisar is located on the outskirts of the South-West monsoon region. The average annual rainfall is 455 mm, out of which 70-80% is received during the monsoon period (July to September) and the rest is received in showers of cyclic rains during *winter*, *spring* and summer seasons. The mean relative humidity remains nearly constant at about 75 to 90% from July to March, steadily decreasing in April and remaining around 40-50 per cent during the hot summer months of May and June.

The weather conditions for growing ridge gourd in the last week of February and the second week of March 2022 and 2023, at the Research Farm of Chaudhary Charan Singh Haryana Agricultural University, Hisar have been shown in Table 3.1, 3.2 and Figure 3.1, 3.2. The weekly average maximum temperatures varied from 24.74 to 44.16°C and 24.74 to 39.83°C, while the minimum temperatures varied from 7.30 to 28.44°C and 7.87 to 28.23°C during the year 2022 and 2023, respectively. The weekly average morning relative humidity levels were between 47.68 to 97.27% and 52.29 to 96.29% and evening relative humidity varied from 17.77 to 51.85% and 13.91 to 75.35%, respectively, during the same period. The total rainfall received by the crop during the growing season of ridge gourd was 7.04 and 50.60 mm in 2022 and 2023, respectively.

Table 3.1: Weekly weather parameters during last week of February and second week of March, 2022

Standard weeks	Temperature (°C)		Relative Humidity		Rainfall
	Maximum	Minimum	Morning	Evening	
7	25.34	7.30	97.27	49.19	0.00
8	24.74	10.39	87.18	49.04	0.00
9	24.80	8.73	94.32	46.78	0.00
10	28.57	11.36	91.71	40.41	0.00
11	34.34	16.96	87.47	38.49	0.00
12	34.74	15.57	84.89	27.48	0.00
13	38.40	15.57	73.50	17.71	0.00
14	40.56	16.11	73.14	31.86	0.00
15	40.37	20.90	69.43	43.57	0.00
16	39.80	20.39	70.71	37.86	0.21
17	41.66	21.36	57.56	24.88	0.00
18	40.43	24.03	60.41	24.82	0.00
19	43.17	26.67	55.52	20.63	0.00
20	43.43	26.07	58.03	30.07	0.51
21	35.83	23.04	70.90	40.26	4.42
22	42.20	25.17	53.59	29.55	0.21
23	44.16	27.26	47.68	29.71	0.00
24	39.69	26.94	68.18	54.32	0.90
25	34.94	23.40	74.58	36.46	0.00
26	38.57	28.44	77.45	51.85	0.79

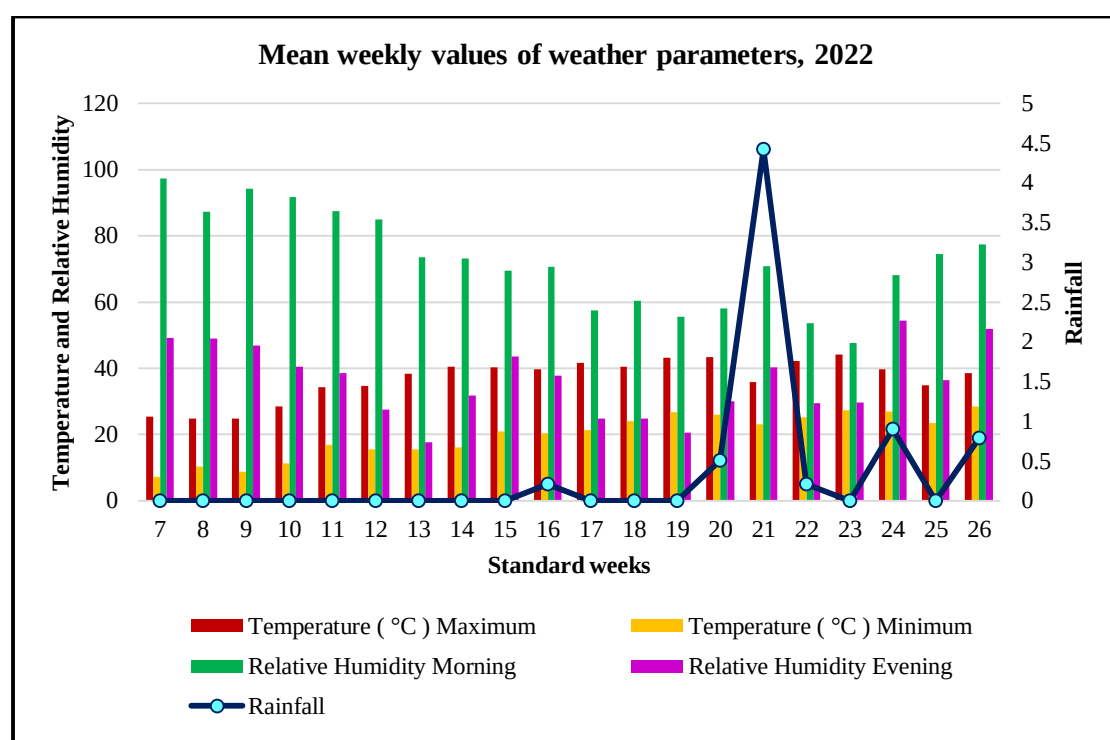


Fig. 3.1 Weather parameters for last week of February and second week of March, 2022

Table 3.2: Weekly weather parameters during last week of February and second week of March, 2023

Standard weeks	Temperature (°C)		Relative Humidity		Rainfall
	Maximum	Minimum	Morning	Evening	
7	25.71	7.87	96.29	57.80	0.00
8	28.37	11.47	94.01	57.39	0.00
9	27.89	12.19	93.95	57.69	0.00
10	29.03	11.30	88.25	51.30	0.00
11	30.74	15.16	88.93	60.44	0.77
12	27.31	15.06	90.92	60.11	0.51
13	29.29	15.11	86.94	51.47	0.54
14	31.77	14.76	76.97	30.47	0.74
15	37.31	17.27	64.38	16.75	0.00
16	37.40	19.07	58.95	24.98	0.00
17	34.54	19.63	52.29	32.19	0.00
18	31.89	19.89	78.27	39.57	0.19
19	39.83	19.97	44.06	13.91	0.00
20	39.43	22.61	64.96	26.43	0.00
21	38.03	23.00	65.25	40.66	0.00
22	32.17	21.37	78.41	48.71	0.00
23	38.89	24.50	62.12	33.92	0.89
24	37.91	26.74	66.03	41.22	0.00
25	39.80	28.23	73.06	49.52	0.83
26	33.16	26.74	87.03	75.35	1.36

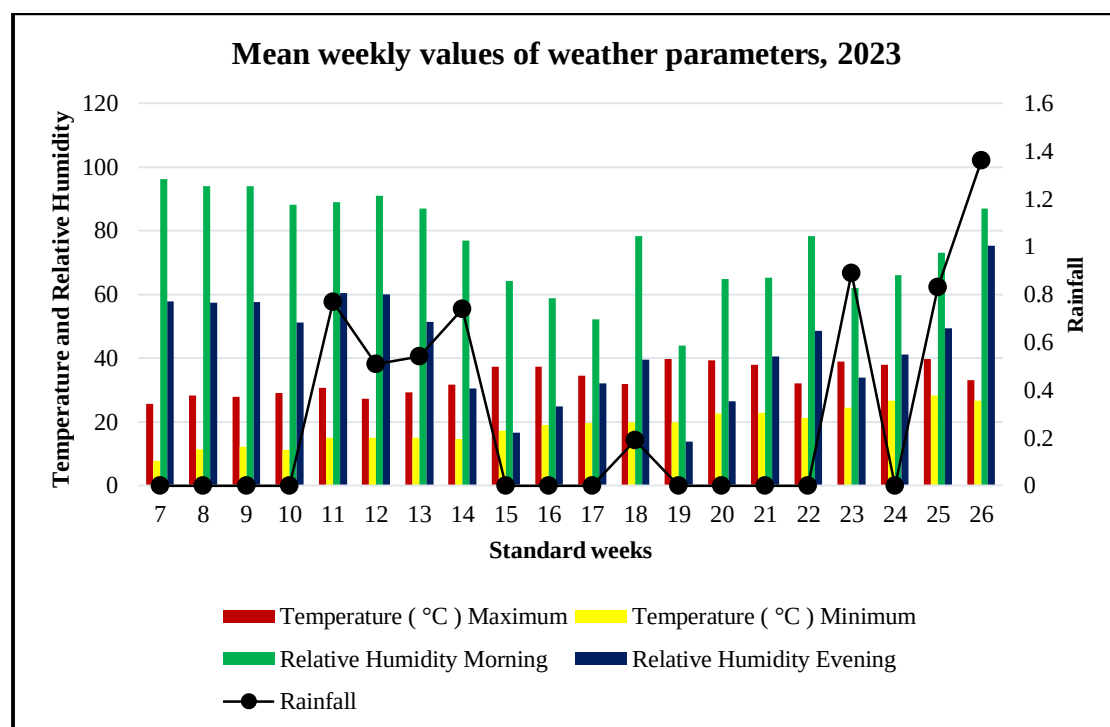


Fig. 3.2 Weather parameters for last week of February and second week of March, 2023

3.3 Layout of the experiment

Number of genotypes/Inbred lines : 40
 Design : RBD (Randomized Block Design)
 Replications : 3 (Three)
 Spacing : 2.5 m x 0.6 m
 Season : Last week of February and second week of March, 2022 and 2023

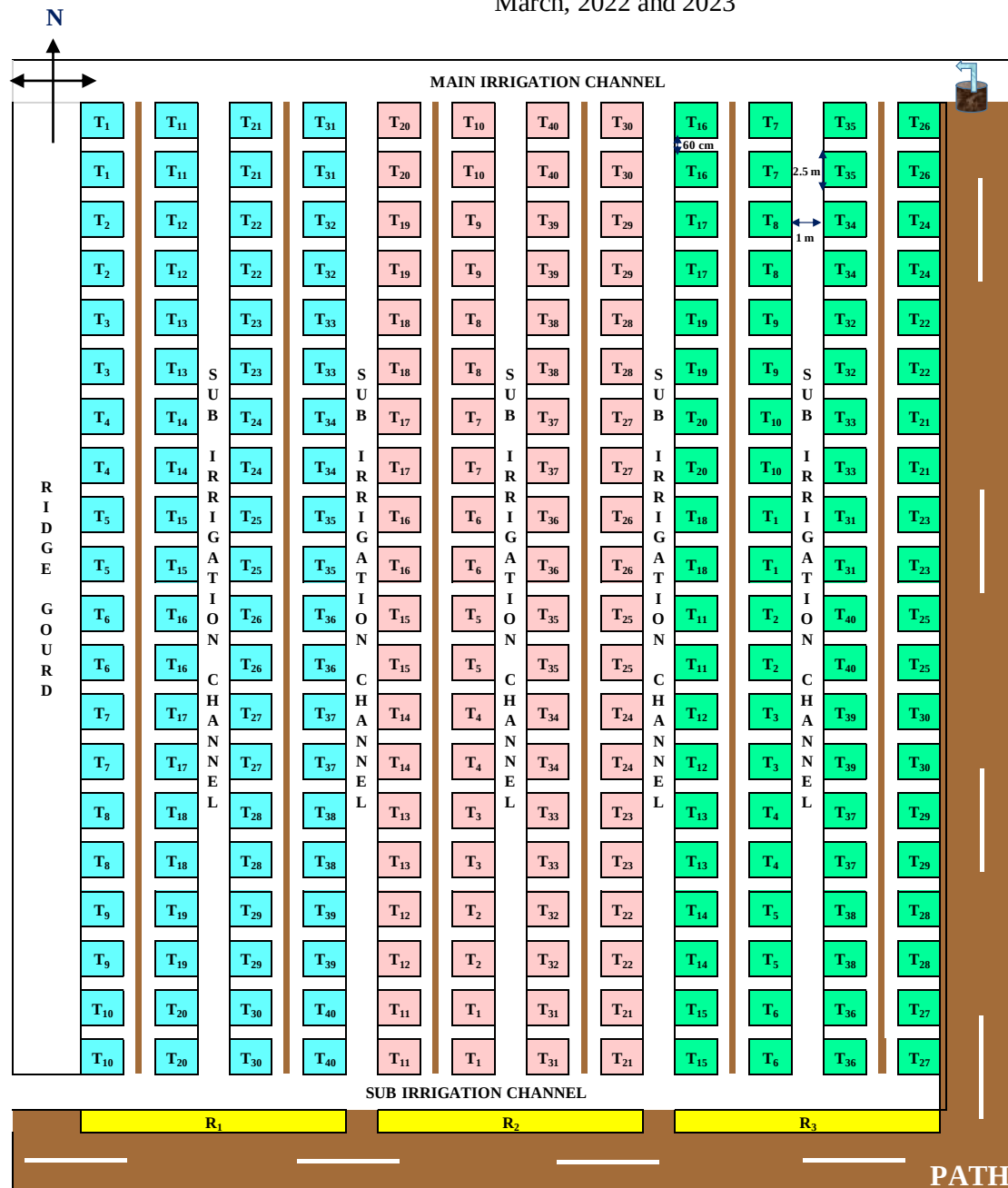


Fig. 3.3: Layout of the experimental field (Last week of February, 2022)

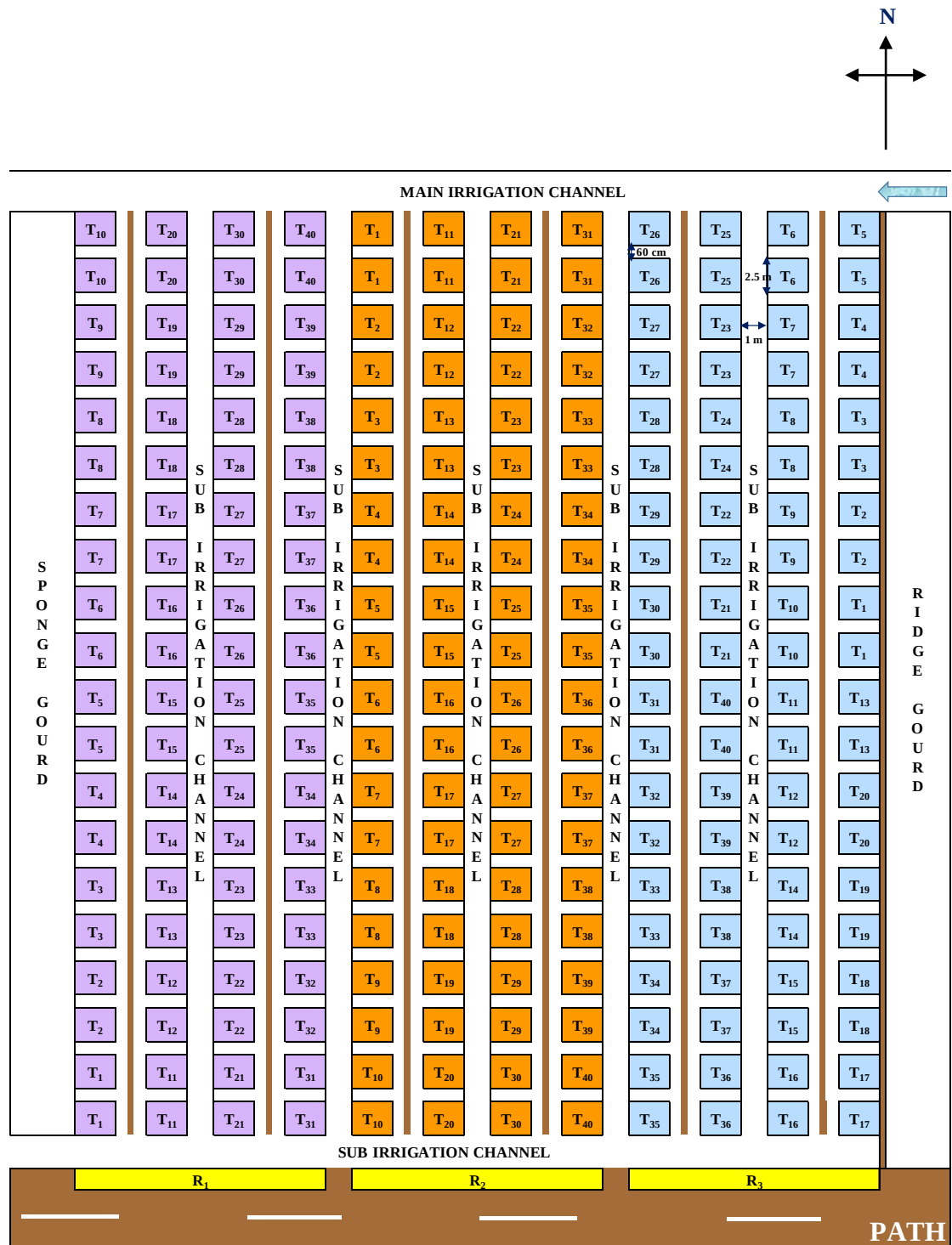


Fig. 3.4: Layout of the experimental field (Second week of March, 2022)

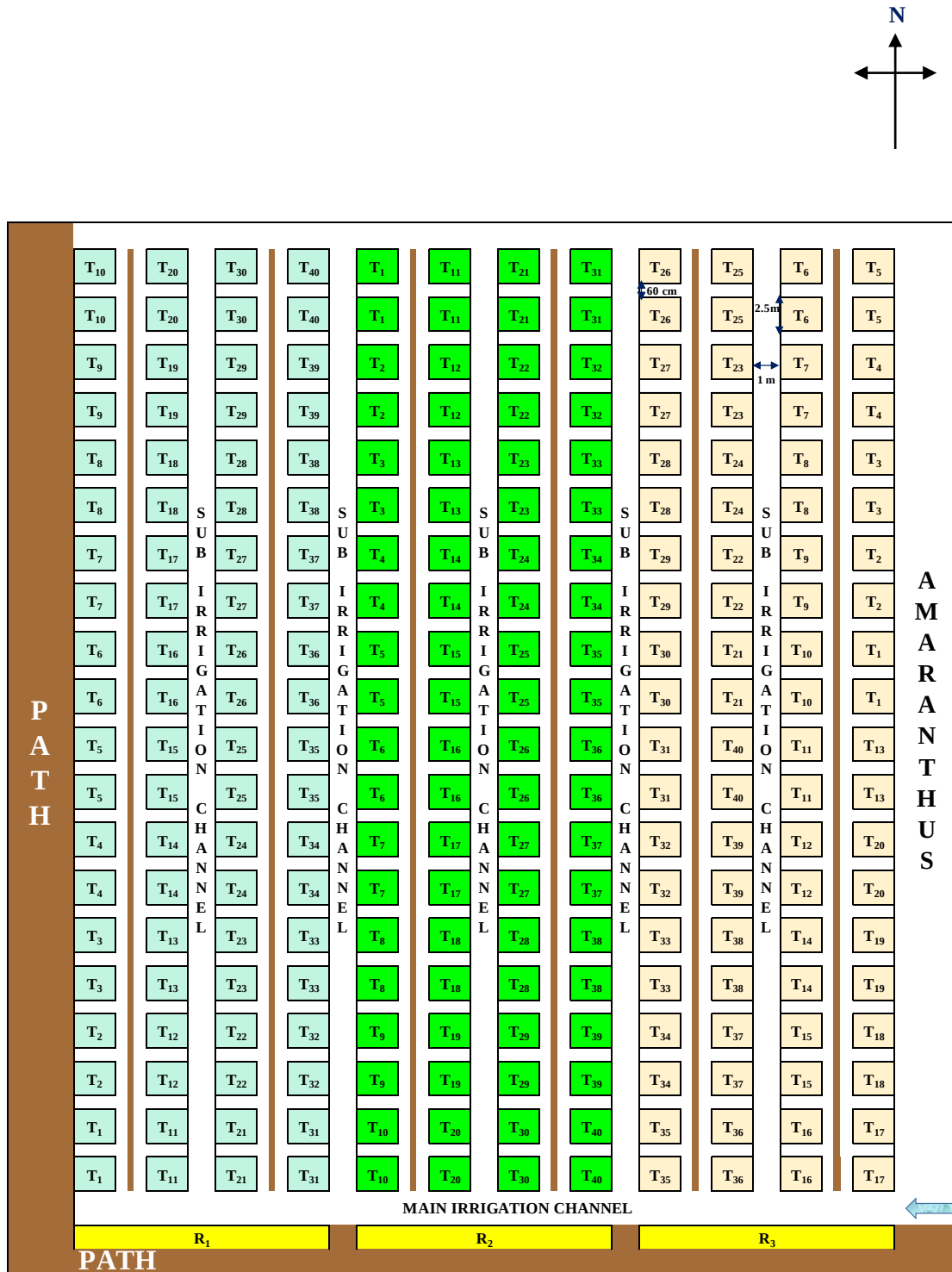


Fig. 3.5: Layout of the experimental field (Last week of February, 2023)



Fig. 3.6: Layout of the experimental field (Second week of March, 2023)

3.4 Details of ridge gourd genotypes and their sources

Forty ridge gourd genotypes collected from different sources were used for the study. The experiment was carried out at Research Farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar during last week of February and second week of March, 2022 and 2023. The list of the genotypes along with their source of collection is presented in Table 3.3. These genotypes were open pollinated at the time of study and also, they were selfed to maintain the germplasm.

Table 3.3: List of ridge gourd genotypes and their source of collection

Treatments	Genotypes	Source of Collection
T ₁	IC-262188	NBPGR, New Delhi
T ₂	IC-262231	NBPGR, New Delhi
T ₃	IC-262245	NBPGR, New Delhi
T ₄	IC-262265	NBPGR, New Delhi
T ₅	IC-262258	NBPGR, New Delhi
T ₆	IC-264830	NBPGR, New Delhi
T ₇	IC-264908	NBPGR, New Delhi
T ₈	IC-264971	NBPGR, New Delhi
T ₉	IC-265026	NBPGR, New Delhi
T ₁₀	IC-278358	NBPGR, New Delhi
T ₁₁	IC-279691	NBPGR, New Delhi
T ₁₂	IC-341099	NBPGR, New Delhi
T ₁₃	IC-341110	NBPGR, New Delhi
T ₁₄	IC-341116	NBPGR, New Delhi
T ₁₅	IC-341122	NBPGR, New Delhi
T ₁₆	IC-341161	NBPGR, New Delhi
T ₁₇	IC-345576	NBPGR, New Delhi
T ₁₈	IC-355952	NBPGR, New Delhi
T ₁₉	IC-355959	NBPGR, New Delhi
T ₂₀	IC-355961	NBPGR, New Delhi
T ₂₁	IC-355967	NBPGR, New Delhi
T ₂₂	IC-355974	NBPGR, New Delhi
T ₂₃	IC-356037	NBPGR, New Delhi
T ₂₄	IC-392531	NBPGR, New Delhi
T ₂₅	IC-392534	NBPGR, New Delhi
T ₂₆	IC-392535	NBPGR, New Delhi
T ₂₇	IC-392538	NBPGR, New Delhi
T ₂₈	IC-392544	NBPGR, New Delhi
T ₂₉	IC-392555	NBPGR, New Delhi
T ₃₀	IC-393298	NBPGR, New Delhi
T ₃₁	IC-393305	NBPGR, New Delhi
T ₃₂	IC-429925	NBPGR, New Delhi
T ₃₃	IC-429949	NBPGR, New Delhi
T ₃₄	IC-429965	NBPGR, New Delhi
T ₃₅	IC-429970	NBPGR, New Delhi
T ₃₆	DARL/SS/238	NBPGR, New Delhi
T ₃₇	DARL/SS/60	NBPGR, New Delhi
T ₃₈	Akola-01	Dr. PDKV, Akola, Maharashtra
T ₃₉	Konkan Harita	Dr. BSKKV, Dapoli, Maharashtra
T ₄₀	Pusa Nasdar	IARI, New Delhi

3.4 Observations recorded

3.5.1 Morphological Characters

- | | |
|--------------------------------|---------------------------------|
| 1. Plant growth habit | 9. Fruit skin colour |
| 2. Leaf shape | 10. Fruit shape of blossom end |
| 3. Leaf blade: Number of lobes | 11. Fruit shape at peduncle end |
| 4. Leaf pubescence | 12. Fruit skin luster |
| 5. Stem shape | 13. Fruit ridge (rib) shape |
| 6. Stem pubescence | 14. Flesh texture |
| 7. Flower colour | 15. Flesh colour |
| 8. Fruit shape | |

3.5.2 Quantitative traits

- | | |
|--|--------------------------------------|
| 1. Days to 50% germination | 12. Fruit diameter (cm) |
| 2. Number of primary branches per vine | 13. Stem length of internodes (cm) |
| 3. Days to first male flower opening | 14. Number of fruits per vine |
| 4. Days to first female flower opening | 15. Days to first fruit harvest |
| 5. Nodes to first male flower | 16. Average fruit weight (g) |
| 6. Nodes to first female flower | 17. Vine length at final harvest (m) |
| 7. Leaf length (cm) | 18. Number of seeds per fruit |
| 8. Leaf width (cm) | 19. Seed length (cm) |
| 9. Petiole length (cm) | 20. Weight of 100 seeds (g) |
| 10. Peduncle length (cm) | 21. Fruit yield per vine (kg) |
| 11. Fruit length (cm) | 22. Fruit yield per hectare (q/ha) |

3.6 Collection of data and recording of observations

Observations were recorded at different stages of crop growth like vegetative stage flowering stage and fruit harvesting stage. Data on morphological parameters was recorded on whole plot basis and quantitative parameters were recorded at their respective stages and yield parameters were recorded at the time of harvest on five randomly selected plants. The data on morphological and quantitative characters were recorded as the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA) shall decide for ridge gourd. The data recorded on five plants from each treatment was averaged and used for statistical analysis. The details of observations recorded and techniques for recording observations are given below.

3.6.1 Morphological characters

3.6.1.1 Plant growth habit

Plant growth habit were classified into three categories: short viny, medium viny and long viny. Plant growth habit was observed in five plants in each genotype and in each replications.

3.6.1.2 Leaf shape

Leaf shape was observed visually for each genotype and replication during the active vegetative phase was recorded as ovate, orbicular and reniform.

3.6.1.3 Leaf blade: Number of lobes

The incisions were observed on fully developed leaves between 15th nodes upwards to 20th nodes of the main stem of a fully grown vine. It was recorded as three lobes, five lobes and more than five lobes.

3.6.1.4 Leaf pubescence

It was observed visually at active vegetative phase in each genotype and replication was recorded as absent and present.

3.6.1.5 Stem shape

Stem shape was observed visually for each genotype and replication during the active vegetative phase was recorded as rounded and angular.

3.6.1.6 Stem pubescence

Stem pubescence were observed visually at active vegetative phase and recorded as absent and present in each genotype and replication.

3.6.1.7 Flower colour

Colour of the flower were recorded at 50% of the flowering stage and categorized into white, light yellow and yellow in each genotype and replication.

3.6.1.8 Fruit shape

With the help of Distinctiveness, Uniformity and Stability (DUS) descriptors for ridge gourd developed by the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), New Delhi, harvested fruits were categorized into oblong, elongate and elliptical shape through visual observation.

3.6.1.9 Fruit skin colour

Fruit skin colour of the harvested fruits were recorded based on colour chart and categorized into light green, green and dark green, according to Distinctiveness, Uniformity and Stability (DUS) descriptors for ridge gourd developed by the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), New Delhi.

3.6.1.10 Fruit shape of blossom end

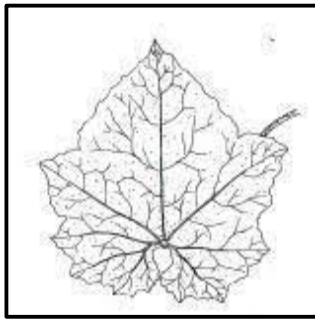
Fruit shape of blossom end were observed visually at marketable maturity stage for each genotype and recorded as rounded and pointed.

3.6.1.11 Fruit shape at peduncle end

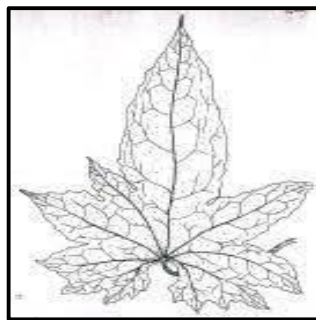
Fruit shape at peduncle end were observed visually at marketable maturity stage for each genotype and recorded as rounded and pointed.

3.6.1.12 Fruit skin luster

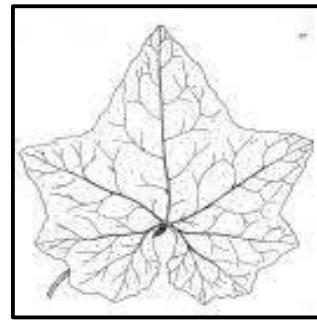
Fruit skin luster were observed on same fully mature harvested fruits and were described as matt or glossy.



Orbicular



Ovate



Reniform

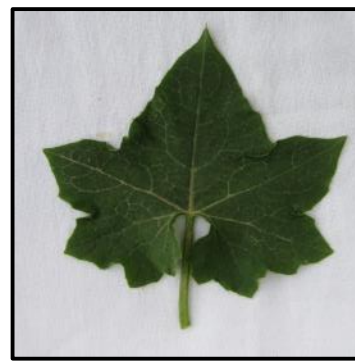


Plate 1: Leaf Shape of ridge gourd



3 Lobes



5 Lobes



>5 Lobes

Plate 2: Leaf blade: Number of lobes of ridge gourd

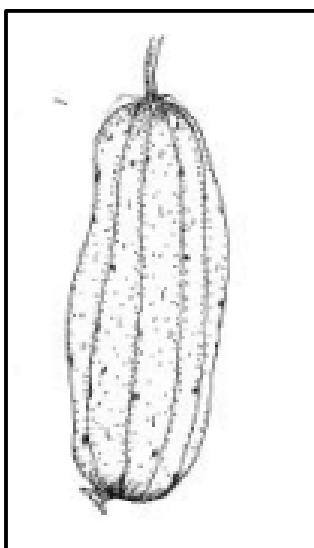


Male Flower

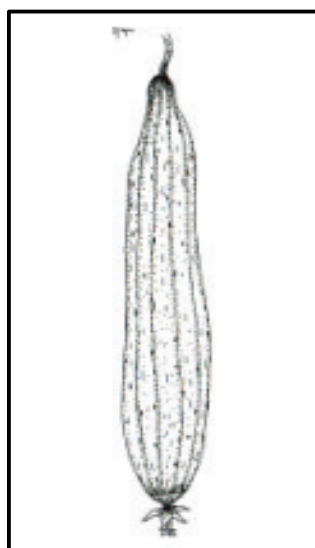


Female Flower

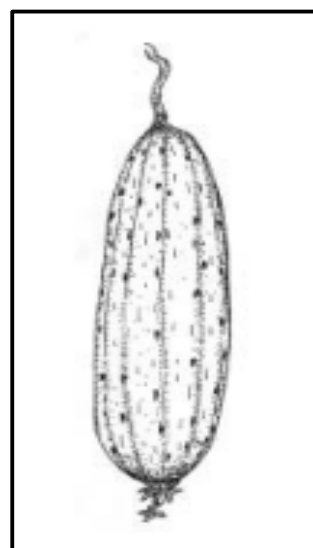
Plate 3: Flower colour (Light yellow) of ridge gourd



Oblong

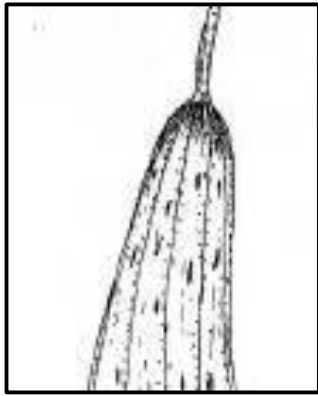


Elongate

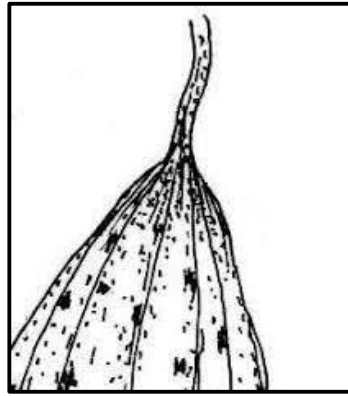


Elliptical

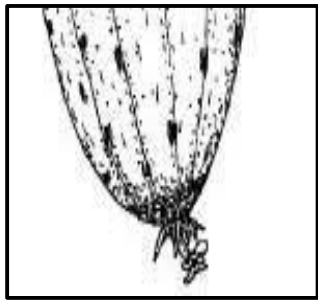
Plate 4: Fruit shape of ridge gourd



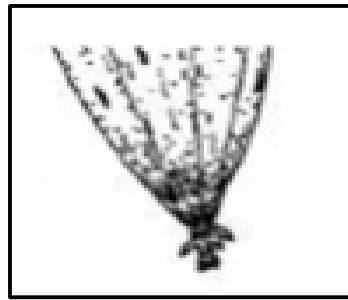
Rounded



Pointed



Rounded



Pointed



Plate: 5 Fruit shape of blossom end and peduncle end of ridge gourd

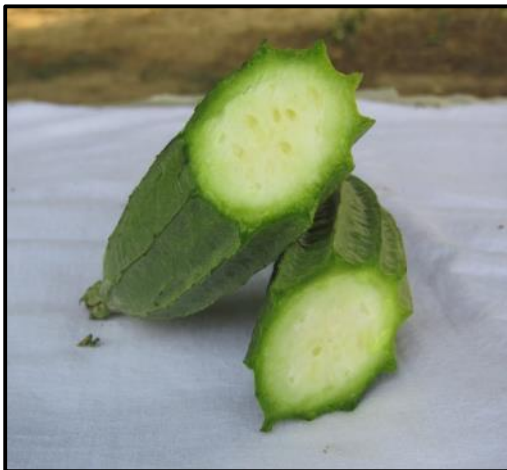


Plate 6: Flesh colour (Cream) of ridge gourd

3.6.1.13 Fruit ridge (rib) shape

Ridge shape of the fruit were recorded at marketable maturity stage of the fruit and categorized into superficial, medium and deep.

3.6.1.14 Flesh texture

Fruit that was ready for market was selected, cut into pieces and classified according to three textures: smooth, soft/spongy and fibrous-gelatinous.

3.6.1.15 Flesh colour

Flesh colour of the fruit were recorded at marketable maturity stage and graded into white and cream in each genotype and replication.

3.6.2 Quantitative Characters

3.6.2.1 Days to 50% germination

The average number of days required for 50% germination of the five randomly selected plants of each genotype was recorded.

3.6.2.2 Number of primary branches per vine

At the final harvest stage, the number of branches on randomly selected five plants of each genotype was counted and the average number of branches per plant was calculated.

3.6.2.3 Days to first male flower opening

The days to the first male flower opening were recorded in five randomly selected plants of each genotype and the average number of days from sowing to the first male flower opening was calculated.

3.6.2.4 Days to first female flower opening

The days to the first female flower opening were recorded in five randomly selected plants of each genotype and average number of days taken from the date of sowing to the date of first female flower opening were calculated.

3.6.2.5 Nodes to first male flower

In each treatment, the total number of nodes to the first male flower was counted in five randomly selected plants and the average was recorded.

3.6.2.6 Nodes to first female flower

Total number of nodes to first female flower were counted in five randomly selected plants in each treatment and average was recorded.

3.6.2.7 Leaf length (cm)

Leaf length was recorded on five randomly selected leaves from each genotype. An ordinary scale was used to measure the length in centimeter from the pedicel end to the tip of the leaf.

3.6.2.8 Leaf width (cm)

Leaf width was recorded on five randomly selected leaves from each genotype. The width was measured in centimeter from one end to the other end in the middle portion of the leaf with the help of an ordinary scale.

3.6.2.9 Petiole length (cm)

Petiole length was recorded in five randomly selected leaves from each genotype. The length was measured in centimeter from the tip of the entire leaf down to the base of the lowest leaflet, where they meet the leaf stem for leaf length with the help of an ordinary scale.

3.6.2.10 Peduncle length (cm)

Peduncle length was recorded in five randomly selected fruits from each genotype. The length was measured in centimeter from the peduncle bottom to the joint with the stem, when the fruits were commercially mature with the help of an ordinary scale.

3.6.2.11 Fruit length (cm)

Fruit length was recorded at the marketable maturity stage in five randomly selected fruits from each genotype. An ordinary scale was used to measure the length in centimeters from the base of the calyx to the tip of the fruit.

3.6.2.12 Fruit diameter (cm)

Fruit diameter was measured using the same fruit that was used to measure fruit length. The diameter of the fruit was measured in centimeters at the midpoint of the fruit using vernier callipers and an average was calculated.

3.6.2.13 Stem length of internodes (cm)

Stem length of internode was measured in five randomly selected plants from each genotype with the help of an ordinary scale, the length of a plant stem between two nodes was measured in centimeters.

3.6.2.14 Number of fruits per vine

Number of fruits per vine in each harvest was counted in all the randomly selected vines and average number of fruits of each genotype were recorded.

3.6.2.15 Days to first fruit harvest

The number of days from sowing to the first fruit harvest at marketable maturity was recorded. Picking was done at the edible maturity stage, when the fruits had reached their maximum growth and weight.

3.6.2.16 Average fruit weight (g)

The average fruit weight (g) was determined by weighing the fruits harvested from five randomly selected vines in each genotype during each harvest and the average weight of fruit for each genotype was recorded.

3.6.2.17 Vine length at final harvest (m)

The vine length of five randomly selected individual plants was measured at final harvest stage from basal portion of the stem to tip of the plant and expressed in meter and replication wise, the average vine length of each genotype was worked out.

3.6.2.18 Number of seeds per fruit

The average number of seeds per genotype was calculated by counting the number of seeds per fruit from five randomly selected plants from each genotype in each replication.

3.6.2.19 Seed length (cm)

Seed length was measured with the help of vernier calliper on ten seeds obtained from five fruits each genotype and average was worked out for each replication.

3.6.2.20 Weight of 100 seeds (g)

Weight of 100 seeds (g) of each genotype was recorded by counting 100 seeds and weight of these seeds was weighed by using an electronic balance.

3.6.2.21 Fruit yield per vine (kg)

Yield per vine was calculated by adding the weight (kg) of all marketable fruits harvested in each picking from all selected vines in each genotype and taking the average.

3.6.2.22 Fruit yield per hectare (q/ha)

Yield per hectare was calculated by adding the weight (kg) of all marketable fruits harvested in each picking from all of the selected plants in each treatment and calculating the average. It is measured in quintal per hectare.

3.7 STATISTICAL ANALYSIS

The data obtained in respect of all the characters have been subjected to the following statistical analysis

3.7.1 Analysis of variance

As suggested by Panse and Sukhatme (1967), the analysis of variance was performed independently for each character. The significance of genotypes differences was evaluated using the following ANOVA skeleton.

Table 3.4: The skeleton ANOVA table for RBD with treatments (t) and replications (r)

Sources of variation	Degree of freedom	Sum of squares	Mean sum of squares	F value
Replications	r-1	RSS	RMS	RMS/EMS
Treatments	t-1	TrSS	TrMS	TrMS/EMS
Error	(r-1) (t-1)	ESS	EMS	
Total	Rt -1	TSS		

To test the significance of treatment, the calculated value of “F” was compared with tabular value of “F” at 5 and 1 per cent levels of probability against error degree of freedom.

Where,

- r = Number of replications
- t = Number of treatments
- RSS = Sum of squares due to replication
- TrSS = Sum of squares due to treatment (genotypes)
- ESS = Sum of squares due to error
- TSS = Total sum of square
- RMS = Mean sum of squares due to replication
- TrMS = Mean sum of squares due to treatment (genotypes)
- EMS = Error mean of square

3.7.1.1 Critical difference

CD = SEd x t Value at 5% at error degree of freedom

$$SE(d) = \sqrt{\frac{2EMS}{r}}$$

Where,

SE(d) = Standard error of difference between two treatment means

EMS = Error mean of square

r = Number of replications

3.7.1.2 Standard error of mean

$$SE(m) \pm = \sqrt{\frac{EMS}{r}}$$

3.7.1.3 Co-efficient of variation (CV %)

Co-efficient of variation is standard deviation expressed as percentage of mean

$$CV\% = \frac{SD}{\bar{X}} \times 100$$

Where,

CV = Co-efficient of variation

SD = Standard deviation

$\bar{X}$ = Mean of character

3.7.2 Estimation of genetic parameter of variation

3.7.2.1 Mean

The character's mean was calculated by adding together all the data and dividing the total by the total number of observations.

$$\bar{X} = \frac{\sum x_i}{N}$$

Where,

$\sum x_i$ = Observations of i^{th} treatment

N = Total number of observations

$\bar{X}$ = Mean of character

3.7.2.2 Range

Range is the differences between the lowest and greatest terms of a series of observation and thus provides the information about the variability present in the genotype.

3.7.3 Estimation of co-efficient of variance

Genotypic and phenotypic variances were calculated as follows:

$$\sigma^2 g = \frac{Mg - Me}{r}$$

$$\sigma^2 p = \sigma^2 g + \sigma^2 e$$

Where,

r = Number of replications

$\sigma^2 g$ = Genotypic variance

Mg = Treatment mean square

Me = Error mean square

$\sigma^2 p$ = phenotypic variance

$\sigma^2 e$ = Environmental variance

Genotypic co-efficient of variation (GCV) and phenotypic co-efficient of variation (PCV) were calculated by the method suggested by Burton and De Vane (1953).

3.7.3.1 Phenotypic co-efficient of variation (PCV)

$$PCV = \frac{\sigma_p}{\bar{x}} \times 100 \quad (\sigma_p = \sqrt{\sigma^2 p})$$

3.7.3.2 Genotypic co-efficient of variation (GCV)

$$PCV = \frac{\sigma_g}{\bar{x}} \times 100 \quad (\sigma_g = \sigma^2 g) \sqrt{\sigma^2 g}$$

Where,

$\sigma^2 p$ & σ_p = Phenotypic variance and its standard deviation

$\sigma^2 g$ & σ_g = Genotypic variance and its standard deviation

$\bar{X}$ = Mean of character

The estimates of PCV and GCV were classified as low, moderate and high according to Sivasubramanian and Madhavamenon (1973).

< 10% = Low, 10-12% = Moderate and > 20% = High

3.7.4 Estimation of Co-efficient of correlation

Correlation co-efficient were calculated for all possible combinations among the characters at genotypic, phenotypic and environmental levels were estimated as given by Searle *et al.* (1961).

3.7.4.1 Phenotypic correlation between characters x and y

$$r_{xy}(p) = \frac{\text{Cov } xy(p)}{\sqrt{\text{var } x(p) \times \text{var } y(p)}}$$

Where,

$\text{Cov } xy(p)$ = Phenotypic co-variances between characters x and y, respectively

$\text{Var } x(p)$ = Phenotypic variance of character x, respectively

$\text{Var } y(p)$ = Phenotypic variance for character y, respectively

3.7.4.2 Genotypic correlation between characters x and y

$$r_{xy}(g) = \frac{\text{Cov } xy(g)}{\sqrt{\text{var } x(g) \times \text{var } y(g)}}$$

Where,

$\text{Cov } xy(g)$ = Genotypic co-variances between characters x and y, respectively

$\text{Var } x(g)$ = Genotypic variance of character x, respectively

$\text{Var } y(g)$ = Genotypic variance for character y, respectively

The significance of correlation co-efficient was tested, against Fisher's table value for (g-2) degrees of freedom at 5 per cent and 1 per cent level of significance, where g is the number of genotypes.

3.7.5 Heritability (h^2)

The broad sense heritability was estimated by following the procedure suggested by Webber and Moorthy (1952) as indicated here below.

$$h^2 = \frac{\sigma^2_g}{\sigma^2_p} \times 100$$

Where,

h^2 (%) = Heritability (Broad sense)

σ^2_g = Genotypic variance

σ^2_p = Phenotypic variance

The calculated heritability was classified into three groups as suggested by Johnson *et al.* (1955) Low: Less than 50% Moderate: 50-75% High: More than 75%

3.7.6 Expected genetic advance

Genetic advance for each character was predicted by the formula given by Johnson *et al.* (1955).

$$GA = h^2 \times \sigma_p \times k$$

Where,

h^2 (%) = Heritability (Broad sense)

k = selection differential (2.06) at 5 per cent selection intensity

σ^2_p = Phenotypic standard variance

3.7.6.1 Genetic advance over per cent of mean (GAM)

Genetic advance as percentage over mean was worked out as suggested by Johnson *et al.* (1955).

$$GAM = \frac{GA}{\bar{X}} \times 100$$

Where,

GAM = Genetic advance over mean

GA = Genetic advance

$\bar{X}$ = Mean of character

Johnson *et al.* (1955) categorized the range of genetic advance as per cent of mean values as follows. Low: Less than 10%, Moderate: 10-20%, High: More than 20%

3.7.7 Path co-efficient analysis

As suggested by Wright (1921) and developed by Dewey and Lu (1959), the genotypic correlation co-efficient were further divided into direct and indirect effects with the help of path co-efficient analysis.

Path co-efficient analysis is simply a normalized partial regression co-efficient that

divides the correlation co-efficient into direct and indirect effects. The path co-efficient was estimated using simultaneous equations, which revealed a basic relationship between the correlation co-efficient and the path co-efficient. These equations were solved by presenting them in matrix notation.

$$A = B.C$$

The solution for the vector “C” may be obtained by multiplying both sides by inverse of “B” matrix *i.e.*, $B^{-1} A = C$

After calculation of values of path co-efficient *i.e.*, “C” vector, it is possible to obtain path values for residual (R). Residual effect was calculated using formula referred from Singh and Chaudhary (1985).

$$R = \sqrt{1 - d_i \times r_{ij}}$$

Where,

d_i = direct effect of i^{th} character

r_{ij} = correlation co-efficient of i^{th} character with j^{th} character

A direct and indirect effect of different characters on fruit yield was calculated at genotypic level.

The present investigation was carried out at Research Farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar, with a view to study the extent of “**Characterization and variability studies in ridge gourd genotypes**” during the last week of February and the second week of March, 2022 and 2023, respectively. The experiment was conducted for estimating the morphological characters and for assessing the variability parameters like genotypic variance (GV), phenotypic variance (PV), genotypic co-efficient of variation (GCV), phenotypic co-efficient of variation (PCV), heritability (b.s.), genetic advance as per cent of mean, correlation and path analysis to identify the most promising genotypes for yield and its attributing traits which are classified given below.

4.1. Characterization of different ridge gourd genotypes

4.2. Mean performance

4.3. Analysis of variance

4.4. Genetic variability

4.5. Correlation analysis

4.6. Path co-efficient analysis

4.1 Characterization of different ridge gourd genotypes

According to the DUS characterization investigational ridge gourd genotypes were clustered into different categories with respect to morphological characters observed during the course of study in the field.

4.1.1 Plant growth habit

According to DUS characterization plant growth habit was categorized into three types *i.e.*, short viny (<3.5 m), medium viny (3.5 -5.5 m) and long viny (>5.5 m). With respect to plant growth habit in the last week of February, 2022, out of forty ridge gourd genotypes, thirty-six genotypes recorded short viny except four genotypes which recorded medium viny, whereas, in the last week of February, 2023, nineteen genotypes recorded short viny and twenty-one genotypes recorded medium viny. Similarly in the second week of March, in both years of study, only five genotypes indicated medium viny plant growth habit as against short viny in the remaining others, as shown in Table 4.1.1.

4.1.2 Leaf shape

The data presented in Table 4.1.2, on the basis of DUS characterization leaf shape was categorized into three types *i.e.*, orbicular, reniform and ovate. Out of forty genotypes, thirty-three genotypes recorded orbicular leaf shape, whereas, seven genotypes recorded reniform leaf shape in the last week of February and the second week of March in 2022 and 2023.

Table 4.1.1: Categorization of ridge gourd genotypes with respect to the plant growth habit

Treatments	Genotypes	Plant growth habit			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Short Viny	Short Viny	Short Viny	Short Viny
T ₂	IC-262231	Short Viny	Short Viny	Short Viny	Short Viny
T ₃	IC-262245	Short Viny	Med. Viny	Short Viny	Short Viny
T ₄	IC-262265	Short Viny	Short Viny	Short Viny	Short Viny
T ₅	IC-262258	Med. Viny	Short Viny	Short Viny	Short Viny
T ₆	IC-264830	Short Viny	Short Viny	Short Viny	Short Viny
T ₇	IC-264908	Short Viny	Short Viny	Short Viny	Short Viny
T ₈	IC-264971	Short Viny	Med. Viny	Med. Viny	Med. Viny
T ₉	IC-265026	Short Viny	Med. Viny	Short Viny	Short Viny
T ₁₀	IC-278358	Short Viny	Med. Viny	Short Viny	Short Viny
T ₁₁	IC-279691	Short Viny	Short Viny	Med. Viny	Med. Viny
T ₁₂	IC-341099	Short Viny	Short Viny	Short Viny	Short Viny
T ₁₃	IC-341110	Short Viny	Med. Viny	Short Viny	Short Viny
T ₁₄	IC-341116	Short Viny	Short Viny	Short Viny	Med. Viny
T ₁₅	IC-341122	Med. Viny	Med. Viny	Med. Viny	Med. Viny
T ₁₆	IC-341161	Short Viny	Short Viny	Short Viny	Short Viny
T ₁₇	IC-345576	Short Viny	Short Viny	Med. Viny	Med. Viny
T ₁₈	IC-355952	Short Viny	Med. Viny	Short Viny	Short Viny
T ₁₉	IC-355959	Short Viny	Short Viny	Short Viny	Short Viny
T ₂₀	IC-355961	Short Viny	Short Viny	Short Viny	Short Viny
T ₂₁	IC-355967	Short Viny	Med. Viny	Short Viny	Short Viny
T ₂₂	IC-355974	Short Viny	Med. Viny	Short Viny	Short Viny
T ₂₃	IC-356037	Med. Viny	Short Viny	Short Viny	Short Viny
T ₂₄	IC-392531	Short Viny	Med. Viny	Short Viny	Short Viny
T ₂₅	IC-392534	Short Viny	Med. Viny	Short Viny	Short Viny
T ₂₆	IC-392535	Short Viny	Short Viny	Short Viny	Short Viny
T ₂₇	IC-392538	Short Viny	Short Viny	Short Viny	Short Viny
T ₂₈	IC-392544	Short Viny	Short Viny	Short Viny	Short Viny
T ₂₉	IC-392555	Short Viny	Med. Viny	Med. Viny	Med. Viny
T ₃₀	IC-393298	Short Viny	Med. Viny	Short Viny	Short Viny
T ₃₁	IC-393305	Med. Viny	Med. Viny	Short Viny	Short Viny
T ₃₂	IC-429925	Short Viny	Short Viny	Short Viny	Short Viny
T ₃₃	IC-429949	Short Viny	Med. Viny	Short Viny	Short Viny
T ₃₄	IC-429965	Short Viny	Med. Viny	Short Viny	Short Viny
T ₃₅	IC-429970	Short Viny	Med. Viny	Short Viny	Short Viny
T ₃₆	DARL/SS/238	Short Viny	Med. Viny	Short Viny	Short Viny
T ₃₇	DARL/SS/60	Short Viny	Med. Viny	Short Viny	Short Viny
T ₃₈	Akola-01	Short Viny	Short Viny	Short Viny	Short Viny
T ₃₉	Konkan Harita	Short Viny	Med. Viny	Short Viny	Short Viny
T ₄₀	Pusa Nasdar	Short Viny	Med. Viny	Short Viny	Short Viny

Short Viny (<3.5m); Medium Viny (3.5 -5.5m); Long Viny (>5.5m)

Table 4.1.2: Categorization of ridge gourd genotypes with respect to the leaf shape

Treatments	Genotypes	Leaf shape			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Orbicular	Orbicular	Orbicular	Orbicular
T ₂	IC-262231	Reniform	Reniform	Reniform	Reniform
T ₃	IC-262245	Orbicular	Orbicular	Orbicular	Orbicular
T ₄	IC-262265	Orbicular	Orbicular	Orbicular	Orbicular
T ₅	IC-262258	Reniform	Reniform	Reniform	Reniform
T ₆	IC-264830	Reniform	Reniform	Reniform	Reniform
T ₇	IC-264908	Orbicular	Orbicular	Orbicular	Orbicular
T ₈	IC-264971	Reniform	Reniform	Reniform	Reniform
T ₉	IC-265026	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₀	IC-278358	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₁	IC-279691	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₂	IC-341099	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₃	IC-341110	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₄	IC-341116	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₅	IC-341122	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₆	IC-341161	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₇	IC-345576	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₈	IC-355952	Orbicular	Orbicular	Orbicular	Orbicular
T ₁₉	IC-355959	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₀	IC-355961	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₁	IC-355967	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₂	IC-355974	Reniform	Reniform	Reniform	Reniform
T ₂₃	IC-356037	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₄	IC-392531	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₅	IC-392534	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₆	IC-392535	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₇	IC-392538	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₈	IC-392544	Orbicular	Orbicular	Orbicular	Orbicular
T ₂₉	IC-392555	Reniform	Reniform	Reniform	Reniform
T ₃₀	IC-393298	Reniform	Reniform	Reniform	Reniform
T ₃₁	IC-393305	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₂	IC-429925	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₃	IC-429949	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₄	IC-429965	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₅	IC-429970	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₆	DARL/SS/238	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₇	DARL/SS/60	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₈	Akola-01	Orbicular	Orbicular	Orbicular	Orbicular
T ₃₉	Konkan Harita	Orbicular	Orbicular	Orbicular	Orbicular
T ₄₀	Pusa Nasdar	Orbicular	Orbicular	Orbicular	Orbicular

Orbicular; Reniform; Ovate

4.1.3 Leaf blade: Number of lobes

On the basis of the leaf blade: Number of lobes ridge gourd genotypes were categorized into three types *i.e.*, 3 Lobes, 5 Lobes and >5 Lobes.



Plate 7a: Variability for leaf shape and leaf blade: Number in lobes of ridge gourd genotypes



Plate 7b: Variability for leaf shape and leaf blade: Number in lobes of ridge gourd genotypes

Among ridge gourd genotypes, twenty-nine genotypes recorded 5 lobes, two genotypes observed 3 lobes, while more than 5 lobes were observed in the seven genotypes in both the years of study in the last week of February and the second week of March, as shown in Table 4.1.3.

Table 4.1.3: Categorization of ridge gourd genotypes with respect to the leaf blade:
Number of lobes

Treatments	Genotypes	Leaf blade: Number of lobes			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₂	IC-262231	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃	IC-262245	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₄	IC-262265	3 Lobes	3 Lobes	3 Lobes	3 Lobes
T ₅	IC-262258	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes
T ₆	IC-264830	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₇	IC-264908	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₈	IC-264971	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₉	IC-265026	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₀	IC-278358	3 Lobes	3 Lobes	3 Lobes	3 Lobes
T ₁₁	IC-279691	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₂	IC-341099	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₃	IC-341110	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₄	IC-341116	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₅	IC-341122	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₆	IC-341161	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₇	IC-345576	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₈	IC-355952	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₁₉	IC-355959	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₂₀	IC-355961	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₂₁	IC-355967	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₂₂	IC-355974	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₂₃	IC-356037	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes
T ₂₄	IC-392531	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes
T ₂₅	IC-392534	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₂₆	IC-392535	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes
T ₂₇	IC-392538	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes
T ₂₈	IC-392544	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes
T ₂₉	IC-392555	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₀	IC-393298	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₁	IC-393305	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₂	IC-429925	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₃	IC-429949	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₄	IC-429965	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₅	IC-429970	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₆	DARL/SS/238	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₇	DARL/SS/60	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₈	Akola-01	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₃₉	Konkan Harita	5 Lobes	5 Lobes	5 Lobes	5 Lobes
T ₄₀	Pusa Nasdar	>5 Lobes	>5 Lobes	>5 Lobes	>5 Lobes

3 Lobes; 5 Lobes; >5 Lobes

4.1.4 Leaf pubescence

The data presented in Table 4.1.4 indicated that the ridge gourd genotypes were categorized on the basis of leaf pubescence as either present or absent. All the forty genotypes noted presence of leaf pubescence in both the years and in both the date of sowing, respectively.

Table 4.1.4: Categorization of ridge gourd genotypes with respect to the leaf pubescence

Treatments	Genotypes	Leaf pubescence			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Present	Present	Present	Present
T ₂	IC-262231	Present	Present	Present	Present
T ₃	IC-262245	Present	Present	Present	Present
T ₄	IC-262265	Present	Present	Present	Present
T ₅	IC-262258	Present	Present	Present	Present
T ₆	IC-264830	Present	Present	Present	Present
T ₇	IC-264908	Present	Present	Present	Present
T ₈	IC-264971	Present	Present	Present	Present
T ₉	IC-265026	Present	Present	Present	Present
T ₁₀	IC-278358	Present	Present	Present	Present
T ₁₁	IC-279691	Present	Present	Present	Present
T ₁₂	IC-341099	Present	Present	Present	Present
T ₁₃	IC-341110	Present	Present	Present	Present
T ₁₄	IC-341116	Present	Present	Present	Present
T ₁₅	IC-341122	Present	Present	Present	Present
T ₁₆	IC-341161	Present	Present	Present	Present
T ₁₇	IC-345576	Present	Present	Present	Present
T ₁₈	IC-355952	Present	Present	Present	Present
T ₁₉	IC-355959	Present	Present	Present	Present
T ₂₀	IC-355961	Present	Present	Present	Present
T ₂₁	IC-355967	Present	Present	Present	Present
T ₂₂	IC-355974	Present	Present	Present	Present
T ₂₃	IC-356037	Present	Present	Present	Present
T ₂₄	IC-392531	Present	Present	Present	Present
T ₂₅	IC-392534	Present	Present	Present	Present
T ₂₆	IC-392535	Present	Present	Present	Present
T ₂₇	IC-392538	Present	Present	Present	Present
T ₂₈	IC-392544	Present	Present	Present	Present
T ₂₉	IC-392555	Present	Present	Present	Present
T ₃₀	IC-393298	Present	Present	Present	Present
T ₃₁	IC-393305	Present	Present	Present	Present
T ₃₂	IC-429925	Present	Present	Present	Present
T ₃₃	IC-429949	Present	Present	Present	Present
T ₃₄	IC-429965	Present	Present	Present	Present
T ₃₅	IC-429970	Present	Present	Present	Present
T ₃₆	DARL/SS/238	Present	Present	Present	Present
T ₃₇	DARL/SS/60	Present	Present	Present	Present
T ₃₈	Akola-01	Present	Present	Present	Present
T ₃₉	Konkan Harita	Present	Present	Present	Present
T ₄₀	Pusa Nasdar	Present	Present	Present	Present

Absent; Present

4.1.5 Stem shape

As shown in Table 4.1.5, the ridge gourd genotypes grouped according to the stem shape *i.e.*, rounded and angular. Stem shape for all the forty genotypes was observed angular in the last week of February and the second week of March, 2022 and 2023.

Table 4.1.5: Categorization of ridge gourd genotypes with respect to the stem shape

Treatments	Genotypes	Stem shape			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Angular	Angular	Angular	Angular
T ₂	IC-262231	Angular	Angular	Angular	Angular
T ₃	IC-262245	Angular	Angular	Angular	Angular
T ₄	IC-262265	Angular	Angular	Angular	Angular
T ₅	IC-262258	Angular	Angular	Angular	Angular
T ₆	IC-264830	Angular	Angular	Angular	Angular
T ₇	IC-264908	Angular	Angular	Angular	Angular
T ₈	IC-264971	Angular	Angular	Angular	Angular
T ₉	IC-265026	Angular	Angular	Angular	Angular
T ₁₀	IC-278358	Angular	Angular	Angular	Angular
T ₁₁	IC-279691	Angular	Angular	Angular	Angular
T ₁₂	IC-341099	Angular	Angular	Angular	Angular
T ₁₃	IC-341110	Angular	Angular	Angular	Angular
T ₁₄	IC-341116	Angular	Angular	Angular	Angular
T ₁₅	IC-341122	Angular	Angular	Angular	Angular
T ₁₆	IC-341161	Angular	Angular	Angular	Angular
T ₁₇	IC-345576	Angular	Angular	Angular	Angular
T ₁₈	IC-355952	Angular	Angular	Angular	Angular
T ₁₉	IC-355959	Angular	Angular	Angular	Angular
T ₂₀	IC-355961	Angular	Angular	Angular	Angular
T ₂₁	IC-355967	Angular	Angular	Angular	Angular
T ₂₂	IC-355974	Angular	Angular	Angular	Angular
T ₂₃	IC-356037	Angular	Angular	Angular	Angular
T ₂₄	IC-392531	Angular	Angular	Angular	Angular
T ₂₅	IC-392534	Angular	Angular	Angular	Angular
T ₂₆	IC-392535	Angular	Angular	Angular	Angular
T ₂₇	IC-392538	Angular	Angular	Angular	Angular
T ₂₈	IC-392544	Angular	Angular	Angular	Angular
T ₂₉	IC-392555	Angular	Angular	Angular	Angular
T ₃₀	IC-393298	Angular	Angular	Angular	Angular
T ₃₁	IC-393305	Angular	Angular	Angular	Angular
T ₃₂	IC-429925	Angular	Angular	Angular	Angular
T ₃₃	IC-429949	Angular	Angular	Angular	Angular
T ₃₄	IC-429965	Angular	Angular	Angular	Angular
T ₃₅	IC-429970	Angular	Angular	Angular	Angular
T ₃₆	DARL/SS/238	Angular	Angular	Angular	Angular
T ₃₇	DARL/SS/60	Angular	Angular	Angular	Angular
T ₃₈	Akola-01	Angular	Angular	Angular	Angular
T ₃₉	Konkan Harita	Angular	Angular	Angular	Angular
T ₄₀	Pusa Nasdar	Angular	Angular	Angular	Angular

Rounded; Angular

4.1.6 Stem pubescence

The ridge gourd genotypes was classified on the basis of stem pubescence as either present or absent. Stem pubescence was recorded as absent, in the last week of February and the second week of March in both years of study (Table 4.1.6).

Table 4.1.6: Categorization of ridge gourd genotypes with respect to the stem pubescence

Treatments	Genotypes	Stem pubescence			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Absent	Absent	Absent	Absent
T ₂	IC-262231	Absent	Absent	Absent	Absent
T ₃	IC-262245	Absent	Absent	Absent	Absent
T ₄	IC-262265	Absent	Absent	Absent	Absent
T ₅	IC-262258	Absent	Absent	Absent	Absent
T ₆	IC-264830	Absent	Absent	Absent	Absent
T ₇	IC-264908	Absent	Absent	Absent	Absent
T ₈	IC-264971	Absent	Absent	Absent	Absent
T ₉	IC-265026	Absent	Absent	Absent	Absent
T ₁₀	IC-278358	Absent	Absent	Absent	Absent
T ₁₁	IC-279691	Absent	Absent	Absent	Absent
T ₁₂	IC-341099	Absent	Absent	Absent	Absent
T ₁₃	IC-341110	Absent	Absent	Absent	Absent
T ₁₄	IC-341116	Absent	Absent	Absent	Absent
T ₁₅	IC-341122	Absent	Absent	Absent	Absent
T ₁₆	IC-341161	Absent	Absent	Absent	Absent
T ₁₇	IC-345576	Absent	Absent	Absent	Absent
T ₁₈	IC-355952	Absent	Absent	Absent	Absent
T ₁₉	IC-355959	Absent	Absent	Absent	Absent
T ₂₀	IC-355961	Absent	Absent	Absent	Absent
T ₂₁	IC-355967	Absent	Absent	Absent	Absent
T ₂₂	IC-355974	Absent	Absent	Absent	Absent
T ₂₃	IC-356037	Absent	Absent	Absent	Absent
T ₂₄	IC-392531	Absent	Absent	Absent	Absent
T ₂₅	IC-392534	Absent	Absent	Absent	Absent
T ₂₆	IC-392535	Absent	Absent	Absent	Absent
T ₂₇	IC-392538	Absent	Absent	Absent	Absent
T ₂₈	IC-392544	Absent	Absent	Absent	Absent
T ₂₉	IC-392555	Absent	Absent	Absent	Absent
T ₃₀	IC-393298	Absent	Absent	Absent	Absent
T ₃₁	IC-393305	Absent	Absent	Absent	Absent
T ₃₂	IC-429925	Absent	Absent	Absent	Absent
T ₃₃	IC-429949	Absent	Absent	Absent	Absent
T ₃₄	IC-429965	Absent	Absent	Absent	Absent
T ₃₅	IC-429970	Absent	Absent	Absent	Absent
T ₃₆	DARL/SS/238	Absent	Absent	Absent	Absent
T ₃₇	DARL/SS/60	Absent	Absent	Absent	Absent
T ₃₈	Akola-01	Absent	Absent	Absent	Absent
T ₃₉	Konkan Harita	Absent	Absent	Absent	Absent
T ₄₀	Pusa Nasdar	Absent	Absent	Absent	Absent

Absent; Present

4.1.7 Flower colour

As shown in Table 4.1.7, the flower colour noticed in ridge gourd genotypes were categorized into three types *i.e.*, white, light yellow and yellow. All the forty genotypes were recorded as light yellow colour in 2022 and 2023 in the last week of February and the second week of March, respectively.

Table 4.1.7: Categorization of ridge gourd genotypes with respect to the flower colour

Treatments	Genotypes	Flower colour			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂	IC-262231	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃	IC-262245	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₄	IC-262265	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₅	IC-262258	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₆	IC-264830	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₇	IC-264908	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₈	IC-264971	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₉	IC-265026	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₀	IC-278358	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₁	IC-279691	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₂	IC-341099	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₃	IC-341110	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₄	IC-341116	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₅	IC-341122	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₆	IC-341161	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₇	IC-345576	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₈	IC-355952	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₁₉	IC-355959	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₀	IC-355961	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₁	IC-355967	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₂	IC-355974	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₃	IC-356037	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₄	IC-392531	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₅	IC-392534	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₆	IC-392535	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₇	IC-392538	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₈	IC-392544	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₂₉	IC-392555	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₀	IC-393298	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₁	IC-393305	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₂	IC-429925	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₃	IC-429949	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₄	IC-429965	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₅	IC-429970	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₆	DARL/SS/238	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₇	DARL/SS/60	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₈	Akola-01	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₃₉	Konkan Harita	L. Yellow	L. Yellow	L. Yellow	L. Yellow
T ₄₀	Pusa Nasdar	L. Yellow	L. Yellow	L. Yellow	L. Yellow

White; Light Yellow; Yellow

4.1.8 Fruit shape

The ridge gourd genotypes were categorized according to the fruit shape *i.e.*, oblong, elongate and elliptical. Out of forty genotypes, twenty-seven genotypes recorded elongate fruit shape, while elliptical fruit shape were recorded in thirteen genotypes in the last week of February and the second week of March, 2022 and 2023, respectively (Table 4.1.8).

Table 4.1.8: Categorization of ridge gourd genotypes with respect to the fruit shape

Treatments	Genotypes	Fruit shape			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Elongate	Elongate	Elongate	Elongate
T ₂	IC-262231	Elliptical	Elliptical	Elliptical	Elliptical
T ₃	IC-262245	Elliptical	Elliptical	Elliptical	Elliptical
T ₄	IC-262265	Elongate	Elongate	Elongate	Elongate
T ₅	IC-262258	Elliptical	Elliptical	Elliptical	Elliptical
T ₆	IC-264830	Elliptical	Elliptical	Elliptical	Elliptical
T ₇	IC-264908	Elliptical	Elliptical	Elliptical	Elliptical
T ₈	IC-264971	Elliptical	Elliptical	Elliptical	Elliptical
T ₉	IC-265026	Elongate	Elongate	Elongate	Elongate
T ₁₀	IC-278358	Elongate	Elongate	Elongate	Elongate
T ₁₁	IC-279691	Elliptical	Elliptical	Elliptical	Elliptical
T ₁₂	IC-341099	Elongate	Elongate	Elongate	Elongate
T ₁₃	IC-341110	Elongate	Elongate	Elongate	Elongate
T ₁₄	IC-341116	Elongate	Elongate	Elongate	Elongate
T ₁₅	IC-341122	Elliptical	Elliptical	Elliptical	Elliptical
T ₁₆	IC-341161	Elongate	Elongate	Elongate	Elongate
T ₁₇	IC-345576	Elongate	Elongate	Elongate	Elongate
T ₁₈	IC-355952	Elongate	Elongate	Elongate	Elongate
T ₁₉	IC-355959	Elliptical	Elliptical	Elliptical	Elliptical
T ₂₀	IC-355961	Elongate	Elongate	Elongate	Elongate
T ₂₁	IC-355967	Elongate	Elongate	Elongate	Elongate
T ₂₂	IC-355974	Elongate	Elongate	Elongate	Elongate
T ₂₃	IC-356037	Elongate	Elongate	Elongate	Elongate
T ₂₄	IC-392531	Elongate	Elongate	Elongate	Elongate
T ₂₅	IC-392534	Elongate	Elongate	Elongate	Elongate
T ₂₆	IC-392535	Elongate	Elongate	Elongate	Elongate
T ₂₇	IC-392538	Elliptical	Elliptical	Elliptical	Elliptical
T ₂₈	IC-392544	Elliptical	Elliptical	Elliptical	Elliptical
T ₂₉	IC-392555	Elongate	Elongate	Elongate	Elongate
T ₃₀	IC-393298	Elongate	Elongate	Elongate	Elongate
T ₃₁	IC-393305	Elongate	Elongate	Elongate	Elongate
T ₃₂	IC-429925	Elongate	Elongate	Elongate	Elongate
T ₃₃	IC-429949	Elongate	Elongate	Elongate	Elongate
T ₃₄	IC-429965	Elongate	Elongate	Elongate	Elongate
T ₃₅	IC-429970	Elliptical	Elliptical	Elliptical	Elliptical
T ₃₆	DARL/SS/238	Elongate	Elongate	Elongate	Elongate
T ₃₇	DARL/SS/60	Elliptical	Elliptical	Elliptical	Elliptical
T ₃₈	Akola-01	Elongate	Elongate	Elongate	Elongate
T ₃₉	Konkan Harita	Elongate	Elongate	Elongate	Elongate
T ₄₀	Pusa Nasdar	Elongate	Elongate	Elongate	Elongate

Oblong; Elongate; Elliptical

4.1.9 Fruit skin colour

As shown in Table 4.1.9, based on the fruit skin colour, ridge gourd genotypes were classified into three types *i.e.*, light green, green and dark green. Out of forty genotypes, maximum thirty-seven genotypes recorded green-coloured fruit skin, whereas, two genotypes recorded dark green-coloured fruit skin and light green colour was recorded in one genotype in the last week of February and the second week of March in both the year of study, respectively.

Table 4.1.9: Categorization of ridge gourd genotypes with respect to the fruit skin colour

Treatments	Genotypes	Fruit skin colour			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Green	Green	Green	Green
T ₂	IC-262231	Green	Green	Green	Green
T ₃	IC-262245	D. Green	D. Green	D. Green	D. Green
T ₄	IC-262265	Green	Green	Green	Green
T ₅	IC-262258	Green	Green	Green	Green
T ₆	IC-264830	Green	Green	Green	Green
T ₇	IC-264908	Green	Green	Green	Green
T ₈	IC-264971	D. Green	D. Green	D. Green	D. Green
T ₉	IC-265026	Green	Green	Green	Green
T ₁₀	IC-278358	Green	Green	Green	Green
T ₁₁	IC-279691	Green	Green	Green	Green
T ₁₂	IC-341099	Green	Green	Green	Green
T ₁₃	IC-341110	Green	Green	Green	Green
T ₁₄	IC-341116	L. Green	L. Green	L. Green	L. Green
T ₁₅	IC-341122	Green	Green	Green	Green
T ₁₆	IC-341161	Green	Green	Green	Green
T ₁₇	IC-345576	Green	Green	Green	Green
T ₁₈	IC-355952	Green	Green	Green	Green
T ₁₉	IC-355959	Green	Green	Green	Green
T ₂₀	IC-355961	Green	Green	Green	Green
T ₂₁	IC-355967	Green	Green	Green	Green
T ₂₂	IC-355974	Green	Green	Green	Green
T ₂₃	IC-356037	Green	Green	Green	Green
T ₂₄	IC-392531	Green	Green	Green	Green
T ₂₅	IC-392534	Green	Green	Green	Green
T ₂₆	IC-392535	Green	Green	Green	Green
T ₂₇	IC-392538	Green	Green	Green	Green
T ₂₈	IC-392544	Green	Green	Green	Green
T ₂₉	IC-392555	Green	Green	Green	Green
T ₃₀	IC-393298	Green	Green	Green	Green
T ₃₁	IC-393305	Green	Green	Green	Green
T ₃₂	IC-429925	Green	Green	Green	Green
T ₃₃	IC-429949	Green	Green	Green	Green
T ₃₄	IC-429965	Green	Green	Green	Green
T ₃₅	IC-429970	Green	Green	Green	Green
T ₃₆	DARL/SS/238	Green	Green	Green	Green
T ₃₇	DARL/SS/60	Green	Green	Green	Green
T ₃₈	Akola-01	Green	Green	Green	Green
T ₃₉	Konkan Harita	Green	Green	Green	Green
T ₄₀	Pusa Nasdar	Green	Green	Green	Green

Light Green; Green; Dark Green

4.1.10 Fruit shape of blossom end

Table 4.1.10, indicated that the ridge gourd genotypes were classified based on the fruit shape of blossom end as either rounded or pointed. The fruit shape of blossom end was recorded for all the genotypes in the last week of February and the second week of March in the years 2022 and 2023, respectively.

Table 4.1.10: Categorization of ridge gourd genotypes with respect to the fruit shape of blossom end

Treatments	Genotypes	Fruit shape of blossom end			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Rounded	Rounded	Rounded	Rounded
T ₂	IC-262231	Rounded	Rounded	Rounded	Rounded
T ₃	IC-262245	Rounded	Rounded	Rounded	Rounded
T ₄	IC-262265	Rounded	Rounded	Rounded	Rounded
T ₅	IC-262258	Rounded	Rounded	Rounded	Rounded
T ₆	IC-264830	Rounded	Rounded	Rounded	Rounded
T ₇	IC-264908	Rounded	Rounded	Rounded	Rounded
T ₈	IC-264971	Rounded	Rounded	Rounded	Rounded
T ₉	IC-265026	Rounded	Rounded	Rounded	Rounded
T ₁₀	IC-278358	Rounded	Rounded	Rounded	Rounded
T ₁₁	IC-279691	Rounded	Rounded	Rounded	Rounded
T ₁₂	IC-341099	Rounded	Rounded	Rounded	Rounded
T ₁₃	IC-341110	Rounded	Rounded	Rounded	Rounded
T ₁₄	IC-341116	Rounded	Rounded	Rounded	Rounded
T ₁₅	IC-341122	Rounded	Rounded	Rounded	Rounded
T ₁₆	IC-341161	Rounded	Rounded	Rounded	Rounded
T ₁₇	IC-345576	Rounded	Rounded	Rounded	Rounded
T ₁₈	IC-355952	Rounded	Rounded	Rounded	Rounded
T ₁₉	IC-355959	Rounded	Rounded	Rounded	Rounded
T ₂₀	IC-355961	Rounded	Rounded	Rounded	Rounded
T ₂₁	IC-355967	Rounded	Rounded	Rounded	Rounded
T ₂₂	IC-355974	Rounded	Rounded	Rounded	Rounded
T ₂₃	IC-356037	Rounded	Rounded	Rounded	Rounded
T ₂₄	IC-392531	Rounded	Rounded	Rounded	Rounded
T ₂₅	IC-392534	Rounded	Rounded	Rounded	Rounded
T ₂₆	IC-392535	Rounded	Rounded	Rounded	Rounded
T ₂₇	IC-392538	Rounded	Rounded	Rounded	Rounded
T ₂₈	IC-392544	Rounded	Rounded	Rounded	Rounded
T ₂₉	IC-392555	Rounded	Rounded	Rounded	Rounded
T ₃₀	IC-393298	Rounded	Rounded	Rounded	Rounded
T ₃₁	IC-393305	Rounded	Rounded	Rounded	Rounded
T ₃₂	IC-429925	Rounded	Rounded	Rounded	Rounded
T ₃₃	IC-429949	Rounded	Rounded	Rounded	Rounded
T ₃₄	IC-429965	Rounded	Rounded	Rounded	Rounded
T ₃₅	IC-429970	Rounded	Rounded	Rounded	Rounded
T ₃₆	DARL/SS/238	Rounded	Rounded	Rounded	Rounded
T ₃₇	DARL/SS/60	Rounded	Rounded	Rounded	Rounded
T ₃₈	Akola-01	Rounded	Rounded	Rounded	Rounded
T ₃₉	Konkan Harita	Rounded	Rounded	Rounded	Rounded
T ₄₀	Pusa Nasdar	Rounded	Rounded	Rounded	Rounded

Rounded; Pointed

4.1.11 Fruit shape of peduncle end

The data presented in Table 4.1.11, the ridge gourd genotypes were categorized on the basis of the fruit shape at peduncle end as either rounded or pointed. All the genotypes observed rounded fruit shape at peduncle end in the last week of February and the second week of March in 2022 and 2023, respectively.

Table 4.1.11: Categorization of ridge gourd genotypes with respect to the fruit shape at peduncle end

Treatments	Genotypes	Fruit shape at peduncle end			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Rounded	Rounded	Rounded	Rounded
T ₂	IC-262231	Rounded	Rounded	Rounded	Rounded
T ₃	IC-262245	Rounded	Rounded	Rounded	Rounded
T ₄	IC-262265	Rounded	Rounded	Rounded	Rounded
T ₅	IC-262258	Rounded	Rounded	Rounded	Rounded
T ₆	IC-264830	Rounded	Rounded	Rounded	Rounded
T ₇	IC-264908	Rounded	Rounded	Rounded	Rounded
T ₈	IC-264971	Rounded	Rounded	Rounded	Rounded
T ₉	IC-265026	Rounded	Rounded	Rounded	Rounded
T ₁₀	IC-278358	Rounded	Rounded	Rounded	Rounded
T ₁₁	IC-279691	Rounded	Rounded	Rounded	Rounded
T ₁₂	IC-341099	Rounded	Rounded	Rounded	Rounded
T ₁₃	IC-341110	Rounded	Rounded	Rounded	Rounded
T ₁₄	IC-341116	Rounded	Rounded	Rounded	Rounded
T ₁₅	IC-341122	Rounded	Rounded	Rounded	Rounded
T ₁₆	IC-341161	Rounded	Rounded	Rounded	Rounded
T ₁₇	IC-345576	Rounded	Rounded	Rounded	Rounded
T ₁₈	IC-355952	Rounded	Rounded	Rounded	Rounded
T ₁₉	IC-355959	Rounded	Rounded	Rounded	Rounded
T ₂₀	IC-355961	Rounded	Rounded	Rounded	Rounded
T ₂₁	IC-355967	Rounded	Rounded	Rounded	Rounded
T ₂₂	IC-355974	Rounded	Rounded	Rounded	Rounded
T ₂₃	IC-356037	Rounded	Rounded	Rounded	Rounded
T ₂₄	IC-392531	Rounded	Rounded	Rounded	Rounded
T ₂₅	IC-392534	Rounded	Rounded	Rounded	Rounded
T ₂₆	IC-392535	Rounded	Rounded	Rounded	Rounded
T ₂₇	IC-392538	Rounded	Rounded	Rounded	Rounded
T ₂₈	IC-392544	Rounded	Rounded	Rounded	Rounded
T ₂₉	IC-392555	Rounded	Rounded	Rounded	Rounded
T ₃₀	IC-393298	Rounded	Rounded	Rounded	Rounded
T ₃₁	IC-393305	Rounded	Rounded	Rounded	Rounded
T ₃₂	IC-429925	Rounded	Rounded	Rounded	Rounded
T ₃₃	IC-429949	Rounded	Rounded	Rounded	Rounded
T ₃₄	IC-429965	Rounded	Rounded	Rounded	Rounded
T ₃₅	IC-429970	Rounded	Rounded	Rounded	Rounded
T ₃₆	DARL/SS/238	Rounded	Rounded	Rounded	Rounded
T ₃₇	DARL/SS/60	Rounded	Rounded	Rounded	Rounded
T ₃₈	Akola-01	Rounded	Rounded	Rounded	Rounded
T ₃₉	Konkan Harita	Rounded	Rounded	Rounded	Rounded
T ₄₀	Pusa Nasdar	Rounded	Rounded	Rounded	Rounded

Rounded; Pointed

4.1.12 Fruit skin luster

Table 4.1.12, indicated that the ridge gourd genotypes were classified on the basis of the fruit skin luster as either matt or glossy. All the forty genotypes recorded matt fruit skin luster in the last week of February and the second week of March in both the years of study.

Table 4.1.12: Categorization of ridge gourd genotypes with respect to the fruit skin luster

Treatments	Genotypes	Fruit skin luster			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Matt	Matt	Matt	Matt
T ₂	IC-262231	Matt	Matt	Matt	Matt
T ₃	IC-262245	Matt	Matt	Matt	Matt
T ₄	IC-262265	Matt	Matt	Matt	Matt
T ₅	IC-262258	Matt	Matt	Matt	Matt
T ₆	IC-264830	Matt	Matt	Matt	Matt
T ₇	IC-264908	Matt	Matt	Matt	Matt
T ₈	IC-264971	Matt	Matt	Matt	Matt
T ₉	IC-265026	Matt	Matt	Matt	Matt
T ₁₀	IC-278358	Matt	Matt	Matt	Matt
T ₁₁	IC-279691	Matt	Matt	Matt	Matt
T ₁₂	IC-341099	Matt	Matt	Matt	Matt
T ₁₃	IC-341110	Matt	Matt	Matt	Matt
T ₁₄	IC-341116	Matt	Matt	Matt	Matt
T ₁₅	IC-341122	Matt	Matt	Matt	Matt
T ₁₆	IC-341161	Matt	Matt	Matt	Matt
T ₁₇	IC-345576	Matt	Matt	Matt	Matt
T ₁₈	IC-355952	Matt	Matt	Matt	Matt
T ₁₉	IC-355959	Matt	Matt	Matt	Matt
T ₂₀	IC-355961	Matt	Matt	Matt	Matt
T ₂₁	IC-355967	Matt	Matt	Matt	Matt
T ₂₂	IC-355974	Matt	Matt	Matt	Matt
T ₂₃	IC-356037	Matt	Matt	Matt	Matt
T ₂₄	IC-392531	Matt	Matt	Matt	Matt
T ₂₅	IC-392534	Matt	Matt	Matt	Matt
T ₂₆	IC-392535	Matt	Matt	Matt	Matt
T ₂₇	IC-392538	Matt	Matt	Matt	Matt
T ₂₈	IC-392544	Matt	Matt	Matt	Matt
T ₂₉	IC-392555	Matt	Matt	Matt	Matt
T ₃₀	IC-393298	Matt	Matt	Matt	Matt
T ₃₁	IC-393305	Matt	Matt	Matt	Matt
T ₃₂	IC-429925	Matt	Matt	Matt	Matt
T ₃₃	IC-429949	Matt	Matt	Matt	Matt
T ₃₄	IC-429965	Matt	Matt	Matt	Matt
T ₃₅	IC-429970	Matt	Matt	Matt	Matt
T ₃₆	DARL/SS/238	Matt	Matt	Matt	Matt
T ₃₇	DARL/SS/60	Matt	Matt	Matt	Matt
T ₃₈	Akola-01	Matt	Matt	Matt	Matt
T ₃₉	Konkan Harita	Matt	Matt	Matt	Matt
T ₄₀	Pusa Nasdar	Matt	Matt	Matt	Matt

Matt; Glossy

4.1.13 Fruit ridge (rib) shape

Based on the fruit ridge (rib) shape of ridge gourd genotypes were clustered into three types *i.e.*, superficial, medium and deep. Out of forty genotypes, maximum thirty-four genotypes recorded medium fruit ridge shape, whereas, deep fruit ridge shape were observed in six genotypes in both the date of sowing in 2022 and 2023, respectively (Table 4.1.13).

Table 4.1.13: Categorization of ridge gourd genotypes with respect to the fruit ridge (rib) shape

Treatments	Genotypes	Fruit ridge (rib) shape			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Medium	Medium	Medium	Medium
T ₂	IC-262231	Medium	Medium	Medium	Medium
T ₃	IC-262245	Medium	Medium	Medium	Medium
T ₄	IC-262265	Medium	Medium	Medium	Medium
T ₅	IC-262258	Medium	Medium	Medium	Medium
T ₆	IC-264830	Medium	Medium	Medium	Medium
T ₇	IC-264908	Medium	Medium	Medium	Medium
T ₈	IC-264971	Medium	Medium	Medium	Medium
T ₉	IC-265026	Medium	Medium	Medium	Medium
T ₁₀	IC-278358	Medium	Medium	Medium	Medium
T ₁₁	IC-279691	Medium	Medium	Medium	Medium
T ₁₂	IC-341099	Medium	Medium	Medium	Medium
T ₁₃	IC-341110	Medium	Medium	Medium	Medium
T ₁₄	IC-341116	Deep	Deep	Deep	Deep
T ₁₅	IC-341122	Medium	Medium	Medium	Medium
T ₁₆	IC-341161	Medium	Medium	Medium	Medium
T ₁₇	IC-345576	Medium	Medium	Medium	Medium
T ₁₈	IC-355952	Medium	Medium	Medium	Medium
T ₁₉	IC-355959	Medium	Medium	Medium	Medium
T ₂₀	IC-355961	Medium	Medium	Medium	Medium
T ₂₁	IC-355967	Medium	Medium	Medium	Medium
T ₂₂	IC-355974	Medium	Medium	Medium	Medium
T ₂₃	IC-356037	Medium	Medium	Medium	Medium
T ₂₄	IC-392531	Deep	Deep	Deep	Deep
T ₂₅	IC-392534	Deep	Deep	Deep	Deep
T ₂₆	IC-392535	Medium	Medium	Medium	Medium
T ₂₇	IC-392538	Medium	Medium	Medium	Medium
T ₂₈	IC-392544	Deep	Deep	Deep	Deep
T ₂₉	IC-392555	Medium	Medium	Medium	Medium
T ₃₀	IC-393298	Medium	Medium	Medium	Medium
T ₃₁	IC-393305	Medium	Medium	Medium	Medium
T ₃₂	IC-429925	Medium	Medium	Medium	Medium
T ₃₃	IC-429949	Deep	Deep	Deep	Deep
T ₃₄	IC-429965	Medium	Medium	Medium	Medium
T ₃₅	IC-429970	Deep	Deep	Deep	Deep
T ₃₆	DARL/SS/238	Medium	Medium	Medium	Medium
T ₃₇	DARL/SS/60	Medium	Medium	Medium	Medium
T ₃₈	Akola-01	Medium	Medium	Medium	Medium
T ₃₉	Konkan Harita	Medium	Medium	Medium	Medium
T ₄₀	Pusa Nasdar	Medium	Medium	Medium	Medium

Superficial; Medium; Deep

4.1.14 Flesh texture

The data presented in Table 4.1.14, showed that the flesh texture of ridge gourd genotypes were categorized into three types *i.e.*, smooth, soft/spongy and fibrous/gelatinous. All the forty genotypes recorded soft/spongy flesh texture in both the year of study in the last week of February and the second week of March, respectively.

Table 4.1.14: Categorization of ridge gourd genotypes with respect to the flesh texture

Treatments	Genotypes	Flesh texture			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂	IC-262231	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃	IC-262245	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₄	IC-262265	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₅	IC-262258	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₆	IC-264830	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₇	IC-264908	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₈	IC-264971	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₉	IC-265026	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₀	IC-278358	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₁	IC-279691	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₂	IC-341099	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₃	IC-341110	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₄	IC-341116	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₅	IC-341122	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₆	IC-341161	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₇	IC-345576	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₈	IC-355952	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₁₉	IC-355959	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₀	IC-355961	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₁	IC-355967	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₂	IC-355974	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₃	IC-356037	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₄	IC-392531	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₅	IC-392534	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₆	IC-392535	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₇	IC-392538	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₈	IC-392544	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₂₉	IC-392555	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₀	IC-393298	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₁	IC-393305	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₂	IC-429925	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₃	IC-429949	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₄	IC-429965	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₅	IC-429970	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₆	DARL/SS/238	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₇	DARL/SS/60	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₈	Akola-01	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₃₉	Konkan Harita	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy
T ₄₀	Pusa Nasdar	Soft/Spongy	Soft/Spongy	Soft/Spongy	Soft/Spongy

Smooth; Soft/Spongy; Fibrous-Gelatinous

4.1.15 Flesh colour

The ridge gourd genotypes classified based on the flesh colour were categorized into two types *i.e.*, white and cream. Cream flesh colour were observed in all the forty genotypes in the last week of February and the second week of March in both the years of study, as shown in Table 4.1.15.

Table 4.1.15: Categorization of ridge gourd genotypes with respect to the flesh colour

Treatments	Genotypes	Flesh colour			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	Cream	Cream	Cream	Cream
T ₂	IC-262231	Cream	Cream	Cream	Cream
T ₃	IC-262245	Cream	Cream	Cream	Cream
T ₄	IC-262265	Cream	Cream	Cream	Cream
T ₅	IC-262258	Cream	Cream	Cream	Cream
T ₆	IC-264830	Cream	Cream	Cream	Cream
T ₇	IC-264908	Cream	Cream	Cream	Cream
T ₈	IC-264971	Cream	Cream	Cream	Cream
T ₉	IC-265026	Cream	Cream	Cream	Cream
T ₁₀	IC-278358	Cream	Cream	Cream	Cream
T ₁₁	IC-279691	Cream	Cream	Cream	Cream
T ₁₂	IC-341099	Cream	Cream	Cream	Cream
T ₁₃	IC-341110	Cream	Cream	Cream	Cream
T ₁₄	IC-341116	Cream	Cream	Cream	Cream
T ₁₅	IC-341122	Cream	Cream	Cream	Cream
T ₁₆	IC-341161	Cream	Cream	Cream	Cream
T ₁₇	IC-345576	Cream	Cream	Cream	Cream
T ₁₈	IC-355952	Cream	Cream	Cream	Cream
T ₁₉	IC-355959	Cream	Cream	Cream	Cream
T ₂₀	IC-355961	Cream	Cream	Cream	Cream
T ₂₁	IC-355967	Cream	Cream	Cream	Cream
T ₂₂	IC-355974	Cream	Cream	Cream	Cream
T ₂₃	IC-356037	Cream	Cream	Cream	Cream
T ₂₄	IC-392531	Cream	Cream	Cream	Cream
T ₂₅	IC-392534	Cream	Cream	Cream	Cream
T ₂₆	IC-392535	Cream	Cream	Cream	Cream
T ₂₇	IC-392538	Cream	Cream	Cream	Cream
T ₂₈	IC-392544	Cream	Cream	Cream	Cream
T ₂₉	IC-392555	Cream	Cream	Cream	Cream
T ₃₀	IC-393298	Cream	Cream	Cream	Cream
T ₃₁	IC-393305	Cream	Cream	Cream	Cream
T ₃₂	IC-429925	Cream	Cream	Cream	Cream
T ₃₃	IC-429949	Cream	Cream	Cream	Cream
T ₃₄	IC-429965	Cream	Cream	Cream	Cream
T ₃₅	IC-429970	Cream	Cream	Cream	Cream
T ₃₆	DARL/SS/238	Cream	Cream	Cream	Cream
T ₃₇	DARL/SS/60	Cream	Cream	Cream	Cream
T ₃₈	Akola-01	Cream	Cream	Cream	Cream
T ₃₉	Konkan Harita	Cream	Cream	Cream	Cream
T ₄₀	Pusa Nasdar	Cream	Cream	Cream	Cream

White; Cream



Plate 8a: Variability for fruit shape in ridge gourd genotypes

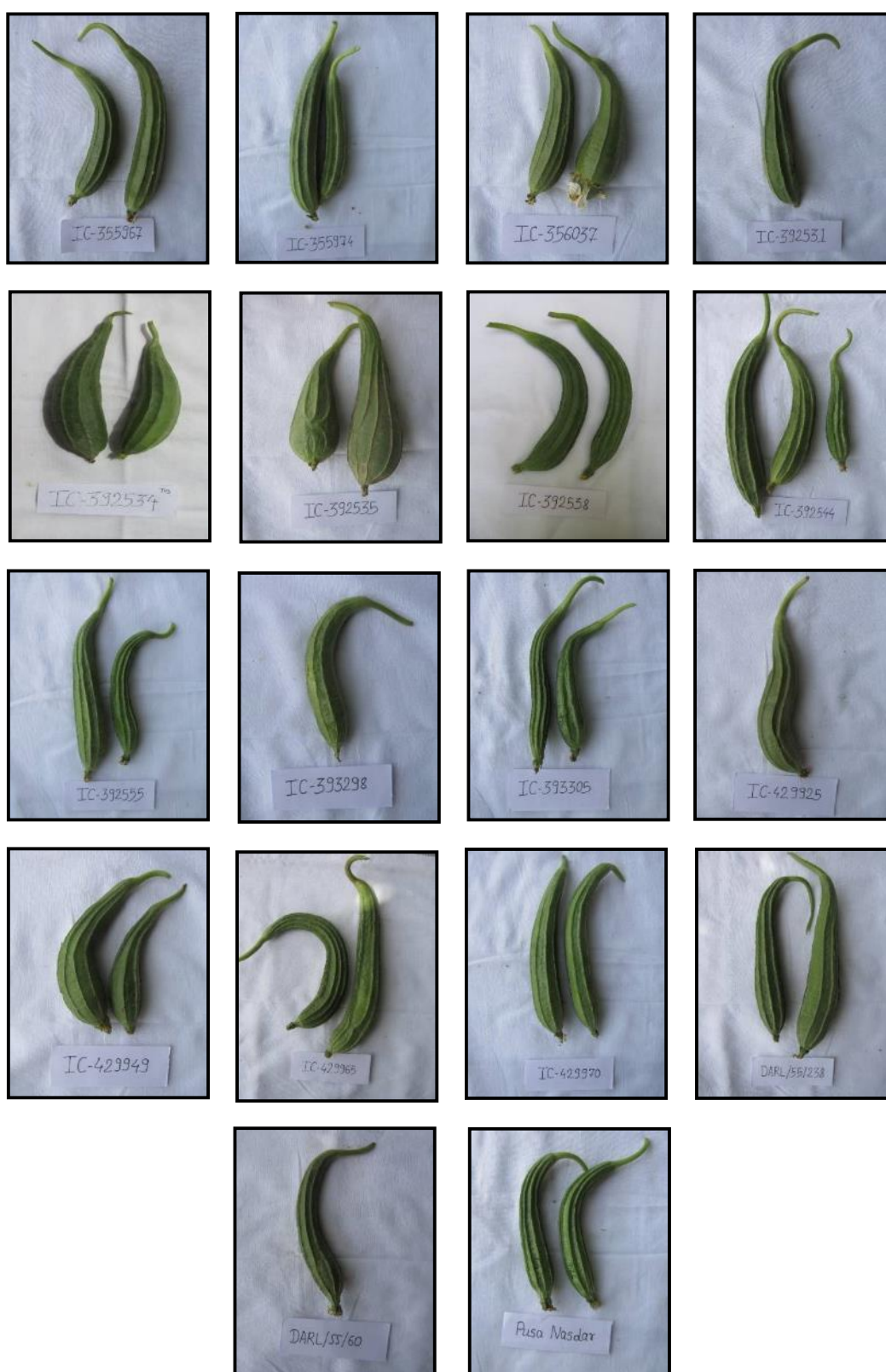


Plate 8b: Variability for fruit shape in ridge gourd genotypes

4.2 Mean performance

Mean performance of different characters of ridge gourd genotypes was observed that wide range from variability is present in both the date of sowing and in both the year, 2022 and 2023 for all the twenty-two traits under study. Minimum, maximum and at par values were recorded in each character are discussed in the section below.

4.2.1 Days to 50% germination

Table 4.2.1 indicated that the days to 50% germination in ridge gourd genotypes, the minimum days (8.04) for 50% germination was recorded in the genotype IC-392535 which was significantly at par with Pusa Nasdar (8.19), IC-355967 (8.27), IC-264971 (8.38), IC-262258 (8.68), IC-262231 (8.83), Konkan Harita (9.24), Akola-01 (9.30), IC-355952 (9.42), IC-429965 (9.53), IC-355961 (9.89), IC-264908 (10.14), IC-355959 (10.27), IC-393305 (10.49), IC-429925 (10.49), IC-356037 (10.55), IC-392538 (10.59), IC-262188 (10.89), IC-392534 (10.90), IC-341116 (11.15), IC-264830 (11.38) and IC-262265 (11.51), while genotype IC-341110 recorded significantly maximum number of days (16.07) for 50% germination in the last week of February, 2022. Whereas, in the last week of February, 2023, the minimum days (8.03) for 50% germination was recorded in the genotype IC-392535 which was significantly at par with Pusa Nasdar (8.20), IC-262231 (8.94), IC-355967 (8.94), IC-262258 (9.29), IC-355961 (9.64), IC-264971 (9.69), IC-355952 (9.93), IC-264908 (10.15), IC-429965 (10.23), Konkan Harita (10.38), Akola-01 (10.63), IC-355959 (10.65), IC-392538 (11.10), IC-265026 (11.46) and IC-429925 (11.46), while genotype IC-341110 recorded significantly maximum number of days (17.35) for 50% germination.

In the second week of March, 2022, the minimum days (6.83) for 50% germination was observed in the genotype IC-355967 which was significantly at par with Pusa Nasdar (7.29), IC-429965 (7.31), IC-262258 (7.58), IC-264971 (7.74), IC-392535 (7.93), IC-355961 (8.21), Akola-01 (8.22), IC-262231 (8.28), IC-264908 (8.30), IC-355952 (8.59), IC-356037 (8.65), IC-392534 (8.73), IC-392538 (8.79), IC-279691 (8.80), Konkan Harita (8.86), IC-262188 (8.89), IC-393298 (9.12), IC-429925 (9.20), IC-393305 (9.33), IC-355959 (9.45), IC-262245 (9.51), IC-262265 (9.49) and IC-264830 (9.81), while genotype IC-341110 recorded significantly maximum number of days (14.42) for 50% germination. The genotype IC-355967 recorded minimum days (6.44) for 50% germination followed by IC-392535 (6.89), IC-355952 (6.95), Pusa Nasdar (7.13), IC-355961 (7.31), IC-262231 (7.92), IC-264971 (7.92), IC-355959 (8.02), IC-262258 (8.04), Konkan Harita (8.92), IC-341161 (9.22), Akola-01 (9.27), IC-265026 (9.30), IC-392538 (9.33) and IC-262265 (9.63), while genotype IC-341110 recorded significantly maximum number of days (15.90) for 50% germination in the second week of March (2023).

Table 4.2.1: Mean performance of days to 50% germination in ridge gourd genotypes

Treatments	Genotypes	Days to 50% germination			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	10.89 ^{cdefghijk}	11.75 ^{cdefghij}	8.89 ^{ghijk}	10.84 ^{bcdefgh}
T ₂	IC-262231	8.83 ^{hijk}	8.94 ^{ijk}	8.28 ^{hijk}	7.92 ^{hijklm}
T ₃	IC-262245	13.14 ^{abcdef}	13.09 ^{bcdefgh}	9.51 ^{defghijk}	9.63 ^{cdefghijklm}
T ₄	IC-262265	11.51 ^{bcdefghijk}	12.06 ^{bcdefghi}	9.49 ^{defghijk}	9.84 ^{bcdefghijkl}
T ₅	IC-262258	8.68 ^{ijk}	9.29 ^{ijk}	7.58 ^{jk}	8.04 ^{ghijklm}
T ₆	IC-264830	11.38 ^{bcdefghijk}	12.03 ^{bcdefghi}	9.81 ^{cdefghijk}	10.43 ^{bcdefghi}
T ₇	IC-264908	10.14 ^{fghijk}	10.15 ^{fghijk}	8.30 ^{hijk}	9.78 ^{bcdefghijkl}
T ₈	IC-264971	8.38 ^{jk}	9.69 ^{hijk}	7.74 ^{ijk}	7.92 ^{hijklm}
T ₉	IC-265026	12.08 ^{bcdefghi}	11.46 ^{cdefghijk}	11.42 ^{abcdefgh}	9.30 ^{defghijklm}
T ₁₀	IC-278358	14.53 ^{ab}	14.28 ^{abcd}	12.43 ^{abcde}	12.94 ^{ab}
T ₁₁	IC-279691	14.16 ^{abc}	14.38 ^{abc}	8.80 ^{ghijk}	12.35 ^{bcde}
T ₁₂	IC-341099	11.61 ^{bcdefghij}	12.22 ^{bcdefghi}	10.58 ^{bcdefghij}	10.48 ^{bcdefghi}
T ₁₃	IC-341110	16.22 ^a	17.35 ^a	14.42 ^a	15.90 ^a
T ₁₄	IC-341116	11.15 ^{bcdefghijk}	13.23 ^{bcdefgh}	10.47 ^{bcdefghij}	11.94 ^{bcdef}
T ₁₅	IC-341122	12.28 ^{bcdefgh}	12.44 ^{bcdefghi}	10.83 ^{bcdefghi}	9.95 ^{bcdefghijkl}
T ₁₆	IC-341161	13.82 ^{abcd}	12.64 ^{bcdefghi}	12.94 ^{abc}	9.22 ^{efghijklm}
T ₁₇	IC-345576	13.79 ^{abcde}	12.54 ^{bcdefghi}	12.56 ^{abcd}	11.20 ^{bcdefg}
T ₁₈	IC-355952	9.42 ^{ghijk}	9.93 ^{ghijk}	8.59 ^{hijk}	6.95 ^{klm}
T ₁₉	IC-355959	10.27 ^{efghijk}	10.65 ^{defghijk}	9.45 ^{defghijk}	8.02 ^{ghijklm}
T ₂₀	IC-355961	9.89 ^{fghijk}	9.64 ^{hijk}	8.21 ^{ijk}	7.31 ^{ijklm}
T ₂₁	IC-355967	8.27 ^{jk}	8.94 ^{ijk}	6.83 ^k	6.44 ^m
T ₂₂	IC-355974	14.32 ^{abc}	14.14 ^{abcd}	12.75 ^{abc}	11.04 ^{bcdefgh}
T ₂₃	IC-356037	10.55 ^{defghijk}	12.00 ^{bcdefghi}	8.65 ^{hijk}	10.14 ^{bcdefghijk}
T ₂₄	IC-392531	16.07 ^a	15.49 ^{ab}	13.41 ^{ab}	12.08 ^{bcdef}
T ₂₅	IC-392534	10.90 ^{cdefghijk}	13.58 ^{bcdefg}	8.73 ^{ghijk}	12.43 ^{bcde}
T ₂₆	IC-392535	8.04 ^k	8.03 ^k	7.93 ^{ijk}	6.89 ^{lm}
T ₂₇	IC-392538	10.59 ^{defghijk}	11.10 ^{cdefghijk}	8.79 ^{ghijk}	9.33 ^{defghijklm}
T ₂₈	IC-392544	14.12 ^{abc}	13.63 ^{bcdefg}	11.84 ^{abcdefg}	12.69 ^{abc}
T ₂₉	IC-392555	12.25 ^{bcdefgh}	12.45 ^{bcdefghi}	10.84 ^{bcdefghi}	12.49 ^{bcd}
T ₃₀	IC-393298	12.19 ^{bcdefghi}	12.28 ^{bcdefghi}	9.12 ^{fghijk}	10.29 ^{bcdefghij}
T ₃₁	IC-393305	10.22 ^{fghijk}	13.88 ^{abcde}	9.33 ^{efghijk}	11.93 ^{bcdef}
T ₃₂	IC-429925	10.49 ^{defghijk}	11.46 ^{cdefghijk}	9.20 ^{fghijk}	9.05 ^{fghijklm}
T ₃₃	IC-429949	12.48 ^{bcdefg}	13.51 ^{bcdefg}	10.48 ^{bcdefghij}	11.66 ^{bcdef}
T ₃₄	IC-429965	9.53 ^{ghijk}	10.23 ^{efghijk}	7.31 ^k	9.86 ^{bcdefghijkl}
T ₃₅	IC-429970	14.47 ^{ab}	13.76 ^{abcdef}	12.22 ^{abcdef}	11.15 ^{bcdefgh}
T ₃₆	DARL/SS/238	12.13 ^{bcdefghi}	13.64 ^{abcdefg}	10.52 ^{bcdefghij}	11.81 ^{bcdef}
T ₃₇	DARL/SS/60	12.26 ^{bcdefgh}	13.34 ^{bcdefgh}	12.09 ^{abcdef}	10.98 ^{bcdefgh}
T ₃₈	Akola-01	9.30 ^{ghijk}	10.63 ^{defghijk}	8.22 ^{ijk}	9.27 ^{defghijklm}
T ₃₉	Konkan Harita	9.24 ^{ghijk}	10.38 ^{efghijk}	8.86 ^{ghijk}	8.92 ^{fghijklm}
T ₄₀	Pusa Nasdar	8.19 ^{jk}	8.20 ^{jk}	7.29 ^k	7.13 ^{klm}
M.S.D.		3.52	3.72	3.15	3.24
SE(m)		0.62	0.65	0.55	0.57
SE(d)		0.87	0.92	0.78	0.80
C.V.		9.31	9.41	9.65	9.68

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

Table 4.2.2: Mean performance of number of primary branches/vine in ridge gourd genotypes

Treatments	Genotypes	Number of primary branches per vine			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	5.33 ^{bcdefghi}	5.35 ^{defg}	4.67 ^{efghijklm}	4.73 ^{hijklmno}
T ₂	IC-262231	5.31 ^{cdefghij}	6.00 ^{abcdefg}	4.97 ^{efghijk}	5.67 ^{defghijk}
T ₃	IC-262245	5.66 ^{abcdefg}	5.64 ^{bcdefg}	4.89 ^{efghijk}	5.55 ^{efghijk}
T ₄	IC-262265	3.78 ^{lm}	4.68 ^g	3.22 ^{lm}	3.08 ^{pq}
T ₅	IC-262258	4.00 ^{klm}	5.16 ^{efg}	3.82 ^{jklm}	4.67 ^{ijklmno}
T ₆	IC-264830	5.91 ^{abcd}	6.67 ^{abcde}	6.00 ^{bcdef}	6.22 ^{bcdefgh}
T ₇	IC-264908	5.86 ^{abcde}	6.67 ^{abcde}	5.80 ^{bcdefg}	6.11 ^{cdefghij}
T ₈	IC-264971	5.00 ^{cdefghijkl}	5.24 ^{efg}	4.77 ^{efghijkl}	5.00 ^{ghijklmno}
T ₉	IC-265026	5.09 ^{cdefghijk}	6.11 ^{abcdefg}	5.89 ^{bcdefg}	6.05 ^{cdefghij}
T ₁₀	IC-278358	6.56 ^{ab}	6.78 ^{abcd}	5.07 ^{defghijk}	6.22 ^{bcdefgh}
T ₁₁	IC-279691	5.66 ^{abcdefg}	6.08 ^{abcdefg}	5.22 ^{defghij}	5.44 ^{fghijk}
T ₁₂	IC-341099	5.81 ^{abcdef}	6.96 ^{abc}	6.33 ^{abcde}	7.54 ^{abc}
T ₁₃	IC-341110	4.00 ^{klm}	5.58 ^{cdefg}	3.55 ^{klm}	3.67 ^{opq}
T ₁₄	IC-341116	5.52 ^{bcdefgh}	6.11 ^{abcdefg}	6.11 ^{bcdef}	6.63 ^{bcdef}
T ₁₅	IC-341161	6.87 ^a	7.44 ^a	4.00 ^{ijklm}	3.81 ^{mnpq}
T ₁₆	IC-345576	3.33 ^m	5.53 ^{cdefg}	3.00 ^m	2.99 ^q
T ₁₇	IC-341122	4.62 ^{fghijkl}	5.89 ^{bcdefg}	5.67 ^{bcdefghi}	5.85 ^{defghij}
T ₁₈	IC-355952	4.09 ^{jklm}	4.67 ^g	4.11 ^{hijklm}	4.12 ^{klmnopq}
T ₁₉	IC-355959	5.55 ^{bcdefgh}	5.67 ^{bcdefg}	6.00 ^{bcdefg}	6.34 ^{bcdefg}
T ₂₀	IC-355961	4.89 ^{cdefghijkl}	5.77 ^{bcdefg}	4.78 ^{efghijkl}	5.07 ^{ghijklmno}
T ₂₁	IC-355967	5.56 ^{bcdefgh}	5.63 ^{bcdefg}	4.45 ^{fghijklm}	4.57 ^{jklmnop}
T ₂₂	IC-355974	5.11 ^{cdefghijk}	6.09 ^{abcdefg}	4.89 ^{efghijkl}	5.12 ^{fghijklmno}
T ₂₃	IC-356037	6.11 ^{abc}	6.50 ^{abcdef}	5.78 ^{bcdefgh}	5.82 ^{defghij}
T ₂₄	IC-392531	5.11 ^{cdefghijk}	5.94 ^{abcdefg}	4.67 ^{efghijklm}	4.76 ^{hijklmno}
T ₂₅	IC-392534	5.56 ^{bcdefgh}	5.77 ^{bcdefg}	5.78 ^{bcdefgh}	6.32 ^{bcdefg}
T ₂₆	IC-392535	5.78 ^{abcdefg}	6.14 ^{abcdefg}	5.11 ^{defghijk}	5.44 ^{fghijk}
T ₂₇	IC-392538	5.57 ^{bcdefg}	6.33 ^{abcdef}	6.11 ^{bcdef}	6.14 ^{bcdefghi}
T ₂₈	IC-392544	5.45 ^{bcdefghi}	6.92 ^{abc}	5.59 ^{cdefghi}	5.89 ^{defghij}
T ₂₉	IC-392555	4.76 ^{defghijkl}	5.11 ^{fg}	5.09 ^{defghijk}	5.22 ^{fghijklmn}
T ₃₀	IC-393298	5.04 ^{cdefghijk}	6.22 ^{abcdef}	5.00 ^{defghijk}	5.39 ^{fghijkl}
T ₃₁	IC-393305	4.67 ^{efghijkl}	5.52 ^{cdefg}	4.89 ^{efghijkl}	5.54 ^{efghijk}
T ₃₂	IC-429925	5.33 ^{bcdefghi}	5.62 ^{bcdefg}	5.56 ^{cdefghi}	5.31 ^{fghijklm}
T ₃₃	IC-429949	4.56 ^{ghijklm}	5.88 ^{bcdefg}	4.11 ^{hijklm}	3.76 ^{nopq}
T ₃₄	IC-429965	5.2 ^{cdefghijk}	6.33 ^{abcdef}	7.00 ^{abc}	7.09 ^{abcde}
T ₃₅	IC-429970	4.34 ^{hijklm}	5.67 ^{bcdefg}	4.67 ^{efghijklm}	4.65 ^{ijklmno}
T ₃₆	DARL/SS/238	4.23 ^{ijklm}	5.27 ^{defg}	4.33 ^{ghijklm}	4.65 ^{ijklmno}
T ₃₇	DARL/SS/60	5.21 ^{cdefghijk}	7.15 ^{ab}	3.55 ^{klm}	3.88 ^{lmnopq}
T ₃₈	Akola-01	5.03 ^{cdefghijk}	6.22 ^{abcdef}	6.67 ^{abcd}	7.14 ^{abcd}
T ₃₉	Konkan Harita	5.53 ^{bcdefgh}	7.00 ^{abc}	7.33 ^{ab}	7.68 ^{ab}
T ₄₀	Pusa Nasdar	5.41 ^{bcdefghi}	7.00 ^{abc}	8.00 ^a	8.57 ^a
M.S.D.		1.23	1.54	1.67	1.55
SE(m)		0.21	0.27	0.29	0.27
SE(d)		0.30	0.38	0.41	0.38
C.V.		7.20	7.75	9.79	8.64

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

Table 4.2.3: Mean performance of vine length (m) at final harvest in ridge gourd genotypes

Treatments	Genotypes	Vine length (m) at final harvest			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	2.74 ^{bcdefgh}	3.36 ^{ijklmnop}	3.02 ^{defgh}	3.36 ^{bcdefghi}
T ₂	IC-262231	2.36 ^{defgh}	2.91 ^{mnpq}	2.35 ^{ijklmn}	2.45 ^{ijklm}
T ₃	IC-262245	3.30 ^{abcdef}	3.60 ^{ghijklm}	2.99 ^{defgh}	3.17 ^{cdefghijk}
T ₄	IC-262265	3.03 ^{abcdefg}	3.44 ^{hijklmnop}	2.56 ^{hijkl}	2.72 ^{efghijklm}
T ₅	IC-262258	3.56 ^{abcd}	3.27 ^{klmnop}	2.49 ^{hijklm}	2.63 ^{fghijklm}
T ₆	IC-264830	2.67 ^{cdefgh}	3.14 ^{lmnop}	1.84 ⁿ	1.96 ^m
T ₇	IC-264908	2.56 ^{cdefgh}	3.49 ^{ghijklmnop}	2.63 ^{fghijkl}	3.06 ^{cdefghijkl}
T ₈	IC-264971	2.47 ^{cdefgh}	4.73 ^{ab}	3.66 ^{bc}	3.63 ^{bcd}
T ₉	IC-265026	2.81 ^{bcdefgh}	3.99 ^{cdefghij}	2.63 ^{fghijkl}	2.71 ^{efghijklm}
T ₁₀	IC-278358	2.97 ^{abcdefgh}	4.02 ^{cdefghi}	2.78 ^{efghijkl}	3.01 ^{cdefghijkl}
T ₁₁	IC-279691	2.31 ^{defgh}	3.29 ^{ijklmnop}	4.62 ^a	4.67 ^a
T ₁₂	IC-341099	2.61 ^{cdefgh}	2.84 ^{opq}	2.52 ^{hijkl}	2.68 ^{efghijklm}
T ₁₃	IC-341110	3.40 ^{abcdef}	4.35 ^{bcdef}	2.56 ^{hijkl}	2.88 ^{defghijkl}
T ₁₄	IC-341116	2.62 ^{cdefgh}	3.13 ^{lmnop}	3.32 ^{bcde}	3.53 ^{bcde}
T ₁₅	IC-341122	4.05 ^{ab}	5.13 ^a	3.76 ^b	4.06 ^{ab}
T ₁₆	IC-341161	2.65 ^{cdefgh}	2.88 ^{nopq}	2.73 ^{efghijkl}	2.83 ^{defghijklm}
T ₁₇	IC-345576	2.86 ^{bcdefgh}	3.55 ^{ghijklmn}	4.52 ^a	4.70 ^a
T ₁₈	IC-355952	2.27 ^{defgh}	4.10 ^{bcdefgh}	3.05 ^{cdefgh}	3.21 ^{bcdefghijk}
T ₁₉	IC-355959	2.78 ^{bcdefgh}	3.45 ^{hijklmnop}	2.23 ^{klmn}	2.38 ^{klm}
T ₂₀	IC-355961	2.69 ^{cdefgh}	2.80 ^{pq}	2.77 ^{efghijkl}	2.83 ^{defghijklm}
T ₂₁	IC-355967	3.13 ^{abcdefg}	4.37 ^{bcde}	2.36 ^{ijklmn}	2.60 ^{ghijklm}
T ₂₂	IC-355974	2.52 ^{cdefgh}	4.18 ^{bcdefg}	2.22 ^{klmn}	2.49 ^{ijklm}
T ₂₃	IC-356037	3.74 ^{abc}	3.33 ^{ijklmnop}	2.16 ^{lmn}	2.19 ^{lm}
T ₂₄	IC-392531	2.82 ^{bcdefgh}	4.15 ^{bcdefgh}	2.31 ^{ijklmn}	2.41 ^{ijklm}
T ₂₅	IC-392534	3.42 ^{abcde}	3.81 ^{cdefghijkl}	2.91 ^{defghij}	3.06 ^{cdefghijkl}
T ₂₆	IC-392535	1.67 ^h	2.31 ^q	3.22 ^{bcdef}	2.99 ^{cdefghijkl}
T ₂₇	IC-392538	2.72 ^{cdefgh}	2.79 ^{pq}	2.81 ^{efghijk}	2.92 ^{cdefghijkl}
T ₂₈	IC-392544	1.89 ^{gh}	2.85 ^{nopq}	2.98 ^{defghi}	3.21 ^{bcdefghijk}
T ₂₉	IC-392555	3.46 ^{abcde}	3.71 ^{efghijkl}	3.52 ^{bcd}	3.77 ^{bc}
T ₃₀	IC-393298	3.32 ^{abcdef}	4.38 ^{bcde}	1.87 ^{mn}	1.96 ^m
T ₃₁	IC-393305	4.24 ^a	4.48 ^{abc}	2.46 ^{hijklmn}	2.54 ^{hijklm}
T ₃₂	IC-429925	2.93 ^{abcdefgh}	3.48 ^{ghijklmnop}	3.03 ^{cdefgh}	3.2 ^{bcdefghijk}
T ₃₃	IC-429949	2.07 ^{fgh}	3.76 ^{defghijkl}	2.59 ^{ghijkl}	2.72 ^{efghijklm}
T ₃₄	IC-429965	3.01 ^{abcdefg}	4.45 ^{abcd}	2.76 ^{efghijkl}	2.93 ^{cdefghijkl}
T ₃₅	IC-429970	2.34 ^{defgh}	3.64 ^{fghijkl}	2.67 ^{fghijkl}	2.77 ^{defghijklm}
T ₃₆	DARL/SS/238	3.01 ^{abcdefg}	3.81 ^{cdefghijkl}	3.20 ^{bcdefg}	3.27 ^{bcdefghij}
T ₃₇	DARL/SS/60	2.15 ^{efgh}	3.80 ^{cdefghijkl}	3.23 ^{bcdef}	3.50 ^{bcdef}
T ₃₈	Akola-01	2.36 ^{defgh}	3.20 ^{lmnop}	3.50 ^{bcd}	3.46 ^{bcdefg}
T ₃₉	Konkan Harita	3.46 ^{abcde}	3.92 ^{cdefghijk}	3.21 ^{bcdefg}	3.39 ^{bcdefgh}
T ₄₀	Pusa Nasdar	3.10 ^{abcdefg}	3.54 ^{ghijklmno}	2.31 ^{ijklmn}	2.63 ^{fghijklm}
M.S.D.		1.33	0.71	0.63	0.88
SE(m)		0.23	0.12	0.11	0.15
SE(d)		0.33	0.18	0.16	0.22
C.V.		14.13	5.91	6.66	8.86

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

4.2.2 Number of primary branches per vine

The maximum number of primary branches per vine was recorded in the genotype IC-341161 (6.87) followed by IC-278358 (6.56), IC-356037 (6.11), IC-264830 (5.91), IC-264908 (5.86), IC-341099 (5.81), IC-392535 (5.78), IC-262245 (5.66) and IC-279691 (5.66), while IC-345576 (3.33) genotype recorded the minimum number of primary branches per vine. in the year 2022, last week of February. Whereas, the maximum number of primary branches per vine was observed in the genotype IC-341161 (7.44) which was significantly at par with Konkan Harita (7.00), Pusa Nasdar (7.00), IC-341099 (6.96), IC-392544 (6.92), IC-278358 (6.78), IC-264830 (6.67), IC-264908 (6.67), IC-356037 (6.50), IC-429965 (6.33), IC-392538 (6.33), Akola-01 (6.22), IC-392535 (6.14), IC-265026 (6.11), IC-341116 (6.11), IC-355974 (6.09), IC-279691 (6.08), IC-262231 (6.00) and IC-392531 (5.94), while the minimum number of primary branches per vine was recorded in the genotype IC-355952 (4.67), in the last week of February, 2023.

The maximum number of primary branches per vine was noted in Pusa Nasdar (8.00) which was at par with Konkan Harita (7.33), IC-429965 (7.00), Akola-01 (6.67) and IC-341099 (6.33), while the minimum number of primary branches per vine was observed in the genotype IC-345576 (3.00) in the second week of March, 2022. Whereas, in the year 2023, Pusa Nasdar (8.57) recorded maximum number of primary branches per vine followed by Konkan Harita (7.68), IC-341099 (7.54), IC-429965 (7.09) and Akola-01 (7.14), while the minimum number of primary branches per vine was observed in the genotype IC-345576 (2.99) as shown in Table 4.2.2.

4.2.3 Vine length (m) at final harvest

The data from Table 4.2.3 revealed that the vine length at the final harvest was significantly influenced by different ridge gourd genotypes. Among forty genotypes, the maximum vine length was observed in the genotype IC-393305 (4.24 m) which was found significantly at par with IC-393305 (4.24 m), IC-341122 (4.05 m), IC-356037 (3.74 m), IC-262258 (3.56 m), Konkan Harita (3.46 m), IC-392555 (3.46 m), IC-392534 (3.42 m), IC-341110 (3.40 m), IC-393298 (3.32 m), IC-262245 (3.30 m), IC-355967 (3.13 m), Pusa Nasdar (3.10 m), IC-262265 (3.03 m), IC-429965 (3.01 m), DARL/SS/238 (3.01 m), IC-278358 (2.97 m) and IC-429925 (2.93 m), while the genotype IC-392535 (1.67 m) noted minimum vine length at the final harvest in the last week of February (2022). In the year 2023, the maximum Vine length was recorded in the genotype IC-341122 (5.13 m) which was found significantly at par with IC-264971 (4.73 m), IC-393305 (4.48 m) and IC-429965 (4.45 m), while the genotype IC-392535 (2.31 m) recorded minimum vine length at final harvest.

In the second week of March (2022), among the genotypes IC-279691 (4.62 m) observed maximum vine length at final harvest followed by IC-345576 (4.52 m), while minimum vine length was recorded in the genotype IC-264830 (1.84 m), whereas, in 2023, the

maximum vine length was recorded in the genotype IC-279691 (4.67 m) which was found significantly at par with IC-345576 (4.70 m) and IC-341122 (4.06 m), while the genotype IC-264830 (1.96 m) recorded minimum vine length.

4.2.4 Stem length of internodes (cm)

In the last week of February (2022), the maximum stem length of internodes was reported in the genotype IC-341122 (20.95 cm) which was significantly at par with IC-429970 (20.61 cm), IC-356037 (20.27 cm), IC-392531 (19.32 cm), IC-264971 (18.80 cm), IC-262258 (18.73 cm), IC-262188 (18.65 cm), IC-265026 (18.68 cm), IC-355959 (18.39 cm), IC-355967 (18.11 cm), IC-262245 (17.65 cm), IC-264830 (17.61 cm) and IC-393298 (17.47 cm), while the genotype IC-392544 (11.76 cm) reported minimum stem length of internodes. Whereas, in the year 2023, the maximum stem length of internodes was observed in the genotype IC-356037 (22.82 cm) which was significantly at par with IC-429970 (21.31 cm), IC-392531 (20.57 cm), IC-341122 (20.46 cm), IC-262258 (19.97 cm) and IC-264971 (19.97 cm), while the minimum stem length of internodes was noted in the genotype Konkan Harita (12.41 cm).

In the second week of March (2022), the genotype IC-392531 (16.11 cm) was recorded significantly maximum stem length of internodes which was at par with IC-265026 (16.06 cm), IC-262265 (15.70 cm), IC-429970 (15.27 cm), IC-341116 (14.48 cm), IC-264971 (14.38 cm), IC-341122 (14.25 cm) and IC-278358 (14.20), while minimum stem length of internodes was recorded in the genotype IC-392555 (7.69 cm). Whereas, the genotype IC-392531 (18.32 cm) reported a maximum stem length of internodes which was significantly at par with IC-265026 (17.32 cm), IC-429970 (17.04 cm), IC-429965 (16.72 cm), IC-262265 (16.20 cm) and IC-264971 (16.18 cm), while the genotype IC-392555 (8.14 cm) observed minimum stem length of internodes in the second week of March (2023) as shown in Table 4.2.4.

4.2.5 Leaf length (cm)

Among the forty genotypes, the maximum leaf length was reported in the genotype Akola-01 (9.47 cm) which was significantly at par with IC-341116 (9.46 cm), IC-393298 (9.16 cm), IC-265026 (8.98 cm), IC-264908 (8.78 cm), IC-262188 (8.64 cm), IC-429949 (8.64 cm), IC-264971 (8.64 cm), IC-341161 (8.61 cm), IC-279691 (8.55 cm), DARL/SS/238 (8.45 cm), Konkan Harita (8.29 cm), IC-262245 (8.21 cm), IC-345576 (8.21 cm) and IC-429970 (8.17 cm), while the genotype IC-355967 (6.31 cm) recorded the minimum leaf length in the last week of February, 2022. Whereas, in 2023 the significantly maximum leaf length was recorded in the genotype DARL/SS/238 (10.83 cm) which was found significantly at par with IC-264908 (10.57 cm), IC-264830 (10.12 cm), IC-262188 (9.89 cm), IC-392555 (9.76 cm), IC-279691 (9.73 cm), IC-392531 (9.71 cm), IC-341122 (9.70 cm), IC-264971 (9.66 cm), IC-345576 (9.65 cm), IC-392534 (9.52 cm), IC-429949 (9.51 cm), IC-265026 (9.42 cm), IC-355959 (9.36 cm), IC-392535 (9.36 cm), IC-262245 (9.30 cm), IC-355959 (9.28 cm) and Akola-01 (9.17 cm), while the genotype IC-262265 (7.57 cm) recorded the minimum leaf length.

Table 4.2.4: Mean performance of stem length of internodes (cm) in ridge gourd genotypes

Treatments	Genotypes	Stem length of internodes (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	18.65 ^{abcdef}	19.12 ^{bcde}	12.21 ^{efghijklm}	13.21 ^{ghijkl}
T ₂	IC-262231	16.31 ^{cdefghijk}	17.40 ^{cdefgh}	13.59 ^{cdefg}	15.10 ^{bcdefg}
T ₃	IC-262245	17.65 ^{abcdefghi}	19.21 ^{bcde}	12.44 ^{efghijklm}	13.22 ^{ghijkl}
T ₄	IC-262265	14.09 ^{ijklm}	14.92 ^{hijklmn}	15.70 ^{ab}	16.20 ^{abcde}
T ₅	IC-262258	18.73 ^{abcde}	20.53 ^{abc}	12.96 ^{defghij}	13.57 ^{efghijk}
T ₆	IC-264830	17.61 ^{abcdefghi}	18.58 ^{bcdefg}	10.71 ^{lmnop}	11.42 ^{ijklmno}
T ₇	IC-264908	13.08 ^{klm}	14.07 ^{ijklmn}	13.17 ^{defghi}	14.50 ^{defgh}
T ₈	IC-264971	18.80 ^{abcd}	19.97 ^{abcd}	14.38 ^{abcde}	16.18 ^{abcde}
T ₉	IC-265026	18.68 ^{abcdef}	18.49 ^{bcdefg}	16.06 ^a	17.32 ^{ab}
T ₁₀	IC-278358	15.18 ^{defghijklm}	17.43 ^{cdefgh}	14.20 ^{abcdef}	15.08 ^{bcdefg}
T ₁₁	IC-341161	12.41 ^{lm}	13.03 ^{klmn}	10.58 ^{mnop}	12.17 ^{hijklm}
T ₁₂	IC-341099	14.46 ^{hijklm}	14.55 ^{hijklmn}	11.47 ^{hijklmn}	12.86 ^{ghijkl}
T ₁₃	IC-341110	14.95 ^{efghijklm}	15.63 ^{efghijklmn}	12.63 ^{defghijkl}	13.78 ^{efghij}
T ₁₄	IC-341116	14.61 ^{ghijklm}	14.36 ^{hijklmn}	14.48 ^{abcd}	15.87 ^{bcdef}
T ₁₅	IC-341122	20.95 ^a	20.46 ^{abc}	14.25 ^{abcde}	15.01 ^{bcdefg}
T ₁₆	IC-345576	13.26 ^{klm}	13.93 ^{ijklmn}	10.72 ^{lmnop}	11.32 ^{klmno}
T ₁₇	IC-279691	15.88 ^{cdefghijkl}	16.35 ^{efghij}	10.47 ^{mnopq}	11.38 ^{ijklmno}
T ₁₈	IC-355952	17.10 ^{bcdefghij}	19.08 ^{bcde}	11.87 ^{ghijklmn}	12.72 ^{ghijkl}
T ₁₉	IC-355959	18.39 ^{abcdefg}	19.00 ^{bcde}	10.08 ^{nopqr}	10.89 ^{lmnop}
T ₂₀	IC-355961	12.04 ^m	12.89 ^{lmn}	10.87 ^{klmno}	12.13 ^{hijklm}
T ₂₁	IC-355967	18.11 ^{abcdefgh}	19.07 ^{bcde}	12.62 ^{defghijkl}	14.04 ^{efghi}
T ₂₂	IC-355974	13.71 ^{ijklm}	15.49 ^{ghijklmn}	8.34 ^{rs}	8.83 ^{pq}
T ₂₃	IC-356037	20.27 ^{ab}	22.82 ^a	11.07 ^{ijklmn}	11.97 ^{ijklmn}
T ₂₄	IC-392531	19.32 ^{abc}	20.57 ^{abc}	16.11 ^a	18.32 ^a
T ₂₅	IC-392534	15.42 ^{defghijklm}	16.10 ^{efghijkl}	8.88 ^{opqrs}	9.63 ^{nopq}
T ₂₆	IC-392535	15.23 ^{defghijklm}	16.22 ^{efghijk}	12.25 ^{efghijklm}	13.94 ^{efghi}
T ₂₇	IC-392538	14.94 ^{efghijklm}	14.92 ^{hijklmn}	13.19 ^{defghi}	13.9 ^{efghi}
T ₂₈	IC-392544	11.76 ^m	12.55 ^{mn}	11.21 ^{ijklmn}	12.09 ^{hijklm}
T ₂₉	IC-392555	16.34 ^{cdefghijk}	17.18 ^{defghi}	7.69 ^s	8.14 ^q
T ₃₀	IC-393298	17.47 ^{abcdefghij}	18.78 ^{bcdef}	11.31 ^{hijklmn}	13.11 ^{ghijkl}
T ₃₁	IC-393305	16.86 ^{bcdefghijk}	17.00 ^{defghij}	8.54 ^{qrs}	9.08 ^{opq}
T ₃₂	IC-429925	15.34 ^{defghijklm}	16.31 ^{efghij}	11.43 ^{hijklmn}	12.91 ^{ghijkl}
T ₃₃	IC-429949	14.16 ^{ijklm}	14.97 ^{hijklmn}	12.96 ^{defghij}	14.11 ^{efghi}
T ₃₄	IC-429965	14.30 ^{ijklm}	16.19 ^{efghijk}	13.85 ^{bcdefg}	16.72 ^{abcd}
T ₃₅	IC-429970	20.61 ^{ab}	21.31 ^{ab}	15.27 ^{abc}	17.04 ^{abc}
T ₃₆	DARL/SS/238	14.92 ^{efghijklm}	15.75 ^{efghijklm}	13.27 ^{defgh}	14.23 ^{efghi}
T ₃₇	DARL/SS/60	13.97 ^{ijklm}	14.71 ^{hijklmn}	10.90 ^{klmn}	12.20 ^{hijklm}
T ₃₈	Akola-01	14.97 ^{efghijklm}	15.50 ^{ghijklmn}	8.73 ^{pqrs}	10.09 ^{mnopq}
T ₃₉	Konkan Harita	11.91 ^m	12.41 ⁿ	11.31 ^{hijklmn}	12.10 ^{hijklm}
T ₄₀	Pusa Nasdar	14.68 ^{ghijklm}	14.66 ^{hijklmn}	12.73 ^{defghijk}	14.77 ^{cdefg}
M.S.D.		3.79	3.24	1.99	2.44
SE(m)		0.66	0.57	0.35	0.43
SE(d)		0.94	0.80	0.49	0.60
C.V.		7.21	5.84	4.98	5.56

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

Table 4.2.5: Mean performance of leaf length (cm) in ridge gourd genotypes

Treatments	Genotypes	Leaf length (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	8.64 ^{abcdefg}	9.89 ^{abcd}	8.86 ^{abcde}	10.72 ^{ab}
T ₂	IC-262231	7.89 ^{cdefghij}	8.55 ^{cdefgh}	7.82 ^{defghijk}	8.14 ^{def}
T ₃	IC-262245	8.21 ^{abcdefgh}	9.30 ^{abcdefg}	8.02 ^{cdefghijk}	8.15 ^{def}
T ₄	IC-262265	6.93 ^{hijk}	7.57 ^h	7.32 ^{fghijkl}	8.60 ^{bcdef}
T ₅	IC-262258	7.56 ^{defghijk}	8.64 ^{cdefgh}	7.46 ^{efghijkl}	9.94 ^{abcde}
T ₆	IC-264830	7.43 ^{fghijk}	10.12 ^{abc}	8.04 ^{bcdefghijk}	9.14 ^{bcdef}
T ₇	IC-264908	8.78 ^{abcdef}	10.57 ^{ab}	8.34 ^{abcdefghi}	9.00 ^{bcdef}
T ₈	IC-264971	8.64 ^{abcdefg}	9.66 ^{abcde}	8.82 ^{abcde}	9.00 ^{bcdef}
T ₉	IC-265026	8.98 ^{abcde}	9.42 ^{abcdef}	9.14 ^{abcd}	10.42 ^{abc}
T ₁₀	IC-278358	7.25 ^{ghijk}	8.41 ^{defgh}	7.50 ^{efghijkl}	8.38 ^{cdef}
T ₁₁	IC-279691	8.55 ^{abcdefg}	9.73 ^{abcde}	9.51 ^a	10.21 ^{abcd}
T ₁₂	IC-341099	7.92 ^{cdefghij}	8.86 ^{cdefgh}	7.83 ^{defghijk}	8.78 ^{bcdef}
T ₁₃	IC-341110	7.43 ^{fghijk}	8.38 ^{defgh}	7.32 ^{fghijkl}	8.48 ^{cdef}
T ₁₄	IC-341116	9.46 ^{ab}	7.90 ^{fgh}	9.58 ^a	9.92 ^{abcde}
T ₁₅	IC-341122	7.32 ^{fghijk}	9.70 ^{abcde}	7.42 ^{efghijkl}	8.83 ^{bcdef}
T ₁₆	IC-341161	8.61 ^{abcdefg}	8.83 ^{cdefgh}	8.54 ^{abcdefgh}	10.06 ^{abcd}
T ₁₇	IC-345576	8.21 ^{abcdefgh}	9.65 ^{abcde}	8.76 ^{abcdef}	10.12 ^{abcd}
T ₁₈	IC-355952	7.53 ^{efghijk}	8.73 ^{cdefgh}	7.06 ^{ijkl}	8.99 ^{bcdef}
T ₁₉	IC-355959	7.23 ^{ghijk}	9.28 ^{abcdefg}	7.23 ^{ghijkl}	9.52 ^{abcdef}
T ₂₀	IC-355961	6.69 ^{ijkl}	7.94 ^{fgh}	6.28 ^{lm}	9.12 ^{bcdef}
T ₂₁	IC-355967	6.31 ^{kl}	9.08 ^{bcdefgh}	6.62 ^{klm}	11.40 ^a
T ₂₂	IC-355974	7.93 ^{cdefghij}	9.11 ^{bcdefgh}	8.04 ^{bcdefghijk}	10.39 ^{abc}
T ₂₃	IC-356037	5.39 ^l	9.36 ^{abcdefg}	5.26 ^m	8.64 ^{bcdef}
T ₂₄	IC-392531	7.49 ^{efghijk}	9.71 ^{abcde}	7.94 ^{cdefghijk}	7.89 ^{ef}
T ₂₅	IC-392534	9.05 ^{abcd}	9.52 ^{abcdef}	9.30 ^{abc}	8.76 ^{bcdef}
T ₂₆	IC-392535	6.18 ^{kl}	9.36 ^{abcdefg}	6.12 ^{lm}	7.58 ^f
T ₂₇	IC-392538	7.49 ^{efghijk}	8.58 ^{cdefgh}	6.85 ^{ijkl}	8.55 ^{cdef}
T ₂₈	IC-392544	6.68 ^{ijkl}	7.73 ^{gh}	6.99 ^{ijkl}	8.85 ^{bcdef}
T ₂₉	IC-392555	6.81 ^{hijkl}	9.76 ^{abcde}	6.78 ^{kl}	9.67 ^{abcdef}
T ₃₀	IC-393298	9.16 ^{abc}	7.93 ^{fgh}	9.06 ^{abcd}	9.17 ^{bcdef}
T ₃₁	IC-393305	6.31 ^{kl}	8.91 ^{cdefgh}	6.26 ^{lm}	8.40 ^{cdef}
T ₃₂	IC-429925	7.64 ^{defghijk}	8.63 ^{cdefgh}	8.96 ^{abcd}	9.48 ^{abcdef}
T ₃₃	IC-429949	8.64 ^{abcdefg}	9.51 ^{abcdef}	7.09 ^{hijkl}	9.37 ^{abcdef}
T ₃₄	IC-429965	6.70 ^{ijkl}	8.79 ^{cdefgh}	6.93 ^{ijkl}	8.75 ^{bcdef}
T ₃₅	IC-429970	8.17 ^{abcdefghi}	9.47 ^{abcdef}	8.63 ^{abcdefg}	9.82 ^{abcde}
T ₃₆	DARL/SS/238	8.45 ^{abcdefg}	10.83 ^a	8.28 ^{abcdefghij}	9.78 ^{abcde}
T ₃₇	DARL/SS/60	6.58 ^{ijkl}	8.17 ^{efgh}	6.94 ^{ijkl}	9.55 ^{abcdef}
T ₃₈	Akola-01	9.47 ^a	9.20 ^{abcdefgh}	9.48 ^{ab}	10.22 ^{abcd}
T ₃₉	Konkan Harita	8.29 ^{abcdefgh}	8.45 ^{defgh}	8.51 ^{abcdefgh}	8.62 ^{bcdef}
T ₄₀	Pusa Nasdar	7.96 ^{bcdefghij}	7.73 ^{gh}	8.52 ^{abcdefgh}	9.41 ^{abcdef}
M.S.D.		1.51	1.64	1.45	2.15
SE(m)		0.26	0.29	0.25	0.38
SE(d)		0.37	0.40	0.36	0.53
C.V.		5.90	5.49	5.61	7.03

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

Table 4.2.6: Mean performance of leaf width (cm) in ridge gourd genotypes

Treatments	Genotypes	Leaf width (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	13.27 ^{abcde}	15.46 ^{abcd}	16.43 ^a	17.33 ^a
T ₂	IC-262231	12.03 ^{bcdef}	13.70 ^{cdefghijkl}	11.88 ^{bcdef}	12.03 ^{hijkl}
T ₃	IC-262245	12.13 ^{bcdef}	14.39 ^{bcdefghi}	11.34 ^{cdef}	11.89 ^{ijkl}
T ₄	IC-262265	11.43 ^{cdef}	12.09 ^{hijkl}	10.43 ^{ef}	10.75 ^l
T ₅	IC-262258	12.41 ^{bcdef}	12.90 ^{efghijkl}	11.90 ^{bcdef}	13.58 ^{defghijk}
T ₆	IC-264830	14.47 ^{ab}	16.75 ^{ab}	11.91 ^{bcdef}	12.32 ^{ghijkl}
T ₇	IC-264908	14.42 ^{ab}	16.01 ^{abc}	13.14 ^{abcdef}	13.28 ^{efghijkl}
T ₈	IC-264971	12.07 ^{bcdef}	14.88 ^{abcdef}	12.85 ^{abcdef}	13.69 ^{defghij}
T ₉	IC-265026	12.73 ^{abcdef}	15.03 ^{abcde}	13.65 ^{abcdef}	14.65 ^{bcdefg}
T ₁₀	IC-278358	13.28 ^{abcde}	14.35 ^{cdefghi}	12.50 ^{bcdef}	13.66 ^{defghij}
T ₁₁	IC-279691	14.24 ^{ab}	15.60 ^{abcd}	14.63 ^{abcd}	15.18 ^{abcdef}
T ₁₂	IC-341099	12.16 ^{bcdef}	12.61 ^{ghijkl}	12.49 ^{bcdef}	14.25 ^{cdefghi}
T ₁₃	IC-341110	11.41 ^{def}	12.40 ^{ghijkl}	11.47 ^{cdef}	11.95 ^{ijkl}
T ₁₄	IC-341116	12.06 ^{bcdef}	14.87 ^{abcdef}	13.75 ^{abcdef}	15.28 ^{abcdef}
T ₁₅	IC-341122	11.41 ^{def}	15.32 ^{abcd}	12.66 ^{bcdef}	13.59 ^{defghijk}
T ₁₆	IC-341161	13.67 ^{abcd}	13.89 ^{cdefghijk}	14.16 ^{abcd}	15.41 ^{abcde}
T ₁₇	IC-345576	13.18 ^{abcde}	14.48 ^{bcdefgh}	14.15 ^{abcd}	15.46 ^{abcde}
T ₁₈	IC-355952	11.71 ^{cdef}	13.33 ^{defghijkl}	12.43 ^{bcdef}	13.83 ^{defghij}
T ₁₉	IC-355959	11.18 ^{ef}	14.24 ^{cdefghij}	13.08 ^{abcdef}	14.39 ^{bcdefghi}
T ₂₀	IC-355961	11.07 ^{ef}	12.01 ^{ijkl}	13.15 ^{abcdef}	13.49 ^{defghijk}
T ₂₁	IC-355967	12.04 ^{bcdef}	13.84 ^{cdefghijk}	15.03 ^{abc}	16.90 ^{ab}
T ₂₂	IC-355974	12.67 ^{abcdef}	14.03 ^{cdefghij}	14.56 ^{abcd}	16.60 ^{abc}
T ₂₃	IC-356037	13.42 ^{abcde}	14.13 ^{cdefghij}	13.91 ^{abcde}	14.25 ^{cdefghi}
T ₂₄	IC-392531	13.30 ^{abcde}	14.37 ^{bcdefghi}	11.31 ^{cdef}	11.59 ^{ijkl}
T ₂₅	IC-392534	13.87 ^{abc}	14.54 ^{bcdefg}	13.50 ^{abcdef}	14.09 ^{cdefghij}
T ₂₆	IC-392535	14.18 ^{ab}	14.65 ^{abcdefg}	10.06 ^f	11.03 ^{kl}
T ₂₇	IC-392538	12.30 ^{bcdef}	13.68 ^{cdefghijkl}	12.60 ^{bcdef}	13.58 ^{defghijk}
T ₂₈	IC-392544	10.60 ^f	11.35 ^l	13.42 ^{abcdef}	15.02 ^{abcdef}
T ₂₉	IC-392555	13.67 ^{abcd}	14.95 ^{abcdef}	13.87 ^{abcde}	14.56 ^{bcdefgh}
T ₃₀	IC-393298	13.34 ^{abcde}	11.61 ^{kl}	13.19 ^{abcdef}	14.14 ^{cdefghij}
T ₃₁	IC-393305	10.67 ^f	13.89 ^{cdefghijk}	11.85 ^{bcdef}	12.77 ^{fghijkl}
T ₃₂	IC-429925	13.26 ^{abcde}	14.90 ^{abcdef}	14.31 ^{abcd}	15.20 ^{abcdef}
T ₃₃	IC-429949	13.21 ^{abcde}	14.26 ^{cdefghij}	12.31 ^{bcdef}	13.41 ^{defghijk}
T ₃₄	IC-429965	11.54 ^{cdef}	12.65 ^{efghijkl}	11.11 ^{def}	11.97 ^{ijkl}
T ₃₅	IC-429970	12.42 ^{bcdef}	13.71 ^{cdefghijkl}	14.38 ^{abcd}	14.92 ^{abcdef}
T ₃₆	DARL/SS/238	15.05 ^a	16.97 ^a	15.27 ^{ab}	15.94 ^{abcd}
T ₃₇	DARL/SS/60	11.01 ^{ef}	11.89 ^{ijkl}	13.02 ^{abcdef}	14.62 ^{bcdefg}
T ₃₈	Akola-01	14.17 ^{ab}	15.38 ^{abcd}	14.41 ^{abcd}	15.46 ^{abcde}
T ₃₉	Konkan Harita	12.60 ^{bcdef}	12.85 ^{efghijkl}	12.60 ^{bcdef}	12.85 ^{fghijkl}
T ₄₀	Pusa Nasdar	12.11 ^{bcdef}	12.39 ^{ghijkl}	13.13 ^{abcdef}	15.51 ^{abcde}
M.S.D.		2.44	2.39	3.72	2.56
SE(m)		0.43	0.42	0.65	0.45
SE(d)		0.60	0.59	0.92	0.63
C.V.		5.83	5.17	8.63	5.54

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

Table 4.2.7: Mean performance of petiole length (cm) in ridge gourd genotypes

Treatments	Genotypes	Petiole length (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	6.46 ^{ijklmno}	7.13 ^{ijk}	9.50 ^{fghijk}	9.71 ^{ijklmn}
T ₂	IC-262231	6.43 ^{ijklmno}	7.05 ^{jk}	7.90 ^{ijklm}	8.79 ^{lmnopq}
T ₃	IC-262245	6.92 ^{ghijklmno}	7.33 ^{hijk}	6.81 ^{klm}	7.75 ^{opqr}
T ₄	IC-262265	6.72 ^{hijklmno}	7.83 ^{ghij}	7.67 ^{ijklm}	8.29 ^{nopqr}
T ₅	IC-262258	7.13 ^{ghijklmno}	7.35 ^{hijk}	8.51 ^{hijkl}	9.45 ^{ijklmnop}
T ₆	IC-264830	6.92 ^{ghijklmno}	8.19 ^{fghij}	9.84 ^{fghij}	10.53 ^{ghijkl}
T ₇	IC-264908	7.58 ^{defghijklmno}	8.08 ^{fghij}	8.17 ^{hijklm}	9.63 ^{ijklmno}
T ₈	IC-264971	8.12 ^{defghij}	8.21 ^{fghij}	9.35 ^{fghijkl}	10.28 ^{hijklm}
T ₉	IC-265026	7.92 ^{defghijklm}	8.74 ^{efghi}	14.36 ^{ab}	16.39 ^a
T ₁₀	IC-278358	7.36 ^{efghijklmno}	8.29 ^{fghij}	11.54 ^{cdefg}	12.59 ^{bcdef}
T ₁₁	IC-279691	9.18 ^{cde}	9.93 ^{bcde}	10.65 ^{defgh}	11.81 ^{cdefgh}
T ₁₂	IC-341099	6.05 ^{mno}	6.87 ^{jk}	6.86 ^{klm}	7.64 ^{pqr}
T ₁₃	IC-341110	5.70 ^o	6.10 ^k	8.22 ^{hijklm}	8.43 ^{mnopqr}
T ₁₄	IC-341116	6.15 ^{klmno}	7.08 ^{jk}	8.42 ^{hijklm}	9.5 ^{ijklmnop}
T ₁₅	IC-341122	8.25 ^{cdefghi}	9.07 ^{defg}	8.49 ^{hijklm}	8.84 ^{klmnopq}
T ₁₆	IC-341161	6.80 ^{hijklmno}	6.81 ^{jk}	15.04 ^a	17.02 ^a
T ₁₇	IC-345576	7.94 ^{defghijkl}	9.30 ^{cdefg}	12.57 ^{abcd}	12.85 ^{bcde}
T ₁₈	IC-355952	7.98 ^{defghijkl}	9.31 ^{cdefg}	8.37 ^{hijklm}	8.90 ^{klmnopq}
T ₁₉	IC-355959	9.45 ^{cd}	10.75 ^{bc}	11.59 ^{cdefg}	13.91 ^b
T ₂₀	IC-355961	9.04 ^{cdef}	10.56 ^{bcd}	11.60 ^{cdefg}	13.08 ^{bcd}
T ₂₁	IC-355967	9.43 ^{cd}	10.47 ^{bcd}	10.65 ^{defgh}	12.81 ^{bcde}
T ₂₂	IC-355974	11.99 ^a	13.03 ^a	12.50 ^{abcde}	13.98 ^b
T ₂₃	IC-356037	7.91 ^{defghijklm}	9.55 ^{cdef}	10.80 ^{defgh}	12.31 ^{bcdefg}
T ₂₄	IC-392531	7.29 ^{fghijklmno}	7.75 ^{ghij}	8.77 ^{hijkl}	9.49 ^{ijklmnop}
T ₂₅	IC-392534	6.25 ^{ijklmno}	6.75 ^{jk}	6.65 ^{lm}	7.25 ^{qr}
T ₂₆	IC-392535	8.31 ^{cdefghi}	9.07 ^{defg}	8.89 ^{ghijkl}	9.25 ^{ijklmnop}
T ₂₇	IC-392538	8.13 ^{defghi}	8.81 ^{efgh}	9.33 ^{fghijkl}	10.56 ^{ghijkl}
T ₂₈	IC-392544	5.92 ^{no}	6.94 ^{jk}	5.78 ^m	6.74 ^r
T ₂₉	IC-392555	8.03 ^{defghijk}	9.08 ^{defg}	10.23 ^{defghij}	11.06 ^{efghij}
T ₃₀	IC-393298	6.11 ^{lmno}	7.80 ^{ghij}	10.15 ^{defghij}	11.5 ^{cdefghi}
T ₃₁	IC-393305	8.69 ^{cdefg}	9.65 ^{cdef}	12.50 ^{abcde}	13.45 ^{bc}
T ₃₂	IC-429925	6.20 ^{klmno}	7.27 ^{hijk}	11.90 ^{bcdef}	13.19 ^{bc}
T ₃₃	IC-429949	9.36 ^{cd}	10.45 ^{bcd}	8.27 ^{hijklm}	8.74 ^{lmnopq}
T ₃₄	IC-429965	6.77 ^{hijklmno}	7.42 ^{hijk}	9.09 ^{ghijkl}	9.94 ^{hijklmn}
T ₃₅	IC-429970	6.82 ^{ghijklmno}	7.39 ^{hijk}	11.57 ^{cdefg}	12.91 ^{bcde}
T ₃₆	DARL/SS/238	11.85 ^{ab}	13.25 ^a	13.96 ^{abc}	16.47 ^a
T ₃₇	DARL/SS/60	7.62 ^{defghijklmn}	8.12 ^{fghij}	9.35 ^{fghijkl}	10.55 ^{ghijkl}
T ₃₈	Akola-01	8.60 ^{cdefgh}	8.29 ^{fghij}	10.19 ^{defghij}	10.78 ^{fghijk}
T ₃₉	Konkan Harita	10.02 ^{bc}	11.33 ^b	10.44 ^{defghi}	11.14 ^{defghij}
T ₄₀	Pusa Nasdar	7.16 ^{fghijklmno}	7.81 ^{ghij}	14.81 ^a	16.29 ^a
M.S.D.		1.88	1.62	2.72	1.96
SE(m)		0.33	0.28	0.48	0.34
SE(d)		0.46	0.40	0.67	0.48
C.V.		7.33	5.71	8.22	5.34

Note: The genotypes with the same letter in the superscript are not significantly differ from each other at 5% level of significance (tukey post hock test)

In the second week of March (2022), the significantly maximum leaf length was noted in the genotype IC-341116 (9.58 cm) which was at par with IC-279691 (9.51 cm), Akola-01 (9.48 cm), IC-392534 (9.30 cm), IC-265026 (9.14 cm), IC-393298 (9.06 cm), IC-429925 (8.96 cm), IC-262188 (8.86 cm), IC-264971 (8.82 cm), IC-345576 (8.76 cm), IC-429970 (8.63 cm), IC-341161 (8.54 cm), Pusa Nasdar (8.52 cm), Konkan Harita (8.51 cm), IC-264908 (8.34 cm) and DARL/SS/238 (8.28 cm), while significantly minimum leaf length was recorded in the genotype IC-356037 (5.26 cm). In 2023, the maximum leaf length was observed in the genotype IC-355967 (11.40 cm) which was found significantly at par with IC-262188 (10.72 cm), IC-265026 (10.42 cm), IC-355974 (10.39 cm), Akola-01 (10.22 cm), IC-279691 (10.21 cm), IC-345576 (10.12 cm), IC-341161 (10.06 cm), IC-341116 (9.92 cm), IC-429970 (9.82 cm), DARL/SS/238 (9.78 cm), IC-392555 (9.67 cm), DARL/SS/60 (9.55 cm), IC-355959 (9.52 cm), IC-429925 (9.48 cm) and IC-429949 (9.37 cm), while the minimum leaf length was recorded in the genotype IC-392535 (7.58 cm) as shown in Table 4.2.5.

4.2.6 Leaf width (cm)

The data presented in Table 4.2.6, indicated that the leaf width of different ridge gourd genotype, the maximum leaf width was reported in the genotype DARL/SS/238 (15.05 cm) which was significantly at par with IC-264830 (14.47 cm), IC-264908 (14.42 cm), IC-279691 (14.24 cm), IC-392535 (14.18 cm), Akola-01 (14.17 cm), IC-392534 (13.87 cm), IC-392555 (13.67 cm), IC-356037 (13.42 cm), IC-393298 (13.34 cm), IC-392531 (13.30 cm), IC-265026 (13.28 cm), IC-262188 (13.27 cm), IC-429925 (13.26 cm), IC-429949 (13.21 cm), IC-265026 (12.73 cm) and IC-355974 (12.67 cm), while the genotype IC-392544 (10.60 cm) recorded minimum leaf width in the last week of February during 2022. Whereas, in 2023, the significant maximum leaf width was recorded in the genotype DARL/SS/238 (16.97 cm) which was at par with IC-264830 (16.75 cm), IC-264908 (16.01 cm), IC-279691 (15.60 cm), IC-262188 (15.46 cm), Akola-01 (15.38 cm), IC-341122 (15.32 cm), IC-265026 (15.03 cm), IC-392555 (14.95 cm), IC-429925 (14.90 cm), IC-264971 (14.88 cm), IC-341116 (14.87 cm) and IC-392535 (14.65 cm), while the genotype IC-392544 (11.35 cm) recorded minimum leaf width.

The genotype IC-262188 (16.43 cm) recorded maximum leaf width which was significantly at par with DARL/SS/238 (15.27 cm), IC-355967 (15.03 cm), IC-341116 (14.75 cm), IC-279691 (14.63 cm), IC-355974 (14.56 cm), Akola-01 (14.41 cm), IC-429970 (14.38 cm), IC-429925 (14.31 cm), IC-341161 (14.16 cm), IC-345576 (14.15 cm), IC-356037 (13.91 cm), IC-392555 (13.87 cm), IC-265026 (13.65 cm), IC-392534 (13.50 cm), IC-392544 (13.42 cm), IC-393298 (13.19 cm), IC-355961 (13.15 cm), IC-264908 (13.14 cm), Pusa Nasdar (13.13 cm), IC-355959 (13.08 cm), DARL/SS/60 (13.02 cm) and IC-264971 (12.85 cm), while the minimum leaf width was reported in the genotype IC-392535 (10.06 cm) in the second week of March during 2022. Whereas, in the year 2023, the significant maximum leaf width was noted in the genotype IC-262188 (17.33 cm) which was significantly at par with IC-355967 (16.90 cm), IC-355974 (16.60 cm), DARL/SS/238 (15.94 cm), Pusa Nasdar (15.51 cm), Akola-

01 (15.46 cm), IC-345576 (15.46 cm), IC-341161 (15.41 cm), IC-341116 (15.28 cm), IC-429925 (15.20 cm), IC-279691 (15.18 cm), IC-392544 (15.02 cm) and IC-429970 (14.92 cm), while the minimum leaf width was reported in the genotype IC-262265 (10.75 cm).

4.2.7 Petiole width (cm)

The maximum petiole length was reported in the genotype IC-355974 (11.99 cm) which was followed by DARL/SS/238 (11.85 cm), while the genotype IC-341110 (5.70 cm) recorded minimum petiole length during 2022 in the last week of February. Whereas, the maximum petiole length was observed in the genotype DARL/SS/238 (13.25 cm) followed by IC-355974 (13.03 cm), while the minimum petiole length was reported in the genotype IC-341110 (6.10 cm) in 2023.

In the second week of March (2022), the maximum petiole length was recorded in the genotype IC-341161 (15.04 cm) which was significantly at par with Pusa Nasdar (14.81 cm), IC-265026 (14.36 cm), DARL/SS/238 (13.96 cm), IC-345576 (12.57 cm) and IC-355974 (12.50 cm), while the minimum petiole length was observed in the genotype IC-392544 (5.78 cm). Whereas, during 2023 the maximum petiole length was reported in the genotype IC-341161 (17.02 cm) which was significantly at par with DARL/SS/238 (16.47 cm), IC-265026 (16.39 cm), and Pusa Nasdar (16.29 cm), while the minimum petiole length was observed in the genotype IC-392544 (6.74 cm) as shown in Table 4.2.7.

4.2.8 Days to first male flower opening

As shown in Table 4.2.8, genotype IC-392535 reported the minimum number of days (36.40) for the first male flower opening which was significantly at par with IC-264971 and IC-355967 (38.05 and 38.02, respectively), while the maximum number of days (54.01) for the first male flower opening was noted in the genotype IC-392531. Whereas, the minimum number of days (37.98) for the first male flower opening was observed in the genotype IC-392535 which was at par with IC-355961, IC-355967, IC-264971, Konkan Harita, Akola-01, Pusa Nasdar, IC-355952 and IC-262258 (38.56, 39.66, 39.99, 40.79, 41.79, 41.79, 41.85, 41.95, respectively), while the maximum number of days (54.88) for the first male flower opening was observed in the genotype DARL/SS/60 in the last week of February, 2022 and 2023, respectively.

In the second week of March (2022), genotype IC-392535 observed the minimum number of days (34.90) for the first male flower opening which was significantly at par with IC-262258, IC-264971, IC-355967 and Akola-01 (36.39, 36.42, 36.95 and 37.50, respectively), while the maximum number of days (52.16) for first male flower opening was observed in the genotype IC-392531. Whereas, in 2023 genotype IC-392535 reported the minimum number of days (36.04) for the first male flower opening which was significantly at par with IC-355961, IC-264971, IC-355967, IC-262258 and Akola-01 (36.09, 38.90, 39.10, 39.74 and 40.10, respectively), while the maximum number of days (51.79) for the first male flower opening was noted in the genotype IC-341161.

Table 4.2.8: Mean performance of days to first male flower opening in ridge gourd genotypes

Treatments	Genotypes	Days to first male flower opening			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	46.77 ^{ghi}	48.12 ^{efghi}	45.74 ^{fgh}	46.78 ^{defghijk}
T ₂	IC-262231	41.21 ^{lm}	42.92 ^{klmn}	40.02 ^{lmno}	41.05 ^{mnop}
T ₃	IC-262245	50.12 ^{bcdefg}	52.34 ^{abcde}	47.75 ^{cdefg}	50.76 ^{abcd}
T ₄	IC-262265	49.65 ^{cdefgh}	48.88 ^{cdefghi}	48.37 ^{cdef}	46.90 ^{defghijk}
T ₅	IC-262258	40.81 ^{lm}	41.95 ^{lmno}	36.41 ^{pq}	39.74 ^{opq}
T ₆	IC-264830	48.16 ^{efghi}	49.53 ^{bcdefgh}	46.44 ^{efgh}	47.21 ^{cdefghij}
T ₇	IC-264908	45.21 ^{ijk}	46.48 ^{ghijk}	40.90 ^{klm}	44.77 ^{hijklm}
T ₈	IC-264971	38.05 ^{mn}	39.99 ^{no}	36.42 ^{pq}	38.90 ^{pq}
T ₉	IC-265026	47.16 ^{fghi}	47.24 ^{fghij}	44.74 ^{ghi}	45.36 ^{ghijkl}
T ₁₀	IC-278358	51.09 ^{abcde}	50.50 ^{bcdefg}	50.36 ^{abc}	47.99 ^{abcdefghi}
T ₁₁	IC-279691	51.92 ^{abcd}	52.05 ^{abcde}	49.90 ^{abcd}	49.69 ^{abcdef}
T ₁₂	IC-341099	50.16 ^{bcdefg}	49.56 ^{bcdefgh}	47.78 ^{cdefg}	46.22 ^{fghijk}
T ₁₃	IC-341110	53.78 ^{ab}	53.47 ^{ab}	51.79 ^{ab}	50.81 ^{abcd}
T ₁₄	IC-341116	48.06 ^{efghi}	46.31 ^{ghijk}	45.46 ^{fghi}	44.05 ^{ijklmn}
T ₁₅	IC-341122	50.77 ^{abcdef}	50.38 ^{bcdefg}	48.75 ^{bcdef}	49.10 ^{abcdefg}
T ₁₆	IC-341161	52.92 ^{abc}	52.5 ^{abcd}	50.58 ^{abc}	51.79 ^a
T ₁₇	IC-345576	52.25 ^{abc}	50.98 ^{abcdef}	49.71 ^{abcde}	48.52 ^{abcdefgh}
T ₁₈	IC-355952	40.37 ^{lm}	41.85 ^{lmno}	38.64 ^{mnop}	40.81 ^{mnop}
T ₁₉	IC-355959	45.74 ^{ijk}	47.12 ^{fghijk}	43.80 ^{hijk}	43.02 ^{klmnop}
T ₂₀	IC-355961	40.34 ^{lm}	38.56 ^o	38.61 ^{mnop}	36.09 ^q
T ₂₁	IC-355967	38.02 ^{mn}	39.66 ^{no}	36.95 ^{opq}	39.10 ^{pq}
T ₂₂	IC-355974	48.50 ^{defghi}	50.88 ^{abcdef}	43.45 ^{hijk}	48.95 ^{abcdefgh}
T ₂₃	IC-356037	46.37 ^{hij}	48.33 ^{defghi}	44.36 ^{hij}	43.02 ^{klmnop}
T ₂₄	IC-392531	54.01 ^a	52.92 ^{abc}	52.16 ^a	47.41 ^{bcdefghij}
T ₂₅	IC-392534	47.95 ^{efghi}	46.01 ^{hijkl}	45.55 ^{fghi}	43.63 ^{jklmno}
T ₂₆	IC-392535	36.40 ⁿ	37.98 ^o	34.90 ^q	36.04 ^q
T ₂₇	IC-392538	46.27 ^{hij}	47.23 ^{fghij}	42.29 ^{ijkl}	44.92 ^{ghijklm}
T ₂₈	IC-392544	52.18 ^{abcd}	52.77 ^{abc}	50.25 ^{abc}	51.18 ^{abc}
T ₂₉	IC-392555	50.91 ^{abcde}	52.35 ^{abcde}	46.19 ^{fgh}	50.61 ^{abcde}
T ₃₀	IC-393298	50.45 ^{abcdefg}	49.84 ^{bcdefgh}	48.14 ^{cdef}	47.46 ^{bcdefghij}
T ₃₁	IC-393305	42.13 ^{kl}	43.47 ^{jklmn}	39.81 ^{lmno}	42.75 ^{klmnop}
T ₃₂	IC-429925	46.20 ^{hij}	48.22 ^{defghi}	44.72 ^{ghi}	46.47 ^{efghijk}
T ₃₃	IC-429949	52.07 ^{abcd}	53.21 ^{ab}	48.60 ^{bcdef}	51.13 ^{abc}
T ₃₄	IC-429965	42.97 ^{jkl}	44.85 ^{ijklm}	41.13 ^{jklm}	43.73 ^{jklmno}
T ₃₅	IC-429970	52.79 ^{abc}	52.63 ^{abc}	50.57 ^{abc}	48.10 ^{abcdefghi}
T ₃₆	DARL/SS/238	50.94 ^{abcde}	52.40 ^{abcde}	48.66 ^{bcdef}	49.78 ^{abcdef}
T ₃₇	DARL/SS/60	51.92 ^{abcd}	54.88 ^a	46.68 ^{defgh}	51.56 ^{ab}
T ₃₈	Akola-01	40.18 ^{lm}	41.79 ^{lmno}	37.50 ^{nopq}	40.10 ^{nopq}
T ₃₉	Konkan Harita	41.08 ^{lm}	40.79 ^{mno}	39.40 ^{lmnop}	39.05 ^{pq}
T ₄₀	Pusa Nasdar	40.80 ^{lm}	41.79 ^{lmno}	40.52 ^{klmn}	41.22 ^{lmnop}
M.S.D.		3.69	4.29	3.36	4.18
SE(m)		0.65	0.75	0.59	0.73
SE(d)		0.91	1.06	0.83	1.03
C.V.		2.38	2.73	2.28	2.79

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.9: Mean performance of days to first female flower opening in ridge gourd genotypes

Treatments	Genotypes	Days to first female flower opening			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	51.79 ^{hijkl}	50.50 ^{hij}	50.52 ^{efghi}	53.85 ^{bcde}
T ₂	IC-262231	45.59 ^{op}	45.54 ^{lmn}	43.17 ^{mn}	45.59 ^{mno}
T ₃	IC-262245	54.87 ^{defg}	53.53 ^{def}	50.71 ^{efgh}	52.57 ^{defg}
T ₄	IC-262265	52.65 ^{ghijk}	53.29 ^{efg}	51.41 ^{defg}	52.57 ^{defg}
T ₅	IC-262258	43.79 ^{pq}	44.39 ^{mno}	40.44 ^{opqr}	44.61 ^{mno}
T ₆	IC-264830	53.22 ^{fghi}	53.57 ^{def}	50.78 ^{efgh}	53.03 ^{defg}
T ₇	IC-264908	48.25 ^{mn}	50.54 ^{hij}	44.85 ^{lm}	46.75 ^{lm}
T ₈	IC-264971	42.79 ^q	42.89 ^{opq}	39.62 ^{pqr}	40.86 ^r
T ₉	IC-265026	51.59 ^{ijkl}	49.80 ^{ij}	49.20 ^{ghij}	51.00 ^{ghij}
T ₁₀	IC-278358	53.70 ^{efghi}	55.10 ^{bcde}	54.45 ^{abc}	52.50 ^{defg}
T ₁₁	IC-279691	55.35 ^{cdef}	55.21 ^{bcde}	55.43 ^{ab}	56.06 ^{ab}
T ₁₂	IC-341099	55.23 ^{cdef}	54.86 ^{bcde}	51.27 ^{defg}	51.57 ^{efghi}
T ₁₃	IC-341110	57.30 ^{bc}	55.77 ^{abcd}	55.62 ^{ab}	56.17 ^{ab}
T ₁₄	IC-341116	53.28 ^{fghi}	48.77 ^{jk}	49.45 ^{fghij}	51.20 ^{fghij}
T ₁₅	IC-341122	54.05 ^{efgh}	53.64 ^{cdef}	54.17 ^{abc}	55.59 ^{abc}
T ₁₆	IC-341161	57.79 ^{ab}	56.54 ^{ab}	56.20 ^a	54.07 ^{bcd}
T ₁₇	IC-345576	56.91 ^{bcd}	51.85 ^{fghi}	52.01 ^{cdef}	51.66 ^{efgh}
T ₁₈	IC-355952	44.14 ^{pq}	44.54 ^{mno}	41.85 ^{nop}	43.77 ^{opq}
T ₁₉	IC-355959	50.55 ^{kl}	50.14 ^{hij}	48.07 ^{ijk}	49.81 ^{hijk}
T ₂₀	IC-355961	45.38 ^{op}	41.01 ^q	42.59 ^{mno}	40.68 ^r
T ₂₁	IC-355967	42.32 ^{qr}	42.03 ^{pq}	39.23 ^{qr}	42.40 ^{pqr}
T ₂₂	IC-355974	53.07 ^{fghij}	50.92 ^{ghij}	47.89 ^{jk}	53.28 ^{cdefg}
T ₂₃	IC-356037	50.69 ^{kl}	51.91 ^{fghi}	48.60 ^{hijk}	49.20 ^{jk}
T ₂₄	IC-392531	59.84 ^a	57.17 ^{ab}	55.55 ^{ab}	57.20 ^a
T ₂₅	IC-392534	52.37 ^{hijk}	51.72 ^{fghi}	48.87 ^{ghij}	48.63 ^{kl}
T ₂₆	IC-392535	40.36 ^r	41.08 ^q	38.52 ^r	40.18 ^r
T ₂₇	IC-392538	50.94 ^{kl}	52.27 ^{fgh}	46.00 ^{kl}	47.97 ^{kl}
T ₂₈	IC-392544	56.97 ^{bcd}	55.41 ^{bcde}	53.55 ^{bcd}	55.54 ^{abc}
T ₂₉	IC-392555	54.82 ^{defg}	54.92 ^{bcde}	50.78 ^{efgh}	52.81 ^{defg}
T ₃₀	IC-393298	55.69 ^{bcde}	52.44 ^{fgh}	52.18 ^{cde}	54.63 ^{bcd}
T ₃₁	IC-393305	47.04 ^{no}	47.02 ^{kl}	43.88 ^{lmn}	41.90 ^{qr}
T ₃₂	IC-429925	49.75 ^{lm}	51.96 ^{fghi}	48.00 ^{ijk}	49.26 ^{ijk}
T ₃₃	IC-429949	55.96 ^{bcde}	56.02 ^{abc}	53.53 ^{bcd}	55.81 ^{ab}
T ₃₄	IC-429965	47.15 ^{no}	47.28 ^{kl}	44.77 ^{lm}	46.47 ^{lmn}
T ₃₅	IC-429970	57.34 ^{bc}	56.19 ^{ab}	55.47 ^{ab}	57.06 ^a
T ₃₆	DARL/SS/238	56.97 ^{bcd}	55.79 ^{abcd}	54.40 ^{abc}	54.20 ^{bcd}
T ₃₇	DARL/SS/60	57.80 ^{ab}	57.89 ^a	51.92 ^{cdef}	53.35 ^{cdef}
T ₃₈	Akola-01	44.51 ^{pq}	44.12 ^{nop}	41.68 ^{nopq}	44.42 ^{mno}
T ₃₉	Konkan Harita	46.02 ^{nop}	44.29 ^{mno}	44.07 ^{lmn}	44.04 ^{opq}
T ₄₀	Pusa Nasdar	44.47 ^{pq}	46.58 ^{klm}	43.92 ^{lmn}	44.14 ^{nopq}
M.S.D.		2.28	2.41	2.60	2.35
SE(m)		0.40	0.42	0.45	0.41
SE(d)		0.56	0.60	0.64	0.58
C.V.		1.34	1.44	1.62	1.42

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.10: Mean performance of nodes to first male flower in ridge gourd genotypes

Treatments	Genotypes	Nodes to first male flower			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	6.32 ^{cdefg}	7.26 ^{cdefg}	4.86 ^{fghij}	5.60 ^{defghi}
T ₂	IC-262231	6.78 ^{bcde}	7.32 ^{bcdef}	5.22 ^{defgh}	5.65 ^{defghi}
T ₃	IC-262245	7.56 ^{abc}	7.93 ^{abcde}	5.87 ^{bcdef}	6.22 ^{cdefg}
T ₄	IC-262265	7.12 ^{abc}	7.71 ^{bcdef}	6.87 ^{ab}	7.44 ^{abc}
T ₅	IC-262258	7.65 ^{abc}	7.38 ^{bcdef}	6.04 ^{bcde}	6.42 ^{cdef}
T ₆	IC-264830	5.49 ^{efgh}	5.65 ^{ghijklm}	4.21 ^{hijklmn}	4.28 ^{ijklmnop}
T ₇	IC-264908	3.54 ^{jk}	4.27 ^{mn}	3.12 ⁿ	3.20 ^{pq}
T ₈	IC-264971	7.26 ^{abc}	7.96 ^{abcde}	5.22 ^{defgh}	6.31 ^{cdefg}
T ₉	IC-265026	5.53 ^{defgh}	5.34 ^{ijklmn}	4.15 ^{hijklmn}	4.70 ^{ijklmn}
T ₁₀	IC-278358	5.39 ^{efgh}	6.22 ^{fghijk}	4.52 ^{ghijkl}	5.21 ^{fghijk}
T ₁₁	IC-279691	5.02 ^{fghi}	5.64 ^{hijklm}	3.88 ^{ijklmn}	4.29 ^{ijklmnop}
T ₁₂	IC-341099	6.83 ^{abcde}	7.32 ^{bcdef}	5.13 ^{efgh}	5.80 ^{defghi}
T ₁₃	IC-341110	5.57 ^{defgh}	6.97 ^{cdefghi}	4.38 ^{hijklm}	5.20 ^{fghijk}
T ₁₄	IC-341116	7.85 ^{ab}	8.90 ^{ab}	6.08 ^{bcde}	6.84 ^{abcd}
T ₁₅	IC-341122	7.00 ^{abcd}	7.84 ^{bcde}	5.61 ^{cdefg}	6.49 ^{bcde}
T ₁₆	IC-341161	3.58 ^{ijk}	4.00 ⁿ	3.65 ^{klmn}	3.02 ^q
T ₁₇	IC-345576	6.20 ^{cdefg}	6.66 ^{cdefghij}	4.71 ^{ghijk}	5.12 ^{ghijkl}
T ₁₈	IC-355952	4.39 ^{hijk}	5.57 ^{hijklmn}	3.32 ^{mn}	4.28 ^{ijklmnop}
T ₁₉	IC-355959	6.83 ^{abcde}	7.74 ^{bcdef}	5.11 ^{efgh}	5.99 ^{defgh}
T ₂₀	IC-355961	6.38 ^{cdef}	7.53 ^{bcdef}	4.85 ^{fghij}	5.63 ^{defghi}
T ₂₁	IC-355967	3.65 ^{ijk}	4.72 ^{klmn}	3.15 ⁿ	3.58 ^{nopq}
T ₂₂	IC-355974	5.40 ^{efgh}	6.15 ^{fghijkl}	4.21 ^{hijklmn}	4.68 ^{ijklmno}
T ₂₃	IC-356037	7.65 ^{abc}	8.26 ^{abc}	5.92 ^{bcdef}	6.57 ^{abcde}
T ₂₄	IC-392531	6.22 ^{cdefg}	7.11 ^{cdefgh}	4.82 ^{fghij}	5.49 ^{efghij}
T ₂₅	IC-392534	8.25 ^a	9.53 ^a	6.30 ^{abcd}	7.28 ^{abc}
T ₂₆	IC-392535	3.80 ^{ijk}	4.64 ^{klmn}	3.21 ⁿ	3.63 ^{mno}
T ₂₇	IC-392538	4.15 ^{hijk}	5.25 ^{ijklmn}	3.18 ⁿ	4.00 ^{klmnopq}
T ₂₈	IC-392544	4.23 ^{hijk}	5.22 ^{ijklmn}	3.24 ^{mn}	3.96 ^{klmnopq}
T ₂₉	IC-392555	4.11 ^{hijk}	5.08 ^{ijklmn}	3.24 ^{mn}	3.91 ^{lmnopq}
T ₃₀	IC-393298	3.32 ^k	4.62 ^{klmn}	3.22 ⁿ	3.45 ^{opq}
T ₃₁	IC-393305	5.03 ^{fghi}	6.35 ^{efghij}	3.80 ^{ijklmn}	4.83 ^{hijklm}
T ₃₂	IC-429925	7.03 ^{abc}	7.74 ^{bcdef}	5.07 ^{efghi}	5.96 ^{defgh}
T ₃₃	IC-429949	3.24 ^k	4.52 ^{mn}	3.27 ^{mn}	3.67 ^{mno}
T ₃₄	IC-429965	4.65 ^{hijk}	5.47 ^{ijklmn}	3.56 ^{lmn}	4.11 ^{klmnopq}
T ₃₅	IC-429970	4.91 ^{ghij}	6.46 ^{defghij}	3.94 ^{ijklmn}	4.86 ^{hijklm}
T ₃₆	DARL/SS/238	7.61 ^{abc}	7.42 ^{bcdef}	7.30 ^a	7.73 ^{ab}
T ₃₇	DARL/SS/60	7.89 ^{ab}	7.97 ^{abcd}	5.91 ^{bcdef}	6.80 ^{abcd}
T ₃₈	Akola-01	7.23 ^{abc}	7.85 ^{bcde}	6.73 ^{abc}	7.78 ^a
T ₃₉	Konkan Harita	6.85 ^{abcde}	7.00 ^{cdefghi}	4.95 ^{efghij}	5.79 ^{defghi}
T ₄₀	Pusa Nasdar	3.70 ^{ijk}	4.59 ^{lmn}	3.44 ^{lmn}	3.48 ^{nopq}
M.S.D.		1.46	1.62	1.15	1.25
SE(m)		0.26	0.28	0.20	0.22
SE(d)		0.36	0.40	0.28	0.31
C.V.		7.67	7.51	7.5	7.21

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.11: Mean performance of nodes to first female flower in ridge gourd genotypes

Treatments	Genotypes	Nodes to first female flower			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	12.32 ^{cdefghijkl}	13.11 ^{cdefghijkl}	10.79 ^{cdefghi}	11.69 ^{cdefghij}
T ₂	IC-262231	11.88 ^{cdefghijklm}	13.43 ^{cdefghijkl}	10.92 ^{cdefgh}	11.68 ^{cdefghij}
T ₃	IC-262245	13.89 ^{bcdefg}	14.58 ^{abcdefghij}	12.09 ^{bcdef}	12.80 ^{bcdefg}
T ₄	IC-262265	14.42 ^{bcde}	15.46 ^{abcdefgh}	12.58 ^{abcd}	13.4 ^{abcdef}
T ₅	IC-262258	12.46 ^{cdefghijkl}	14.26 ^{bcdefghijk}	10.9 ^{cdefgh}	12.23 ^{cdefghi}
T ₆	IC-264830	9.78 ^{ghijklmnop}	10.14 ^{ijklmn}	8.44 ^{fghijklm}	8.64 ^{hijklm}
T ₇	IC-264908	7.40 ^{op}	8.36 ^{mn}	6.56 ^{lm}	7.28 ^{lm}
T ₈	IC-264971	13.61 ^{bcdefgh}	13.89 ^{bcdefghijk}	11.61 ^{cdefg}	11.79 ^{cdefghij}
T ₉	IC-265026	9.43 ^{ijklmnop}	10.27 ^{ijklmn}	8.15 ^{ghijklm}	8.97 ^{ghijklm}
T ₁₀	IC-278358	10.66 ^{efghijklmnop}	11.78 ^{efghijklmn}	9.57 ^{defghijklm}	10.26 ^{defghijklm}
T ₁₁	IC-279691	9.81 ^{fghijklmnop}	10.33 ^{ijklmn}	8.44 ^{fghijklm}	8.95 ^{ghijklm}
T ₁₂	IC-341099	11.29 ^{defghijklmno}	12.6 ^{cdefghijklm}	9.82 ^{defghijkl}	10.68 ^{defghijkl}
T ₁₃	IC-341110	11.94 ^{cdefghijklm}	12.79 ^{cdefghijklm}	10.28 ^{cdefghijk}	10.99 ^{cdefghijkl}
T ₁₄	IC-341116	13.91 ^{bcdef}	15.58 ^{abcdef}	12.08 ^{bcdef}	13.54 ^{abcde}
T ₁₅	IC-341122	11.63 ^{cdefghijklmn}	12.56 ^{cdefghijklm}	9.95 ^{defghijkl}	10.86 ^{cdefghijkl}
T ₁₆	IC-341161	7.63 ^{nop}	8.37 ^{mn}	6.62 ^{klm}	7.22 ^{lm}
T ₁₇	IC-345576	12.21 ^{cdefghijklm}	13.43 ^{cdefghijkl}	10.53 ^{cdefghij}	11.53 ^{cdefghijk}
T ₁₈	IC-355952	8.16 ^{mnop}	9.19 ^{lmn}	7.04 ^{ijklm}	7.99 ^{ijklm}
T ₁₉	IC-355959	15.70 ^{abc}	16.96 ^{abc}	13.65 ^{abc}	14.76 ^{abc}
T ₂₀	IC-355961	14.63 ^{abcde}	16.43 ^{abcd}	12.62 ^{abcd}	13.8 ^{abcd}
T ₂₁	IC-355967	7.06 ^p	7.92 ⁿ	6.13 ^m	6.64 ^m
T ₂₂	IC-355974	12.03 ^{cdefghijklm}	13.1 ^{cdefghijkl}	10.08 ^{cdefghijkl}	11.29 ^{cdefghijk}
T ₂₃	IC-356037	14.94 ^{abcd}	15.99 ^{abcde}	12.65 ^{abcd}	13.67 ^{abcde}
T ₂₄	IC-392531	9.09 ^{ijklmnop}	10.68 ^{ijklmn}	7.84 ^{hijklm}	9.24 ^{ghijklm}
T ₂₅	IC-392534	13.42 ^{bcdefghi}	15.52 ^{abcdefg}	11.61 ^{cdefg}	13.41 ^{abcde}
T ₂₆	IC-392535	9.53 ^{hijklmnop}	10.21 ^{ijklmn}	8.25 ^{ghijklm}	8.92 ^{ghijklm}
T ₂₇	IC-392538	10.01 ^{fghijklmnop}	11.27 ^{fghijklmn}	8.71 ^{fghijklm}	9.80 ^{efghijklm}
T ₂₈	IC-392544	8.37 ^{lmnop}	8.47 ^{mn}	7.21 ^{ijklm}	7.28 ^{lm}
T ₂₉	IC-392555	9.18 ^{ijklmnop}	9.24 ^{lmn}	8.01 ^{ghijklm}	8.67 ^{hijklm}
T ₃₀	IC-393298	8.16 ^{mnop}	8.31 ^{mn}	7.50 ^{hijklm}	7.71 ^{klm}
T ₃₁	IC-393305	9.53 ^{hijklmnop}	10.95 ^{ghijklmn}	8.73 ^{efghijklm}	9.76 ^{efghijklm}
T ₃₂	IC-429925	12.94 ^{bcdefghijk}	13.88 ^{bcdefghijk}	10.97 ^{cdefgh}	12.49 ^{cdefgh}
T ₃₃	IC-429949	8.09 ^{mnop}	9.70 ^{klmn}	6.97 ^{ijklm}	8.43 ^{ijklm}
T ₃₄	IC-429965	8.89 ^{klmnop}	10.89 ^{hijklmn}	8.40 ^{ghijklm}	9.48 ^{fghijklm}
T ₃₅	IC-429970	9.93 ^{fghijklmnop}	10.38 ^{ijklmn}	8.32 ^{ghijklm}	8.93 ^{ghijklm}
T ₃₆	DARL/SS/238	16.79 ^{ab}	18.05 ^{ab}	15.57 ^{ab}	16.88 ^a
T ₃₇	DARL/SS/60	13.17 ^{bcdefghij}	15.11 ^{abcdefghi}	12.38 ^{bcde}	13.88 ^{abcd}
T ₃₈	Akola-01	18.65 ^a	19.00 ^a	16.10 ^a	16.54 ^{ab}
T ₃₉	Konkan Harita	10.85 ^{defghijklmnop}	12.37 ^{defghijklmn}	9.65 ^{defghijklm}	10.65 ^{defghijkl}
T ₄₀	Pusa Nasdar	11.67 ^{cdefghijklmn}	12.66 ^{cdefghijklm}	10.77 ^{cdefghi}	11.34 ^{cdefghijk}
M.S.D.		4.12	4.58	3.66	3.92
SE(m)		0.72	0.80	0.64	0.69
SE(d)		1.02	1.13	0.91	0.97
C.V.		10.96	11.16	11.13	10.95

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

4.2.9 Days to first female flower opening

As shown in Table 4.2.9, the genotype IC-392535 reported the minimum number of days (40.36) for the first female flower opening which was followed by IC-355967 (42.32), while the maximum number of days (59.84) for the first female flower opening was noted in the genotype IC-392531. Whereas, the minimum number of days (39.01) for first female flower opening was observed in the genotype IC-355961 which was at par with IC-392535, IC-355967 and IC-264971 (39.08, 42.03 and 42.89, respectively), while the maximum number of days (57.89) for the first female flower opening was observed in the genotype DARL/SS/60 in the last week of February, 2022 and 2023, respectively.

In the second week of March (2022), genotype IC-392535 observed the minimum number of days (38.52) for the first female flower opening which was significantly at par with IC-355967, IC-264971 and IC-262258 (39.23, 39.62 and 40.44, respectively), while the maximum number of days (56.20) for the first female flower opening was observed in the genotype IC-341161. Whereas, in 2023 genotype IC-392535 reported the minimum number of days (40.18) for the first female flower opening which was significantly at par with IC-355961, IC-264971, IC-355967 and IC-393305 (40.68, 40.86, 42.40 and 41.90, respectively), while the maximum number of days (57.20) for the first female flower opening was noted in the genotype IC-392531.

4.2.10 Nodes to first male flower

In the last week of February (2022), the minimum number of nodes (3.24) for the first male flower was reported in the genotype IC-429949 which was significantly at par with IC-393298, IC-264908, IC-341161, IC-355967, Pusa Nasdar, IC-392535, IC-392555, IC-392538, IC-392544, IC-355952 and IC-429965 (3.32, 3.54, 3.58, 3.65, 3.70, 3.80, 4.11, 4.15, 4.23, 4.39 and 4.65, respectively), while the maximum number of nodes (8.25) for the first male flower was recorded in the genotype IC-392534. Whereas, genotype IC-341161 reported minimum number of nodes (4.00) for first male flower which was significantly at par with IC-264908, IC-429949, Pusa Nasdar, IC-393298, IC-392535, IC-355967, IC-392555, IC-392544, IC-392538, IC-265026, IC-429965 and IC-355952 (4.27, 4.52, 4.59, 4.62, 4.64, 4.72, 5.08, 5.22, 5.25, 5.34, 5.47 and 5.57, respectively), while maximum number of nodes (9.53) for the first male flower was noted in the genotype IC-392534 in 2023.

In the second week of March (2022), the minimum number of nodes (3.12) for the first male flower was reported in the genotype IC-264908 which was significantly at par with IC-355967, IC-392538, IC-392535, IC-393305, IC-392555, IC-392544, IC-429949, IC-355952, Pusa Nasdar, IC-429965, IC-341161, IC-279691, IC-265026, IC-264830, IC-355974, IC-393298 and IC-429970 (3.15, 3.18, 3.21, 3.22, 3.24, 3.24, 3.27, 3.32, 3.44, 3.56, 3.65, 3.88, 4.15, 4.21, 4.21, 3.80 and 3.94, respectively), while genotype DARL/SS/238 noted maximum number of nodes (7.30) for the first male flower. Whereas, in 2023 the minimum number of

nodes (3.02) for the first male flower was observed in the genotype IC-341161 which was significantly at par with IC-264908, IC-393298, Pusa Nasdar, IC-355967, IC-392535, IC-429949, IC-392555, IC-392544, IC-392538 and IC-429965 (3.20, 3.45, 3.48, 3.58, 3.63, 3.67, 3.91, 3.96, 4.00 and 4.11, respectively), while the genotype Akola-01 observed the maximum number of nodes (7.78) for the first male flower in 2023 as shown in Table 4.2.10.

4.2.11 Nodes to first female flower

As shown in Table 4.2.11, the significantly minimum number of nodes (7.06) for the first female flower was observed in the genotype IC-355967 which was at par with IC-264908, IC-341161, IC-429949, IC-355952, IC-393298, IC-392544, IC-429965, IC-392531, IC-392555, IC-265026, IC-392535, IC-393305, IC-264830, IC-279691, IC-429970, IC-392538, IC-278358 and Konkan Harita (7.40, 7.63, 8.09, 8.16, 8.16, 8.37, 8.89, 9.09, 9.18, 9.43, 9.53, 9.53, 9.78, 9.81, 9.93, 10.10, 10.66 and 10.85, respectively), while the maximum number of nodes (18.65) for the first female flower was observed in the genotype Akola-01 in the last week of February during 2022. Whereas, the genotype IC-355967 recorded minimum number of nodes (7.92) for the first female flower which was significantly at par with the genotypes IC-393298, IC-264908, IC-341161, IC-392544, IC-355952, IC-392555, IC-429949, IC-429965, IC-264830, IC-392535, IC-265026, IC-392538, IC-279691, IC-429970, IC-392531, IC-393305, IC-278358 and Konkan Harita (8.31, 8.36, 8.37, 8.47, 9.19, 9.24, 9.70, 9.89, 10.14, 10.21, 10.27, 10.27, 10.33, 10.38, 10.68, 10.95, 11.78 and 12.37, respectively), while the maximum number of nodes (19.00) for first female flower was recorded in the genotype Akola-01 in 2023.

In the second week of March, 2022, the minimum number of nodes (6.13) for the first female flower was reported in the genotype IC-355967 which was at par with IC-264908, IC-341161, IC-429949, IC-355952, IC-392544, IC-393298, IC-392531, IC-392555, IC-265026, IC-392535, IC-429970, IC-429965, IC-264830, IC-279691, IC-392538, IC-393305, IC-278358 and Konkan Harita (6.56, 6.62, 6.97, 7.04, 7.21, 7.50, 7.84, 8.01, 8.15, 8.25, 8.32, 8.40, 8.44, 8.44, 8.71, 8.73, 9.57 and 9.65, respectively), while the maximum number of nodes (16.10) for the first female flower was reported in the genotype Akola-01. Whereas, in 2023 the genotype IC-355967 observed minimum number of nodes (7.22) for the first female flower which were significantly at par with IC-341161, IC-264908, IC-392544, IC-393298, IC-355952, IC-429949, IC-264830, IC-392555, IC-392535, IC-429970, IC-279691, IC-265026, IC-392531, IC-429965, IC-393305, IC-392538 and IC-278358 (7.22, 7.28, 7.28, 7.71, 7.99, 8.43, 8.64, 8.67, 8.92, 8.93, 8.95, 8.97, 9.24, 9.48, 9.76, 9.80 and 10.26, respectively), while the maximum number of nodes (16.88) for the first female flower opening was noted in the genotype DARL/SS/238.

Table 4.2.12: Mean performance of days to first fruit harvest in ridge gourd genotypes

Treatments	Genotypes	Days to first fruit harvest			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	58.12 ^{ijkl}	59.46 ^{hijk}	57.99 ^{cdefghij}	60.46 ^{defghi}
T ₂	IC-262231	54.18 ^{lmnop}	53.61 ^{nop}	51.74 ^{lmnop}	51.92 ^{opqrs}
T ₃	IC-262245	62.93 ^{fghi}	63.85 ^{cdefgh}	59.80 ^{cdefg}	60.67 ^{defghi}
T ₄	IC-262265	65.36 ^{cdefg}	62.78 ^{efghij}	62.14 ^{abc}	60.66 ^{defghi}
T ₅	IC-262258	51.96 ^{nopq}	52.37 ^{nopq}	49.58 ^{nopqr}	52.01 ^{opqr}
T ₆	IC-264830	62.19 ^{fghij}	63.09 ^{defghij}	58.88 ^{cdefghi}	60.51 ^{defghi}
T ₇	IC-264908	54.91 ^{lmnop}	56.04 ^{klmno}	52.43 ^{klmnop}	53.79 ^{lmnop}
T ₈	IC-264971	46.53 ^r	47.60 ^r	46.05 ^{qrs}	47.87 ^{rs}
T ₉	IC-265026	59.66 ^{hijk}	60.54 ^{ghijk}	56.99 ^{defghijk}	58.67 ^{efghijk}
T ₁₀	IC-278358	63.40 ^{efgh}	62.67 ^{fghij}	60.99 ^{bcde}	61.16 ^{defghi}
T ₁₁	IC-279691	69.93 ^{abc}	68.22 ^{abc}	66.39 ^a	67.89 ^a
T ₁₂	IC-341099	67.97 ^{abcde}	67.58 ^{abcd}	60.43 ^{bcdef}	61.65 ^{defgh}
T ₁₃	IC-341110	70.49 ^a	70.27 ^a	66.72 ^a	64.20 ^{abcd}
T ₁₄	IC-341116	63.41 ^{efgh}	62.22 ^{fghij}	59.41 ^{cdefgh}	62.59 ^{cdef}
T ₁₅	IC-341122	65.73 ^{bcdefg}	63.71 ^{cdefghi}	62.43 ^{abc}	60.98 ^{defghi}
T ₁₆	IC-341161	69.80 ^{abc}	70.14 ^a	66.60 ^a	67.63 ^{ab}
T ₁₇	IC-345576	69.65 ^{abc}	68.09 ^{abc}	62.48 ^{abc}	64.29 ^{abcd}
T ₁₈	IC-355952	51.32 ^{opq}	51.62 ^{opqr}	49.04 ^{opqr}	50.31 ^{pqrs}
T ₁₉	IC-355959	59.64 ^{hijk}	59.31 ^{hijkl}	56.45 ^{efghijkl}	57.45 ^{hijklm}
T ₂₀	IC-355961	50.98 ^{pqr}	49.61 ^{pqr}	48.56 ^{pqrs}	49.14 ^{qrs}
T ₂₁	IC-355967	46.36 ^r	48.57 ^{qr}	43.96 ^s	47.39 ^s
T ₂₂	IC-355974	58.27 ^{ijkl}	59.15 ^{ijkl}	54.62 ^{hijklmn}	58.36 ^{fghijkl}
T ₂₃	IC-356037	58.24 ^{ijkl}	59.32 ^{hijkl}	55.34 ^{ghijklm}	56.75 ^{ijklmn}
T ₂₄	IC-392531	69.69 ^{abc}	68.67 ^{ab}	66.90 ^a	64.52 ^{abcd}
T ₂₅	IC-392534	63.34 ^{efgh}	64.16 ^{bcdefg}	60.23 ^{cdefg}	59.60 ^{efghij}
T ₂₆	IC-392535	48.00 ^{qr}	50.08 ^{pqr}	45.44 ^{rs}	47.96 ^{rs}
T ₂₇	IC-392538	61.94 ^{ghij}	63.16 ^{defghij}	58.85 ^{cdefghi}	57.97 ^{ghijkl}
T ₂₈	IC-392544	70.18 ^{ab}	70.53 ^a	65.42 ^{ab}	66.80 ^{abc}
T ₂₉	IC-392555	64.21 ^{defgh}	64.86 ^{bcdefg}	60.94 ^{bcde}	61.95 ^{defgh}
T ₃₀	IC-393298	66.70 ^{abcdef}	63.02 ^{defghij}	63.05 ^{abc}	62.92 ^{cdef}
T ₃₁	IC-393305	53.20 ^{mnop}	54.79 ^{lmno}	50.51 ^{mnopq}	51.42 ^{opqrs}
T ₃₂	IC-429925	57.14 ^{klm}	58.5 ^{jklm}	54.05 ^{ijklmno}	55.27 ^{jklmno}
T ₃₃	IC-429949	68.67 ^{abcd}	68.25 ^{abc}	61.96 ^{abcd}	62.74 ^{cdef}
T ₃₄	IC-429965	56.16 ^{klmn}	56.21 ^{klmno}	52.75 ^{klmnop}	53.00 ^{mnopq}
T ₃₅	IC-429970	66.23 ^{abcdefg}	66.01 ^{abcdef}	61.94 ^{abcd}	63.15 ^{bcde}
T ₃₆	DARL/SS/238	68.76 ^{abcd}	67.40 ^{abcde}	62.73 ^{abc}	60.40 ^{defghi}
T ₃₇	DARL/SS/60	69.20 ^{abc}	70.39 ^a	60.84 ^{bcde}	62.33 ^{cdefg}
T ₃₈	Akola-01	53.40 ^{mnop}	54.07 ^{mnop}	50.83 ^{mnopq}	52.86 ^{nopq}
T ₃₉	Konkan Harita	55.72 ^{klmno}	56.74 ^{klmn}	52.93 ^{jklmnop}	54.03 ^{lmnop}
T ₄₀	Pusa Nasdar	55.45 ^{klmnop}	56.80 ^{klmn}	55.39 ^{fghijklm}	54.21 ^{klmnop}
M.S.D.		4.68	4.65	5.07	4.58
SE(m)		0.82	0.81	0.89	0.80
SE(d)		1.16	1.15	1.25	1.13
C.V.		2.33	2.32	2.68	2.38

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.13: Mean performance of number of fruits per vine in ridge gourd genotypes

Treatments	Genotypes	Number of fruits per vine			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	20.47 ^{defgh}	21.52 ^{cdef}	17.87 ^{defg}	18.15 ^{cdefghi}
T ₂	IC-262231	16.13 ^{ghijk}	17.06 ^{fghij}	13.75 ^{ghijklm}	13.71 ^{hijklm}
T ₃	IC-262245	12.34 ^{ijklmno}	12.87 ^{ijklmn}	10.02 ^{mnop}	10.45 ^{klmno}
T ₄	IC-262265	15.34 ^{hijklm}	16.18 ^{hijk}	13.08 ^{klmn}	13.44 ^{ijklmn}
T ₅	IC-262258	20.80 ^{cdefg}	21.98 ^{cde}	17.61 ^{defgh}	18.29 ^{cdefgh}
T ₆	IC-264830	6.53 ^p	6.48 ^p	5.75 ^q	5.96 ^o
T ₇	IC-264908	15.46 ^{hijklm}	16.23 ^{hijk}	13.24 ^{ijklmn}	14.06 ^{ghijklm}
T ₈	IC-264971	16.46 ^{fghijk}	17.44 ^{efghi}	14.15 ^{ghijklm}	15.13 ^{fghijkl}
T ₉	IC-265026	13.87 ^{ijklmn}	14.66 ^{hijklm}	11.16 ^{klmno}	11.96 ^{klmn}
T ₁₀	IC-278358	20.20 ^{defghi}	22.46 ^{cd}	16.68 ^{efghij}	17.91 ^{defghij}
T ₁₁	IC-279691	23.33 ^{abcd}	24.67 ^{abc}	21.51 ^{bcd}	20.03 ^{cde}
T ₁₂	IC-341099	10.20 ^{mnop}	10.83 ^{mnop}	8.870 ^{opq}	9.36 ^{mno}
T ₁₃	IC-341110	14.46 ^{ijklmn}	14.43 ^{hijklmn}	12.39 ^{klmno}	13.09 ^{ijklmn}
T ₁₄	IC-341116	11.74 ^{klmnop}	12.41 ^{ijklmn}	10.00 ^{mnop}	10.34 ^{lmno}
T ₁₅	IC-341122	14.20 ^{ijklmn}	15.30 ^{hijklm}	12.52 ^{ijklmno}	13.21 ^{ijklmn}
T ₁₆	IC-341161	26.80 ^{ab}	27.89 ^{ab}	23.07 ^{ab}	25.40 ^{ab}
T ₁₇	IC-345576	27.80 ^a	28.58 ^a	26.37 ^a	27.27 ^a
T ₁₈	IC-355952	12.53 ^{ijklmn}	13.25 ^{ijklmn}	11.01 ^{klmno}	11.40 ^{klmn}
T ₁₉	IC-355959	20.80 ^{cdefg}	21.18 ^{cdefg}	17.38 ^{defghi}	18.80 ^{cdefg}
T ₂₀	IC-355961	16.60 ^{fghijk}	16.56 ^{ghijk}	14.26 ^{ghijkl}	14.85 ^{fghijkl}
T ₂₁	IC-355967	22.26 ^{bcde}	23.57 ^{bc}	18.77 ^{cdef}	19.63 ^{cdef}
T ₂₂	IC-355974	22.40 ^{bcde}	23.50 ^{bc}	20.59 ^{bcde}	20.34 ^{cd}
T ₂₃	IC-356037	13.34 ^{ijklmn}	14.12 ^{hijklmn}	10.83 ^{klmno}	11.20 ^{klmn}
T ₂₄	IC-392531	24.40 ^{abcd}	25.46 ^{abc}	20.72 ^{bcde}	22.17 ^{bcd}
T ₂₅	IC-392534	12.93 ^{ijklmn}	12.98 ^{ijklmn}	10.89 ^{klmno}	11.66 ^{klmn}
T ₂₆	IC-392535	11.60 ^{klmnop}	12.07 ^{klmno}	10.08 ^{lmnop}	9.99 ^{mno}
T ₂₇	IC-392538	25.87 ^{abc}	27.37 ^{ab}	22.23 ^{abc}	22.78 ^{abc}
T ₂₈	IC-392544	15.13 ^{ijklm}	14.59 ^{hijklm}	20.54 ^{bcde}	21.29 ^{bcd}
T ₂₉	IC-392555	11.93 ^{ijklmno}	12.95 ^{ijklmn}	10.36 ^{lmno}	10.72 ^{klmno}
T ₃₀	IC-393298	10.74 ^{lmnop}	11.35 ^{lmno}	9.30 ^{nopq}	8.80 ^{no}
T ₃₁	IC-393305	11.40 ^{klmnop}	12.11 ^{klmno}	10.08 ^{lmnop}	10.46 ^{klmno}
T ₃₂	IC-429925	15.67 ^{ghijkl}	16.59 ^{ghijk}	13.48 ^{hijklmn}	14.13 ^{ghijklm}
T ₃₃	IC-429949	15.60 ^{ghijkl}	16.74 ^{fghijk}	13.15 ^{ijklmn}	13.90 ^{hijklm}
T ₃₄	IC-429965	20.40 ^{defghi}	21.52 ^{cdef}	17.76 ^{defg}	18.31 ^{cdefgh}
T ₃₅	IC-429970	17.13 ^{efghij}	18.11 ^{defgh}	14.71 ^{fghijk}	15.27 ^{efghijk}
T ₃₆	DARL/SS/238	21.74 ^{bcdef}	23.21 ^{bc}	17.65 ^{defgh}	18.36 ^{cdefgh}
T ₃₇	DARL/SS/60	16.00 ^{ghijkl}	17.35 ^{efghi}	13.39 ^{ijklmn}	13.71 ^{hijklm}
T ₃₈	Akola-01	7.20 ^{op}	7.36 ^{op}	6.09 ^{pq}	6.26 ^o
T ₃₉	Konkan Harita	9.66 ^{nop}	9.66 ^{nop}	8.38 ^{opq}	8.71 ^{no}
T ₄₀	Pusa Nasdar	14.40 ^{ijklmn}	15.74 ^{hijkl}	12.30 ^{klmno}	12.64 ^{klmn}
M.S.D.		5.32	4.82	4.19	4.84
SE(m)		0.93	0.84	0.73	0.85
SE(d)		1.31	1.19	1.04	1.20
C.V.		9.82	8.48	8.88	9.87

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.14: Mean performance of fruit length (cm) in ridge gourd genotypes

Treatments	Genotypes	Fruit length (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	16.33 ^{cdefg}	18.24 ^{ghijklmno}	14.10 ^{klmno}	14.30 ^{mn}
T ₂	IC-262231	15.05 ^{fghi}	18.20 ^{ghijklmno}	14.95 ^{ijklmno}	18.11 ^{cdefghijkl}
T ₃	IC-262245	15.86 ^{cdefghi}	17.54 ^{ijklmno}	15.78 ^{efghijklmno}	18.44 ^{bcdefghijk}
T ₄	IC-262265	16.35 ^{cdefg}	19.60 ^{bcdefghij}	16.88 ^{cdefghij}	19.92 ^{bcde}
T ₅	IC-262258	16.94 ^{abcdef}	21.75 ^{abcd}	18.39 ^{abcde}	21.81 ^{ab}
T ₆	IC-264830	15.17 ^{efghi}	15.45 ^{nop}	15.79 ^{efghijklmno}	16.26 ^{fghijklmn}
T ₇	IC-264908	15.76 ^{defghi}	17.38 ^{ijklmno}	15.91 ^{defghijklmn}	19.67 ^{bcdef}
T ₈	IC-264971	17.16 ^{abcdef}	18.23 ^{ghijklmno}	17.34 ^{bcdefghi}	19.23 ^{bcdefgh}
T ₉	IC-265026	15.83 ^{defghi}	17.94 ^{hijklmno}	15.80 ^{efghijklmno}	18.03 ^{defghijkl}
T ₁₀	IC-278358	15.34 ^{efghi}	18.25 ^{fghijklmno}	16.36 ^{cdefghijklm}	18.40 ^{bcdefghijk}
T ₁₁	IC-279691	17.22 ^{abcdef}	17.78 ^{ijklmno}	17.72 ^{bcdefgh}	19.36 ^{bcdefg}
T ₁₂	IC-341099	13.43 ^{hi}	15.65 ^{mnop}	18.32 ^{abcde}	18.89 ^{bcdefghi}
T ₁₃	IC-341110	15.00 ^{fghi}	16.42 ^{klmnop}	14.33 ^{jklmno}	14.84 ^{lmn}
T ₁₄	IC-341116	14.94 ^{fghi}	15.27 ^{op}	13.70 ^{mno}	15.06 ^{klmn}
T ₁₅	IC-341122	15.78 ^{defghi}	17.36 ^{ijklmno}	15.84 ^{efghijklmno}	19.99 ^{bcde}
T ₁₆	IC-341161	13.63 ^{ghi}	16.61 ^{jklmnop}	13.89 ^{lmno}	15.62 ^{ijklmn}
T ₁₇	IC-345576	16.90 ^{abcdef}	17.75 ^{ijklmno}	17.75 ^{bcdefgh}	19.07 ^{bcdefghi}
T ₁₈	IC-355952	15.94 ^{cdefghi}	16.29 ^{klmnop}	16.42 ^{cdefghijkl}	16.88 ^{efghijklmn}
T ₁₉	IC-355959	15.77 ^{defghi}	17.27 ^{ijklmno}	15.23 ^{ghijklmno}	15.92 ^{ghijklmn}
T ₂₀	IC-355961	16.46 ^{bcdefg}	18.83 ^{defghijkl}	15.47 ^{fghijklmno}	18.96 ^{bcdefghi}
T ₂₁	IC-355967	16.48 ^{bcdefg}	21.33 ^{bcdef}	17.35 ^{bcdefghi}	21.37 ^{abcd}
T ₂₂	IC-355974	15.47 ^{efghi}	16.31 ^{klmnop}	15.55 ^{fghijklmno}	16.21 ^{ghijklmn}
T ₂₃	IC-356037	13.21 ⁱ	13.98 ^p	13.27 ^{no}	13.56 ⁿ
T ₂₄	IC-392531	18.62 ^{abcd}	19.32 ^{cdefghijk}	18.71 ^{abc}	18.79 ^{bcdefghij}
T ₂₅	IC-392534	15.71 ^{efghi}	16.46 ^{klmnop}	15.47 ^{fghijklmno}	15.89 ^{hijklmn}
T ₂₆	IC-392535	13.94 ^{ghi}	17.44 ^{ijklmno}	15.10 ^{hijklmno}	17.45 ^{efghijklm}
T ₂₇	IC-392538	15.62 ^{efghi}	17.31 ^{ijklmno}	15.61 ^{fghijklmno}	17.28 ^{efghijklm}
T ₂₈	IC-392544	15.53 ^{efghi}	18.72 ^{defghijklm}	13.21 ^o	15.66 ^{ijklmn}
T ₂₉	IC-392555	17.63 ^{abcdef}	20.96 ^{bcdefgh}	18.54 ^{abcd}	21.57 ^{ab}
T ₃₀	IC-393298	19.72 ^a	22.49 ^{ab}	20.83 ^a	19.82 ^{bcde}
T ₃₁	IC-393305	17.63 ^{abcdef}	21.36 ^{bcde}	17.97 ^{bcdef}	21.50 ^{abc}
T ₃₂	IC-429925	19.41 ^a	22.27 ^{abc}	16.66 ^{cdefghijk}	18.52 ^{bcdefghij}
T ₃₃	IC-429949	19.30 ^{ab}	21.18 ^{bcdefg}	14.37 ^{jklmno}	14.72 ^{lmn}
T ₃₄	IC-429965	14.86 ^{fghi}	15.38 ^{nop}	15.44 ^{fghijklmno}	16.08 ^{ghijklmn}
T ₃₅	IC-429970	18.01 ^{abcde}	19.86 ^{bcdefghi}	17.24 ^{cdefghi}	18.07 ^{cdefghijkl}
T ₃₆	DARL/SS/238	15.49 ^{efghi}	16.23 ^{lmnop}	15.53 ^{fghijklmno}	17.98 ^{defghijkl}
T ₃₇	DARL/SS/60	16.32 ^{cdefg}	18.21 ^{ghijklmno}	13.96 ^{lmno}	15.39 ^{jklmn}
T ₃₈	Akola-01	16.20 ^{cdefgh}	18.36 ^{efghijklmn}	16.34 ^{cdefghijklm}	16.37 ^{fghijklmn}
T ₃₉	Konkan Harita	17.69 ^{abcdef}	17.90 ^{hijklmno}	17.79 ^{bcdefg}	17.54 ^{efghijklm}
T ₄₀	Pusa Nasdar	18.72 ^{abc}	24.58 ^a	19.92 ^{ab}	24.58 ^a
M.S.D.		2.87	3.08	2.67	3.45
SE(m)		0.50	0.54	0.47	0.60
SE(d)		0.71	0.76	0.66	0.85
C.V.		5.34	5.10	4.99	5.83

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.15: Mean performance of fruit diameter (cm) in ridge gourd genotypes

Treatments	Genotypes	Fruit diameter (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	3.05 ^{ghijk}	3.22 ^{ghi}	3.39 ^{cdefgh}	3.47 ^{ghijk}
T ₂	IC-262231	3.10 ^{ghijk}	3.38 ^{defgh}	3.42 ^{bcdefgh}	3.56 ^{fghij}
T ₃	IC-262245	3.21 ^{efghi}	3.42 ^{defgh}	3.54 ^{bcdefgh}	3.44 ^{ghijk}
T ₄	IC-262265	3.06 ^{ghijk}	3.22 ^{ghi}	3.35 ^{cdefgh}	3.31 ^{hijk}
T ₅	IC-262258	3.02 ^{ghijk}	3.25 ^{ghi}	3.25 ^{cdefgh}	3.16 ^{hijk}
T ₆	IC-264830	2.94 ^{ijk}	3.17 ^{ghi}	3.28 ^{cdefgh}	3.37 ^{ghijk}
T ₇	IC-264908	3.90 ^{abc}	4.10 ^{abc}	4.16 ^{abcde}	3.95 ^{cdefg}
T ₈	IC-264971	2.95 ^{ijk}	3.11 ^{hi}	3.21 ^{cdefgh}	3.34 ^{hijk}
T ₉	IC-265026	3.84 ^{abc}	4.04 ^{abc}	4.21 ^{abcde}	4.38 ^{abc}
T ₁₀	IC-278358	3.14 ^{fghij}	3.37 ^{efghi}	3.52 ^{bcdefgh}	3.73 ^{efgh}
T ₁₁	IC-279691	2.96 ^{hijk}	3.13 ^{hi}	3.20 ^{cdefgh}	3.30 ^{hijk}
T ₁₂	IC-341099	3.88 ^{abc}	4.17 ^{abc}	4.24 ^{abc}	4.36 ^{abcd}
T ₁₃	IC-341110	3.22 ^{efghi}	3.40 ^{defgh}	3.48 ^{bcdefgh}	3.61 ^{fghi}
T ₁₄	IC-341116	3.14 ^{fghij}	3.29 ^{fghi}	3.25 ^{cdefgh}	3.35 ^{ghijk}
T ₁₅	IC-341122	2.94 ^{ijk}	2.88 ^{hi}	3.21 ^{cdefgh}	3.17 ^{hijk}
T ₁₆	IC-341161	3.79 ^{bcd}	3.98 ^{abcd}	4.24 ^{abc}	4.37 ^{abcd}
T ₁₇	IC-345576	4.37 ^a	4.41 ^{ab}	4.53 ^{ab}	4.50 ^{abc}
T ₁₈	IC-355952	3.68 ^{bcdef}	3.85 ^{bcdef}	3.65 ^{abcdefgh}	3.77 ^{defgh}
T ₁₉	IC-355959	2.90 ^{ijk}	3.03 ^{hi}	3.10 ^{efgh}	3.22 ^{hijk}
T ₂₀	IC-355961	2.76 ^{ijk}	2.93 ^{hi}	2.98 ^{gh}	3.08 ^{ijk}
T ₂₁	IC-355967	4.22 ^{ab}	4.50 ^a	4.71 ^a	4.63 ^{ab}
T ₂₂	IC-355974	3.25 ^{defghi}	3.24 ^{ghi}	3.59 ^{bcdefgh}	3.72 ^{efgh}
T ₂₃	IC-356037	2.99 ^{ghijk}	3.18 ^{ghi}	3.14 ^{cdefgh}	2.98 ^{jk}
T ₂₄	IC-392531	3.51 ^{cdefgh}	3.42 ^{defgh}	3.81 ^{abcdefgh}	3.64 ^{fghi}
T ₂₅	IC-392534	2.89 ^{ijk}	3.11 ^{hi}	3.11 ^{defgh}	3.12 ^{ijk}
T ₂₆	IC-392535	2.56 ^k	2.77 ⁱ	2.79 ^h	2.90 ^k
T ₂₇	IC-392538	2.93 ^{ijk}	3.11 ^{hi}	3.18 ^{cdefgh}	3.35 ^{hijk}
T ₂₈	IC-392544	3.17 ^{efghij}	3.40 ^{defgh}	3.40 ^{cdefgh}	3.51 ^{ghij}
T ₂₉	IC-392555	2.65 ^{jk}	2.88 ^{hi}	2.85 ^{gh}	2.98 ^{jk}
T ₃₀	IC-393298	4.10 ^{ab}	4.32 ^{abc}	4.51 ^{ab}	4.82 ^a
T ₃₁	IC-393305	2.85 ^{ijk}	2.99 ^{hi}	3.10 ^{fgh}	3.31 ^{hijk}
T ₃₂	IC-429925	3.02 ^{ghijk}	2.95 ^{hi}	3.20 ^{cdefgh}	3.33 ^{hijk}
T ₃₃	IC-429949	3.05 ^{ghijk}	2.98 ^{hi}	3.37 ^{cdefgh}	3.49 ^{ghijk}
T ₃₄	IC-429965	3.20 ^{efghi}	3.21 ^{ghi}	3.45 ^{bcdefgh}	3.48 ^{ghijk}
T ₃₅	IC-429970	3.69 ^{bcde}	3.92 ^{abcde}	4.15 ^{abcde}	4.32 ^{abcde}
T ₃₆	DARL/SS/238	2.72 ^{ijk}	2.87 ^{hi}	2.95 ^{gh}	3.06 ^{ijk}
T ₃₇	DARL/SS/60	3.92 ^{abc}	4.28 ^{abc}	4.22 ^{abcd}	4.36 ^{abcd}
T ₃₈	Akola-01	2.79 ^{ijk}	2.97 ^{hi}	2.97 ^{gh}	3.10 ^{ijk}
T ₃₉	Konkan Harita	3.52 ^{cdefg}	3.73 ^{cdefg}	3.92 ^{abcdefg}	4.16 ^{bcdef}
T ₄₀	Pusa Nasdar	2.91 ^{ijk}	3.08 ^{hi}	3.19 ^{cdefgh}	3.32 ^{hijk}
M.S.D.		0.55	0.6	1.11	0.60
SE(m)		0.10	0.11	0.19	0.11
SE(d)		0.14	0.15	0.28	0.15
C.V.		5.13	5.35	9.58	5.08

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

4.2.12 Days to first fruit harvest

With respect to the days to first fruit harvest in last week of February, 2022, the minimum number of days (46.36) for first fruit harvest was recorded in the genotype IC-355967 which was significantly at par with IC-264971, IC-392535 and IC-355961 (46.53, 48.00 and 50.98, respectively), while the maximum number of days (70.49) for first fruit harvest was reported in the genotype IC-341110. Whereas, in 2023 the genotype IC-264971 reported minimum number of days (47.60) for first fruit harvest which was followed by IC-355952, IC-355961, IC-355967 and IC-392535 (51.62, 51.61, 48.57 and 50.08), while the maximum number of days (70.53) for first fruit harvest was recorded in the genotype IC-392544.

In the second week of March (2022), the minimum number of days (43.96) for first harvest was observed in the genotype IC-355967 which was significantly at par with IC-392535, IC-264971 and IC-355961 (45.44, 46.05 and 48.56, respectively), while the maximum number of days (66.90) for first fruit harvest was recorded in the genotype IC-392531. Whereas, the minimum number of days (47.39) for first fruit harvest was reported in the genotype IC-355967 which was significantly at par with the genotype IC-264971, IC-392535, IC-355961, IC-355952, IC-393305 and IC-262231 (47.87, 47.96, 49.14, 50.31, 51.42 and 51.92, respectively), while the maximum number of days (67.89) for first fruit harvest was noted in the genotype IC-279691 in 2023 as shown in Table 4.2.12.

4.2.13 Number of fruit per vine

As shown in Table 4.2.13, significantly maximum number of fruits was recorded in the genotype IC-345576 (27.80 and 28.58) which was followed by IC-341161, IC-392538, IC-392531 (26.80 and 27.89, 25.87 and 27.37, 24.40 and 25.46), while the minimum number of fruits was recorded in the genotype IC-264830 (6.53 and 6.48) in the last week of February in 2022 and 2023, respectively.

In second week of March (2022 and 2023), the genotype IC-345576 (26.37 and 27.27) reported maximum number of fruits per vine which was significantly at par with IC-392531 and IC-392538 (23.07 and 25.40, 22.23 and 22.78), while minimum number of fruits was recorded in the genotype IC-264830 (5.75 and 5.96), respectively.

4.2.14 Fruit length (cm)

Fruit length was reported maximum in the genotype IC-393298 (19.72 cm) which was at par with IC-429949 (19.30 cm), IC-429925 (19.41 cm), Pusa Nasdar (18.72 cm), IC-429970 (18.01 cm), Konkan Harita (17.69 cm), IC-392555 (17.63 cm), IC-393305 (17.63 cm), IC-279691 (17.22 cm), IC-264971 (17.16 cm), IC-262258 (16.94 cm) and IC-345576 (16.90 cm), while the minimum fruit length was noted in the genotype IC-356037 (13.21 cm) in the last week of February (2022). Whereas, in 2023 the maximum fruit length was noted in the genotype Pusa Nasdar (24.58 cm) which was significantly at par with IC-393298 (22.49 cm), IC-429925 (22.27 cm) and IC-262258 (21.75 cm), while the genotype IC-356037 (13.98 cm) reported the minimum fruit length.

In the second week of March (2022), the maximum fruit length was reported in the genotype IC-393298 (20.83 cm) which was significantly at par with Pusa Nasdar (19.92 cm), IC-392531 (18.71 cm), IC-392555 (18.54 cm), IC-262258 (18.39 cm) and IC-341099 (18.32 cm), while the minimum fruit length was observed in the genotype IC-392544 (13.21 cm). Whereas, in 2023 the genotype Pusa Nasdar (24.58 cm) recorded maximum fruit length which was significantly at par with IC-392555 (21.57 cm), IC-393305 (21.50 cm), IC-355967 (21.37 cm) and IC-262258 (19.92 cm), while the minimum fruit length was recorded in the genotype IC-356037 (13.56 cm) as shown in Table 4.2.14.

4.2.15 Fruit diameter (cm)

In the last week of February (2022), genotype IC-345576 (4.37 cm) recorded maximum fruit diameter which was significantly at par with IC-355967 (4.22 cm), IC-393298 (4.10 cm), DARL/SS/60 (3.92 cm), IC-264908 (3.90 cm), IC-341099 (3.88 cm) and IC-265026 (3.84 cm), while the genotype IC-392535 (2.56 cm) recorded minimum fruit diameter. Whereas, in 2023 the genotype IC-355967 (4.50 cm) reported maximum fruit diameter which was at par with IC-345576 (4.41 cm), IC-393298 (4.32 cm), DARL/SS/60 (4.28 cm), IC-341099 (4.17 cm), IC-264908 (4.10 cm), IC-265026 (4.04 cm), IC-341161 (3.98 cm) and IC-429970 (3.92 cm), while the minimum fruit diameter was observed in the genotype IC-392535 (2.77 cm).

In the second week of March (2022), the maximum fruit diameter was reported in the genotype IC-355967 (4.71 cm) which was significantly at par with IC-345576 (4.53 cm), IC-393298 (4.51 cm), IC-341099 (4.24 cm), IC-341161 (4.24 cm), DARL/SS/60 (4.22 cm), IC-265026 (4.21 cm), IC-429970 (4.15 cm), IC-392531 (3.81 cm) and IC-355952 (3.65 cm), while the minimum fruit diameter was noted in the genotype IC-392535 (2.79 cm). Whereas, the maximum fruit diameter was recorded in the genotype IC-393298 (4.82 cm) which was significantly at par with IC-345576 (4.50 cm), IC-355967 (4.63 cm), IC-265026 (4.38 cm), IC-341161 (4.37 cm), DARL/SS/60 (4.36 cm), IC-341099 (4.36 cm) and IC-429970 (4.32 cm), while minimum fruit diameter was recorded in the genotype IC-392535 (2.90 cm) in 2023 as shown in Table 4.2.15.

4.2.16 Peduncle length (cm)

As shown in Table 4.2.16, in the last week of February, 2022 the genotype IC-341122 (11.35 cm) recorded maximum peduncle length which was followed by IC-278358 (10.43 cm) and IC-355974 (10.36 cm), while minimum peduncle length was reported in the genotype Konkan Harita (5.06 cm). Whereas, in 2023 the maximum peduncle length was observed in the genotype IC-341122 (11.69 cm) which was significantly at par with IC-355974 (11.04 cm) and IC-264971 (10.54 cm), while the genotype Konkan Harita (5.49 cm) recorded minimum peduncle length. The maximum peduncle length was recorded in the genotype IC-393305 (11.19 and 12.33 cm) which was followed by IC-429970 (10.36 and 11.20 cm), while the minimum peduncle length was reported in the genotype IC-262231 (3.70 and 4.22 cm) in the second week of March in both year of study.

Table 4.2.16: Mean performance of peduncle length (cm) in ridge gourd genotypes

Treatments	Genotypes	Peduncle length (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	6.80 ^{ijklmnop}	6.90 ^{nopqrs}	5.16 ^{hijklm}	6.05 ^{klmnop}
T ₂	IC-262231	5.79 ^{pqr}	6.73 ^{opqrs}	3.70 ^m	4.22 ^s
T ₃	IC-262245	7.18 ^{hijklmno}	8.56 ^{fghijkl}	3.77 ^{lm}	4.48 ^{rs}
T ₄	IC-262265	7.97 ^{fghijk}	8.33 ^{hijklmn}	4.47 ^{hijklm}	5.54 ^{mnopqr}
T ₅	IC-262258	6.69 ^{ijklmnop}	7.42 ^{klmnopqr}	4.38 ^{ijklm}	4.74 ^{qrs}
T ₆	IC-264830	5.31 ^{qr}	6.47 ^{qrs}	5.88 ^{fghijk}	6.56 ^{ijklm}
T ₇	IC-264908	6.24 ^{nopqr}	7.62 ^{ijklmnopqr}	5.27 ^{hijklm}	6.37 ^{ijklmn}
T ₈	IC-264971	9.72 ^{bcd}	10.54 ^{abc}	6.27 ^{efghi}	6.82 ^{ijkl}
T ₉	IC-265026	6.60 ^{lmnopq}	7.73 ^{ijklmnopqr}	4.42 ^{hijklm}	5.10 ^{opqrs}
T ₁₀	IC-278358	10.43 ^{ab}	10.03 ^{bcde}	3.84 ^{lm}	4.47 ^{rs}
T ₁₁	IC-279691	7.81 ^{fghijklm}	8.59 ^{efghijk}	5.16 ^{hijklm}	5.82 ^{klmnopq}
T ₁₂	IC-341099	8.00 ^{fghij}	7.86 ^{hijklmnopq}	4.02 ^{klm}	4.32 ^{rs}
T ₁₃	IC-341110	8.96 ^{cdef}	9.26 ^{cdefgh}	7.73 ^{cdef}	8.98 ^{defg}
T ₁₄	IC-341116	7.17 ^{hijklmno}	7.14 ^{lmnopqr}	5.00 ^{hijklm}	6.05 ^{klmnop}
T ₁₅	IC-341122	11.35 ^a	11.69 ^a	6.15 ^{fghij}	6.42 ^{ijklmn}
T ₁₆	IC-341161	7.20 ^{hijklmno}	6.94 ^{mnopqr}	6.23 ^{efghij}	7.06 ^{hijk}
T ₁₇	IC-345576	7.94 ^{fghijk}	7.95 ^{hijklmno}	7.53 ^{cdefg}	8.26 ^{fgh}
T ₁₈	IC-355952	7.76 ^{fghijklm}	8.64 ^{efghijk}	7.39 ^{cdefg}	8.42 ^{fg}
T ₁₉	IC-355959	8.07 ^{fghi}	8.56 ^{fghijkl}	7.26 ^{defg}	8.45 ^{fg}
T ₂₀	IC-355961	6.74 ^{ijklmnop}	6.93 ^{mnopqrs}	4.93 ^{hijklm}	5.79 ^{lmnopq}
T ₂₁	IC-355967	9.42 ^{bcde}	9.84 ^{bcdef}	8.52 ^{bcd}	9.72 ^{cd}
T ₂₂	IC-355974	10.36 ^{ab}	11.04 ^{ab}	7.20 ^{defg}	7.97 ^{ghi}
T ₂₃	IC-356037	6.54 ^{mnopq}	6.81 ^{opqrs}	4.32 ^{ijklm}	4.98 ^{pqrs}
T ₂₄	IC-392531	8.53 ^{defg}	8.97 ^{defghij}	7.37 ^{cdefg}	8.21 ^{fgh}
T ₂₅	IC-392534	6.93 ^{ijklmnop}	7.31 ^{klmnopqr}	8.72 ^{bcd}	9.70 ^{cde}
T ₂₆	IC-392535	7.54 ^{ghijklmn}	8.01 ^{hijklmno}	6.24 ^{efghi}	6.43 ^{ijklmn}
T ₂₇	IC-392538	6.07 ^{opqr}	6.50 ^{pqrs}	6.32 ^{efgh}	7.12 ^{hij}
T ₂₈	IC-392544	5.78 ^{pqr}	6.30 ^{rs}	5.25 ^{hijklm}	6.25 ^{ijklmno}
T ₂₉	IC-392555	7.97 ^{fghijk}	8.35 ^{ghijklm}	8.07 ^{cde}	9.40 ^{cdef}
T ₃₀	IC-393298	9.64 ^{bcd}	10.22 ^{bcd}	8.06 ^{cde}	8.48 ^{efg}
T ₃₁	IC-393305	10.03 ^{bc}	9.83 ^{bcdef}	11.19 ^a	12.33 ^a
T ₃₂	IC-429925	7.82 ^{fghijklm}	8.37 ^{ghijklm}	4.55 ^{hijklm}	5.25 ^{nopqrs}
T ₃₃	IC-429949	7.77 ^{fghijklm}	8.15 ^{hijklmno}	4.38 ^{ijklm}	5.04 ^{opqrs}
T ₃₄	IC-429965	7.87 ^{fghijkl}	8.56 ^{fghijkl}	6.27 ^{efghi}	7.15 ^{hij}
T ₃₅	IC-429970	9.84 ^{bcd}	9.78 ^{bcdefg}	10.36 ^{ab}	11.20 ^{ab}
T ₃₆	DARL/SS/238	8.71 ^{cdefg}	9.08 ^{defghi}	5.64 ^{ghijkl}	6.46 ^{ijklmn}
T ₃₇	DARL/SS/60	8.28 ^{efgh}	7.93 ^{hijklmnop}	5.20 ^{hijklm}	6.25 ^{ijklmno}
T ₃₈	Akola-01	7.02 ^{hijklmnop}	7.47 ^{klmnopqr}	7.72 ^{cdef}	9.38 ^{cdef}
T ₃₉	Konkan Harita	5.06 ^r	5.49 ^s	6.02 ^{fghij}	6.34 ^{ijklmn}
T ₄₀	Pusa Nasdar	6.67 ^{klmnop}	7.10 ^{mnopqr}	9.20 ^{bc}	10.44 ^{bc}
M.S.D.		1.32	1.45	1.91	1.24
SE(m)		0.23	0.25	0.33	0.22
SE(d)		0.33	0.36	0.47	0.31
C.V.		5.12	5.32	9.30	5.31

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.17: Mean performance of average fruit weight (g) in ridge gourd genotypes

Treatments	Genotypes	Average fruit weight (g)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	98.62 ^{abc}	99.84 ^{abcd}	99.00 ^{abcd}	100.04 ^{abcde}
T ₂	IC-262231	79.65 ^{defghijkl}	82.35 ^{bcdefghij}	80.60 ^{defghij}	83.97 ^{abcdefghijk}
T ₃	IC-262245	88.36 ^{abcdefghij}	89.01 ^{abcdefghi}	89.80 ^{abcdefghi}	90.73 ^{abcdefghi}
T ₄	IC-262265	101.41 ^a	102.59 ^a	102.87 ^a	104.85 ^a
T ₅	IC-262258	96.23 ^{abcde}	96.39 ^{abcde}	97.73 ^{abcd}	99.19 ^{abcde}
T ₆	IC-264830	82.34 ^{bcdefghijkl}	84.30 ^{abcdefghij}	81.10 ^{cdefghij}	83.67 ^{abcdefghijk}
T ₇	IC-264908	91.29 ^{abcdefghij}	93.23 ^{abcdefghi}	91.24 ^{abcdefghi}	93.14 ^{abcdefghi}
T ₈	IC-264971	86.20 ^{abcdefghijk}	87.52 ^{abcdefghi}	87.95 ^{abcdefghi}	88.16 ^{abcdefghij}
T ₉	IC-265026	92.19 ^{abcdefghi}	95.33 ^{abcde}	92.91 ^{abcde}	95.17 ^{abcdefghi}
T ₁₀	IC-278358	99.82 ^{abc}	100.94 ^{ab}	95.87 ^{abcde}	98.40 ^{abcde}
T ₁₁	IC-279691	99.31 ^{abc}	100.30 ^{abc}	101.36 ^{ab}	102.05 ^{ab}
T ₁₂	IC-341099	78.44 ^{efghijkl}	80.89 ^{defghij}	75.55 ^{hij}	79.65 ^{cdefghijk}
T ₁₃	IC-341110	94.86 ^{abcde}	96.95 ^{abcde}	98.47 ^{abcd}	98.96 ^{abcde}
T ₁₄	IC-341116	81.05 ^{cdefghijkl}	84.01 ^{abcdefghij}	82.51 ^{cdefghij}	84.54 ^{abcdefghijk}
T ₁₅	IC-341122	74.51 ^{hijkl}	75.92 ^{ghij}	77.87 ^{fghij}	76.91 ^{ghijk}
T ₁₆	IC-341161	92.66 ^{abcde}	95.18 ^{abcde}	95.01 ^{abcde}	96.17 ^{abcde}
T ₁₇	IC-345576	87.83 ^{abcde}	90.59 ^{abcde}	87.43 ^{abcde}	87.96 ^{abcde}
T ₁₈	IC-355952	73.01 ^{kl}	75.80 ^{hij}	74.59 ^{hij}	77.92 ^{fghijk}
T ₁₉	IC-355959	90.98 ^{abcde}	91.91 ^{abcde}	91.48 ^{abcde}	92.17 ^{abcde}
T ₂₀	IC-355961	94.16 ^{abcde}	94.21 ^{abcde}	97.44 ^{abcde}	100.84 ^{abc}
T ₂₁	IC-355967	99.92 ^{ab}	101.99 ^a	101.15 ^{ab}	103.20 ^{ab}
T ₂₂	IC-355974	78.09 ^{efghijkl}	81.33 ^{cdefghij}	79.10 ^{efghij}	79.23 ^{efghijk}
T ₂₃	IC-356037	78.08 ^{efghijkl}	82.41 ^{bcdefghij}	78.01 ^{fghij}	80.65 ^{cdefghijk}
T ₂₄	IC-392531	93.34 ^{abcde}	95.29 ^{abcde}	94.81 ^{abcde}	96.03 ^{abcde}
T ₂₅	IC-392534	79.75 ^{defghijkl}	81.15 ^{cdefghij}	81.32 ^{cdefghij}	83.24 ^{bcdefghijk}
T ₂₆	IC-392535	68.75 ^{kl}	66.90 ^j	66.83 ^j	65.75 ^k
T ₂₇	IC-392538	81.73 ^{bcdefghijkl}	84.21 ^{abcde}	83.12 ^{bcde}	83.76 ^{abcde}
T ₂₈	IC-392544	91.82 ^{abcde}	92.76 ^{abcde}	95.44 ^{abcde}	96.66 ^{abcde}
T ₂₉	IC-392555	72.83 ^{ijkl}	74.45 ^{ij}	74.31 ^{ij}	75.31 ^{ijk}
T ₃₀	IC-393298	77.86 ^{efghijkl}	78.03 ^{fghij}	78.15 ^{fghij}	79.12 ^{efghijk}
T ₃₁	IC-393305	74.97 ^{ghijkl}	75.01 ^{hij}	77.08 ^{ghij}	78.72 ^{efghijk}
T ₃₂	IC-429925	76.73 ^{fghijkl}	78.52 ^{efghij}	74.98 ^{hij}	79.49 ^{defghijk}
T ₃₃	IC-429949	73.63 ^{ijkl}	75.59 ^{hij}	74.71 ^{hij}	76.23 ^{hijk}
T ₃₄	IC-429965	88.73 ^{abcde}	87.43 ^{abcde}	91.66 ^{abcde}	93.70 ^{abcde}
T ₃₅	IC-429970	95.51 ^{abcde}	95.28 ^{abcde}	96.31 ^{abcde}	96.35 ^{abcde}
T ₃₆	DARL/SS/238	89.74 ^{abcde}	93.03 ^{abcde}	91.31 ^{abcde}	93.40 ^{abcde}
T ₃₇	DARL/SS/60	97.50 ^{abcd}	97.41 ^{abcde}	99.26 ^{abc}	100.62 ^{abcd}
T ₃₈	Akola-01	89.15 ^{abcde}	92.14 ^{abcde}	83.25 ^{bcde}	94.12 ^{abcde}
T ₃₉	Konkan Harita	64.91 ^l	66.93 ^j	65.77 ^j	67.49 ^{jk}
T ₄₀	Pusa Nasdar	93.77 ^{abcde}	97.34 ^{abcde}	96.77 ^{abcde}	98.21 ^{abcde}
M.S.D.		18.79	19.35	18.51	21.33
SE(m)		3.28	3.38	3.23	3.73
SE(d)		4.64	4.78	4.57	5.27
C.V.		6.60	6.67	6.43	7.26

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hoc test)

4.2.17 Average fruit weight (g)

Among genotypes, IC-262265 (101.41 and 102.87 g) reported maximum average weight of fruit which was significantly at par with IC-355967, IC-279691, IC-278358, IC-262188, DARL/SS/60, Pusa Nasdar, IC-262258, IC-429970, IC-355961, IC-341110, IC-392531, IC-265026, IC-341161, IC-392544, IC-264908, IC-355959, DARL/SS/238, Akola-01, IC-429965, IC-262245, IC-345576 and IC-264971 (99.92 and 101.15 g, 99.31 and 101.36 g, 99.82 and 95.87 g, 98.62 and 99.00 g, 97.50 and 99.26 g, 96.77 g, 96.23 and 97.73 g, 95.51 and 96.31 g, 94.16 and 97.48 g, 94.86 and 98.47 g, 93.34 and 94.81 g, 92.19 and 92.91 g, 92.66 and 95.01 g, 91.82 and 95.44 g, 91.29 and 91.24 g, 90.98 and 91.48 g, 89.74 and 91.31 g, 89.15 and 93.77 g, 88.73 and 91.66 g, 88.36 and 89.80 g, 87.83 and 87.43 g and 86.20 and 87.95 g, respectively), while minimum average weight of fruit was observed in genotype Konkan Harita (64.91 and 65.77 g) in the last week of February and the second week of March, 2022.

The genotype IC-262265 (102.59 and 104.85 g) noted maximum average weight of fruit which was at par with IC-355967, IC-279691, IC-278358, IC-262188, DARL/SS/60, Pusa Nasdar, IC-341110, IC-262258, IC-265026, IC-392531, IC-429970, IC-341161, IC-355961, IC-264908, DARL/SS/238, IC-392544, Akola-01, IC-355959, IC-345576, IC-262245, IC-264971, IC-429965, IC-264830, IC-392538, IC-341116 and IC-262231 (101.99 and 103.20 g, 100.30 and 102.05 g, 100.94 and 98.40 g, 99.84 and 100.04 g, 97.41 and 100.62 g, 97.34 and 98.21 g, 96.95 and 98.96 g, 96.39 and 99.19 g, 95.33 and 95.17 g, 95.29 and 96.03 g, 95.28 and 96.35 g, 95.18 and 96.17 g, 94.21 and 100.84 g, 93.23 and 93.14 g, 93.03 and 93.40 g, 92.76 and 96.66 g, 92.14 and 94.12 g, 91.91 and 92.17 g, 90.59 and 87.96 g, 89.01 and 90.73 g, 87.52 and 88.16 g, 87.43 and 93.70 g, 84.30 and 83.67 g, 84.21 and 83.76 g, 84.01 and 84.54 g, and 83.97 g), while the minimum average weight of fruit was reported in the genotype IC-392535 (66.90 and 65.75 g) in the last week of February and the second week of March, 2023 as shown in Table 4.2.17.

4.2.18 Fruit yield per vine (kg)

The data presented in Table 4.2.18 revealed that the fruit yield per vine, the genotype IC-345576 (2.44 kg) reported maximum fruit yield per vine which was significantly at par with IC-341161 (2.42 kg), IC-279691 (2.32 kg), IC-392531 (2.28 kg), IC-355967 (2.22 kg), IC-392538 (2.13 kg), IC-278358 (2.04 kg), IC-262188 (2.02 kg), IC-262258 (1.99 kg), DARL/SS/238 (1.95 kg) and IC-355959 (1.89 kg), while the minimum fruit yield per vine was recorded in the genotype IC-264830 (0.54 kg) in the last week of February (2022). Whereas, the maximum fruit yield per vine was recorded in the genotype IC-341161 (2.65 kg) which was at par with IC-345576 (2.60 kg), IC-279691 (2.47 kg), IC-392531 (2.42 kg), IC-355967 (2.40 kg), IC-392538 (2.29 kg), IC-278358 (2.27 kg), DARL/SS/238 (2.17 kg) and IC-262188 (2.15 kg), while the minimum fruit yield per vine was recorded in the genotype IC-264830 (0.47 kg) in 2023.

In the second week of March, the maximum fruit yield per vine was recorded in the genotype IC-345576 (2.30 kg) and IC-341161 (2.44 kg) which was significantly at par with IC-345576 (2.40 kg), IC-279691 (2.18 and 2.05 kg), IC-341161 (2.19 kg), IC-392531 (1.97 and 2.14 kg), IC-392544 (1.96 and 2.05 kg) and IC-355967 (1.90 and 2.03 kg), while minimum fruit yield per vine was recorded in the genotype IC-264830 (0.47 and 0.50 kg) in the years of 2022 and 2023, respectively.

4.2.19 Fruit yield (q/ha)

In the last week of February, 2022, the genotype IC-345576 (146.32 q/ha) recorded maximum fruit yield per hectare which was at par with IC-341161 (145.22 q/ha), IC-279691 (139.02 q/ha), IC-392531 (136.88 q/ha), IC-355967 (133.44 q/ha), IC-392538 (127.87 q/ha), IC-278358 (122.24 q/ha), IC-262188 (121.22 q/ha), IC-262258 (119.16 q/ha), DARL/SS/238 (117.03 q/ha) and IC-355959 (113.56 q/ha), while the minimum fruit yield per hectare was recorded in the genotype IC-264830 (32.25 q/ha). Whereas, the maximum fruit yield per hectare was recorded in the genotype IC-341161 (159.40 q/ha) which was at par with IC-278358 (136.02 q/ha), IC-279691 (148.43 q/ha), IC-345576 (155.73 q/ha), IC-355967 (144.21 q/ha), IC-392531 (145.55 q/ha), IC-392538 (137.25 q/ha) and DARL/SS/238 (130.25 q/ha), while the minimum fruit yield per hectare was noted in the genotype IC-264830 (32.72 q/ha) in 2023.

In the second week of March, the maximum fruit yield per hectare was reported in the genotype IC-345576 (138.25 q/ha) and IC-341161 (146.56 q/ha) which was significantly at par with IC-345576 (143.69 q/ha), IC-341161 (131.52 q/ha), IC-279691 (130.69 and 122.70 q/ha), IC-392531 (117.85 and 128.36 q/ha), IC-392544 (117.93 and 123.22 q/ha) and IC-355967 (113.79 and 121.51 q/ha), while minimum fruit yield per hectare was recorded in the genotype IC-264830 (28.05 and 29.92 q/ha) in the years of 2022 and 2023, respectively as shown in Table 4.2.19.

4.2.20 Number of seeds per fruit

As shown in Table 4.2.20, the genotype Akola-01 (149.92 and 169.00, 153.12 and 163.40) recorded maximum number of seed per fruit which was followed by Pusa Nasdar (133.67, 144.68 and 153.92), while the minimum number of seed per fruit reported in the genotype IC-393298 (57.82 and 65.42) and IC-355974 (55.28 and 57.98) in the last week of February and the second week of March in 2022 and 2023, respectively.

4.2.21 Seed length (cm)

The maximum seed length was reported in the genotype IC-392544 (1.45 cm) which was significantly at par with IC-262188, IC-279691 and IC-393298 (1.26, 1.25 and 1.25 cm), while the minimum seed length was recorded in the genotype IC-264830 (0.93 cm) in the last week of February (2022). Whereas, seed length was maximum observed in genotype IC-392544 (1.52 cm) which was followed by IC-279691 (1.37 cm), while the minimum seed length was observed in the genotype IC-264908 (0.96 cm) in 2023.

Table 4.2.18: Mean performance of fruit yield per vine (kg) in ridge gourd genotypes

Treatments	Genotypes	Fruit yield per vine (kg)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	2.02 ^{abcdef}	2.15 ^{abcdefg}	1.77 ^{bcde}	1.82 ^{cdef}
T ₂	IC-262231	1.28 ^{ijklmnop}	1.40 ^{ijklmnop}	1.11 ^{ghijklm}	1.15 ^{ijklmnop}
T ₃	IC-262245	1.09 ^{lmnopqr}	1.14 ^{mnopqrstu}	0.90 ^{hijklmno}	0.95 ^{klmnopqrs}
T ₄	IC-262265	1.55 ^{efghijklm}	1.66 ^{ghijkl}	1.34 ^{efgh}	1.41 ^{efghijkl}
T ₅	IC-262258	1.99 ^{abcdefg}	2.11 ^{bcdefg}	1.72 ^{cde}	1.81 ^{cdefg}
T ₆	IC-264830	0.54 ^f	0.54 ^v	0.47 ^o	0.50 ^s
T ₇	IC-264908	1.41 ^{ghijklmno}	1.51 ^{hijklmno}	1.21 ^{fghijkl}	1.31 ^{fghijklmn}
T ₈	IC-264971	1.42 ^{fghijklmn}	1.53 ^{hijklmn}	1.24 ^{fghij}	1.33 ^{fghijklmn}
T ₉	IC-265026	1.29 ^{ijklmnop}	1.40 ^{klmnopq}	1.04 ^{ghijklm}	1.14 ^{ijklmnop}
T ₁₀	IC-278358	2.04 ^{abcde}	2.27 ^{abcde}	1.60 ^{cdef}	1.76 ^{cdefgh}
T ₁₁	IC-279691	2.32 ^{abc}	2.47 ^{ab}	2.18 ^{ab}	2.05 ^{abcd}
T ₁₂	IC-341099	0.80 ^{opqr}	0.87 ^{rstuv}	0.67 ^{mno}	0.75 ^{opqrs}
T ₁₃	IC-341110	1.37 ^{hijklmnop}	1.40 ^{klmnopq}	1.22 ^{fghijk}	1.29 ^{ghijklmn}
T ₁₄	IC-341116	0.95 ^{mnopqr}	1.04 ^{nopqrstuv}	0.82 ^{jklmno}	0.88 ^{mnopqrs}
T ₁₅	IC-341122	1.06 ^{lmnopqr}	1.16 ^{lmnopqrst}	0.97 ^{ghijklmn}	1.02 ^{ijklmnopqrs}
T ₁₆	IC-341161	2.42 ^{ab}	2.65 ^a	2.19 ^{ab}	2.44 ^a
T ₁₇	IC-345576	2.44 ^a	2.60 ^{ab}	2.30 ^a	2.40 ^{ab}
T ₁₈	IC-355952	0.92 ^{nopqr}	1.00 ^{opqrstuv}	0.82 ^{jklmno}	0.89 ^{lmnopqrs}
T ₁₉	IC-355959	1.89 ^{abcdefghi}	1.95 ^{cdefgh}	1.59 ^{cdef}	1.75 ^{cdefgh}
T ₂₀	IC-355961	1.56 ^{efghijklm}	1.56 ^{hijklm}	1.39 ^{efg}	1.50 ^{efghij}
T ₂₁	IC-355967	2.22 ^{abcd}	2.40 ^{abcd}	1.90 ^{abc}	2.03 ^{abcd}
T ₂₂	IC-355974	1.76 ^{cdefghijk}	1.91 ^{defghi}	1.62 ^{cdef}	1.60 ^{defghi}
T ₂₃	IC-356037	1.04 ^{lmnopqr}	1.16 ^{lmnopqrst}	0.85 ^{jklmno}	0.91 ^{lmnopqrs}
T ₂₄	IC-392531	2.28 ^{abc}	2.42 ^{abc}	1.97 ^{abc}	2.14 ^{abc}
T ₂₅	IC-392534	1.02 ^{lmnopqr}	1.05 ^{lmnopqrstu}	0.89 ^{ijklmno}	0.97 ^{ijklmnopqrs}
T ₂₆	IC-392535	0.80 ^{pqr}	0.81 ^{stuv}	0.68 ^{mno}	0.66 ^{pqrs}
T ₂₇	IC-392538	2.13 ^{abcde}	2.29 ^{abcde}	1.85 ^{bcd}	1.90 ^{bcde}
T ₂₈	IC-392544	1.39 ^{ghijklmnop}	1.35 ^{klmnopqr}	1.96 ^{abc}	2.05 ^{abcd}
T ₂₉	IC-392555	0.87 ^{nopqr}	0.96 ^{pqrstuv}	0.77 ^{lmno}	0.81 ^{nopqrs}
T ₃₀	IC-393298	0.84 ^{nopqr}	0.89 ^{qrstuv}	0.73 ^{mno}	0.70 ^{pqrs}
T ₃₁	IC-393305	0.85 ^{nopqr}	0.91 ^{pqrstuv}	0.77 ^{klmno}	0.82 ^{nopqrs}
T ₃₂	IC-429925	1.20 ^{ijklmnopq}	1.30 ^{klmnopqrs}	1.01 ^{ghijklm}	1.12 ^{ijklmnopq}
T ₃₃	IC-429949	1.15 ^{klmnopqr}	1.26 ^{klmnopqrs}	0.98 ^{ghijklmn}	1.06 ^{ijklmnopqr}
T ₃₄	IC-429965	1.81 ^{bcdefghij}	1.88 ^{efghij}	1.63 ^{cdef}	1.71 ^{cdefgh}
T ₃₅	IC-429970	1.63 ^{defghijkl}	1.72 ^{fghijk}	1.42 ^{defg}	1.47 ^{efghijk}
T ₃₆	DARL/SS/238	1.95 ^{abcdefgh}	2.17 ^{abcdef}	1.62 ^{cdef}	1.71 ^{cdefgh}
T ₃₇	DARL/SS/60	1.55 ^{efghijklm}	1.69 ^{fghijk}	1.33 ^{efghi}	1.38 ^{efghijklm}
T ₃₈	Akola-01	0.64 ^{qr}	0.68 ^{tuv}	0.51 ^o	0.59 ^{qrs}
T ₃₉	Konkan Harita	0.63 ^{qr}	0.64 ^{uv}	0.55 ^{no}	0.59 ^{rs}
T ₄₀	Pusa Nasdar	1.35 ^{hijklmnop}	1.53 ^{hijklmn}	1.19 ^{fghijkl}	1.24 ^{hijklmno}
M.S.D.		0.61	0.51	0.45	0.53
SE(m)		0.11	0.09	0.08	0.09
SE(d)		0.15	0.13	0.11	0.13
C.V.		12.89	10.00	10.75	11.96

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.19: Mean performance of fruit yield (q/ha) in ridge gourd genotypes

Treatments	Genotypes	Fruit yield (q/ha)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	121.22 ^{abcdef}	128.89 ^{bcdefg}	106.34 ^{bcde}	108.96 ^{cdef}
T ₂	IC-262231	77.09 ^{ijklmnopq}	84.31 ^{ijklmno}	66.48 ^{ghijkl}	69.11 ^{ijklmnop}
T ₃	IC-262245	65.3 ^{lmnopqrs}	68.69 ^{mnpqrst}	54.05 ^{hijklmn}	56.75 ^{klmnopqr}
T ₄	IC-262265	93.21 ^{efghijklmn}	99.60 ^{ghijkl}	80.63 ^{efgh}	84.63 ^{efghijkl}
T ₅	IC-262258	119.16 ^{abcdefg}	126.71 ^{bcdefg}	103.26 ^{cde}	108.75 ^{cdefg}
T ₆	IC-264830	32.25 ^s	32.72 ^u	28.05 ⁿ	29.92 ^r
T ₇	IC-264908	84.68 ^{fghijklmnop}	90.80 ^{hijklmn}	72.54 ^{fghijk}	78.55 ^{fghijklmn}
T ₈	IC-264971	85.30 ^{fghijklmno}	91.65 ^{hijklmn}	74.67 ^{fghij}	79.70 ^{fghijklmn}
T ₉	IC-265026	77.39 ^{ijklmnopq}	83.67 ^{ijklmnop}	62.22 ^{ghijkl}	68.25 ^{ijklmnop}
T ₁₀	IC-278358	122.24 ^{abcde}	136.02 ^{abcde}	95.88 ^{cdef}	105.77 ^{cdefgh}
T ₁₁	IC-279691	139.02 ^{abc}	148.43 ^{ab}	130.69 ^{ab}	122.70 ^{abcd}
T ₁₂	IC-341099	47.98 ^{pqrs}	51.95 ^{qrstu}	40.27 ^{lmn}	44.79 ^{opqr}
T ₁₃	IC-341110	82.13 ^{hijklmnopq}	83.92 ^{ijklmno}	73.22 ^{fghijk}	77.23 ^{ghijklmn}
T ₁₄	IC-341116	56.92 ^{nopqrs}	62.50 ^{nopqrstu}	49.44 ^{jklmn}	52.53 ^{mnpopqr}
T ₁₅	IC-341122	63.49 ^{lmnopqrs}	69.72 ^{lmnopqrs}	58.02 ^{ghijklm}	61.04 ^{ijklmnopqr}
T ₁₆	IC-341161	145.22 ^{ab}	159.40 ^a	131.52 ^{ab}	146.56 ^a
T ₁₇	IC-345576	146.32 ^a	155.73 ^{ab}	138.25 ^a	143.69 ^{ab}
T ₁₈	IC-355952	54.93 ^{opqrs}	60.21 ^{opqrstu}	49.00 ^{jklmn}	53.27 ^{lmnopqr}
T ₁₉	IC-355959	113.56 ^{abcdefghi}	116.75 ^{cdefgh}	95.20 ^{cdef}	104.51 ^{cdefgh}
T ₂₀	IC-355961	93.65 ^{efghijklm}	93.57 ^{hijklm}	83.24 ^{efg}	89.68 ^{efghij}
T ₂₁	IC-355967	133.44 ^{abcd}	144.21 ^{abcd}	113.79 ^{abc}	121.51 ^{abcd}
T ₂₂	IC-355974	105.50 ^{cdefghijk}	114.55 ^{defghi}	97.36 ^{cdef}	96.12 ^{defghi}
T ₂₃	IC-356037	62.16 ^{lmnopqrs}	69.52 ^{lmnopqrs}	50.71 ^{jklmn}	54.18 ^{lmnopqr}
T ₂₄	IC-392531	136.88 ^{abc}	145.55 ^{abc}	117.85 ^{abc}	128.36 ^{abc}
T ₂₅	IC-392534	60.96 ^{mnpqrs}	63.19 ^{nopqrst}	53.42 ^{ijklmn}	58.17 ^{ijklmnopqr}
T ₂₆	IC-392535	47.83 ^{qrs}	48.47 ^{rstu}	40.82 ^{lmn}	39.45 ^{pqr}
T ₂₇	IC-392538	127.87 ^{abcde}	137.25 ^{abcde}	110.81 ^{bcd}	114.48 ^{bcde}
T ₂₈	IC-392544	83.53 ^{ghijklmnopq}	81.18 ^{klmnopq}	117.93 ^{abc}	123.22 ^{abcd}
T ₂₉	IC-392555	52.18 ^{opqrs}	57.76 ^{opqrstu}	46.17 ^{klmn}	48.38 ^{nopqr}
T ₃₀	IC-393298	50.14 ^{opqrs}	53.52 ^{pqrstu}	43.65 ^{lmn}	41.76 ^{pqr}
T ₃₁	IC-393305	50.90 ^{opqrs}	54.37 ^{opqrstu}	46.51 ^{klmn}	49.38 ^{nopqr}
T ₃₂	IC-429925	72.11 ^{ijklmnopqr}	78.12 ^{klmnopqr}	60.71 ^{ghijkl}	67.22 ^{ijklmnop}
T ₃₃	IC-429949	68.92 ^{klmnopqrs}	75.39 ^{klmnopqr}	58.93 ^{ghijklm}	63.58 ^{ijklmnopq}
T ₃₄	IC-429965	108.61 ^{bcdefghij}	112.85 ^{efghij}	97.85 ^{cdef}	102.93 ^{cdefgh}
T ₃₅	IC-429970	97.98 ^{defghijkl}	103.51 ^{fghijk}	85.00 ^{defg}	88.36 ^{efghijk}
T ₃₆	DARL/SS/238	117.03 ^{abcdefgh}	130.25 ^{abcdef}	96.82 ^{cdef}	102.83 ^{cdefgh}
T ₃₇	DARL/SS/60	93.29 ^{efghijklmn}	101.46 ^{fghijk}	79.72 ^{efghi}	82.90 ^{efghijklm}
T ₃₈	Akola-01	38.59 ^{rs}	40.68 ^{stu}	30.42 ⁿ	35.36 ^{qr}
T ₃₉	Konkan Harita	37.58 ^{rs}	38.79 ^{tu}	33.05 ^{mn}	35.22 ^{qr}
T ₄₀	Pusa Nasdar	81.04 ^{hijklmnopq}	91.62 ^{hijklmn}	71.44 ^{fghijk}	74.53 ^{hijklmno}
M.S.D.		36.71	30.31	27.11	31.73
SE(m)		6.42	5.30	4.74	5.55
SE(d)		9.07	7.49	6.70	7.84
C.V.		12.89	9.95	10.78	11.95

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

Table 4.2.20: Mean performance of number of seeds/fruit in ridge gourd genotypes

Treatments	Genotypes	Number of seeds per fruit			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	91.17 ^{defghij}	92.73 ^{efghijkl}	77.37 ^{fghijk}	85.87 ^{ghijklm}
T ₂	IC-262231	98.77 ^{cdefghi}	103.21 ^{defgh}	102.57 ^{bcd}	108.13 ^{cdef}
T ₃	IC-262245	76.09 ^{hijkl}	84.70 ^{hijklm}	83.38 ^{defghij}	89.91 ^{fghijkl}
T ₄	IC-262265	99.92 ^{cdefgh}	104.33 ^{defg}	90.54 ^{defgh}	95.20 ^{defghi}
T ₅	IC-262258	79.47 ^{fghijkl}	83.05 ^{ijklmn}	85.53 ^{defghi}	91.93 ^{efghijk}
T ₆	IC-264830	100.53 ^{cdefgh}	101.84 ^{efghi}	89.30 ^{defghi}	91.67 ^{efghijk}
T ₇	IC-264908	79.73 ^{fghijkl}	81.27 ^{jklmn}	87.71 ^{defghi}	93.68 ^{efghij}
T ₈	IC-264971	96.98 ^{cdefghi}	99.26 ^{efghij}	74.76 ^{fghijk}	77.70 ^{ijklmno}
T ₉	IC-265026	72.44 ^{ijkl}	75.76 ^{lmno}	71.24 ^{ghijk}	75.27 ^{jklmno}
T ₁₀	IC-278358	67.30 ^{kl}	64.21 ^{no}	73.63 ^{fghijk}	77.64 ^{ijklmno}
T ₁₁	IC-279691	104.20 ^{cdefg}	107.79 ^{cdef}	102.61 ^{bcd}	108.99 ^{cde}
T ₁₂	IC-341099	105.73 ^{cdef}	108.91 ^{cde}	102.76 ^{bcd}	112.36 ^{bcd}
T ₁₃	IC-341110	93.70 ^{defghij}	97.40 ^{efghijk}	86.62 ^{defghi}	85.73 ^{ghijklm}
T ₁₄	IC-341116	91.92 ^{defghij}	94.67 ^{efghijk}	68.20 ^{ijk}	70.05 ^{mno}
T ₁₅	IC-341122	100.85 ^{cdefgh}	98.55 ^{efghijk}	82.21 ^{defghij}	87.83 ^{ghijklm}
T ₁₆	IC-341161	84.82 ^{efghijk}	85.80 ^{ghijklm}	75.22 ^{fghijk}	79.18 ^{ijklmno}
T ₁₇	IC-345576	88.41 ^{efghijk}	92.65 ^{efghijkl}	77.55 ^{efghijk}	78.49 ^{ijklmno}
T ₁₈	IC-355952	63.43 ^{kl}	71.74 ^{mno}	74.68 ^{fghijk}	80.88 ^{hijklmno}
T ₁₉	IC-355959	75.91 ^{hijkl}	80.10 ^{klmn}	70.27 ^{hijk}	72.38 ^{lmno}
T ₂₀	IC-355961	91.59 ^{defghij}	95.70 ^{fghijk}	90.17 ^{defgh}	95.17 ^{defghi}
T ₂₁	IC-355967	98.08 ^{cdefghi}	97.30 ^{efghijk}	93.88 ^{cdef}	99.00 ^{defgh}
T ₂₂	IC-355974	55.28 ^l	57.98 ^o	63.67 ^{jk}	66.51 ^{no}
T ₂₃	IC-356037	106.57 ^{cde}	120.85 ^{cd}	93.16 ^{cdef}	98.34 ^{defgh}
T ₂₄	IC-392531	74.66 ^{hijkl}	75.09 ^{lmno}	79.78 ^{efghij}	77.00 ^{ijklmno}
T ₂₅	IC-392534	88.24 ^{efghijk}	92.25 ^{efghijkl}	77.83 ^{efghijk}	86.84 ^{ghijklm}
T ₂₆	IC-392535	101.15 ^{cdefgh}	108.33 ^{cde}	92.52 ^{cdefg}	90.49 ^{efghijkl}
T ₂₇	IC-392538	84.46 ^{efghijk}	88.22 ^{ghijklm}	82.99 ^{defghij}	84.33 ^{hijklmn}
T ₂₈	IC-392544	79.92 ^{efghijkl}	83.56 ^{ijklm}	76.81 ^{fghijk}	84.65 ^{ghijklmn}
T ₂₉	IC-392555	67.01 ^{jkl}	70.43 ^{mno}	87.84 ^{defghi}	88.16 ^{ghijklm}
T ₃₀	IC-393298	78.31 ^{ghijkl}	81.93 ^{jklmn}	57.82 ^k	65.42 ^o
T ₃₁	IC-393305	94.11 ^{defghi}	87.36 ^{ghijklm}	86.79 ^{defghi}	86.04 ^{ghijklm}
T ₃₂	IC-429925	92.35 ^{defghij}	97.01 ^{efghijk}	84.66 ^{defghij}	88.60 ^{ghijklm}
T ₃₃	IC-429949	81.74 ^{efghijkl}	89.22 ^{fghijklm}	68.22 ^{ijk}	73.93 ^{klmno}
T ₃₄	IC-429965	85.66 ^{efghijk}	90.63 ^{efghijkl}	68.03 ^{ijk}	74.32 ^{klmno}
T ₃₅	IC-429970	122.88 ^{bc}	126.29 ^{bc}	112.31 ^{bc}	123.82 ^{bc}
T ₃₆	DARL/SS/238	56.93 ^l	59.57 ^o	68.30 ^{ijk}	72.11 ^{lmno}
T ₃₇	DARL/SS/60	116.10 ^{bcd}	125.74 ^{bc}	118.85 ^b	128.42 ^b
T ₃₈	Akola-01	149.92 ^a	169.00 ^a	153.12 ^a	163.40 ^a
T ₃₉	Konkan Harita	90.89 ^{defghij}	90.72 ^{efghijkl}	98.83 ^{bcde}	103.03 ^{defg}
T ₄₀	Pusa Nasdar	133.67 ^{ab}	143.05 ^b	144.68 ^a	153.92 ^a
M.S.D.		26.7	18.88	21.38	18.59
SE(m)		4.67	3.30	3.74	3.25
SE(d)		6.60	4.67	5.28	4.59
C.V.		8.93	6.05	7.45	6.14

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hoc test)

Table 4.2.21: Mean performance of seed length (cm) in ridge gourd genotypes

Treatments	Genotypes	Seed length (cm)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	1.26 ^{ab}	1.31 ^{bc}	1.27 ^{ab}	1.32 ^a
T ₂	IC-262231	1.06 ^{bcdef}	1.08 ^{ghij}	1.04 ^{efgh}	1.03 ^{efgh}
T ₃	IC-262245	1.09 ^{bcdef}	1.12 ^{cdefghij}	1.06 ^{efgh}	1.03 ^{efgh}
T ₄	IC-262265	1.02 ^{bcdef}	1.00 ^{hij}	1.05 ^{efgh}	1.09 ^{cdefgh}
T ₅	IC-262258	0.99 ^{def}	0.99 ^{ij}	0.99 ^{fgh}	0.98 ^h
T ₆	IC-264830	0.93 ^f	1.00 ^{ghij}	0.98 ^{gh}	0.99 ^{gh}
T ₇	IC-264908	0.99 ^{def}	0.96 ^j	0.96 ^{gh}	0.99 ^{gh}
T ₈	IC-264971	1.10 ^{bcdef}	1.09 ^{ghij}	1.16 ^{abcdef}	1.18 ^{abcdefgh}
T ₉	IC-265026	1.05 ^{bcdef}	1.12 ^{cdefghij}	1.08 ^{defg}	1.13 ^{abcdefgh}
T ₁₀	IC-278358	1.01 ^{cdef}	1.02 ^{ghij}	1.02 ^{fgh}	1.04 ^{defgh}
T ₁₁	IC-279691	1.25 ^{abc}	1.37 ^{ab}	1.29 ^a	1.33 ^a
T ₁₂	IC-341099	1.08 ^{bcdef}	1.11 ^{efghij}	1.08 ^{defg}	1.15 ^{abcdefgh}
T ₁₃	IC-341110	1.06 ^{bcdef}	1.14 ^{cdefghij}	1.10 ^{bcdefg}	1.13 ^{abcdefgh}
T ₁₄	IC-341116	0.98 ^{def}	1.03 ^{ghij}	0.98 ^{gh}	1.04 ^{defgh}
T ₁₅	IC-341122	0.94 ^{ef}	0.99 ^{hij}	0.94 ^{gh}	1.03 ^{efgh}
T ₁₆	IC-341161	1.09 ^{bcdef}	1.11 ^{defghij}	1.04 ^{efgh}	1.06 ^{defgh}
T ₁₇	IC-345576	1.04 ^{bcdef}	1.03 ^{ghij}	1.01 ^{fgh}	1.01 ^{fgh}
T ₁₈	IC-355952	1.05 ^{bcdef}	1.07 ^{ghij}	1.07 ^{defgh}	1.10 ^{bcdefgh}
T ₁₉	IC-355959	1.19 ^{bcde}	1.25 ^{bcdef}	1.06 ^{defgh}	1.24 ^{abcde}
T ₂₀	IC-355961	1.12 ^{bcdef}	1.10 ^{efghij}	1.08 ^{defg}	1.16 ^{abcdefgh}
T ₂₁	IC-355967	1.00 ^{def}	1.05 ^{ghij}	0.98 ^{gh}	0.98 ^h
T ₂₂	IC-355974	1.09 ^{bcdef}	1.16 ^{cdefghi}	1.05 ^{efgh}	1.09 ^{cdefgh}
T ₂₃	IC-356037	1.19 ^{bcd}	1.31 ^{bc}	1.20 ^{abcde}	1.22 ^{abcde}
T ₂₄	IC-392531	1.12 ^{bcdef}	1.18 ^{cdefgh}	1.15 ^{abcdef}	1.20 ^{abcde}
T ₂₅	IC-392534	1.20 ^{abcd}	1.28 ^{bcde}	1.07 ^{defg}	1.19 ^{abcde}
T ₂₆	IC-392535	1.08 ^{bcdef}	1.11 ^{defghij}	1.05 ^{efgh}	1.09 ^{cdefgh}
T ₂₇	IC-392538	1.03 ^{bcdef}	0.99 ^{hij}	1.09 ^{defg}	1.10 ^{bcdefgh}
T ₂₈	IC-392544	1.45 ^a	1.52 ^a	1.26 ^{abc}	1.31 ^{ab}
T ₂₉	IC-392555	1.04 ^{bcdef}	1.07 ^{ghij}	1.09 ^{defg}	1.10 ^{bcdefgh}
T ₃₀	IC-393298	1.25 ^{abc}	1.30 ^{bcd}	1.23 ^{abcd}	1.28 ^{abc}
T ₃₁	IC-393305	1.04 ^{bcdef}	1.10 ^{efghij}	1.06 ^{efgh}	1.18 ^{abcdefgh}
T ₃₂	IC-429925	1.01 ^{cdef}	1.08 ^{ghij}	1.04 ^{efgh}	1.05 ^{defgh}
T ₃₃	IC-429949	1.05 ^{bcdef}	1.10 ^{efghij}	1.06 ^{efgh}	1.11 ^{bcdefgh}
T ₃₄	IC-429965	1.05 ^{bcdef}	1.01 ^{ghij}	1.08 ^{defg}	1.12 ^{abcdefgh}
T ₃₅	IC-429970	1.06 ^{bcdef}	1.09 ^{ghij}	1.08 ^{defg}	1.09 ^{cdefgh}
T ₃₆	DARL/SS/238	1.15 ^{bcdef}	1.19 ^{bcdefg}	1.10 ^{cdefg}	1.25 ^{abcd}
T ₃₇	DARL/SS/60	1.02 ^{bcdef}	1.04 ^{ghij}	1.02 ^{fgh}	1.09 ^{cdefgh}
T ₃₈	Akola-01	0.99 ^{def}	1.05 ^{ghij}	0.90 ^h	1.00 ^{gh}
T ₃₉	Konkan Harita	1.07 ^{bcdef}	1.13 ^{cdefghij}	1.1 ^{cdefg}	1.17 ^{abcdefgh}
T ₄₀	Pusa Nasdar	1.00 ^{def}	1.06 ^{ghij}	1.06 ^{efgh}	1.03 ^{efgh}
M.S.D.		0.24	0.19	0.17	0.21
SE(m)		0.04	0.03	0.03	0.04
SE(d)		0.06	0.05	0.04	0.05
C.V.		6.84	5.15	4.75	5.75

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hoc test)

Table 4.2.22: Mean performance of weight of 100 seeds (g) in ridge gourd genotypes

Treatments	Genotypes	Weight of 100 seeds (g)			
		Last week of February		Second week of March	
		2022	2023	2022	2023
T ₁	IC-262188	9.47 ^{defghij}	9.80 ^{cdefgh}	9.30 ^{cdef}	9.81 ^{def}
T ₂	IC-262231	11.31 ^{bcdefg}	11.51 ^{bcdef}	10.91 ^{bcd}	10.74 ^{cdef}
T ₃	IC-262245	11.12 ^{bcdefgh}	11.22 ^{bcdefg}	11.16 ^{bcd}	10.89 ^{bcdef}
T ₄	IC-262265	10.55 ^{bcdefghij}	10.67 ^{bcdefgh}	10.29 ^{cdef}	10.40 ^{cdef}
T ₅	IC-262258	9.65 ^{cdefghij}	9.69 ^{cdefgh}	9.64 ^{cdef}	9.29 ^{ef}
T ₆	IC-264830	9.94 ^{bcdefghij}	9.92 ^{cdefgh}	10.12 ^{cdef}	10.19 ^{cdef}
T ₇	IC-264908	10.71 ^{bcdefghi}	10.76 ^{bcdefgh}	10.49 ^{cde}	10.68 ^{cdef}
T ₈	IC-264971	9.37 ^{defghij}	9.46 ^{defgh}	9.97 ^{cdef}	10.06 ^{cdef}
T ₉	IC-265026	10.69 ^{bcdefghi}	11.39 ^{bcdef}	10.55 ^{bcde}	11.07 ^{bcde}
T ₁₀	IC-278358	8.87 ^{fghij}	8.54 ^{fgh}	8.71 ^{def}	8.98 ^{ef}
T ₁₁	IC-279691	10.20 ^{bcdefghij}	10.65 ^{bcdefgh}	10.01 ^{cdef}	10.75 ^{cdef}
T ₁₂	IC-341099	10.52 ^{bcdefghij}	11.07 ^{bcdefgh}	10.70 ^{bcd}	11.51 ^{bcde}
T ₁₃	IC-341110	9.91 ^{bcdefghij}	10.43 ^{cdefgh}	9.75 ^{cdef}	10.33 ^{cdef}
T ₁₄	IC-341116	7.81 ^{ij}	8.26 ^{gh}	7.48 ^f	7.94 ^f
T ₁₅	IC-341122	9.78 ^{cdefghij}	10.35 ^{cdefgh}	10.23 ^{cdef}	10.55 ^{cdef}
T ₁₆	IC-341161	11.65 ^{bcdef}	11.58 ^{bcdef}	11.90 ^{bc}	11.54 ^{bcde}
T ₁₇	IC-345576	10.20 ^{bcdefghij}	10.66 ^{bcdefgh}	10.59 ^{bcd}	10.21 ^{cdef}
T ₁₈	IC-355952	11.45 ^{bcdefg}	12.15 ^{bcd}	11.79 ^{bc}	11.17 ^{bcde}
T ₁₉	IC-355959	9.04 ^{efghij}	9.35 ^{defgh}	9.25 ^{cdef}	10.05 ^{cdef}
T ₂₀	IC-355961	9.76 ^{cdefghij}	10.28 ^{cdefgh}	9.83 ^{cdef}	10.24 ^{cdef}
T ₂₁	IC-355967	8.28 ^{hij}	8.54 ^{fgh}	8.40 ^{def}	8.92 ^{ef}
T ₂₂	IC-355974	12.80 ^{ab}	13.68 ^{ab}	13.43 ^{ab}	13.98 ^{ab}
T ₂₃	IC-356037	11.84 ^{bcde}	12.60 ^{abc}	12.11 ^{abc}	12.78 ^{abcd}
T ₂₄	IC-392531	10.77 ^{bcdefgh}	11.23 ^{bcdefg}	10.80 ^{bcd}	11.25 ^{bcde}
T ₂₅	IC-392534	14.79 ^a	15.40 ^a	15.05 ^a	14.71 ^a
T ₂₆	IC-392535	10.62 ^{bcdefghij}	10.71 ^{bcdefgh}	10.32 ^{cdef}	9.73 ^{def}
T ₂₇	IC-392538	8.79 ^{fghij}	9.12 ^{defgh}	9.26 ^{cdef}	9.66 ^{def}
T ₂₈	IC-392544	8.68 ^{ghij}	8.92 ^{efgh}	8.60 ^{def}	8.89 ^{ef}
T ₂₉	IC-392555	10.54 ^{bcdefghij}	10.57 ^{cdefgh}	10.83 ^{bcd}	11.51 ^{bcde}
T ₃₀	IC-393298	11.46 ^{bcdefg}	11.83 ^{bcde}	11.68 ^{bc}	11.12 ^{bcde}
T ₃₁	IC-393305	10.78 ^{bcdefgh}	10.95 ^{bcdefgh}	10.97 ^{bcd}	11.38 ^{bcde}
T ₃₂	IC-429925	9.76 ^{cdefghij}	9.88 ^{cdefgh}	9.63 ^{cdef}	9.85 ^{def}
T ₃₃	IC-429949	10.33 ^{bcdefghij}	10.29 ^{cdefgh}	10.46 ^{cde}	10.85 ^{cdef}
T ₃₄	IC-429965	12.52 ^{abc}	12.67 ^{abc}	12.13 ^{abc}	11.50 ^{bcde}
T ₃₅	IC-429970	9.35 ^{defghij}	9.52 ^{defgh}	9.45 ^{cdef}	9.73 ^{def}
T ₃₆	DARL/SS/238	10.01 ^{bcdefghij}	10.88 ^{bcdefgh}	10.15 ^{cdef}	10.82 ^{cdef}
T ₃₇	DARL/SS/60	10.78 ^{bcdefgh}	11.42 ^{bcdef}	10.62 ^{bcd}	11.66 ^{abcde}
T ₃₈	Akola-01	7.73 ^j	8.13 ^h	7.62 ^{ef}	7.79 ^f
T ₃₉	Konkan Harita	8.91 ^{fghij}	9.38 ^{defgh}	9.30 ^{cdef}	9.72 ^{def}
T ₄₀	Pusa Nasdar	12.08 ^{abcd}	12.67 ^{abc}	12.18 ^{abc}	13.02 ^{abc}
M.S.D.		2.90	3.05	2.94	3.12
SE(m)		0.51	0.53	0.51	0.55
SE(d)		0.72	0.76	0.73	0.77
C.V.		8.52	8.68	8.56	8.90

Note: The genotypes with the same letter in the superscript are not significantly different from each other at 5% level of significance (tukey post hock test)

In the second week of March 2022, the maximum seed length was observed in the genotype IC-279691 (1.29 cm) which was significantly at par with IC-262188, IC-392544, IC-393298, IC-356037, IC-264971 and IC-392531 (1.27, 1.26, 1.23, 1.20, 1.16 and 1.15cm, respectively), while the minimum seed length was recorded in genotype Akola-01 (0.90 cm). Whereas, in 2023 the maximum seed length was recorded in the genotype IC-279691 (1.33 cm) which was at par with IC-262188, IC-392544, IC-393298, DARL/SS/238, IC-356037, IC-392531, IC-392534, IC-393305, IC-264971, Konkan Harita, IC-355961, IC-265026 and IC-429965 (1.32, 1.31, 1.28, 1.25, 1.22, 1.20, 1.19, 1.18, 1.18, 1.17, 1.16, 1.13 and 1.12 cm, respectively), while IC-355967 (0.98 cm) recorded minimum seed length, as shown in Table 4.2.21.

4.2.22 Weight of 100 seeds (g)

Weight of 100 seed was recorded maximum in the genotype IC-392534 (14.79 and 15.40 g) which was followed by IC-355974 (12.80 and 13.68 g), IC-356037 (12.60 g), IC-429965 (12.52 and 12.67 g) and Pusa Nasdar (12.08 and 12.67 g), while the minimum weight of 100nseed was reported in the genotype Akola-01 (7.73 and 8.13 g) in both the year of study in the last week of February. As shown in Table 4.2.22, in the second week of March (2022 and 2023), the maximum weight of 100 seed was noted in the genotype IC-392534 (15.05 and 14.71 g) which was at par with IC-355974 (13.43 and 13.98 g), Pusa Nasdar (12.18 and 13.02 g), IC-429965 (12.13 g), IC-356037 (12.11 and 12.78 g) and DARL/SS/60 (11.66 g), while the minimum weight of 100 seed was recorded in the genotype IC-341116 (7.48 g) and Akola-01 (7.79 g), respectively.

4.3 Analysis of variance

Table 4.3.1, 4.3.2, 4.3.3 and 4.3.4 presented that the analysis of variance of last week of February and second week of March in the years 2022 and 2023, respectively. It was recorded that treatment mean sum squares were highly significant for all the twenty two characters observed among forty ridge gourd genotypes. This specifies the presence of sufficient genetic variability in the material under study. Thus, selection and improvement are possible.

Table 4.3.1: Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Last week of February, 2022)

S. No.	TRAITS	REPLICATIONS	GENOTYPES	ERROR	SE (m)	C.D. at 5%
	Df	2	39	78		
1	Days to 50% germination	0.159	14.460***	1.136	0.615	1.732
2	Number of primary branches per vine	0.533*	1.625***	0.138	0.215	0.604
3	Vine length at final harvest (m)	0.182	0.928***	0.162	0.233	0.655
4	Stem length of internodes (cm)	0.186	18.100***	1.318	0.663	1.866
5	Leaf length (cm)	0.037	2.850***	0.209	0.264	0.743
6	Leaf width (cm)	0.809	3.903***	0.544	0.426	1.199
7	Petiole length (cm)	0.299	6.513***	0.324	0.329	0.925
8	Days to first male flower opening	0.080	76.720***	1.249	0.645	1.817
9	Days to first female flower opening	0.036	82.117***	0.475	0.398	1.121
10	Nodes to first male flower	0.031	7.037***	0.197	0.256	0.721
11	Nodes to first female flower	0.012	22.338***	1.555	0.720	2.027
12	Days to first fruit harvest	0.006	157.145***	2.003	0.817	2.300
13	Number of fruits per vine	4.056	83.806***	2.590	0.929	2.616
14	Fruit length (cm)	0.073	7.411***	0.754	0.501	1.411
15	Fruit diameter (cm)	0.034	0.634***	0.028	0.096	0.271
16	Peduncle length (cm)	0.096	6.576***	0.159	0.230	0.649
17	Average fruit weight (g)	0.064	285.670***	32.363	3.284	9.247
18	Number of seeds per fruit	81.08	1096.090***	65.33	4.667	13.139
19	Seed length (cm)	0.005	0.030***	0.005	0.043	0.120
20	Weight of 100 seeds (g)	0.224	5.832***	0.773	0.508	1.429
21	Fruit yield per vine (kg)	0.052	0.894***	0.034	0.107	0.301
22	Fruit yield per ha (q/ha)	192.6	3215.1***	123.5	6.416	18.064

Signif. Codes: 0 '***', 0.01 '**'; Df: Degrees of freedom

Table 4.3.2: Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Last week of February, 2023)

S. No.	TRAITS	REPLICATIONS	GENOTYPES	ERROR	SE (m)	C.D. at 5%
Df		2	39	78		
1	Days to 50% germination	0.111	12.652***	1.268	0.650	1.830
2	Number of primary branches per vine	0.231	1.326***	0.217	0.269	0.757
3	Vine length at final harvest (m)	0.057	1.106***	0.046	0.124	0.349
4	Stem length of internodes (cm)	0.086	20.447***	0.961	0.566	1.593
5	Leaf length (cm)	0.073	1.81***	0.246	0.286	0.806
6	Leaf width (cm)	0.005	5.511***	0.524	0.418	1.176
7	Petiole length (cm)	0.440	8.186***	0.242	0.284	0.799
8	Days to first male flower opening	0.206	68.591***	1.684	0.749	2.110
9	Days to first female flower opening	0.104	71.987***	0.533	0.421	1.186
10	Nodes to first male flower	0.470	5.935***	0.241	0.283	0.798
11	Nodes to first female flower	0.015	24.776***	1.923	0.801	2.254
12	Days to first fruit harvest	0.07	132.246***	1.985	0.814	2.291
13	Number of fruits per vine	0.303	93.857***	2.131	0.843	2.373
14	Fruit length (cm)	0.112	15.671***	0.871	0.539	1.517
15	Fruit diameter (cm)	0.045	0.71***	0.033	0.105	0.297
16	Peduncle length (cm)	0.073	5.787***	0.192	0.253	0.711
17	Average fruit weight (g)	0.327	283.626***	34.315	3.382	9.522
18	Number of seeds per fruit	0.220	1374.78***	32.66	3.300	9.290
19	Seed length (cm)	0.003	0.043***	0.003	0.033	0.094
20	Weight of 100 seeds (g)	0.213	6.655***	0.855	0.534	1.503
21	Fruit yield per vine (kg)	0.006	1.043***	0.024	0.089	0.250
22	Fruit yield per ha (q)	21.60	3755.1***	84.2	5.298	14.917

Signif. Codes: 0 '***'; Df: Degrees of freedom

Table 4.3.3: Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Second week of March, 2022)

S. No.	TRAITS	REPLICATIONS	GENOTYPES	ERROR	SE (m)	C.D. at 5%
	Df	2	39	78		
1	Days to 50% germination	0.434	10.912***	0.906	0.550	1.548
2	Number of primary branches per vine	0.115	3.599***	0.255	0.292	0.821
3	Vine length at final harvest (m)	0.054	1.099***	0.036	0.110	0.310
4	Stem length of internodes (cm)	0.123	13.394***	0.364	0.348	0.981
5	Leaf length (cm)	0.008	3.349***	0.193	0.254	0.714
6	Leaf width (cm)	0.025	5.451***	1.268	0.650	1.830
7	Petiole length (cm)	0.209	15.457***	0.680	0.476	1.34
8	Days to first male flower opening	0.358	72.172***	1.034	0.587	1.653
9	Days to first female flower opening	0.143	81.780***	0.620	0.455	1.280
10	Nodes to first male flower	0.027	4.208***	0.121	0.200	0.564
11	Nodes to first female flower	0.014	17.301***	1.230	0.640	1.803
12	Days to first fruit harvest	0.032	117.691***	2.359	0.887	2.496
13	Number of fruits per vine	1.410	70.622***	1.612	0.733	2.064
14	Fruit length (cm)	0.082	9.529***	0.655	0.467	1.315
15	Fruit diameter (cm)	0.046	0.769***	0.114	0.195	0.548
16	Peduncle length (cm)	0.261	10.087***	0.335	0.334	0.942
17	Average fruit weight (g)	21.55	311.314***	31.378	3.234	9.106
18	Number of seeds per fruit	2.320	1139.530***	41.880	3.736	10.52
19	Seed length (cm)	0.007	0.022***	0.003	0.029	0.083
20	Weight of 100 seeds (g)	4.340**	6.313***	0.792	0.514	1.446
21	Fruit yield per vine (kg)	0.001	0.766***	0.019	0.079	0.222
22	Fruit yield per ha (q/ha)	2.470	2756.86***	67.330	4.737	13.338

Signif. Codes: 0 '***', 0.001 '***', 0.05 ' '; Df: Degrees of freedom

Table 4.3.4: Analysis of variance (mean sum of squares) for growth and yield characters in ridge gourd genotypes (Second week of March, 2023)

S. No.	TRAITS	REPLICATIONS	GENOTYPES	ERROR	SE (m)	C.D. at 5%
	Df	2	39	78		
1	Days to 50% germination	0.278	12.252***	0.963	0.567	1.595
2	Number of primary branches per vine	0.760*	4.571***	0.221	0.271	0.764
3	Vine length at final harvest (m)	0.045	1.100***	0.071	0.154	0.434
4	Stem length of internodes (cm)	0.265	16.986***	0.545	0.426	1.200
5	Leaf length (cm)	0.200	2.064***	0.422	0.375	1.056
6	Leaf width (cm)	0.074	7.366***	0.602	0.448	1.262
7	Petiole length (cm)	0.069	21.059***	0.352	0.342	0.964
8	Days to first male flower opening	0.145	59.726***	1.603	0.731	2.058
9	Days to first female flower opening	0.196	78.263***	0.504	0.410	1.154
10	Nodes to first male flower	0.320	5.291***	0.142	0.218	0.613
11	Nodes to first female flower	0.016	19.495***	1.412	0.686	1.931
12	Days to first fruit harvest	0.002	97.057***	1.918	0.800	2.251
13	Number of fruits per vine	0.058	76.437***	2.142	0.845	2.379
14	Fruit length (cm)	0.005	16.896***	1.092	0.603	1.699
15	Fruit diameter (cm)	0.025	0.792***	0.033	0.106	0.297
16	Peduncle length (cm)	0.026	11.944***	0.140	0.216	0.608
17	Average fruit weight (g)	0.366	311.605***	41.701	3.728	10.497
18	Number of seeds per fruit	0.100	1339.190***	31.660	3.249	9.146
19	Seed length (cm)	0.001	0.029***	0.004	0.037	0.104
20	Weight of 100 seeds (g)	0.141	5.852***	0.895	0.546	1.538
21	Fruit yield per vine (kg)	0.0002	0.831***	0.026	0.093	0.260
22	Fruit yield per ha (q/ha)	0.290	2991.12***	92.280	5.546	15.615

Signif. Codes: 0 '***', 0.001 '***', 0.01 '**'; Df: Degrees of freedom

4.4 Genetic variability

The parameters of variability including range, mean, genotypic variance (GV), phenotypic variance (PV), genotypic co-efficient of variation (GCV), phenotypic co-efficient of variation (PCV), heritability in broad sense (h^2) and genetic advance as percent of mean (GAM) for fruit yield and its contributing characters were recorded. Based on statistical analysis result, it may be concluded that significant genetic variability is present for all the characters observed in last week of February and the second week of March in the years 2022 and 2023, respectively studied. The recorded genetic variability for each trait are included in Table 4.4.1, 4.4.2, 4.4.3 and 4.4.4, respectively.

4.4.1 Experimental result of last week of February 2022 and 2023

4.4.1.1 Mean and Range

The data presented in Table 4.4.1 and 4.4.2 indicate that Days to 50% germination in the last week of February (2022 and 2023) varied from 8.04 to 16.22 and 8.03 to 17.35 days with an average value of 11.44 and 11.96 days, In the case of number of primary branches per vine varied from 3.33 to 6.87 branches and 4.67 to 7.44 branches with a mean value of 5.16 branches and 6.01 branches in the last week of February, 2022 and 2023, respectively.

In the last week of February in both the year of study, with a mean value (2.85 m and 3.64 m), vine length at final harvest varied from 1.67 to 4.24 m and 2.31 to 5.13 m. Stem length of internodes ranged from 11.76 to 20.95 cm and 12.41 and 22.82 cm with a mean value (15.93 cm and 16.79 cm), in the last week of February in both the year of study. Leaf length in the last week of February, 2022 and 2023 varied from 5.39 to 9.47 cm and 7.57 to 10.83 cm with a mean value (7.75 cm and 9.02 cm). Leaf width varied from 10.6 to 15.05 cm and 11.35 to 16.97 cm in the last week of February (2022 and 2023) with a mean value (12.64 cm and 14.01 cm). Petiole length varied from 5.70 to 11.99 cm and 6.10 to 13.25 cm with a mean value (7.76 cm and 8.61 cm) in the last week of February in the years 2022 and 2023, respectively.

With a mean value of 46.92 days and 47.57 days, days to first male flower opening in the last week of February (2022 and 2023) varied from 36.40 to 54.01 days and 37.98 to 54.88 days. Days to first female flower opening reported a mean value of 51.31 days and 50.71 days in the last week of February in the years 2022 and 2023 which varied from 40.36 to 59.84 days and 41.01 to 57.89 days. Nodes to first male flower varied between 3.24 to 8.25 nodes and 4.00 to 9.53 nodes with a mean value of 5.78 nodes and 6.53 nodes in the last week of February 2022 and 2023, respectively. In the last week of February (2022 and 2023), nodes to first female flower reported a range of 7.06 to 18.65 nodes and 7.92 to 19.00 nodes with an average value of 11.38 and 12.43 nodes.

Days to first fruit harvest varied from 46.36 to 70.49 days and 47.60 to 70.53 days in the last week of February (2022 and 2023) with mean value of 60.73 days and 60.84 days, respectively. Number of fruits per vine recorded a mean value of 16.40 and 17.21 fruits with

range value of 6.53 to 27.8 fruits and 6.48 to 28.58 fruits in the last week of February, 2022 and 2023, respectively.

In the last week of February, 2022 and 2023, the fruit length ranged from 13.21 to 19.72 cm and 13.98 to 24.58 cm with an average value of 16.26 cm and 18.29 cm. The range of fruit diameter in the last week of February (2022 and 2023) was recorded to be 2.56 to 4.37 cm and 2.77 to 4.50 cm with an average of 3.25 cm and 3.41 cm. Peduncle length varied from 5.06 to 11.35 cm and 5.49 to 11.69 cm with a mean value of 7.79 cm and 8.23 cm in the last week of February in the years 2022 and 2023, respectively. With an average value of 86.24 g and 87.86, average fruit weight recorded a range of 64.91 to 101.41 g in the last week of February in the years 2022-2023, respectively.

Number of seed per fruit ranged from 55.28 to 149.92 seeds and 57.98 and 169.00 seeds with a mean value of 90.52 seeds and 94.45 seeds, in the last week of February in both the year of study. Seed length varied from 0.93 to 1.45 cm and 0.96 to 1.52 cm in the last week of February (2022 and 2023) with a mean value of 1.08 cm and 1.12 cm weight of 100 seeds varied from 7.73 to 14.79 g and 8.13 to 15.40 g with an average value of 10.32 g and 10.65, respectively in both the year of study in the last week of February.

With an average value of 1.44 kg and 1.54 kg fruit yield per vine ranged from 0.54 to 2.44 kg and 0.54 to 2.65 kg in the last week of February in both the year of study. Fruit yield per hectare ranged from 32.25 to 146.32 q/ha and 32.72 to 159.40 q/ha in the last week of February (2022 and 2023), respectively with a mean value of 86.19 q/ha and 92.19 q/ha.

4.4.1.2 Genotypic co-efficient of variation (GCV)

For all 22 traits studied, the assessments of genotypic co-efficient of variation (GCV) was found to be lower than phenotypic co-efficient of variation (PCV) showing the effect of environment on these traits. GCV ranged from 8.37 to 37.25% and 8.00 to 37.95% in 2022 and 2023, respectively.

As shown in Table 4.4.1 and 4.4.2, in the last week of February (2022 and 2023), high GCV value was recorded for the character nodes to first male flower (26.12 and 21.10%), nodes to first female flower (23.14 and 22.20%), number of fruits per vine (31.73 and 32.71%), number of seeds per fruit (20.48 and 22.39%), fruit yield per vine (37.25 and 37.95%) and fruit yield per hectare (37.25 and 37.95%), respectively.

The traits days to 50% germination(18.41%), number of primary branches (13.65%), Vine length at final harvest (17.71%), stem length of internodes (14.85%), leaf length (12.11%), petiole length (18.50%), days to first male flower opening (10.69%), days to first female flower opening (10.17%), days to first fruit harvest (11.84%), fruit diameter (13.85%), peduncle length (18.78%), average fruit weight (10.65%) and weight of 100 seeds (12.58%) reported moderate GCV values in the last week of February in 2022. In 2023, Moderate GCV value observed for the traits days to 50% germination(16.29%), number of primary branches (10.12%), vine length

at final harvest (16.35%), stem length of internodes (15.18%), petiole length (18.91%), days to first fruit harvest (10.83%), fruit length (12.15%), fruit diameter (13.95%), peduncle length (16.60%), average fruit weight (10.38%), seed length (10.31%) and weight of 100 seeds (13.05%).

In the last week of February in 2022 the traits, leaf width (8.37%), fruit length (9.16%) and seed length (8.39%) recorded low GCV value. In 2023, the low GCV value observed for the traits, leaf length (8.00%), leaf width (9.20%), days to first male flower opening (9.93%) and days to first female flower opening (9.62%).

4.4.1.3 Phenotypic co-efficient of variation (PCV)

The data presented in Table 4.4.1 and 4.4.2 indicated that the results of the analysis exhibited that the values of phenotypic co-efficient of variation (PCV) were higher for most of the traits and were comparatively similar in both the year of study in the last week of February. The characters recorded were clustered into low, moderate and high based on PCV values obtained.

In the last week of February, 2022 the high PCV value reported for the traits, days to 50% germination (20.64%), vine length at final harvest (22.66%), nodes to first male flower (27.22%), nodes to first female flower (25.60%), number of fruits per vine (33.22%), number of seeds per fruit (22.34%), fruit yield per vine (39.42%) and fruit yield per hectare (39.41%). In 2023, the traits nodes to first male flower (22.40%), nodes to first female flower (24.85%), number of fruits per vine (33.23%), number of seeds per fruit (23.20%), fruit yield per vine (39.25%) and fruit yield per hectare (39.2%) reported high PCV value.

Moderate PCV value was observed for the traits, number of primary branches (15.43%), stem length of internodes (16.51%), leaf length (13.47%), leaf width (10.20%), petiole length (19.90%), days to first male flower opening (10.95%), days to first female flower opening (10.26%), days to first fruit harvest (12.07%), fruit length (10.60%), fruit diameter (14.77%), peduncle length (19.46%), average fruit weight (12.53%), seed length (10.80%) and weight of 100 seeds (15.20%) in the last week of February in 2022. Whereas, In 2023 the traits days to 50% germination (18.81%), number of primary branches per vine (12.75%), vine length at final harvest (17.38%), stem length of internodes (16.27%), leaf width (10.55%), petiole length (19.75%), days to first male flower opening (10.30%), days to first fruit harvest (11.08%), fruit length (10.60%), fruit diameter (14.94%), peduncle length (17.44%), average fruit weight (12.33%), seed length (11.52%) and weight of 100 seeds (15.68%) had moderate level of PCV.

In the last week of February in 2023, the low PCV value was recorded for the trait leaf length (9.71%) and days to first female flower opening (9.73%).

4.4.1.4 Heritability (b.s.) and genetic advance as percent of mean

The data presented in Table 4.4.1 and 4.4.2 indicate that high assessments of heritability coupled with low, moderate and high genetic advance as per cent of mean in both the year of study in the last week of February. For the days to 50% germination, high heritability estimates of 79.64% with high estimate of genetic advance as per cent of mean of 33.85% and moderate estimates of heritability of 74.95% with high estimate of genetic advance as per cent of mean of 29.05% in 2022 and 2023 in the last week of February, respectively. High heritability estimates of 78.21% with high estimate of genetic advance as per cent of mean of 24.86% for number of primary branches per vine in the year 2022 in last week of February, while moderate heritability estimates of 63.06% with moderate estimates of genetic advance as per cent of mean 16.56% were reported in 2023. Moderate estimates of heritability 61.09% in the last week of February (2022) coupled with high genetic advance as per cent of mean of 28.51% and high estimates of heritability 88.43% with high genetic advance as per cent of mean of 31.67% in 2023 were observed for vine length at final harvest.

In the last week of February in both year of study, high heritability estimates of 80.94% and 87.11% with high estimates of genetic advance as per cent of mean 27.52% and 29.19%, respectively, for stem length of internodes. For leaf length high estimates of heritability 80.83% coupled with high estimates of genetic advance as per cent of mean 22.43% was reported in the last week of February (2022), while in 2023 moderate heritability estimates 67.97% with moderate estimates of genetic advance as per cent of mean 13.59% was recorded. Leaf width in the last week of February showed to have moderate estimates of heritability of 67.31% coupled with moderate estimates of genetic advance as per cent of mean 14.14%, whereas, in 2023, leaf width recorded high estimates of heritability 76.04% with moderate estimates of genetic advance as per cent of mean 16.53%. For the trait petiole length, high estimates of heritability value 86.43% and 91.64% coupled with high estimates of genetic advance as per cent of mean 35.43% and 37.29%, respectively in the last week of February, 2022 and 2023.

Days to first male flower opening exhibited high heritability 95.27% with high level of genetic advance as per cent of mean 21.49% in the last week of February (2022), whereas, in 2023 high estimates of heritability 92.98% coupled with moderate values of genetic advance as per cent of mean 19.72% was noted. In the last week of February in 2022, days to first female flower opening recorded high heritability 98.28% with high level of genetic advance as per cent of mean 20.76%, while in 2023, high heritability days to first female flower opening recorded high heritability 98.28% with high level of genetic advance as per cent of mean 20.76%. Nodes to first male flower, recorded high heritability estimates of 92.06% and 88.74% with high value of genetic advance as per cent of mean 51.63% and 40.95% in the last week of February, 2022 and 2023, respectively. High heritability estimates of 81.67% and 79.84% for the trait nodes to first female flower along with high genetic advance as per cent of mean of 43.07% and 43.07% in the last week of February in both the years of study, respectively.

Days to first fruit harvest recorded high heritability estimates of 96.27% and 95.63% with high estimates of genetic advance as per cent of mean 23.94% and 21.82% in 2022 and 2023 in the last week of February, respectively. In both the years of study in the last week of February, high heritability estimates of 91.27% and 93.49% recorded for the trait number of fruits per vine coupled with high genetic advance as per cent of mean of 62.45% and 64.00%, respectively. Fruit length in 2022 in the last week of February, showed moderate estimates of heritability of 74.65% coupled with moderate estimates of genetic advance as per cent of mean 16.31%, whereas, in 2023 fruit length recorded high estimates of heritability value 84.99% with high estimates of genetic advance as per cent of mean 23.07%. For the trait fruit diameter, high values of heritability estimates of 87.94% and 87.14% along with high genetic advance as per cent of mean of 26.75% and 26.82% in both the years of study in the last week of February, respectively, were observed. Peduncle length reported high heritability estimates of 93.07% and 90.69% with high estimates of genetic advance as per cent of mean 37.31% and 32.57% in 2022 and 2023 in the last week of February, respectively.

In the last week of February in both the year of study, average fruit weight reported moderate heritability estimates of 72.29% and 70.78% with moderate estimates of genetic advance as per cent of mean 18.66% and 17.98%, respectively. Number of seed per fruit observed high heritability estimates of 84.02% and 93.20% with high estimates of genetic advance as per cent of mean 38.67% and 44.53% in the last week of February in the years 2022 and 2023, respectively. Moderate heritability estimates of 60.29% with moderate estimate of genetic advance as per cent of mean of 13.41% for seed length in the year 2022 in last week of February, while high heritability estimates of 80.12% with moderate estimates of genetic advance as per cent of mean 19.01% were reported in 2023. For the weight of 100 seeds, moderate heritability estimates of 68.57% and 69.34% with high estimate of genetic advance as per cent of mean of 21.46% and 22.39% in 2022 and 2023 in the last week of February, respectively. Fruit yield per vine reported high heritability estimates of 89.31% and 93.51% along with high estimates of genetic advance as per cent of mean of 72.52% and 75.61% in the last week of February in 2022 and 2023, respectively. In both the year of study in the last week of February, fruit yield per hectare observed high heritability estimate values of 89.30% and 93.56% with high estimates of genetic advance as per cent of mean of 72.50% and 75.61%, respectively.

Table 4.4.1: Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Last week of February, 2022)

S. No.	TRAITS	RANGE		MEAN	GV	PV	GCV (%)	PCV (%)	Heritability (b.s.)	GA	GAM (%)
		MIN.	MAX.								
1	DG	8.04	16.22	11.44	4.44	5.58	18.41	20.64	79.64	3.87	33.85
2	NPB	3.33	6.87	5.16	0.50	0.63	13.65	15.43	78.21	1.28	24.86
3	VL	1.67	4.24	2.85	0.26	0.42	17.71	22.66	61.09	0.81	28.51
4	SLI	11.76	20.95	15.93	5.59	6.91	14.85	16.51	80.94	4.38	27.52
5	LL	5.39	9.47	7.75	0.88	1.09	12.11	13.47	80.83	1.74	22.43
6	LW	10.60	15.05	12.64	1.12	1.66	8.37	10.20	67.31	1.79	14.14
7	PTL	5.70	11.99	7.76	2.06	2.39	18.50	19.90	86.43	2.75	35.43
8	DFMF	36.40	54.01	46.92	25.16	26.41	10.69	10.95	95.27	10.08	21.49
9	DFFF	40.36	59.84	51.31	27.21	27.69	10.17	10.26	98.28	10.65	20.76
10	NFMF	3.24	8.25	5.78	2.28	2.48	26.12	27.22	92.06	2.98	51.63
11	NFFF	7.06	18.65	11.38	6.93	8.48	23.14	25.60	81.67	4.90	43.07
12	DFFH	46.36	70.49	60.73	51.71	53.72	11.84	12.07	96.27	14.54	23.94
13	NFV	6.53	27.8	16.40	27.07	29.66	31.73	33.22	91.27	10.24	62.45
14	FL	13.21	19.72	16.26	2.22	2.97	9.16	10.60	74.65	2.65	16.31
15	FD	2.56	4.37	3.25	0.20	0.23	13.85	14.77	87.94	0.87	26.75
16	PDL	5.06	11.35	7.79	2.14	2.30	18.78	19.46	93.07	2.91	37.31
17	AFW	64.91	101.41	86.24	84.44	116.8	10.65	12.53	72.29	16.09	18.66
18	NSF	55.28	149.92	90.52	343.59	408.92	20.48	22.34	84.02	35.00	38.67
19	SL	0.93	1.45	1.08	0.01	0.01	8.39	10.80	60.29	0.14	13.41
20	WS	7.73	14.79	10.32	1.69	2.46	12.58	15.20	68.57	2.22	21.46
21	FYV	0.54	2.44	1.44	0.29	0.32	37.25	39.42	89.31	1.04	72.52
22	FYH	32.25	146.32	86.19	1030.53	1154.02	37.25	39.41	89.30	62.49	72.50

GV: Genotypic variance; **PV:** Phenotypic variance; **GCV(%):** Genotypic co-efficient of variation; **PCV(%):** Phenotypic co-efficient of variation; **GA:** Genetic advance; **GAM(%):** Genetic advance as per cent of mean; **DG:** Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **FD:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.4.2: Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Last week of February, 2023)

S. No.	TRAITS	RANGE		MEAN	GV	PV	GCV (%)	PCV (%)	Heritability (b.s.)	GA	GAM (%)
		MIN.	MAX.								
1	DG	8.03	17.35	11.96	3.79	5.06	16.29	18.81	74.95	3.47	29.05
2	NPB	4.67	7.44	6.01	0.37	0.59	10.12	12.75	63.06	0.99	16.56
3	VL	2.31	5.13	3.64	0.35	0.40	16.35	17.38	88.43	1.15	31.67
4	SLI	12.41	22.82	16.79	6.50	7.46	15.18	16.27	87.11	4.90	29.19
5	LL	7.57	10.83	9.02	0.52	0.77	8.00	9.71	67.97	1.23	13.59
6	LW	11.35	16.97	14.01	1.66	2.19	9.20	10.55	76.04	2.32	16.53
7	PTL	6.10	13.25	8.61	2.65	2.89	18.91	19.75	91.64	3.21	37.29
8	DFMF	37.98	54.88	47.57	22.30	23.99	9.93	10.30	92.98	9.38	19.72
9	DFFF	41.01	57.89	50.71	23.82	24.35	9.62	9.73	97.81	9.94	19.61
10	NFMF	4.00	9.53	6.53	1.90	2.14	21.10	22.40	88.74	2.67	40.95
11	NFFF	7.92	19.00	12.43	7.62	9.54	22.20	24.85	79.84	5.08	40.87
12	DFFH	47.60	70.53	60.84	43.42	45.41	10.83	11.08	95.63	13.27	21.82
13	NFV	6.48	28.58	17.21	30.58	32.71	32.13	33.23	93.49	11.01	64.00
14	FL	13.98	24.58	18.29	4.93	5.80	12.15	13.18	84.99	4.22	23.07
15	FD	2.77	4.50	3.41	0.23	0.26	13.95	14.94	87.14	0.91	26.82
16	PDL	5.49	11.69	8.23	1.87	2.06	16.60	17.44	90.69	2.68	32.57
17	AFW	66.90	102.59	87.86	83.10	117.42	10.38	12.33	70.78	15.80	17.98
18	NSF	57.98	169.00	94.45	447.37	480.04	22.39	23.20	93.20	42.06	44.53
19	SL	0.96	1.52	1.12	0.01	0.02	10.31	11.52	80.12	0.21	19.01
20	WS	8.13	15.40	10.65	1.93	2.79	13.05	15.68	69.34	2.39	22.39
21	FYV	0.54	2.65	1.54	0.34	0.36	37.95	39.25	93.51	1.16	75.61
22	FYH	32.72	159.40	92.19	1223.64	1307.85	37.95	39.23	93.56	69.70	75.61

GV: Genotypic variance; PV: Phenotypic variance; GCV(%): Genotypic co-efficient of variation; PCV(%): Phenotypic co-efficient of variation; GA: Genetic advance; GAM(%): Genetic advance as per cent of mean; DG: Days to 50% germination; NPB: Number of primary branches per vine; VL: Vine length at final harvest (m); SLI: Stem length of internodes (cm); LL: Leaf length (cm); LW: Leaf width (cm); PL: Petiole length (cm); DFMF: Days to first male flower opening; DFFF: Days to first female flower opening; NFMF: Nodes to first male flower; NFFF: Nodes to first female flower; DFFH: Days to first fruit harvest; NFV: Number of fruits per vine; FL: Fruit length (cm); 15: Fruit diameter (cm); FD: Peduncle length (cm); AFW: Average fruit weight (g); NSF: Number of seeds per fruit; SL: Seed length (cm); WS: Weight of 100 seeds (g); FYV: Fruit yield per vine (kg); FYH: Fruit yield per ha (q/ha)

4.4.2 Experimental result of second week of March 2022 and 2023

4.4.2.1 Mean and Range

The second week of March recorded wide range of variability in both 2022 and 2023 years for all the characters under study. The range and overall mean values recorded for each character are presented in Table 4.4.3 and 4.4.4 further.

In the second week of March in 2022, days to 50% germination varied between 6.83 to 14.42 days with an average value of 9.87 days, while in 2023 the range was from 6.44 to 15.90 days with a mean value of 10.14 days. The character number of primary branches per vine recorded to vary between 3.00 to 8.00 branches with a mean value of 5.16 branches in the second week of March (2022), while the range was from 2.99 to 8.57 branches with an average of 5.44 branches in 2023. Vine length at final harvest reported to varied between 1.84 to 4.62 m and 1.96 to 4.70 m with an average value of 2.86 and 3.01 in the second week of March in 2022 and 2023, respectively. Stem length of internodes was reported to have a mean value of 12.11 cm in the second week of March in 2022, while the range was varying between 7.69 to 16.11 cm in 2022, whereas, in 2023 the value was ranging between 8.14 to 18.32 cm with a mean value of 13.28 cm. Leaf length was reported to have a mean value of 7.83 cm in the second week of March in 2022 ranging from 5.26 to 9.58 cm, while in 2023 the leaf length ranged from 7.58 to 11.4 cm with an average value of 9.25 cm. In the second week of March in the years 2022 and 2023, leaf width was reported range between 10.06 to 16.43 cm and 10.75 to 17.33 cm with average value 13.05 and 14.01, respectively. It was noticed that petiole length in the second week of March varied from 5.78 to 15.04 cm with a mean value of 10.03 cm, while in 2023 the range of 6.74 to 17.02 cm was observed for leaf length with a mean value of 11.10 cm.

Days to first male flower opening in the second week of March varied between 34.90 to 52.16 days with a mean value of 44.60 days, while in 2023 with an average value of 45.39 days, it varied from 36.04 to 51.79 days. In the second week of March, days to first female flower opening recorded a range of 38.52 to 56.20 days with an average value of 48.62 days, while in 2023 the range reported to be between 40.18 to 57.20 days with an average value of 49.91 days. Nodes to first male flower recorded a mean value of 4.63 nodes in the second week of March in 2022 which varied from 3.12 to 7.30 nodes, whereas, in 2023 the mean value recorded was 5.23 nodes with a range of 3.02 to 7.78 nodes. With a mean value of 6.13 nodes, nodes to first female flower in the second week of March in 2022 varied from 6.13 to 16.10 nodes, while in 2023, it ranged from 6.64 to 16.88 nodes with a mean value of 10.85 nodes.

The trait days to first fruit harvest recorded to vary between 43.96 to 66.90 days with a mean value of 57.34 days in the second week of March in 2022, while the range was from 47.39 to 67.89 days with an average of 58.19 days in 2023. Number of fruits per vine reported to

varied between 5.75 to 26.37 fruits and 5.96 to 27.27 fruits with an average value of 14.30 and 14.83 fruits in the second week of March in 2022 and 2023, respectively. With an average value of 16.22 cm fruit length ranged from 13.21 to 20.83 cm in the second week of March in 2022, while in 2023 with a mean value of 17.93 cm the value ranged from 13.56 to 24.58 cm. Fruit diameter was recorded to have a mean value of 3.52 in the second week of March in 2022 ranging from 2.79 to 4.71 cm, while in 2023 the fruit diameter ranged from 2.90 to 4.82 cm with an average value of 3.60 cm. In the second week of March in the years 2022 and 2023, peduncle length was reported range between 3.70 to 11.19 cm and 4.22 to 12.33 cm with average value 6.23 and 7.05, respectively. Average fruit weight noted a mean value of 87.10 g in the second week of March in the year 2022 with range value of 65.77 to 102.87 g, while in 2023 the range of 65.75 to 104.85 g with an average of 88.89 g was recorded.

With an average value of 86.91 seeds number of seeds per fruit ranged from 57.82 to 153.12 seed in the second week of March in 2022, while in 2023 with a mean value of 91.66 seeds the value ranged from 65.42 to 163.40 seeds. In the last week of February in both the year of study, with a mean value of 1.07 cm and 1.12 cm, seed length varied from 0.90 to 1.29 cm and 0.98 to 1.33 cm. With a mean value of 10.39 g and 10.63 g, weight of 100 seeds in the last week of February in the years 2022 and 2023 varied from 7.48 to 15.05 g and 7.79 to 14.71 g. fruit yield per vine reported a mean value of 1.27 and 1.34 kg with range value of 0.47 to 2.30 kg and 0.50 to 2.44 kg in the last week of February in 2022 and 2023, respectively. In the last week of February in 2022, fruit yield per hectare ranged from 28.05 to 138.25 q/ha with a mean value of 76.15 q/ha, while in 2023 an average value of 80.36 q/ha was recorded with a range of 29.92 to 146.56 q/ha.

4.4.2.2 Genotypic co-efficient of variation (GCV)

As shown in Table 4.4.3 and 4.4.4, indicate that the statistical analysis of variability parameter, it was recorded that the value of GCV was comparable in the years 2022 and 2023 in the second week of March for corresponding traits. From the achieved results the traits were categorized as having low, moderate and high GCV value as mentioned below.

In the second week of March in 2022, the high GCV were recorded for the traits number of primary branches per vine (20.46%), vine length at final harvest (20.82%), petiole length (22.12%), nodes to first male flower (25.20%), nodes to first female flower (23.23%), number of fruits per vine (33.54%), peduncle length (28.94%), number of seeds per fruit (22.01%), fruit yield per vine (39.32%) and fruit yield per hectare (39.32%). Whereas, in the year 2023 high GCV was reported for the characters number of primary branches per vine (22.13%), petiole length (23.68%), nodes to first male flower (25.04%), nodes to first female flower (22.62%), number of fruits per vine (33.56%), peduncle length (28.14%), number of seeds per fruit (22.78%), fruit yield per vine (38.68%) and fruit yield per hectare (38.68%).

Moderate values of GCV was observed for the characters days to 50% germination (18.51%), stem length of internodes (17.21%), leaf length (13.09%), days to first male flower opening (10.92%), days to first female flower opening (10.70%), days to first fruit harvest (10.81%), fruit length (10.60%), fruit diameter (13.27%), average fruit weight (11.09%) and weight of 100 seeds (13.05%) in the year 2022 in second week of March. In 2023, Moderate GCV was noted for the traits days to 50% germination (19.13%), vine length at final harvest (19.45%), stem length of internodes (17.63%), leaf width (10.72%), days to first female flower opening (10.20%), fruit length (12.80%), fruit diameter (13.96%), average fruit weight (10.67%) and weight of 100 seeds (12.09%).

In 2022 in the second week of March the traits leaf width (9.05%) and seed length (7.52%) reported low values of GCV. Similarly, in 2023 low GCV were noted for the characters leaf length (8.00%), days to first male flower opening (9.70%), days to first fruit harvest (9.68%) and seed length (8.11%).

4.4.1.3 Phenotypic co-efficient of variation (PCV)

The data presented in Table 4.4.3 and 4.4.4, indicate that the PCV values were greater than the corresponding GCV values for all the twenty-two traits of observation in both the year of study in the second week of March, while the PCV values were comparable in both the year of study. The PCV values observed for various characters are classified in three categories of low, moderate and high PCV.

Days to 50% germination (20.87%), number of primary branches per vine (22.68%), vine length at final harvest (21.86%), petiole length (23.60%), nodes to first male flower (26.30%), nodes to first female flower (25.76%), number of fruits per vine (34.70%), peduncle length (30.40%), number of seeds per fruit (23.23%), fruit yield per vine (40.76%) and fruit yield per hectare (40.77%) recorded high PCV in the second week of March in 2022. Whereas, in the year 2023 high PCV was observed for the characters Days to 50% germination (21.44%), number of primary branches per vine (23.75%), vine length at final harvest (21.37%), petiole length (24.27%), nodes to first male flower (26.06%), nodes to first female flower (25.13%), number of fruits per vine (34.98%), peduncle length (28.63%), number of seeds per fruit (23.59%), fruit yield per vine (40.48%) and fruit yield per hectare (40.49%).

Moderate values of PCV were recorded for stem length of internodes (17.91%), leaf length (14.24%), leaf width (12.51%), days to first male flower opening (11.15%), days to first female flower opening (10.82%), days to first fruit harvest (11.14%), fruit length (11.72%), fruit diameter (16.37%), average fruit weight (12.82%) and weight of 100 seeds (15.61%) in the year 2022 in second week of March. Similarly, in 2023 for the traits for the stem length of internodes (18.48%), leaf length (10.65%), leaf width (12.06%), days to first male flower opening (10.09%), days to first female flower opening (10.30%), fruit length (14.07%), fruit diameter (14.86%), average fruit weight (12.91%) and weight of 100 seeds (15.01%) were reported moderate PCV value.

Seed length (8.89%) showed low PCV values in 2022 in the second week of March. Whereas, in 2023 for the traits days to first harvest (9.97%) and seed length (9.93%) had low levels of PCV.

4.4.2.4 Heritability (b.s.) and genetic advance as percent of mean

The values obtained for each trait are presented in Table 4.4.3 and 4.4.4, indicated that most of the traits recorded high heritability coupled with low, moderate and high levels of genetic advance per cent of mean in the years 2022 and 2023 in the second week of March.

Days to 50% germination recorded high heritability (78.63% and 79.63%) with high estimates of genetic advance as per cent of mean (33.81% and 35.17%) in the year 2022 and 2023 in the second week of March, respectively. In the second week of March (2022 and 2023), number of primary branches per vine reported high heritability (81.38% and 86.78%) with high estimates of genetic advance as per cent of mean (38.02% and 42.47%), respectively. Whereas, in both the year of study in the second week of March, for the trait vine length at final harvest heritability estimates were high (90.70% and 82.81%) coupled with high estimates of genetic advance as per cent of mean (40.84% and 36.46%), respectively. High estimates of heritability (92.26% and 90.96%) along with high estimates of genetic advance as per cent of mean (34.04% and 34.64%) was noted in the second week of March in 2022 and 2023, respectively for the stem length of internodes. Leaf length reported high heritability (84.50%) with high estimates of genetic advance as per cent of mean (24.79%) in the second week of March in 2022 and in the year 2023 moderate heritability estimates (56.45%) with moderate estimates of genetic advance per cent of mean (12.38%). In the second week of March in 2022, leaf width reported moderate heritability estimates (52.38%) with moderate estimates of genetic advance as per cent of mean (13.49%) and high heritability estimates (78.91%) with moderate estimates of genetic advance as per cent of mean (19.61%) in the year 2023. Petiole length reported high heritability (87.88% and 95.15%) coupled with high estimates of genetic advance as per cent of mean (42.72% and 47.58%) in both the year of study in second week of March, respectively.

The trait days to first male flower opening was reported to have high heritability (95.82%) with high genetic advance as per cent of mean (22.02%) in 2022 in the second week of March and high heritability (92.36%) with moderate genetic advance as per cent of mean (19.20%) in 2023. In both the year of study in the second week of March, days to first female flower opening recorded high heritability (97.76% and 98.09%) with high estimates of genetic advance as per cent of mean (21.79% and 20.81%), respectively. nodes to first male flower observed high heritability (91.87% and 92.34%) along with high estimates of genetic advance as per cent of mean (49.77% and 49.57%) in the second week of March in 2022 and 2023, respectively. High heritability (81.33% and 81.03%) with high estimates of genetic advance as per cent of mean (43.16% and 41.95%) were recorded for nodes to first female flower in the second week of March in 2022 and 2023, respectively. Days to first fruit harvest reported high

heritability (94.22%) with high estimates of genetic advance as per cent of mean (21.62%) in the second week of March 2022, while in 2023 high heritability of (94.30%) coupled with moderate estimates of genetic advance as per cent of mean (19.36%).

High estimates of heritability (93.45% and 92.04%) along with moderate estimates of genetic advance as per cent of mean (66.80% and 66.32%) was recorded for the trait number of fruits per vine in the second week of March in 2022 and 2023, respectively. High heritability estimates (81.87%) with moderate estimates of genetic advance as per cent of mean (19.76%) in the second week of March in 2022, while high estimates of heritability estimates (82.83%) with high genetic advance as per cent of mean (24.00%) was recorded in 2023 for fruit length. Moderate heritability estimates (65.76%) with high estimates of genetic advance as per cent of mean (22.17%) in the second week of March in 2022, whereas, high estimate of heritability value (88.33%) with high estimate of genetic advance as per cent of mean (27.03%) was recorded in 2023 for the trait fruit diameter. Peduncle length recorded high heritability estimate values (90.65% and 96.56%) with high estimates of genetic advance as per cent of mean (56.76% and 56.96%) in the second week of March in 2022 and 2023, respectively.

Average fruit weight recorded moderate estimates heritability (74.83% and 68.33%) with moderate estimates of genetic advance as per cent of mean (19.76% and 18.17%), in the second week of March in the years 2022 and 2023, respectively. High heritability estimates (89.73% and 93.23%) with high estimates of genetic advance as per cent of mean (42.95% and 45.30%) was reported for the trait number of seeds per fruit in the second week of March in 2022 and 2023, respectively. seed length observed moderate estimates of heritability (71.43% and 66.67%) along with high estimates of genetic advance as per cent of mean (13.09% and 13.64%) in 2022 and 2023 in the second week of March, respectively. Weight of 100 seeds observed high estimates heritability (69.92% and 64.87%) along with high estimates of genetic advance as per cent of mean (22.49% and 20.06%) in 2022 and 2023 in the second week of March, respectively. The trait fruit yield per vine was recorded to have high heritability estimates (93.05% and 91.29%) coupled with high estimates of genetic advance as per cent of mean (78.13% and 76.13%) in the second week of March in 2022 and 2023, respectively. Similarly, high heritability estimates (93.01% and 91.28%) coupled with high estimates of genetic advance as per cent of mean (78.12% and 76.14%) was recorded for fruit yield per hectare, respectively.

Table 4.4.3: Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Second week of March 2022)

S. No.	TRAITS	RANGE		MEAN	GV	PV	GCV (%)	PCV (%)	Heritability (b.s.)	GA	GAM (%)
		MIN.	MAX.								
1	DG	6.83	14.42	9.87	3.34	4.24	18.51	20.87	78.63	3.34	33.81
2	NPB	3.00	8.00	5.16	1.11	1.37	20.46	22.68	81.38	1.96	38.02
3	VL	1.84	4.62	2.86	0.35	0.39	20.82	21.86	90.70	1.17	40.84
4	SLI	7.69	16.11	12.11	4.34	4.71	17.21	17.91	92.26	4.12	34.04
5	LL	5.26	9.58	7.83	1.05	1.24	13.09	14.24	84.50	1.94	24.79
6	LW	10.06	16.43	13.05	1.39	2.66	9.05	12.51	52.38	1.76	13.49
7	PTL	5.78	15.04	10.03	4.93	5.61	22.12	23.60	87.88	4.29	42.72
8	DFMF	34.90	52.16	44.60	23.71	24.75	10.92	11.15	95.82	9.82	22.02
9	DFFF	38.52	56.20	48.62	27.05	27.67	10.70	10.82	97.76	10.59	21.79
10	NFMF	3.12	7.30	4.63	1.36	1.48	25.20	26.30	91.87	2.30	49.77
11	NFFF	6.13	16.10	9.96	5.36	6.59	23.23	25.76	81.33	4.30	43.16
12	DFFH	43.96	66.90	57.34	38.44	40.80	10.81	11.14	94.22	12.40	21.62
13	NFV	5.75	26.37	14.30	23.00	24.62	33.54	34.70	93.45	9.55	66.80
14	FL	13.21	20.83	16.22	2.96	3.61	10.60	11.72	81.87	3.21	19.76
15	FD	2.79	4.71	3.52	0.22	0.33	13.27	16.37	65.76	0.78	22.17
16	PDL	3.70	11.19	6.23	3.25	3.59	28.94	30.40	90.65	3.54	56.76
17	AFW	65.77	102.87	87.10	93.31	124.69	11.09	12.82	74.83	17.21	19.76
18	NSF	57.82	153.12	86.91	365.88	407.76	22.01	23.23	89.73	37.33	42.95
19	SL	0.90	1.29	1.07	0.01	0.01	7.52	8.89	71.43	0.14	13.09
20	WS	7.48	15.05	10.39	1.84	2.63	13.05	15.61	69.92	2.34	22.49
21	FYV	0.47	2.30	1.27	0.25	0.27	39.32	40.76	93.05	0.99	78.13
22	FYH	28.05	138.25	76.15	896.51	963.84	39.32	40.77	93.01	59.49	78.12

GV: Genotypic variance; **PV:** Phenotypic variance; **GCV(%):** Genotypic co-efficient of variation; **PCV(%):** Phenotypic co-efficient of variation; **GA:** Genetic advance; **GAM(%):** Genetic advance as per cent of mean; **DG:** Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **15:** Fruit diameter (cm); **FD:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.4.4: Estimates of range, mean, co-efficient of variance, heritability, genetic advance and GAM (%) for growth and yield parameters in ridge gourd genotypes (Second week of March 2023)

S. No.	TRAITS	RANGE		MEAN	GV	PV	GCV (%)	PCV (%)	Heritability (b.s.)	GA	GAM (%)
		MIN.	MAX.								
1	DG	6.44	15.90	10.14	3.76	4.73	19.13	21.44	79.63	3.57	35.17
2	NPB	2.99	8.57	5.44	1.45	1.67	22.13	23.75	86.78	2.31	42.47
3	VL	1.96	4.70	3.01	0.34	0.41	19.45	21.37	82.81	1.10	36.46
4	SLI	8.14	18.32	13.28	5.48	6.02	17.63	18.48	90.96	4.60	34.64
5	LL	7.58	11.4	9.25	0.55	0.97	8.00	10.65	56.45	1.14	12.38
6	LW	10.75	17.33	14.01	2.25	2.86	10.72	12.06	78.91	2.75	19.61
7	PTL	6.74	17.02	11.10	6.90	7.25	23.68	24.27	95.15	5.28	47.58
8	DFMF	36.04	51.79	45.39	19.37	20.98	9.70	10.09	92.36	8.71	19.20
9	DFFF	40.18	57.20	49.91	25.92	26.42	10.20	10.30	98.09	10.39	20.81
10	NFMF	3.02	7.78	5.23	1.72	1.86	25.04	26.06	92.34	2.59	49.57
11	NFFF	6.64	16.88	10.85	6.03	7.44	22.62	25.13	81.03	4.55	41.95
12	DFFH	47.39	67.89	58.19	31.71	33.63	9.68	9.97	94.30	11.27	19.36
13	NFV	5.96	27.27	14.83	24.76	26.91	33.56	34.98	92.04	9.83	66.32
14	FL	13.56	24.58	17.93	5.27	6.36	12.80	14.07	82.83	4.30	24.00
15	FD	2.90	4.82	3.60	0.25	0.29	13.96	14.86	88.33	0.97	27.03
16	PDL	4.22	12.33	7.05	3.93	4.07	28.14	28.63	96.56	4.02	56.96
17	AFW	65.75	104.85	88.89	89.97	131.67	10.67	12.91	68.33	16.15	18.17
18	NSF	65.42	163.40	91.66	435.84	467.50	22.78	23.59	93.23	41.52	45.30
19	SL	0.98	1.33	1.12	0.01	0.01	8.11	9.93	66.67	0.15	13.64
20	WS	7.79	14.71	10.63	1.65	2.55	12.09	15.01	64.87	2.13	20.06
21	FYV	0.50	2.44	1.34	0.27	0.29	38.68	40.48	91.29	1.02	76.13
22	FYH	29.92	146.56	80.36	966.28	1058.56	38.68	40.49	91.28	61.18	76.14

GV: Genotypic variance; **PV:** Phenotypic variance; **GCV(%):** Genotypic co-efficient of variation; **PCV(%):** Phenotypic co-efficient of variation; **GA:** Genetic advance; **GAM(%):** Genetic advance as per cent of mean; **DG:** Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **15:** Fruit diameter (cm); **FD:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

4.5 Correlation analysis

4.5.1 Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022 and 2023)

The data presented in Table 4.5.1a, 4.5.1b, 4.5.2a, 4.5.2b and also Figure 4.5.1 and 4.5.2 indicate that the genotypic correlation among fruit yield and yield contributing characters in the last week of February, 2022 and 2023 of ridge gourd, respectively. The genotypic correlation values of various characters were mentioned below:

Days to 50% germination

Days to 50% germination had significant positive genotypic correlation with days to first male flower opening (0.9601), days to first female flower opening (0.9347), days to first fruit harvest (0.874) peduncle length (0.3486), fruit yield per vine (0.334) and fruit yield per hectare (0.3335) in the last week of February in 2022. Whereas, in 2023 days to 50% germination had significant positive genotypic correlation with days to first male flower opening (0.8624), days to first female flower opening (0.8342), days to first fruit harvest (0.8425) peduncle length (0.3159) and seed length (0.3347).

4.5.1.1 Number of primary branches per vine

In the year 2022, in last week of February, number of primary branches per vine was highly significant and negatively correlated with fruit length (-0.4125), while in 2023 number of primary branches per vine had significant negative genotypic correlation with vine length at final harvest (-0.3177), stem length of internodes (-0.4388), nodes to first male flower (-0.3321) and peduncle length (-0.407).

4.5.1.2 Vine length at final harvest

In the last week of February in 2022, vine length at final harvest had significant positive genotypic correlation with stem length of internodes (0.3717), while significant positive genotypic correlation with stem length of internodes (0.3931) and peduncle length (0.7583) in 2023.

4.5.1.3 Stem length of internodes

Stem length of internodes had significant positive genotypic correlation with peduncle length (0.3504) in 2022 in the last week of February. Whereas, in 2023 stem length of internodes had significant positive genotypic correlation with leaf length (0.3784) and peduncle length (0.4267).

4.5.1.4 Leaf length

Leaf length highly significant and positively correlated with leaf width (0.4642) in the last week of February, 2022. Whereas, in 2023 leaf length had significant and positive genotypic correlation with leaf width (0.9502) and petiole length (0.3318), while significant negative genotypic correlation with fruit length (-0.3247).

4.5.1.5 Leaf width

In the years 2022 and 2023 in the last week of February, leaf width had non-significant genotypic correlation with petiole length, days to first male flower opening, days to first female flower opening, nodes to first male flower, nodes to first female flower, days to first fruit harvest, number of fruits per vine, fruit length, fruit diameter, peduncle length, average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare, respectively.

4.5.1.6 Petiole length

In the year 2022 in the last week of February, no significant genotypic correlation was noted for petiole length. Whereas, in the last week of February in 2023, petiole length highly significant and negatively correlated with number of seeds per fruit (-0.3159).

4.5.1.7 Days to first male flower opening

Days to first male flower opening was highly significant and positively correlated with days to first female flower opening (0.9968 and 0.9876) and days to first fruit harvest (0.9711 and 0.945) in the last week of February in the years 2022 and 2023, respectively.

4.5.1.8 Days to first female flower opening

In the last week of February in the years 2022 and 2023, days to first female flower opening was highly significant and positively correlated with days to first fruit harvest (0.9675 and 0.9492) respectively.

4.5.1.9 Nodes to first male flower

In the last week of February in 2022, nodes to first male flower was highly significant and positively correlated with nodes to first female flower (0.8532). Whereas, in 2023 nodes to first male flower had significant and positive genotypic correlation with nodes to first female flower (0.8781), while nodes to first male flower had significant negative genotypic correlation with fruit length (-0.3174).

4.5.1.10 Nodes to first female flower

Nodes to first female flower had significant negative genotypic correlation with fruit diameter (-0.455 and -0.4155) in the last week of February in 2022 and 2023, respectively.

4.5.1.11 Days to first fruit harvest

Days to first fruit harvest had non-significant genotypic correlation with number of fruits per vine, fruit length, fruit diameter, peduncle length, average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare in the last week of February, respectively.

4.5.1.12 Number of fruits per vine

In the last week of February in 2022 and 2023, number of fruits per vine had significant positive genotypic correlation with average fruit weight (0.5155 and 0.5303), fruit yield per vine (0.9751 and 0.9776) and fruit yield per hectare (0.9749 and 0.9774), respectively.

Whereas, number of fruits per vine had significant negative genotypic correlation with number of seed per fruit (-0.3415 and -0.356), respectively.

4.5.1.13 Fruit length

In the last week of February in 2022 and 2023, no significant genotypic correlation was observed for fruit length, respectively.

4.5.1.14 Fruit diameter

In the last week of February in 2022 and 2023, Fruit diameter had non-significant correlation genotypic with peduncle length, average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare, respectively.

4.5.1.15 Peduncle length

No significant genotypic correlation was recorded for peduncle length in the last week of February in 2022 and 2023, respectively.

4.5.1.16 Average fruit weight

Average fruit weight had significant positive genotypic correlation with fruit yield per vine (0.6893 and 0.690) and fruit yield per hectare (0.9749 and 0.9774) in the last week of February in 2022 and 2023, respectively.

4.5.1.17 Number of seeds per fruit

No significant genotypic correlation was reported for number of seeds per fruit in the last week of February in 2022 and 2023, respectively.

4.5.1.18 Seed length

In the last week of February in 2022 and 2023, seed length had non-significant correlation with weight of 100 seeds, fruit yield per vine and fruit yield per hectare, respectively.

4.5.1.19 Weight of 100 seeds

Weight of 100 seeds had non-significant correlation with fruit yield per vine and fruit yield per hectare in the last week of February in 2022 and 2023, respectively.

4.5.1.20 Fruit yield per vine

Fruit yield per vine had significant positive genotypic correlation with fruit yield per hectare (1.00 and 1.00) in both the year of study in the last week of February.

Table 4.5.1a: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.1014 ^{NS}	-0.0489 ^{NS}	-0.047 ^{NS}	0.1247 ^{NS}	0.0649 ^{NS}	-0.1057 ^{NS}	0.9601**	0.9347**	-0.0664 ^{NS}	-0.149 ^{NS}
NPB	-0.1014 ^{NS}	1**	-0.1581 ^{NS}	-0.1192 ^{NS}	-0.0044 ^{NS}	0.2836 ^{NS}	-0.1201 ^{NS}	-0.0547 ^{NS}	-0.0454 ^{NS}	-0.1537 ^{NS}	-0.1858 ^{NS}
VL	-0.0489 ^{NS}	-0.1581 ^{NS}	1**	0.3717*	-0.2035 ^{NS}	-0.173 ^{NS}	-0.0091 ^{NS}	0.0329 ^{NS}	0.0006 ^{NS}	0.2703 ^{NS}	0.1386 ^{NS}
SLI	-0.047 ^{NS}	-0.1192 ^{NS}	0.3717*	1**	-0.091 ^{NS}	0.0106 ^{NS}	-0.0878 ^{NS}	-0.0341 ^{NS}	-0.0435 ^{NS}	0.1878 ^{NS}	0.0299 ^{NS}
LL	0.1247 ^{NS}	-0.0044 ^{NS}	-0.2035 ^{NS}	-0.091 ^{NS}	1**	0.4642**	-0.0606 ^{NS}	0.1819 ^{NS}	0.1897 ^{NS}	0.0858 ^{NS}	0.1206 ^{NS}
LW	0.0649 ^{NS}	0.2836 ^{NS}	-0.173 ^{NS}	0.0106 ^{NS}	0.4642**	1**	0.1817 ^{NS}	0.1308 ^{NS}	0.1146 ^{NS}	-0.1057 ^{NS}	-0.0189 ^{NS}
PTL	-0.1057 ^{NS}	-0.1201 ^{NS}	-0.0091 ^{NS}	-0.0878 ^{NS}	-0.0606 ^{NS}	0.1817 ^{NS}	1**	-0.2128 ^{NS}	-0.1747 ^{NS}	-0.026 ^{NS}	0.167 ^{NS}
DFMF	0.9601**	-0.0547 ^{NS}	0.0329 ^{NS}	-0.0341 ^{NS}	0.1819 ^{NS}	0.1308 ^{NS}	-0.2128 ^{NS}	1**	0.9968**	0.0144 ^{NS}	-0.1031 ^{NS}
DFFF	0.9347**	-0.0454 ^{NS}	0.0006 ^{NS}	-0.0435 ^{NS}	0.1897 ^{NS}	0.1146 ^{NS}	-0.1747 ^{NS}	0.9968**	1**	0.0461 ^{NS}	-0.0732 ^{NS}
NFMF	-0.0664 ^{NS}	-0.1537 ^{NS}	0.2703 ^{NS}	0.1878 ^{NS}	0.0858 ^{NS}	-0.1057 ^{NS}	-0.026 ^{NS}	0.0144 ^{NS}	0.0461 ^{NS}	1**	0.8532**
NFFF	-0.149 ^{NS}	-0.1858 ^{NS}	0.1386 ^{NS}	0.0299 ^{NS}	0.1206 ^{NS}	-0.0189 ^{NS}	0.167 ^{NS}	-0.1031 ^{NS}	-0.0732 ^{NS}	0.8532**	1**
DFFH	0.874**	-0.0791 ^{NS}	-0.0242 ^{NS}	-0.1469 ^{NS}	0.207 ^{NS}	0.1123 ^{NS}	-0.2168 ^{NS}	0.9711**	0.9675**	0.0248 ^{NS}	-0.0629 ^{NS}
NFV	0.3087 ^{NS}	-0.0566 ^{NS}	-0.1204 ^{NS}	-0.062 ^{NS}	-0.0431 ^{NS}	0.0438 ^{NS}	0.2399 ^{NS}	0.2416 ^{NS}	0.2391 ^{NS}	-0.1387 ^{NS}	-0.1339 ^{NS}
FL	0.0215 ^{NS}	-0.4125**	0.1191 ^{NS}	0.1187 ^{NS}	0.2346 ^{NS}	-0.0046 ^{NS}	0.0733 ^{NS}	0.0481 ^{NS}	0.0384 ^{NS}	-0.2023 ^{NS}	-0.1648 ^{NS}
FD	0.2408 ^{NS}	-0.0446 ^{NS}	-0.0927 ^{NS}	-0.0509 ^{NS}	0.2016 ^{NS}	-0.0882 ^{NS}	-0.1756 ^{NS}	0.2328 ^{NS}	0.2534 ^{NS}	-0.2189 ^{NS}	-0.455**
PDL	0.3486*	-0.2768 ^{NS}	0.2643 ^{NS}	0.3504*	-0.112 ^{NS}	-0.1899 ^{NS}	0.2286 ^{NS}	0.2281 ^{NS}	0.2055 ^{NS}	-0.0555 ^{NS}	-0.0323 ^{NS}
AFW	0.2956 ^{NS}	-0.0373 ^{NS}	-0.1739 ^{NS}	0.0403 ^{NS}	0.031 ^{NS}	-0.125 ^{NS}	-0.173 ^{NS}	0.2236 ^{NS}	0.2004 ^{NS}	0.0585 ^{NS}	0.154 ^{NS}
NSF	-0.308 ^{NS}	0.0636 ^{NS}	-0.1112 ^{NS}	0.0671 ^{NS}	-0.0128 ^{NS}	-0.0888 ^{NS}	-0.2589 ^{NS}	-0.2374 ^{NS}	-0.2426 ^{NS}	0.1406 ^{NS}	0.2871 ^{NS}
SL	0.2935 ^{NS}	0.1552 ^{NS}	-0.217 ^{NS}	-0.0835 ^{NS}	0.0122 ^{NS}	-0.0393 ^{NS}	-0.0588 ^{NS}	0.254 ^{NS}	0.2924 ^{NS}	-0.0404 ^{NS}	-0.0246 ^{NS}
WS	0.024 ^{NS}	0.0682 ^{NS}	0.2089 ^{NS}	-0.0255 ^{NS}	-0.0538 ^{NS}	0.1004 ^{NS}	-0.0951 ^{NS}	0.0961 ^{NS}	0.0856 ^{NS}	-0.0724 ^{NS}	-0.1575 ^{NS}
FYV	0.334*	-0.0452 ^{NS}	-0.1399 ^{NS}	-0.0312 ^{NS}	-0.0393 ^{NS}	0.0194 ^{NS}	0.1628 ^{NS}	0.2557 ^{NS}	0.248 ^{NS}	-0.109 ^{NS}	-0.0916 ^{NS}
FYH	0.3335*	-0.0449 ^{NS}	-0.1405 ^{NS}	-0.0311 ^{NS}	-0.0393 ^{NS}	0.0195 ^{NS}	0.1629 ^{NS}	0.2551 ^{NS}	0.2472 ^{NS}	-0.1092 ^{NS}	-0.0916 ^{NS}

Signif. Codes: 0.001 ***, 0.01 **, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.1b: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.874**	0.3087 ^{NS}	0.0215 ^{NS}	0.2408 ^{NS}	0.3486*	0.2956 ^{NS}	-0.308 ^{NS}	0.2935 ^{NS}	0.024 ^{NS}	0.334*	0.3335*
NPB	-0.0791 ^{NS}	-0.0566 ^{NS}	-0.4125**	-0.0446 ^{NS}	-0.2768 ^{NS}	-0.0373 ^{NS}	0.0636 ^{NS}	0.1552 ^{NS}	0.0682 ^{NS}	-0.0452 ^{NS}	-0.0449 ^{NS}
VL	-0.0242 ^{NS}	-0.1204 ^{NS}	0.1191 ^{NS}	-0.0927 ^{NS}	0.2643 ^{NS}	-0.1739 ^{NS}	-0.1112 ^{NS}	-0.217 ^{NS}	0.2089 ^{NS}	-0.1399 ^{NS}	-0.1405 ^{NS}
SLI	-0.1469 ^{NS}	-0.062 ^{NS}	0.1187 ^{NS}	-0.0509 ^{NS}	0.3504*	0.0403 ^{NS}	0.0671 ^{NS}	-0.0835 ^{NS}	-0.0255 ^{NS}	-0.0312 ^{NS}	-0.0311 ^{NS}
LL	0.207 ^{NS}	-0.0431 ^{NS}	0.2346 ^{NS}	0.2016 ^{NS}	-0.112 ^{NS}	0.031 ^{NS}	-0.0128 ^{NS}	0.0122 ^{NS}	-0.0538 ^{NS}	-0.0393 ^{NS}	-0.0393 ^{NS}
LW	0.1123 ^{NS}	0.0438 ^{NS}	-0.0046 ^{NS}	-0.0882 ^{NS}	-0.1899 ^{NS}	-0.125 ^{NS}	-0.0888 ^{NS}	-0.0393 ^{NS}	0.1004 ^{NS}	0.0194 ^{NS}	0.0195 ^{NS}
PTL	-0.2168 ^{NS}	0.2399 ^{NS}	0.0733 ^{NS}	-0.1756 ^{NS}	0.2286 ^{NS}	-0.173 ^{NS}	-0.2589 ^{NS}	-0.0588 ^{NS}	-0.0951 ^{NS}	0.1628 ^{NS}	0.1629 ^{NS}
DFMF	0.9711**	0.2416 ^{NS}	0.0481 ^{NS}	0.2328 ^{NS}	0.2281 ^{NS}	0.2236 ^{NS}	-0.2374 ^{NS}	0.254 ^{NS}	0.0961 ^{NS}	0.2557 ^{NS}	0.2551 ^{NS}
DFFF	0.9675**	0.2391 ^{NS}	0.0384 ^{NS}	0.2534 ^{NS}	0.2055 ^{NS}	0.2004 ^{NS}	-0.2426 ^{NS}	0.2924 ^{NS}	0.0856 ^{NS}	0.248 ^{NS}	0.2472 ^{NS}
NFMF	0.0248 ^{NS}	-0.1387 ^{NS}	-0.2023 ^{NS}	-0.2189 ^{NS}	-0.0555 ^{NS}	0.0585 ^{NS}	0.1406 ^{NS}	-0.0404 ^{NS}	-0.0724 ^{NS}	-0.109 ^{NS}	-0.1092 ^{NS}
NFFF	-0.0629 ^{NS}	-0.1339 ^{NS}	-0.1648 ^{NS}	-0.455**	-0.0323 ^{NS}	0.154 ^{NS}	0.2871 ^{NS}	-0.0246 ^{NS}	-0.1575 ^{NS}	-0.0916 ^{NS}	-0.0916 ^{NS}
DFFH	1**	0.2048 ^{NS}	0.0263 ^{NS}	0.206 ^{NS}	0.1152 ^{NS}	0.1807 ^{NS}	-0.1407 ^{NS}	0.2868 ^{NS}	0.0791 ^{NS}	0.2147 ^{NS}	0.2141 ^{NS}
NFV	0.2048 ^{NS}	1**	-0.0068 ^{NS}	0.2244 ^{NS}	0.201 ^{NS}	0.5155**	-0.3415*	0.163 ^{NS}	0.0011 ^{NS}	0.9751**	0.9749**
FL	0.0263 ^{NS}	-0.0068 ^{NS}	1**	0.0838 ^{NS}	0.1993 ^{NS}	-0.0149 ^{NS}	0.0189 ^{NS}	0.0031 ^{NS}	-0.0867 ^{NS}	-0.0019 ^{NS}	-0.0021 ^{NS}
FD	0.206 ^{NS}	0.2244 ^{NS}	0.0838 ^{NS}	1**	0.1136 ^{NS}	0.193 ^{NS}	-0.0622 ^{NS}	-0.0712 ^{NS}	0.0303 ^{NS}	0.2484 ^{NS}	0.2487 ^{NS}
PDL	0.1152 ^{NS}	0.201 ^{NS}	0.1993 ^{NS}	0.1136 ^{NS}	1**	0.0666 ^{NS}	-0.1277 ^{NS}	-0.1357 ^{NS}	0.0071 ^{NS}	0.1901 ^{NS}	0.1904 ^{NS}
AFW	0.1807 ^{NS}	0.5155**	-0.0149 ^{NS}	0.193 ^{NS}	0.0666 ^{NS}	1**	0.1462 ^{NS}	0.115 ^{NS}	-0.2287 ^{NS}	0.6893**	0.69**
NSF	-0.1407 ^{NS}	-0.3415*	0.0189 ^{NS}	-0.0622 ^{NS}	-0.1277 ^{NS}	0.1462 ^{NS}	1**	-0.2283 ^{NS}	-0.1893 ^{NS}	-0.2563 ^{NS}	-0.2553 ^{NS}
SL	0.2868 ^{NS}	0.163 ^{NS}	0.0031 ^{NS}	-0.0712 ^{NS}	-0.1357 ^{NS}	0.115 ^{NS}	-0.2283 ^{NS}	1**	0.1667 ^{NS}	0.1803 ^{NS}	0.1796 ^{NS}
WS	0.0791 ^{NS}	0.0011 ^{NS}	-0.0867 ^{NS}	0.0303 ^{NS}	0.0071 ^{NS}	-0.2287 ^{NS}	-0.1893 ^{NS}	0.1667 ^{NS}	1**	-0.0721 ^{NS}	-0.0725 ^{NS}
FYV	0.2147 ^{NS}	0.9751**	-0.0019 ^{NS}	0.2484 ^{NS}	0.1901 ^{NS}	0.6893**	-0.2563 ^{NS}	0.1803 ^{NS}	-0.0721 ^{NS}	1**	1**
FYH	0.2141 ^{NS}	0.9749**	-0.0021 ^{NS}	0.2487 ^{NS}	0.1904 ^{NS}	0.69**	-0.2553 ^{NS}	0.1796 ^{NS}	-0.0725 ^{NS}	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB**: Number of primary branches per vine; **VL**: Vine length at final harvest (m); **SLI**: Stem length of internodes (cm); **LL**: Leaf length (cm); **LW**: Leaf width (cm); **PL**: Petiole length (cm); **DFMF**: Days to first male flower opening; **DFFF**: Days to first female flower opening; **NFMF**: Nodes to first male flower; **NFFF**: Nodes to first female flower; **DFFH**: Days to first fruit harvest; **NFV**: Number of fruits per vine; **FL**: Fruit length (cm); **FD**: Fruit diameter (cm); **PDL**: Peduncle length (cm); **AFW**: Average fruit weight (g); **NSF**: Number of seeds per fruit; **SL**: Seed length (cm); **WS**: Weight of 100 seeds (g); **FYV**: Fruit yield per vine (kg); **FYH**: Fruit yield per ha (q/ha)

Table 4.5.2a: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	0.0303 ^{NS}	0.2916 ^{NS}	-0.0221 ^{NS}	0.1078 ^{NS}	0.061 ^{NS}	-0.0837 ^{NS}	0.8624**	0.8342**	0.2046 ^{NS}	-0.0372 ^{NS}
NPB	0.0303 ^{NS}	1**	-0.3177*	-0.4388**	-0.218 ^{NS}	-0.183 ^{NS}	-0.1512 ^{NS}	0.1527 ^{NS}	0.2227 ^{NS}	-0.3321*	-0.2246 ^{NS}
VL	0.2916 ^{NS}	-0.3177*	1**	0.3931*	0.1625 ^{NS}	0.0203 ^{NS}	0.1879 ^{NS}	0.1018 ^{NS}	0.0559 ^{NS}	0.0598 ^{NS}	-0.1211 ^{NS}
SLI	-0.0221 ^{NS}	-0.4388**	0.3931*	1**	0.3784*	0.2893 ^{NS}	-0.0614 ^{NS}	0.0036 ^{NS}	-0.0129 ^{NS}	0.1978 ^{NS}	-0.0118 ^{NS}
LL	0.1078 ^{NS}	-0.218 ^{NS}	0.1625 ^{NS}	0.3784*	1**	0.9502**	0.3318*	0.1989 ^{NS}	0.1761 ^{NS}	-0.0362 ^{NS}	-0.0655 ^{NS}
LW	0.061 ^{NS}	-0.183 ^{NS}	0.0203 ^{NS}	0.2893 ^{NS}	0.9502**	1**	0.2578 ^{NS}	0.0764 ^{NS}	0.0815 ^{NS}	0.075NS	0.1088 ^{NS}
PTL	-0.0837 ^{NS}	-0.1512 ^{NS}	0.1879 ^{NS}	-0.0614 ^{NS}	0.3318*	0.2578 ^{NS}	1**	-0.1128 ^{NS}	-0.1802 ^{NS}	-0.1048 ^{NS}	0.1351 ^{NS}
DFMF	0.8624**	0.1527 ^{NS}	0.1018 ^{NS}	0.0036 ^{NS}	0.1989 ^{NS}	0.0764 ^{NS}	-0.1128 ^{NS}	1**	0.9876**	-0.0103 ^{NS}	-0.1181 ^{NS}
DFFF	0.8342**	0.2227 ^{NS}	0.0559 ^{NS}	-0.0129 ^{NS}	0.1761 ^{NS}	0.0815 ^{NS}	-0.1802 ^{NS}	0.9876**	1**	-0.0147 ^{NS}	-0.1381 ^{NS}
NFMF	0.2046 ^{NS}	-0.3321*	0.0598 ^{NS}	0.1978 ^{NS}	-0.0362 ^{NS}	0.075 ^{NS}	-0.1048 ^{NS}	-0.0103 ^{NS}	-0.0147 ^{NS}	1**	0.8781**
NFFF	-0.0372 ^{NS}	-0.2246 ^{NS}	-0.1211 ^{NS}	-0.0118 ^{NS}	-0.0655 ^{NS}	0.1088 ^{NS}	0.1351 ^{NS}	-0.1181 ^{NS}	-0.1381 ^{NS}	0.8781**	1**
DFFH	0.8425**	0.2871 ^{NS}	-0.0446 ^{NS}	-0.2116 ^{NS}	0.0706 ^{NS}	-0.0158 ^{NS}	-0.1908 ^{NS}	0.945**	0.9492**	-0.0033 ^{NS}	-0.1007 ^{NS}
NFV	0.1362 ^{NS}	-0.0727 ^{NS}	0.0358 ^{NS}	0.0012 ^{NS}	0.1651 ^{NS}	0.0533 ^{NS}	0.1923 ^{NS}	0.2421 ^{NS}	0.2125 ^{NS}	-0.1815 ^{NS}	-0.0904 ^{NS}
FL	-0.2203 ^{NS}	-0.2285 ^{NS}	0.1361 ^{NS}	0.0312 ^{NS}	-0.3247*	-0.2859 ^{NS}	-0.0624 ^{NS}	-0.1419 ^{NS}	-0.1369 ^{NS}	-0.3174*	-0.2449 ^{NS}
FD	0.0118 ^{NS}	0.2934 ^{NS}	0.122 ^{NS}	-0.054 ^{NS}	-0.1035 ^{NS}	-0.3048 ^{NS}	-0.169 ^{NS}	0.1527 ^{NS}	0.1266 ^{NS}	-0.2654 ^{NS}	-0.4155**
PDL	0.3159*	-0.407**	0.7583**	0.4267**	0.1999 ^{NS}	0.1118 ^{NS}	0.2363 ^{NS}	0.192 ^{NS}	0.1248 ^{NS}	-0.0005 ^{NS}	-0.1078 ^{NS}
AFW	0.1713 ^{NS}	-0.0305 ^{NS}	-0.0491 ^{NS}	0.028 ^{NS}	-0.078 ^{NS}	-0.0778 ^{NS}	-0.2097 ^{NS}	0.2273 ^{NS}	0.2227 ^{NS}	0.0246 ^{NS}	0.1589 ^{NS}
NSF	-0.2717 ^{NS}	0.2937 ^{NS}	-0.2555 ^{NS}	-0.021 ^{NS}	-0.2073 ^{NS}	-0.1337 ^{NS}	-0.3159*	-0.2342 ^{NS}	-0.1874 ^{NS}	0.19 ^{NS}	0.3034 ^{NS}
SL	0.3347*	0.0783 ^{NS}	-0.1211 ^{NS}	0.0359 ^{NS}	0.0071 ^{NS}	-0.1235 ^{NS}	0.0536 ^{NS}	0.2671 ^{NS}	0.2377 ^{NS}	0.0322 ^{NS}	-0.0465 ^{NS}
WS	0.0823 ^{NS}	0.0528 ^{NS}	0.1875 ^{NS}	0.0382 ^{NS}	0.1036 ^{NS}	-0.1241 ^{NS}	0.0071 ^{NS}	0.1117 ^{NS}	0.1184 ^{NS}	0.0205 ^{NS}	-0.0292 ^{NS}
FYV	0.1523 ^{NS}	-0.0623 ^{NS}	0.0211 ^{NS}	0.013 ^{NS}	0.1264 ^{NS}	0.0336 ^{NS}	0.118 ^{NS}	0.2518 ^{NS}	0.2281 ^{NS}	-0.158 ^{NS}	-0.0577 ^{NS}
FYH	0.1523 ^{NS}	-0.0622 ^{NS}	0.0212 ^{NS}	0.0133 ^{NS}	0.1268 ^{NS}	0.0335 ^{NS}	0.1177 ^{NS}	0.252 ^{NS}	0.2284 ^{NS}	-0.1588 ^{NS}	-0.0592 ^{NS}

Signif. Codes: 0.001 '***', 0.01 '**', NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.2b: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.8425**	0.1362 ^{NS}	-0.2203 ^{NS}	0.0118 ^{NS}	0.3159*	0.1713 ^{NS}	-0.2717 ^{NS}	0.3347*	0.0823 ^{NS}	0.1523 ^{NS}	0.1523 ^{NS}
NPB	0.2871 ^{NS}	-0.0727 ^{NS}	-0.2285 ^{NS}	0.2934 ^{NS}	-0.407**	-0.0305 ^{NS}	0.2937 ^{NS}	0.0783 ^{NS}	0.0528 ^{NS}	-0.0623 ^{NS}	-0.0622 ^{NS}
VL	-0.0446 ^{NS}	0.0358 ^{NS}	0.1361 ^{NS}	0.122 ^{NS}	0.7583**	-0.0491 ^{NS}	-0.2555 ^{NS}	-0.1211 ^{NS}	0.1875 ^{NS}	0.0211 ^{NS}	0.0212 ^{NS}
SLI	-0.2116 ^{NS}	0.0012 ^{NS}	0.0312 ^{NS}	-0.054 ^{NS}	0.4267**	0.028 ^{NS}	-0.021 ^{NS}	0.0359 ^{NS}	0.0382 ^{NS}	0.013 ^{NS}	0.0133 ^{NS}
LL	0.0706 ^{NS}	0.1651 ^{NS}	-0.3247*	-0.1035 ^{NS}	0.1999 ^{NS}	-0.078 ^{NS}	-0.2073 ^{NS}	0.0071 ^{NS}	0.1036 ^{NS}	0.1264 ^{NS}	0.1268 ^{NS}
LW	-0.0158 ^{NS}	0.0533 ^{NS}	-0.2859 ^{NS}	-0.3048 ^{NS}	0.1118 ^{NS}	-0.0778 ^{NS}	-0.1337 ^{NS}	-0.1235 ^{NS}	-0.1241 ^{NS}	0.0336 ^{NS}	0.0335 ^{NS}
PTL	-0.1908 ^{NS}	0.1923 ^{NS}	-0.0624 ^{NS}	-0.169 ^{NS}	0.2363 ^{NS}	-0.2097 ^{NS}	-0.3159*	0.0536 ^{NS}	0.0071 ^{NS}	0.118 ^{NS}	0.1177 ^{NS}
DFMF	0.945**	0.2421 ^{NS}	-0.1419 ^{NS}	0.1527 ^{NS}	0.192 ^{NS}	0.2273 ^{NS}	-0.2342 ^{NS}	0.2671 ^{NS}	0.1117 ^{NS}	0.2518 ^{NS}	0.252 ^{NS}
DFFF	0.9492**	0.2125 ^{NS}	-0.1369 ^{NS}	0.1266 ^{NS}	0.1248 ^{NS}	0.2227 ^{NS}	-0.1874 ^{NS}	0.2377 ^{NS}	0.1184 ^{NS}	0.2281 ^{NS}	0.2284 ^{NS}
NFMF	-0.0033 ^{NS}	-0.1815 ^{NS}	-0.3174*	-0.2654 ^{NS}	-0.0005 ^{NS}	0.0246 ^{NS}	0.19 ^{NS}	0.0322 ^{NS}	0.0205 ^{NS}	-0.158 ^{NS}	-0.1588 ^{NS}
NFFF	-0.1007 ^{NS}	-0.0904 ^{NS}	-0.2449 ^{NS}	-0.4155**	-0.1078 ^{NS}	0.1589 ^{NS}	0.3034 ^{NS}	-0.0465 ^{NS}	-0.0292 ^{NS}	-0.0577 ^{NS}	-0.0592 ^{NS}
DFFH	1**	0.1887 ^{NS}	-0.1727 ^{NS}	0.1673 ^{NS}	-0.0246 ^{NS}	0.1935 ^{NS}	-0.1188 ^{NS}	0.3073 ^{NS}	0.0926 ^{NS}	0.2047 ^{NS}	0.205 ^{NS}
NFV	0.1887 ^{NS}	1**	0.0313 ^{NS}	0.1465 ^{NS}	0.1812 ^{NS}	0.5303**	-0.356*	-0.0082 ^{NS}	-0.0021 ^{NS}	0.9776**	0.9774**
FL	-0.1727 ^{NS}	0.0313 ^{NS}	1**	0.0029 ^{NS}	0.1588 ^{NS}	0.0955 ^{NS}	0.1401 ^{NS}	-0.0751 ^{NS}	-0.1784 ^{NS}	0.0536 ^{NS}	0.0543 ^{NS}
FD	0.1673 ^{NS}	0.1465 ^{NS}	0.0029 ^{NS}	1**	0.0164 ^{NS}	0.2629 ^{NS}	-0.0409 ^{NS}	-0.0783 ^{NS}	0.0403 ^{NS}	0.2062 ^{NS}	0.2069 ^{NS}
PDL	-0.0246 ^{NS}	0.1812 ^{NS}	0.1588 ^{NS}	0.0164 ^{NS}	1**	0.0121 ^{NS}	-0.2458 ^{NS}	-0.13 ^{NS}	0.0636 ^{NS}	0.1542 ^{NS}	0.1543 ^{NS}
AFW	0.1935 ^{NS}	0.5303**	0.0955 ^{NS}	0.2629 ^{NS}	0.0121 ^{NS}	1**	0.1425 ^{NS}	0.0214 ^{NS}	-0.2343 ^{NS}	0.6902**	0.6903**
NSF	-0.1188 ^{NS}	-0.356*	0.1401 ^{NS}	-0.0409 ^{NS}	-0.2458 ^{NS}	0.1425 ^{NS}	1**	-0.1046 ^{NS}	-0.1271 ^{NS}	-0.2739 ^{NS}	-0.2743 ^{NS}
SL	0.3073 ^{NS}	-0.0082 ^{NS}	-0.0751 ^{NS}	-0.0783 ^{NS}	-0.13 ^{NS}	0.0214 ^{NS}	-0.1046 ^{NS}	1**	0.1902 ^{NS}	0.009 ^{NS}	0.0094 ^{NS}
WS	0.0926 ^{NS}	-0.0021 ^{NS}	-0.1784 ^{NS}	0.0403 ^{NS}	0.0636 ^{NS}	-0.2343 ^{NS}	-0.1271 ^{NS}	0.1902 ^{NS}	1**	-0.0706 ^{NS}	-0.0709 ^{NS}
FYV	0.2047 ^{NS}	0.9776**	0.0536 ^{NS}	0.2062 ^{NS}	0.1542 ^{NS}	0.6902**	-0.2739 ^{NS}	0.009 ^{NS}	-0.0706 ^{NS}	1**	1**
FYH	0.205 ^{NS}	0.9774**	0.0543 ^{NS}	0.2069 ^{NS}	0.1543 ^{NS}	0.6903**	-0.2743 ^{NS}	0.0094 ^{NS}	-0.0709 ^{NS}	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

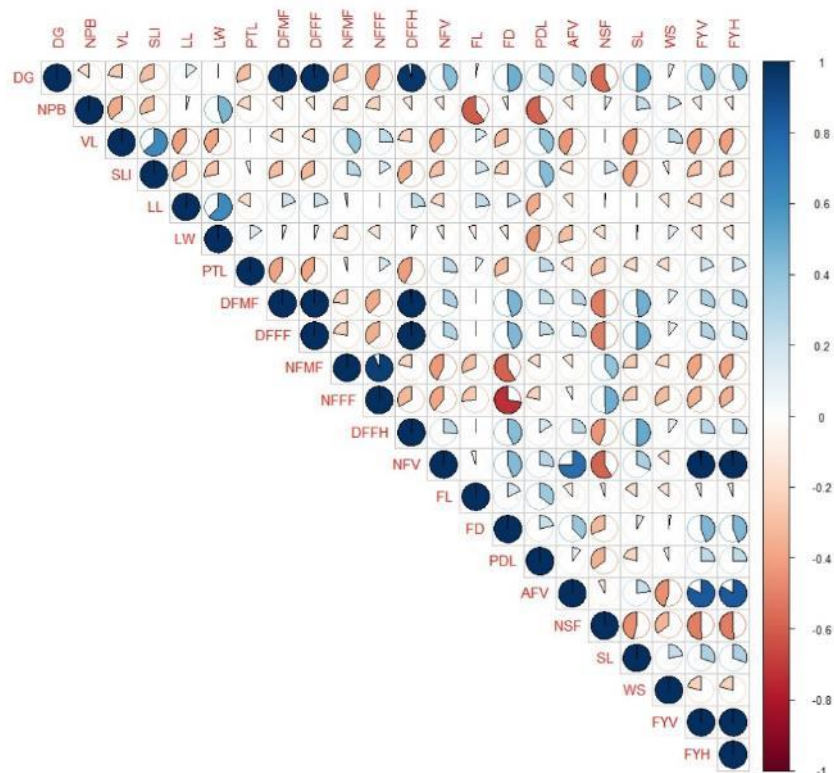


Fig. 4.5.1: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)

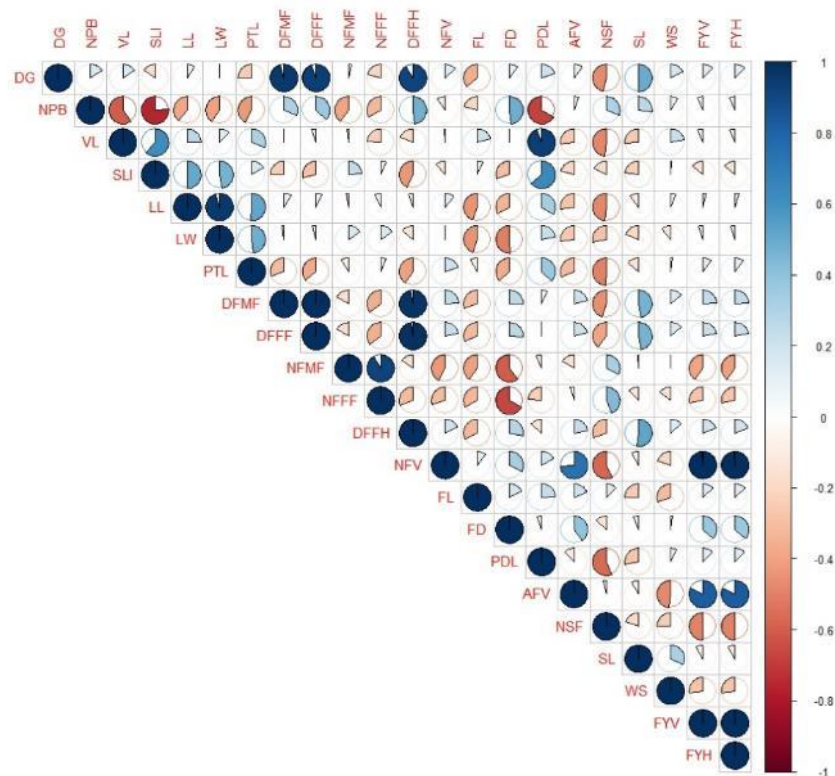


Fig. 4.5.2: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)

4.5.2 Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022 and 2023)

As data shown in Table 4.5.3a, 4.5.3b, 4.5.4a, 4.5.4b and Figure 4.5.3 and 4.5.4 indicated that the phenotypic correlation among fruit yield and yield contributing characters in the last week of February, 2022 and 2023 of ridge gourd, respectively. The phenotypic correlation values of various characters were mentioned below:

4.5.2.1 Days to 50% germination

Days to 50% germination had significant positive phenotypic correlation with days to first male flower opening (0.8285), days to first female flower opening (0.8329), days to first fruit harvest (0.7721), number of fruits per vine (0.2825), fruit diameter (0.2134), peduncle length (0.3028), average fruit weight (0.2171), fruit yield per vine (0.2951) and fruit yield per hectare (0.2944), while days to 50% germination had significant negative phenotypic correlation with number of seeds per fruit (-0.2508) in the last week of February in 2022. Whereas, in 2023 days to 50% germination had significant positive phenotypic correlation with vine length at final harvest (0.2081) days to first male flower opening (0.7381), days to first female flower opening (0.7243), days to first fruit harvest (0.7097), peduncle length (0.2579) and seed length (0.279), while days to 50% germination had significant negative phenotypic correlation with fruit length (-0.1802) and number of seed per fruit (-0.2277).

4.5.2.2 Number of primary branches per vine

In the year in last week of February, 2022, number of primary branches per vine had significant positive phenotypic correlation with leaf width (0.1997), while highly significant and negatively correlated with fruit length (-0.4125) and peduncle length (-0.2279). Whereas, number of primary branches per vine had significant positive phenotypic correlation with days to first fruit harvest (0.2428) and fruit diameter (0.2185), while significant negative correlation with vine length at final harvest (-0.2218), stem length of internodes (-0.347), nodes to first male flower (-0.2008), nodes to first female flower (-0.1806) and peduncle length (-0.3084).

4.5.2.3 Vine length at final harvest

In the last week of February in 2022, vine length at final harvest had significant positive phenotypic correlation with stem length of internodes (0.2685), nodes to first male flower (0.203) and peduncle length (0.2035), while significant positive phenotypic correlation with stem length of internodes (0.3416) and peduncle length (0.6793), while significant negative phenotypic correlation observed for the trait number of seeds per fruit (-0.2509) in the year 2023.

4.5.2.4 Stem length of internodes

In the last week of February (2022), stem length of internodes had significant positive phenotypic correlation with peduncle length (0.3103). Whereas, in 2023 stem length of internodes had significant positive phenotypic correlation with leaf length (0.3098), leaf width

(0.2089), nodes to first male flower (0.1879) and peduncle length (0.4142), while significant negative phenotypic correlation with days to first fruit harvest (-1905).

4.5.2.5 Leaf length

Leaf length highly significant and positively correlated with leaf width (0.31) and fruit length (0.2169) in the last week of February, 2022. Whereas, in 2023 leaf length had significant and positive phenotypic correlation with leaf width (0.6781) and petiole length (0.2695), while significant negative phenotypic correlation with fruit length (-0.2238).

4.5.2.6 Leaf width

In the year 2022 in the last week of February, leaf width had non-significant phenotypic correlation with petiole length, days to first male flower opening, days to first female flower opening, nodes to first male flower, nodes to first female flower, days to first fruit harvest, number of fruits per vine, fruit length, fruit diameter, peduncle length, average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare. Whereas, in 2023 leaf width highly significant and positively correlated with petiole length (0.2439), while significant negative phenotypic correlation with fruit length (-0.2622) and fruit diameter (-0.2673).

4.5.2.7 Petiole length

In the last week of February in 2022 and 2023, petiole length highly significant and positively correlated with number of fruit per vine (0.2266 and 0.1892) and peduncle length (0.1935 and 0.1984), respectively. In the year 2022, significant phenotypic negative correlation with days to first fruit harvest (-0.2016), and number of seeds per fruit (-0.2392), while in 2023 days to first fruit harvest (-0.1833), average fruit weight (-0.1914) and number of seeds per fruit (-0.2814).

4.5.2.8 Days to first male flower opening

Days to first male flower opening was highly significant and positively correlated with days to first female flower opening (0.9712), days to first fruit harvest (0.9423), number of fruits per vine (0.2238), fruit diameter (0.2254), peduncle length (0.221), average fruit weight (0.1942), fruit yield per vine (0.2357) and fruit yield per hectare (0.2348) in the last week of February in the years 2022 and in 2023, days to first female flower opening (0.9434), days to first fruit harvest (0.8891), number of fruits per vine (0.2256), average fruit weight (0.1878), seed length (0.2153), fruit yield per vine (0.234) and fruit yield per hectare (0.2344). Whereas, significant phenotypic negative correlation with number of seeds per fruit (-0.2267 and -0.2204) in 2022 and 2023, respectively.

4.5.2.9 Days to first female flower opening

In the last week of February (2022), days to first female flower opening was highly significant and positively correlated with days to first fruit harvest (0.9452), number of fruits per vine (0.2165), fruit diameter (0.241), peduncle length (0.1987), seed length (0.2136) fruit

yield per vine (0.2242) and fruit yield per hectare (0.2234), while significant phenotypic negative correlation with number of seeds per fruit (-0.2155). Whereas, in 2023 the days to first female flower opening had significant positive phenotypic correlation with days to first fruit harvest (0.921), number of fruits per vine (0.197), average fruit weight (0.1877), seed length (0.2115) fruit yield per vine (0.2134) and fruit yield per hectare (0.2138).

4.5.2.10 Nodes to first male flower

In the last week of February in 2022, nodes to first male flower was highly significant and positively correlated with nodes to first female flower (0.7303), while significant phenotypic negative correlation with fruit diameter (-0.2217). Whereas, in 2023 nodes to first male flower had significant and positive phenotypic correlation with nodes to first female flower (0.7412), while nodes to first male flower had significant negative phenotypic correlation with fruit length (-0.2505) and fruit diameter (-0.2368).

4.5.2.11 Nodes to first female flower

Nodes to first female flower had significant positive phenotypic correlation with number of seeds per fruit (0.2479 and 0.2864) in the last week of February in 2022 and 2023, respectively. Whereas, nodes to first female flower had significant negative phenotypic correlation with fruit diameter (-0.3943) in 2022 in the last week of February, while fruit length (-0.1911) and fruit diameter (-0.3562), in 2023.

4.5.2.12 Days to first fruit harvest

Days to first fruit harvest had significant positive phenotypic correlation with number of fruits per vine (0.1888 and 0.1795), seed length (0.2087 and 0.2644), fruit yield per vine (0.1998 and 0.1932) and fruit yield per hectare (0.1979 and 0.1935) in the last week of February in 2022 and 2023, respectively. Except days to first fruit harvest had significant positive phenotypic correlation with fruit diameter (0.1961) in 2022.

4.5.2.13 Number of fruits per vine

In the last week of February in 2022 and 2023, number of fruits per vine had significant positive phenotypic correlation with average fruit weight (0.4117 and 0.4053), fruit yield per vine (0.9565 and 0.9601) and fruit yield per hectare (0.9564 and 0.96), respectively. Whereas, number of fruits per vine had significant negative phenotypic correlation with number of seed per fruit (-0.3075 and -0.3204) in the years 2022 and 2023, respectively.

4.5.2.14 Fruit length

Fruit length had non-significant phenotypic correlation with fruit diameter, peduncle length, average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare in the last week of February in 2022 and 2023, respectively.

4.5.2.15 Fruit diameter

In the last week of February in 2022, Fruit diameter had significant positive phenotypic correlation with fruit yield per vine (0.2103) and fruit yield per hectare (0.2104), while in 2023, fruit diameter reported no significant phenotypic correlation.

4.5.2.16 Peduncle length

Peduncle length had non-significant phenotypic correlation with average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare in the last week of February in 2022. Whereas, peduncle length had significant negative phenotypic correlation with number of seeds per fruit (-0.2323) in 2023.

4.5.2.17 Average fruit weight

Average fruit weight had significant positive phenotypic correlation with fruit yield per vine (0.6448 and 0.6311) and fruit yield per hectare (0.6452 and 0.6312) in the last week of February in 2022 and 2023, respectively.

4.5.2.18 Number of seeds per fruit

Number of seeds per fruit had had significant negative phenotypic correlation with seed length (-0.1865), weight of 100 seeds (-0.1809), fruit yield per vine (-0.2201) and fruit yield per hectare (0.2194) in the last week of February in 2022 and in 2023, fruit yield per vine (-0.2526) and fruit yield per hectare (-0.2533).

4.5.2.19 Seed length

In the last week of February in 2022 and 2023, seed length had non-significant phenotypic correlation with weight of 100 seeds, fruit yield per vine and fruit yield per hectare, respectively.

4.5.2.20 Weight of 100 seeds

Weight of 100 seeds had non-significant phenotypic correlation with fruit yield per vine and fruit yield per hectare in the last week of February in 2022 and 2023, respectively.

4.5.2.21 Fruit yield per vine

Fruit yield per vine had significant positive phenotypic correlation with fruit yield per hectare (1.00 and 1.00) in both the year of study in the last week of February.

Table 4.5.3a: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.0421 ^{NS}	-0.0011 ^{NS}	-0.0185 ^{NS}	0.1019 ^{NS}	0.0789 ^{NS}	-0.0978 ^{NS}	0.8285**	0.8329**	-0.0466 ^{NS}	-0.1476 ^{NS}
NPB	-0.0421 ^{NS}	1**	-0.1313 ^{NS}	-0.0679 ^{NS}	-0.0307 ^{NS}	0.1997*	-0.1107 ^{NS}	-0.0685 ^{NS}	-0.0443 ^{NS}	-0.1173 ^{NS}	-0.1689 ^{NS}
VL	-0.0011 ^{NS}	-0.1313 ^{NS}	1**	0.2685**	-0.1422 ^{NS}	-0.0794 ^{NS}	-0.0161 ^{NS}	0.0053 ^{NS}	-0.0003 ^{NS}	0.203*	0.0917 ^{NS}
SLI	-0.0185 ^{NS}	-0.0679 ^{NS}	0.2685**	1**	-0.0875 ^{NS}	0.0225 ^{NS}	-0.0684 ^{NS}	-0.0456 ^{NS}	-0.0395 ^{NS}	0.1603 ^{NS}	0.041 ^{NS}
LL	0.1019 ^{NS}	-0.0307 ^{NS}	-0.1422 ^{NS}	-0.0875 ^{NS}	1**	0.31**	-0.0614 ^{NS}	0.1464 ^{NS}	0.1661 ^{NS}	0.0879 ^{NS}	0.0922 ^{NS}
LW	0.0789 ^{NS}	0.1997*	-0.0794 ^{NS}	0.0225 ^{NS}	0.31**	1**	0.17 ^{NS}	0.1042 ^{NS}	0.109 ^{NS}	-0.0778 ^{NS}	0.0042 ^{NS}
PTL	-0.0978 ^{NS}	-0.1107 ^{NS}	-0.0161 ^{NS}	-0.0684 ^{NS}	-0.0614 ^{NS}	0.17 ^{NS}	1**	-0.1778 ^{NS}	-0.1647 ^{NS}	-0.0266 ^{NS}	0.1659 ^{NS}
DFMF	0.8285**	-0.0685 ^{NS}	0.0053 ^{NS}	-0.0456 ^{NS}	0.1464 ^{NS}	0.1042 ^{NS}	-0.1778 ^{NS}	1**	0.9712**	0.0092 ^{NS}	-0.0892 ^{NS}
DFFF	0.8329**	-0.0443 ^{NS}	-0.0003 ^{NS}	-0.0395 ^{NS}	0.1661 ^{NS}	0.109 ^{NS}	-0.1647 ^{NS}	0.9712**	1**	0.0454 ^{NS}	-0.0635 ^{NS}
NFMF	-0.0466 ^{NS}	-0.1173 ^{NS}	0.203*	0.1603 ^{NS}	0.0879 ^{NS}	-0.0778 ^{NS}	-0.0266 ^{NS}	0.0092 ^{NS}	0.0454 ^{NS}	1**	0.7303**
NFFF	-0.1476 ^{NS}	-0.1689 ^{NS}	0.0917 ^{NS}	0.041 ^{NS}	0.0922 ^{NS}	0.0042 ^{NS}	0.1659 ^{NS}	-0.0892 ^{NS}	-0.0635 ^{NS}	0.7303**	1**
DFFH	0.7721**	-0.0673 ^{NS}	-0.0232 ^{NS}	-0.1458 ^{NS}	0.1741 ^{NS}	0.0911 ^{NS}	-0.2016*	0.9423**	0.9452**	0.0256 ^{NS}	-0.0528 ^{NS}
NFV	0.2825**	-0.0398 ^{NS}	-0.0748 ^{NS}	-0.0507 ^{NS}	-0.0261 ^{NS}	0.0071 ^{NS}	0.2266*	0.2238*	0.2165*	-0.1218 ^{NS}	-0.1094 ^{NS}
FL	0.0382 ^{NS}	-0.3261**	0.1119 ^{NS}	0.1082 ^{NS}	0.2169*	0.0046 ^{NS}	0.0535 ^{NS}	0.0239 ^{NS}	0.0253 ^{NS}	-0.1714 ^{NS}	-0.1362 ^{NS}
FD	0.2134*	-0.044 ^{NS}	-0.08 ^{NS}	-0.0731 ^{NS}	0.1511 ^{NS}	-0.0507 ^{NS}	-0.1363 ^{NS}	0.2254*	0.241**	-0.2217*	-0.3943**
PDL	0.3008**	-0.2279*	0.2035*	0.3103**	-0.0915 ^{NS}	-0.1442 ^{NS}	0.1935*	0.221*	0.1987*	-0.042 ^{NS}	-0.0411 ^{NS}
AFW	0.2171*	-0.0146 ^{NS}	-0.0651 ^{NS}	0.0157 ^{NS}	0.0039 ^{NS}	-0.0772 ^{NS}	-0.1381 ^{NS}	0.1942*	0.1773 ^{NS}	0.0455 ^{NS}	0.0743 ^{NS}
NSF	-0.2508**	0.0476 ^{NS}	-0.0791 ^{NS}	0.0609 ^{NS}	0.0119 ^{NS}	-0.0383 ^{NS}	-0.2392**	-0.2267*	-0.2155*	0.1209 ^{NS}	0.2479**
SL	0.1748 ^{NS}	0.1308 ^{NS}	-0.1312 ^{NS}	-0.0418 ^{NS}	0.0122 ^{NS}	0.0119 ^{NS}	-0.0383 ^{NS}	0.1711 ^{NS}	0.2136*	-0.0399 ^{NS}	0.0145 ^{NS}
WS	0.0697 ^{NS}	0.027 ^{NS}	0.1221 ^{NS}	-0.0484 ^{NS}	0 ^{NS}	0.1381 ^{NS}	-0.0603 ^{NS}	0.0695 ^{NS}	0.072 ^{NS}	-0.0364 ^{NS}	-0.1291 ^{NS}
FYV	0.2951**	-0.0234 ^{NS}	-0.0716 ^{NS}	-0.0279 ^{NS}	-0.0272 ^{NS}	-0.0066 ^{NS}	0.155 ^{NS}	0.2357**	0.2242*	-0.0947 ^{NS}	-0.0939 ^{NS}
FYH	0.2944**	-0.0232 ^{NS}	-0.0715 ^{NS}	-0.0281 ^{NS}	-0.0272 ^{NS}	-0.0072 ^{NS}	0.155 ^{NS}	0.2348**	0.2234*	-0.0948 ^{NS}	-0.094 ^{NS}

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.3b: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.7721**	0.2825**	0.0382 ^{NS}	0.2134*	0.3008**	0.2171*	-0.2508**	0.1748 ^{NS}	0.0697 ^{NS}	0.2951**	0.2944**
NPB	-0.0673 ^{NS}	-0.0398 ^{NS}	-0.3261**	-0.044 ^{NS}	-0.2279*	-0.0146 ^{NS}	0.0476 ^{NS}	0.1308 ^{NS}	0.027 ^{NS}	-0.0234 ^{NS}	-0.0232 ^{NS}
VL	-0.0232 ^{NS}	-0.0748 ^{NS}	0.1119 ^{NS}	-0.08 ^{NS}	0.2035*	-0.0651 ^{NS}	-0.0791 ^{NS}	-0.1312 ^{NS}	0.1221 ^{NS}	-0.0716 ^{NS}	-0.0715 ^{NS}
SLI	-0.1458 ^{NS}	-0.0507 ^{NS}	0.1082 ^{NS}	-0.0731 ^{NS}	0.3103**	0.0157 ^{NS}	0.0609 ^{NS}	-0.0418 ^{NS}	-0.0484 ^{NS}	-0.0279 ^{NS}	-0.0281 ^{NS}
LL	0.1741 ^{NS}	-0.0261 ^{NS}	0.2169*	0.1511 ^{NS}	-0.0915 ^{NS}	0.0039 ^{NS}	0.0119 ^{NS}	0.0122 ^{NS}	0.0000 ^{NS}	-0.0272 ^{NS}	-0.0272 ^{NS}
LW	0.0911 ^{NS}	0.0071 ^{NS}	0.0046 ^{NS}	-0.0507 ^{NS}	-0.1442 ^{NS}	-0.0772 ^{NS}	-0.0383 ^{NS}	0.0119 ^{NS}	0.1381 ^{NS}	-0.0066 ^{NS}	-0.0072 ^{NS}
PTL	-0.2016*	0.2266*	0.0535 ^{NS}	-0.1363 ^{NS}	0.1935*	-0.1381 ^{NS}	-0.2392**	-0.0383 ^{NS}	-0.0603 ^{NS}	0.155 ^{NS}	0.155 ^{NS}
DFMF	0.9423**	0.2238*	0.0239 ^{NS}	0.2254*	0.221*	0.1942*	-0.2267*	0.1711 ^{NS}	0.0695 ^{NS}	0.2357**	0.2348**
DFFF	0.9452**	0.2165*	0.0253 ^{NS}	0.241**	0.1987*	0.1773 ^{NS}	-0.2155*	0.2136*	0.072 ^{NS}	0.2242*	0.2234*
NFMF	0.0256 ^{NS}	-0.1218 ^{NS}	-0.1714 ^{NS}	-0.2217*	-0.042 ^{NS}	0.0455 ^{NS}	0.1209 ^{NS}	-0.0399 ^{NS}	-0.0364 ^{NS}	-0.0947 ^{NS}	-0.0948 ^{NS}
NFFF	-0.0528 ^{NS}	-0.1094 ^{NS}	-0.1362 ^{NS}	-0.3943**	-0.0411 ^{NS}	0.0743 ^{NS}	0.2479**	0.0145 ^{NS}	-0.1291 ^{NS}	-0.0939 ^{NS}	-0.094 ^{NS}
DFFH	1**	0.1888*	0.0044 ^{NS}	0.1961*	0.1194 ^{NS}	0.1594 ^{NS}	-0.1209 ^{NS}	0.2087*	0.0583 ^{NS}	0.1988*	0.1979*
NFV	0.1888*	1**	0.0099 ^{NS}	0.1875*	0.1742 ^{NS}	0.4117**	-0.3075**	0.0999 ^{NS}	-0.0045 ^{NS}	0.9565**	0.9564**
FL	0.0044 ^{NS}	0.0099 ^{NS}	1**	0.0382 ^{NS}	0.1656 ^{NS}	-0.0271 ^{NS}	0.0641 ^{NS}	-0.0271 ^{NS}	-0.0852 ^{NS}	0.0104 ^{NS}	0.0102 ^{NS}
FD	0.1961*	0.1875*	0.0382 ^{NS}	1**	0.0949 ^{NS}	0.1647 ^{NS}	-0.0809 ^{NS}	-0.0507 ^{NS}	0.053 ^{NS}	0.2103*	0.2104*
PDL	0.1194 ^{NS}	0.1742 ^{NS}	0.1656 ^{NS}	0.0949 ^{NS}	1**	0.0667 ^{NS}	-0.1086 ^{NS}	-0.1158 ^{NS}	0.0095 ^{NS}	0.1646 ^{NS}	0.1647 ^{NS}
AFW	0.1594 ^{NS}	0.4117**	-0.0271 ^{NS}	0.1647 ^{NS}	0.0667 ^{NS}	1**	0.1305 ^{NS}	0.0878 ^{NS}	-0.1642 ^{NS}	0.6448**	0.6452**
NSF	-0.1209 ^{NS}	-0.3075**	0.0641 ^{NS}	-0.0809 ^{NS}	-0.1086 ^{NS}	0.1305 ^{NS}	1**	-0.1865*	-0.1809*	-0.2201*	-0.2194*
SL	0.2087*	0.0999 ^{NS}	-0.0271 ^{NS}	-0.0507 ^{NS}	-0.1158 ^{NS}	0.0878 ^{NS}	-0.1865*	1**	0.0964 ^{NS}	0.1104 ^{NS}	0.1097 ^{NS}
WS	0.0583 ^{NS}	-0.0045 ^{NS}	-0.0852 ^{NS}	0.053 ^{NS}	0.0095 ^{NS}	-0.1642 ^{NS}	-0.1809*	0.0964 ^{NS}	1**	-0.0752 ^{NS}	-0.0751 ^{NS}
FYV	0.1988*	0.9565**	0.0104 ^{NS}	0.2103*	0.1646 ^{NS}	0.6448**	-0.2201*	0.1104 ^{NS}	-0.0752 ^{NS}	1**	1**
FYH	0.1979*	0.9564**	0.0102 ^{NS}	0.2104*	0.1647 ^{NS}	0.6452**	-0.2194*	0.1097 ^{NS}	-0.0751 ^{NS}	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.4a: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.0191 ^{NS}	0.2081*	-0.0108 ^{NS}	0.0904 ^{NS}	0.06 ^{NS}	-0.049 ^{NS}	0.7381**	0.7243**	0.149 ^{NS}	0.0294 ^{NS}
NPB	-0.0191 ^{NS}	1**	-0.2218*	-0.347**	-0.1736 ^{NS}	-0.1544 ^{NS}	-0.1517 ^{NS}	0.1148 ^{NS}	0.1774 ^{NS}	-0.2008*	-0.1806*
VL	0.2081*	-0.2218*	1**	0.3416**	0.1229 ^{NS}	0.0265 ^{NS}	0.1585 ^{NS}	0.0876 ^{NS}	0.0494 ^{NS}	0.072 ^{NS}	-0.1254 ^{NS}
SLI	-0.0108 ^{NS}	-0.347**	0.3416**	1**	0.3098**	0.2089*	-0.0538 ^{NS}	-0.0086 ^{NS}	-0.0206 ^{NS}	0.1879*	-0.0145 ^{NS}
LL	0.0904 ^{NS}	-0.1736 ^{NS}	0.1229 ^{NS}	0.3098**	1**	0.6781**	0.2695**	0.1452 ^{NS}	0.1478 ^{NS}	-0.0275 ^{NS}	-0.0169 ^{NS}
LW	0.06 ^{NS}	-0.1544 ^{NS}	0.0265 ^{NS}	0.2089*	0.6781**	1**	0.2439**	0.0831 ^{NS}	0.0732 ^{NS}	0.062 ^{NS}	0.0787 ^{NS}
PTL	-0.049 ^{NS}	-0.1517 ^{NS}	0.1585 ^{NS}	-0.0538 ^{NS}	0.2695**	0.2439**	1**	-0.1121 ^{NS}	-0.1713 ^{NS}	-0.096 ^{NS}	0.1489 ^{NS}
DFMF	0.7381**	0.1148 ^{NS}	0.0876 ^{NS}	-0.0086 ^{NS}	0.1452 ^{NS}	0.0831 ^{NS}	-0.1121 ^{NS}	1**	0.9434**	-0.0271 ^{NS}	-0.1175 ^{NS}
DFFF	0.7243**	0.1774 ^{NS}	0.0494 ^{NS}	-0.0206 ^{NS}	0.1478 ^{NS}	0.0732 ^{NS}	-0.1713 ^{NS}	0.9434**	1**	-0.0084 ^{NS}	-0.1151 ^{NS}
NFMF	0.149 ^{NS}	-0.2008*	0.072 ^{NS}	0.1879*	-0.0275 ^{NS}	0.062 ^{NS}	-0.096 ^{NS}	-0.0271 ^{NS}	-0.0084 ^{NS}	1**	0.7412**
NFFF	0.0294 ^{NS}	-0.1806*	-0.1254 ^{NS}	-0.0145 ^{NS}	-0.0169 ^{NS}	0.0787 ^{NS}	0.1489 ^{NS}	-0.1175 ^{NS}	-0.1151 ^{NS}	0.7412**	1**
DFFH	0.7097**	0.2428**	-0.0408 ^{NS}	-0.1905*	0.0451 ^{NS}	-0.0264 ^{NS}	-0.1833*	0.8891**	0.921**	0.0017 ^{NS}	-0.0826 ^{NS}
NFV	0.0884 ^{NS}	-0.0674 ^{NS}	0.0214 ^{NS}	-0.0103 ^{NS}	0.108 ^{NS}	0.0532 ^{NS}	0.1892*	0.2256*	0.197*	-0.1525 ^{NS}	-0.0764 ^{NS}
FL	-0.1802*	-0.0939 ^{NS}	0.1468 ^{NS}	0.0343 ^{NS}	-0.2238*	-0.2622**	-0.0502 ^{NS}	-0.1425 ^{NS}	-0.1201 ^{NS}	-0.2505**	-0.1911*
FD	0.024 ^{NS}	0.2185*	0.1043 ^{NS}	-0.0661 ^{NS}	-0.1034 ^{NS}	-0.2673**	-0.1619 ^{NS}	0.1425 ^{NS}	0.1197 ^{NS}	-0.2368**	-0.3562**
PDL	0.2579**	-0.3084**	0.6793**	0.4142**	0.165 ^{NS}	0.0801 ^{NS}	0.1984*	0.1689 ^{NS}	0.1227 ^{NS}	0.0005 ^{NS}	-0.0996 ^{NS}
AFW	0.1304 ^{NS}	0.0364 ^{NS}	-0.0405 ^{NS}	0.0328 ^{NS}	-0.058 ^{NS}	-0.0429 ^{NS}	-0.1914*	0.1878*	0.1877*	0.0325 ^{NS}	0.1026 ^{NS}
NSF	-0.2277*	0.1793 ^{NS}	-0.2509**	-0.0278 ^{NS}	-0.1623 ^{NS}	-0.1042 ^{NS}	-0.2814**	-0.2204*	-0.1771 ^{NS}	0.1683 ^{NS}	0.2864**
SL	0.279**	0.0913 ^{NS}	-0.1024 ^{NS}	0.0554 ^{NS}	0.0165 ^{NS}	-0.095 ^{NS}	0.0428 ^{NS}	0.2153*	0.2115*	0.0585 ^{NS}	-0.0252 ^{NS}
WS	0.0714 ^{NS}	0.0186 ^{NS}	0.1463 ^{NS}	0.0294 ^{NS}	0.0285 ^{NS}	-0.1385 ^{NS}	0.0092 ^{NS}	0.072 ^{NS}	0.1046 ^{NS}	-0.0086 ^{NS}	0.0056 ^{NS}
FYV	0.1143 ^{NS}	-0.0421 ^{NS}	0.0063 ^{NS}	0.0045 ^{NS}	0.0868 ^{NS}	0.039 ^{NS}	0.1134 ^{NS}	0.234*	0.2134*	-0.1271 ^{NS}	-0.0532 ^{NS}
FYH	0.1146 ^{NS}	-0.0417 ^{NS}	0.0068 ^{NS}	0.0046 ^{NS}	0.0873 ^{NS}	0.0389 ^{NS}	0.113 ^{NS}	0.2344**	0.2138*	-0.1278 ^{NS}	-0.0542 ^{NS}

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.4b: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.7097**	0.0884 ^{NS}	-0.1802*	0.024 ^{NS}	0.2579**	0.1304 ^{NS}	-0.2277*	0.279**	0.0714 ^{NS}	0.1143 ^{NS}	0.1146 ^{NS}
NPB	0.2428**	-0.0674 ^{NS}	-0.0939 ^{NS}	0.2185*	-0.3084**	0.0364 ^{NS}	0.1793 ^{NS}	0.0913 ^{NS}	0.0186 ^{NS}	-0.0421 ^{NS}	-0.0417 ^{NS}
VL	-0.0408 ^{NS}	0.0214 ^{NS}	0.1468 ^{NS}	0.1043 ^{NS}	0.6793**	-0.0405 ^{NS}	-0.2509**	-0.1024 ^{NS}	0.1463 ^{NS}	0.0063 ^{NS}	0.0068 ^{NS}
SLI	-0.1905*	-0.0103 ^{NS}	0.0343 ^{NS}	-0.0661 ^{NS}	0.4142**	0.0328 ^{NS}	-0.0278 ^{NS}	0.0554 ^{NS}	0.0294 ^{NS}	0.0045 ^{NS}	0.0046 ^{NS}
LL	0.0451 ^{NS}	0.108 ^{NS}	-0.2238*	-0.1034 ^{NS}	0.165 ^{NS}	-0.058 ^{NS}	-0.1623 ^{NS}	0.0165 ^{NS}	0.0285 ^{NS}	0.0868 ^{NS}	0.0873 ^{NS}
LW	-0.0264 ^{NS}	0.0532 ^{NS}	-0.2622**	-0.2673**	0.0801 ^{NS}	-0.0429 ^{NS}	-0.1042 ^{NS}	-0.095 ^{NS}	-0.1385 ^{NS}	0.039 ^{NS}	0.0389 ^{NS}
PTL	-0.1833*	0.1892*	-0.0502 ^{NS}	-0.1619 ^{NS}	0.1984*	-0.1914*	-0.2814**	0.0428 ^{NS}	0.0092 ^{NS}	0.1134 ^{NS}	0.113 ^{NS}
DFMF	0.8891**	0.2256*	-0.1425 ^{NS}	0.1425 ^{NS}	0.1689 ^{NS}	0.1878*	-0.2204*	0.2153*	0.072 ^{NS}	0.234*	0.2344**
DFFF	0.921**	0.197*	-0.1201 ^{NS}	0.1197 ^{NS}	0.1227 ^{NS}	0.1877*	-0.1771 ^{NS}	0.2115*	0.1046 ^{NS}	0.2134*	0.2138*
NFMF	0.0017 ^{NS}	-0.1525 ^{NS}	-0.2505**	-0.2368**	0.0005 ^{NS}	0.0325 ^{NS}	0.1683 ^{NS}	0.0585 ^{NS}	-0.0086 ^{NS}	-0.1271 ^{NS}	-0.1278 ^{NS}
NFFF	-0.0826 ^{NS}	-0.0764 ^{NS}	-0.1911*	-0.3562**	-0.0996 ^{NS}	0.1026 ^{NS}	0.2864**	-0.0252 ^{NS}	0.0056 ^{NS}	-0.0532 ^{NS}	-0.0542 ^{NS}
DFFH	1**	0.1795*	-0.1579 ^{NS}	0.1675 ^{NS}	-0.0223 ^{NS}	0.1573 ^{NS}	-0.1139 ^{NS}	0.2644**	0.0983 ^{NS}	0.1932*	0.1935*
NFV	0.1795*	1**	-0.0102 ^{NS}	0.1162 ^{NS}	0.1566 ^{NS}	0.4053**	-0.3204**	0.0012 ^{NS}	-0.0059 ^{NS}	0.9601**	0.96**
FL	-0.1579 ^{NS}	-0.0102 ^{NS}	1**	-0.0008 ^{NS}	0.1396 ^{NS}	0.0907 ^{NS}	0.0997 ^{NS}	-0.0656 ^{NS}	-0.1148 ^{NS}	0.0257 ^{NS}	0.0262 ^{NS}
FD	0.1675 ^{NS}	0.1162 ^{NS}	-0.0008 ^{NS}	1**	0.0102 ^{NS}	0.1768 ^{NS}	-0.0315 ^{NS}	-0.0715 ^{NS}	0.0257 ^{NS}	0.1629 ^{NS}	0.1636 ^{NS}
PDL	-0.0223 ^{NS}	0.1566 ^{NS}	0.1396 ^{NS}	0.0102 ^{NS}	1**	0.0084 ^{NS}	-0.2323*	-0.0804 ^{NS}	0.0566 ^{NS}	0.1305 ^{NS}	0.1305 ^{NS}
AFW	0.1573 ^{NS}	0.4053**	0.0907 ^{NS}	0.1768 ^{NS}	0.0084 ^{NS}	1**	0.0949 ^{NS}	0.0486 ^{NS}	-0.1478 ^{NS}	0.6311**	0.6312**
NSF	-0.1139 ^{NS}	-0.3204**	0.0997 ^{NS}	-0.0315 ^{NS}	-0.2323*	0.0949 ^{NS}	1**	-0.1074 ^{NS}	-0.1175 ^{NS}	-0.2526**	-0.2533**
SL	0.2644**	0.0012 ^{NS}	-0.0656 ^{NS}	-0.0715 ^{NS}	-0.0804 ^{NS}	0.0486 ^{NS}	-0.1074 ^{NS}	1**	0.1617 ^{NS}	0.0296 ^{NS}	0.0299 ^{NS}
WS	0.0983 ^{NS}	-0.0059 ^{NS}	-0.1148 ^{NS}	0.0257 ^{NS}	0.0566 ^{NS}	-0.1478 ^{NS}	-0.1175 ^{NS}	0.1617 ^{NS}	1**	-0.0583 ^{NS}	-0.0587 ^{NS}
FYV	0.1932*	0.9601**	0.0257 ^{NS}	0.1629 ^{NS}	0.1305 ^{NS}	0.6311**	-0.2526**	0.0296 ^{NS}	-0.0583 ^{NS}	1**	1**
FYH	0.1935*	0.96**	0.0262 ^{NS}	0.1636 ^{NS}	0.1305 ^{NS}	0.6312**	-0.2533**	0.0299 ^{NS}	-0.0587 ^{NS}	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

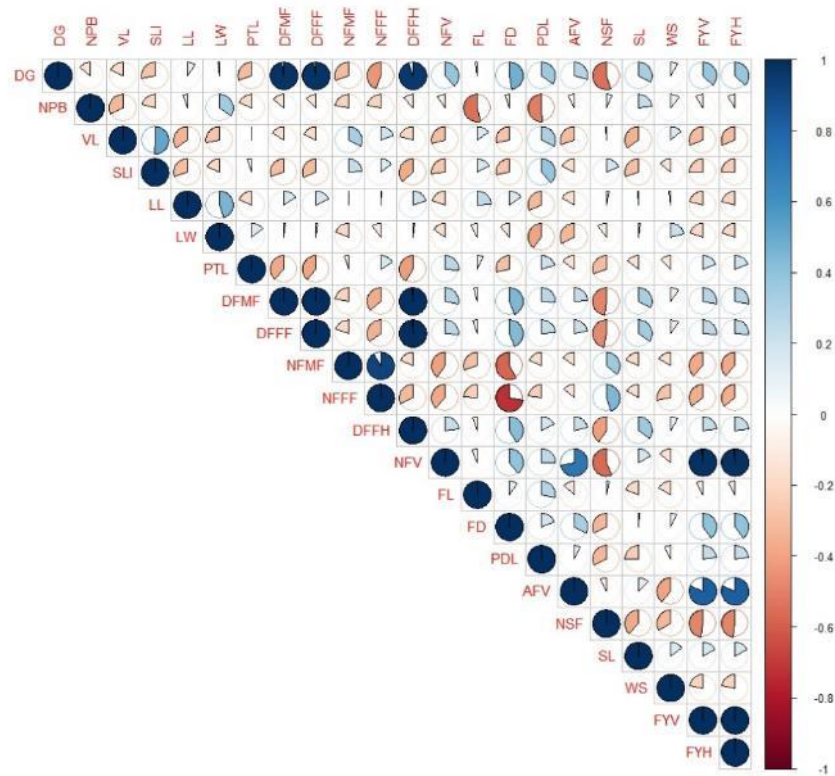


Fig. 4.5.3: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2022)

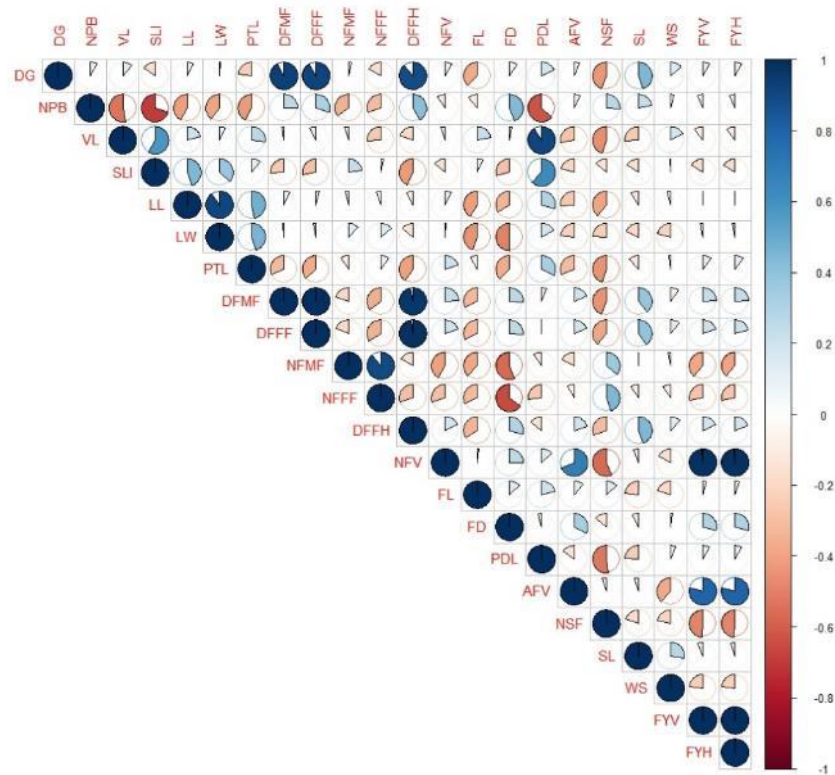


Fig. 4.5.4: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Last week of February, 2023)

4.5.3 Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022 and 2023)

The genotypic correlation co-efficients for the second week of March (2022 and 2023) are presented in Table 4.5.5a, 4.5.5b, 4.5.6a, 4.5.6b and Figure 4.5.5 and 4.5.6, respectively. The genotypic correlation of various traits under study are reported below.

4.5.3.1 Days to 50% germination

Days to 50% germination had significant positive genotypic correlation with days to first male flower opening (0.8208), days to first female flower opening (0.811), days to first fruit harvest (0.7742) and fruit diameter (0.03277), while significant negative genotypic correlation with number of primary branches (-0.4311) in the second week of March in 2022. Whereas, in 2023 days to 50% germination had significant positive genotypic correlation with days to first male flower opening (0.7406), days to first female flower opening (0.7399), days to first fruit harvest (0.7657) and seed length (0.3664), while significant negative genotypic correlation with fruit length (-0.3346).

4.5.3.2 Number of primary branches

Number of primary branches per vine had significant positive genotypic correlation with number of seed per fruit (0.3312 and 0.3472) in the years 2022 and 2023 in second week of March, respectively. Whereas, highly significant and negatively correlated with number of fruits per vine (-0.3802), average fruit weight (-0.3285), fruit yield per vine (-0.3946) and fruit yield per hectare (-0.394) in 2022 and in 2023, number of primary branches per vine had significant negative genotypic correlation with days to first male flower opening (-0.3732), number of fruits per vine (-0.4252), fruit yield per vine (-0.4233) and fruit yield per hectare (-0.4234).

4.5.3.3 Vine length at final harvest

In the years 2022 and 2023 in the second week of March, no significant genotypic correlation was reported for vine length at final harvest, respectively.

4.5.3.4 Stem length of internodes

Stem length of internodes had significant positive genotypic correlation with average fruit weight (0.3609 and 0.3331) in both the year of study in second week of March, respectively. Whereas, in 2022 stem length of internodes had significant negative genotypic correlation with leaf width (-0.3246) and peduncle length (-0.3249) and leaf width (-0.3131) in 2023.

4.5.3.5 Leaf length

Leaf length highly significant and positively correlated with leaf width (0.4715) in the second week of March, 2022. Whereas, in 2023 leaf length had significant and positive genotypic correlation with leaf width (0.9677) and petiole length (0.5274), fruit diameter (0.3759), average fruit weight (0.4338), fruit yield per vine (0.3625) and fruit yield per hectare (0.3442).

4.5.3.6 Leaf width

In the second week of March in 2022 and 2023, leaf width had significant positive genotypic correlation with petiole length (0.5165 and 0.5062), number of fruits per vine (0.3205 and 0.3395), fruit yield per vine (0.3236 and 0.3456) and fruit yield per hectare (0.3242 and 0.3442), respectively.

4.5.3.7 Petiole length

No significant genotypic correlation was reported for petiole length in the years 2022 and 2023 in the second week of March, respectively.

4.5.3.8 Days to first male flower opening

Days to first male flower opening was highly significant and positively correlated with days to first female flower opening (0.9985 and 0.9288) and days to first fruit harvest (0.9729 and 0.9089) in the second week of March (2022 and 2023), respectively.

4.5.3.9 Days to first female flower opening

In the second week of March in the years 2022 and 2023, days to first female flower opening was highly significant and positively correlated with days to first fruit harvest (0.9708 and 0.9459), respectively.

4.5.3.10 Nodes to first male flower

In the second week of March in 2022 and 2023, nodes to first male flower was highly significant and positively correlated with nodes to first female flower (0.8955 and 0.9221), respectively. Whereas, nodes to first male flower had significant negative genotypic correlation with peduncle length (-0.3274) in 2022 and fruit diameter (-0.3634) in 2023.

4.5.3.11 Nodes to first female flower

Nodes to first female flower had significant negative genotypic correlation with fruit diameter (-0.5224 and -0.4866) in both years of study in the second week of March, respectively.

4.5.3.12 Days to first fruit harvest

Days to first fruit harvest had significant positive genotypic correlation with seed length (-0.1795 and -0.1697) in the second week of March in 2022 and 2023, respectively.

4.5.3.13 Number of fruits per vine

In the second week of March in 2022 and 2023, number of fruits per vine had significant positive genotypic correlation with average fruit weight (0.5289 and 0.4733), fruit yield per vine (0.9806 and 0.9752) and fruit yield per hectare (0.9807 and 0.9753), respectively. Whereas, number of fruits per vine had significant negative genotypic correlation with number of seed per fruit (-0.3177 and -0.3392), respectively.

4.5.3.14 Fruit length

Fruit length had significant positive genotypic correlation with peduncle length (0.43) in the second week of March in 2022, while significant negative genotypic correlation with seed length (-0.3207) in 2023.

4.5.3.15 Fruit diameter

No significant genotypic correlation was observed for fruit diameter in the second week of March in 2022 and 2023, respectively.

4.5.3.16 Peduncle length

Peduncle length had non-significant genotypic correlation with average fruit weight, number of seeds per fruit, seed length, weight of 100 seeds, fruit yield per vine and fruit yield per hectare in the second week of March in 2022 and 2023, respectively.

4.5.3.17 Average fruit weight

In the second week of March in 2022 and 2023, average fruit weight had significant positive genotypic correlation with fruit yield per vine (0.7067 and 0.6483) and fruit yield per hectare (0.7066 and 0.648), respectively.

4.5.3.18 Number of seeds per fruit

No significant genotypic correlation was reported for number of seeds per fruit in the second week of March in 2022 and 2023, respectively.

4.5.3.19 Seed length

In the second week of March in 2022 and 2023, seed length had non-significant correlation with weight of 100 seeds, fruit yield per vine and fruit yield per hectare, respectively.

4.5.3.20 Weight of 100 seeds

Weight of 100 seeds had non-significant correlation with fruit yield per vine and fruit yield per hectare in the second week of March in 2022 and 2023, respectively.

4.5.3.21 Fruit yield per vine

Fruit yield per vine had significant positive genotypic correlation with fruit yield per hectare (1.00 and 1.00) in both the year of study in the second week of March.

Table 4.5.5a: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.4311**	0.0422 ^{NS}	0.0677 ^{NS}	0.0958 ^{NS}	0.0983 ^{NS}	0.1445 ^{NS}	0.8208**	0.811**	0.0059 ^{NS}	-0.131 ^{NS}
NPB	-0.4311**	1**	-0.1405 ^{NS}	-0.0829 ^{NS}	0.1702 ^{NS}	0.0122 ^{NS}	0.057 ^{NS}	-0.2918 ^{NS}	-0.2767 ^{NS}	-0.1191 ^{NS}	0.0475 ^{NS}
VL	0.0422 ^{NS}	-0.1405 ^{NS}	1**	-0.1023 ^{NS}	0.3034 ^{NS}	0.2915 ^{NS}	-0.0162 ^{NS}	0.0719 ^{NS}	0.0859 ^{NS}	0.1579 ^{NS}	0.1567 ^{NS}
SLI	0.0677 ^{NS}	-0.0829 ^{NS}	-0.1023 ^{NS}	1**	0.088 ^{NS}	-0.3246*	-0.1287 ^{NS}	0.1461 ^{NS}	0.1126 ^{NS}	0.0883 ^{NS}	-0.1195 ^{NS}
LL	0.0958 ^{NS}	0.1702 ^{NS}	0.3034 ^{NS}	0.088 ^{NS}	1**	0.4715**	0.1618 ^{NS}	0.2226 ^{NS}	0.2253 ^{NS}	0.2238 ^{NS}	0.1474 ^{NS}
LW	0.0983 ^{NS}	0.0122 ^{NS}	0.2915 ^{NS}	-0.3246*	0.4715**	1**	0.5165**	0.1459 ^{NS}	0.1888 ^{NS}	0.0522 ^{NS}	0.1492 ^{NS}
PTL	0.1445 ^{NS}	0.057 ^{NS}	-0.0162 ^{NS}	-0.1287 ^{NS}	0.1618 ^{NS}	0.5165**	1**	-0.0109 ^{NS}	0.0426 ^{NS}	-0.1209 ^{NS}	0.0606 ^{NS}
DFMF	0.8208**	-0.2918 ^{NS}	0.0719 ^{NS}	0.1461 ^{NS}	0.2226 ^{NS}	0.1459 ^{NS}	-0.0109 ^{NS}	1**	0.9985**	0.0687 ^{NS}	-0.1067 ^{NS}
DFFF	0.811**	-0.2767 ^{NS}	0.0859 ^{NS}	0.1126 ^{NS}	0.2253 ^{NS}	0.1888 ^{NS}	0.0426 ^{NS}	0.9985**	1**	0.0776 ^{NS}	-0.0897 ^{NS}
NFMF	0.0059 ^{NS}	-0.1191 ^{NS}	0.1579 ^{NS}	0.0883 ^{NS}	0.2238 ^{NS}	0.0522 ^{NS}	-0.1209 ^{NS}	0.0687 ^{NS}	0.0776 ^{NS}	1**	0.8955**
NFFF	-0.131 ^{NS}	0.0475 ^{NS}	0.1567 ^{NS}	-0.1195 ^{NS}	0.1474 ^{NS}	0.1492 ^{NS}	0.0606 ^{NS}	-0.1067 ^{NS}	-0.0897 ^{NS}	0.8955**	1**
DFFH	0.7742**	-0.2107 ^{NS}	0.1182 ^{NS}	0.0862 ^{NS}	0.268 ^{NS}	0.1054 ^{NS}	-0.0338 ^{NS}	0.9729**	0.9708**	0.0718 ^{NS}	-0.0795 ^{NS}
NFV	0.2917 ^{NS}	-0.3802*	0.233 ^{NS}	0.1084 ^{NS}	-0.0036 ^{NS}	0.3205*	0.2459 ^{NS}	0.2694 ^{NS}	0.2517 ^{NS}	-0.1891 ^{NS}	-0.1903 ^{NS}
FL	-0.2026 ^{NS}	0.1294 ^{NS}	-0.0266 ^{NS}	-0.0082 ^{NS}	0.2538 ^{NS}	-0.1383 ^{NS}	0.2095 ^{NS}	-0.1161 ^{NS}	-0.1498 ^{NS}	-0.1857 ^{NS}	-0.189 ^{NS}
FD	0.3277*	-0.2772 ^{NS}	-0.1506 ^{NS}	0.224 ^{NS}	0.2309 ^{NS}	0.1632 ^{NS}	0.1231 ^{NS}	0.2654 ^{NS}	0.2135 ^{NS}	-0.293 ^{NS}	-0.5224**
PDL	0.0355 ^{NS}	0.0567 ^{NS}	-0.066 ^{NS}	-0.3249*	0.033 ^{NS}	0.1435 ^{NS}	0.3004 ^{NS}	-0.1012 ^{NS}	-0.1054 ^{NS}	-0.3274*	-0.1911 ^{NS}
AFW	0.1606 ^{NS}	-0.3285*	-0.0175 ^{NS}	0.3609*	0.1033 ^{NS}	0.1731 ^{NS}	0.143 ^{NS}	0.2825 ^{NS}	0.2624 ^{NS}	0.114 ^{NS}	0.1032 ^{NS}
NSF	-0.2517 ^{NS}	0.3312*	0.1107 ^{NS}	-0.1461 ^{NS}	0.0584 ^{NS}	0.0293 ^{NS}	0.0731 ^{NS}	-0.2545 ^{NS}	-0.2413 ^{NS}	0.1528 ^{NS}	0.309 ^{NS}
SL	0.0151 ^{NS}	-0.0467 ^{NS}	0.0355 ^{NS}	-0.019 ^{NS}	-0.0005 ^{NS}	0.1971 ^{NS}	-0.0629 ^{NS}	0.3001 ^{NS}	0.3042 ^{NS}	-0.2151 ^{NS}	-0.1731 ^{NS}
WS	-0.013 ^{NS}	0.0004 ^{NS}	-0.2381 ^{NS}	-0.2831 ^{NS}	-0.0742 ^{NS}	-0.1925 ^{NS}	0.0692 ^{NS}	0.0608 ^{NS}	0.0522 ^{NS}	-0.0771 ^{NS}	-0.1346 ^{NS}
FYV	0.2766 ^{NS}	-0.3946*	0.2025 ^{NS}	0.1727 ^{NS}	0.0351 ^{NS}	0.3236*	0.2356 ^{NS}	0.2964 ^{NS}	0.2786 ^{NS}	-0.1413 ^{NS}	-0.1532 ^{NS}
FYH	0.2761 ^{NS}	-0.394*	0.203 ^{NS}	0.1721 ^{NS}	0.0363 ^{NS}	0.3242*	0.2359 ^{NS}	0.296 ^{NS}	0.2783 ^{NS}	-0.1419 ^{NS}	-0.1537 ^{NS}

Signif. Codes: 0.001 '***', 0.01 '**', NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.5b: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.7742**	0.2917 ^{NS}	-0.2026 ^{NS}	0.3277*	0.0355 ^{NS}	0.1606 ^{NS}	-0.2517 ^{NS}	0.0151 ^{NS}	-0.013 ^{NS}	0.2766 ^{NS}	0.2761 ^{NS}
NPB	-0.2107 ^{NS}	-0.3802*	0.1294 ^{NS}	-0.2772 ^{NS}	0.0567 ^{NS}	-0.3285*	0.3312*	-0.0467 ^{NS}	0.0004 ^{NS}	-0.3946*	-0.394*
VL	0.1182 ^{NS}	0.233 ^{NS}	-0.0266 ^{NS}	-0.1506 ^{NS}	-0.066 ^{NS}	-0.0175 ^{NS}	0.1107 ^{NS}	0.0355 ^{NS}	-0.2381 ^{NS}	0.2025 ^{NS}	0.203 ^{NS}
SLI	0.0862 ^{NS}	0.1084 ^{NS}	-0.0082 ^{NS}	0.224 ^{NS}	-0.3249*	0.3609*	-0.1461 ^{NS}	-0.019 ^{NS}	-0.2831 ^{NS}	0.1727 ^{NS}	0.1721 ^{NS}
LL	0.268 ^{NS}	-0.0036 ^{NS}	0.2538 ^{NS}	0.2309 ^{NS}	0.033 ^{NS}	0.1033 ^{NS}	0.0584 ^{NS}	-0.0005 ^{NS}	-0.0742 ^{NS}	0.0351 ^{NS}	0.0363 ^{NS}
LW	0.1054 ^{NS}	0.3205*	-0.1383 ^{NS}	0.1632 ^{NS}	0.1435 ^{NS}	0.1731 ^{NS}	0.0293 ^{NS}	0.1971 ^{NS}	-0.1925 ^{NS}	0.3236*	0.3242*
PTL	-0.0338 ^{NS}	0.2459 ^{NS}	0.2095 ^{NS}	0.1231 ^{NS}	0.3004 ^{NS}	0.143 ^{NS}	0.0731 ^{NS}	-0.0629 ^{NS}	0.0692 ^{NS}	0.2356 ^{NS}	0.2359 ^{NS}
DFMF	0.9729**	0.2694 ^{NS}	-0.1161 ^{NS}	0.2654 ^{NS}	-0.1012 ^{NS}	0.2825 ^{NS}	-0.2545 ^{NS}	0.3001 ^{NS}	0.0608 ^{NS}	0.2964 ^{NS}	0.296 ^{NS}
DFFF	0.9708**	0.2517 ^{NS}	-0.1498 ^{NS}	0.2135 ^{NS}	-0.1054 ^{NS}	0.2624 ^{NS}	-0.2413 ^{NS}	0.3042 ^{NS}	0.0522 ^{NS}	0.2786 ^{NS}	0.2783 ^{NS}
NFMF	0.0718 ^{NS}	-0.1891 ^{NS}	-0.1857 ^{NS}	-0.293 ^{NS}	-0.3274*	0.114 ^{NS}	0.1528 ^{NS}	-0.2151 ^{NS}	-0.0771 ^{NS}	-0.1413 ^{NS}	-0.1419 ^{NS}
NFFF	-0.0795 ^{NS}	-0.1903 ^{NS}	-0.189 ^{NS}	-0.5224**	-0.1911 ^{NS}	0.1032 ^{NS}	0.309 ^{NS}	-0.1731 ^{NS}	-0.1346 ^{NS}	-0.1532 ^{NS}	-0.1537 ^{NS}
DFFH	1**	0.269 ^{NS}	-0.0991 ^{NS}	0.1599 ^{NS}	-0.0676 ^{NS}	0.2629 ^{NS}	-0.1795 ^{NS}	0.3286*	0.0805 ^{NS}	0.2959 ^{NS}	0.2956 ^{NS}
NFV	0.269 ^{NS}	1**	-0.099 ^{NS}	0.2393 ^{NS}	-0.006 ^{NS}	0.5289**	-0.3177*	0.2639 ^{NS}	-0.0231 ^{NS}	0.9806**	0.9807**
FL	-0.0991 ^{NS}	-0.099 ^{NS}	1**	0.2233 ^{NS}	0.43**	-0.0764 ^{NS}	0.1967 ^{NS}	0.0285 ^{NS}	0.1133 ^{NS}	-0.0878 ^{NS}	-0.0879 ^{NS}
FD	0.1599 ^{NS}	0.2393 ^{NS}	0.2233 ^{NS}	1**	0.0892 ^{NS}	0.2412 ^{NS}	-0.0817 ^{NS}	-0.0314 ^{NS}	0.0714 ^{NS}	0.2673 ^{NS}	0.2673 ^{NS}
PDL	-0.0676 ^{NS}	-0.006 ^{NS}	0.43**	0.0892 ^{NS}	1**	-0.0642 ^{NS}	0.1854 ^{NS}	-0.0636 ^{NS}	0.2159 ^{NS}	-0.026 ^{NS}	-0.0261 ^{NS}
AFW	0.2629 ^{NS}	0.5289**	-0.0764 ^{NS}	0.2412 ^{NS}	-0.0642 ^{NS}	1**	0.1107 ^{NS}	0.1496 ^{NS}	-0.2338 ^{NS}	0.7067**	0.7066**
NSF	-0.1795 ^{NS}	-0.3177*	0.1967 ^{NS}	-0.0817 ^{NS}	0.1854 ^{NS}	0.1107 ^{NS}	1**	-0.2681 ^{NS}	-0.2083 ^{NS}	-0.2299 ^{NS}	-0.2295 ^{NS}
SL	0.3286*	0.2639 ^{NS}	0.0285 ^{NS}	-0.0314 ^{NS}	-0.0636 ^{NS}	0.1496 ^{NS}	-0.2681 ^{NS}	1**	0.1423 ^{NS}	0.2935 ^{NS}	0.2939 ^{NS}
WS	0.0805 ^{NS}	-0.0231 ^{NS}	0.1133 ^{NS}	0.0714 ^{NS}	0.2159 ^{NS}	-0.2338 ^{NS}	-0.2083 ^{NS}	0.1423 ^{NS}	1**	-0.0896 ^{NS}	-0.09 ^{NS}
FYV	0.2959 ^{NS}	0.9806**	-0.0878 ^{NS}	0.2673 ^{NS}	-0.026 ^{NS}	0.7067**	-0.2299 ^{NS}	0.2935 ^{NS}	-0.0896 ^{NS}	1**	1**
FYH	0.2956 ^{NS}	0.9807**	-0.0879 ^{NS}	0.2673 ^{NS}	-0.0261 ^{NS}	0.7066**	-0.2295 ^{NS}	0.2939 ^{NS}	-0.09NS	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.6a: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.1828 ^{NS}	0.2154 ^{NS}	-0.136 ^{NS}	-0.1041 ^{NS}	0.0129 ^{NS}	-0.2013 ^{NS}	0.7406**	0.7399**	0.1094 ^{NS}	0.0006 ^{NS}
NPB	-0.1828 ^{NS}	1**	-0.1546 ^{NS}	-0.0382 ^{NS}	-0.2147 ^{NS}	0.0001 ^{NS}	0.0272 ^{NS}	-0.3732*	-0.308 ^{NS}	-0.0068 ^{NS}	0.0743 ^{NS}
VL	0.2154 ^{NS}	-0.1546 ^{NS}	1**	-0.1459 ^{NS}	0.243 ^{NS}	0.2631 ^{NS}	-0.0987 ^{NS}	0.1998 ^{NS}	0.093 ^{NS}	0.1849 ^{NS}	0.138 ^{NS}
SLI	-0.136 ^{NS}	-0.0382 ^{NS}	-0.1459 ^{NS}	1**	-0.2113 ^{NS}	-0.3131*	-0.0752 ^{NS}	-0.0639 ^{NS}	0.0938 ^{NS}	0.0051 ^{NS}	-0.1376 ^{NS}
LL	-0.1041 ^{NS}	-0.2147 ^{NS}	0.243 ^{NS}	-0.2113 ^{NS}	1**	0.9677**	0.5274**	0.1106 ^{NS}	0.1269 ^{NS}	-0.0497 ^{NS}	0.0179 ^{NS}
LW	0.0129 ^{NS}	0.0001 ^{NS}	0.2631 ^{NS}	-0.3131*	0.9677**	1**	0.5062**	0.1622 ^{NS}	0.1474 ^{NS}	-0.0285 ^{NS}	0.085 ^{NS}
PTL	-0.2013 ^{NS}	0.0272 ^{NS}	-0.0987 ^{NS}	-0.0752 ^{NS}	0.5274**	0.5062**	1**	-0.0108 ^{NS}	-0.0618 ^{NS}	-0.18 ^{NS}	0.0734 ^{NS}
DFMF	0.7406**	-0.3732*	0.1998 ^{NS}	-0.0639 ^{NS}	0.1106 ^{NS}	0.1622 ^{NS}	-0.0108 ^{NS}	1**	0.9288**	-0.0859 ^{NS}	-0.1649 ^{NS}
DFFF	0.7399**	-0.308 ^{NS}	0.093 ^{NS}	0.0938 ^{NS}	0.1269 ^{NS}	0.1474 ^{NS}	-0.0618 ^{NS}	0.9288**	1**	0.0123 ^{NS}	-0.1075 ^{NS}
NFMF	0.1094 ^{NS}	-0.0068 ^{NS}	0.1849 ^{NS}	0.0051 ^{NS}	-0.0497 ^{NS}	-0.0285 ^{NS}	-0.18 ^{NS}	-0.0859 ^{NS}	0.0123 ^{NS}	1**	0.9221**
NFFF	0.0006 ^{NS}	0.0743 ^{NS}	0.138 ^{NS}	-0.1376 ^{NS}	0.0179 ^{NS}	0.085 ^{NS}	0.0734 ^{NS}	-0.1649 ^{NS}	-0.1075 ^{NS}	0.9221**	1**
DFFH	0.7657**	-0.2366 ^{NS}	0.2135 ^{NS}	-0.0276 ^{NS}	0.1025 ^{NS}	0.1637 ^{NS}	-0.0414 ^{NS}	0.9089**	0.9459**	-0.0301 ^{NS}	-0.115 ^{NS}
NFV	0.0891 ^{NS}	-0.4252**	0.2412 ^{NS}	0.1212 ^{NS}	0.3045 ^{NS}	0.3395*	0.2741 ^{NS}	0.2849 ^{NS}	0.2468 ^{NS}	-0.2293 ^{NS}	-0.1551 ^{NS}
FL	-0.3346*	0.1396 ^{NS}	0.0585 ^{NS}	0.0723 ^{NS}	0.018 ^{NS}	-0.0544 ^{NS}	0.213 ^{NS}	-0.2394 ^{NS}	-0.3185*	-0.1876 ^{NS}	-0.1854 ^{NS}
FD	-0.002 ^{NS}	-0.1875 ^{NS}	-0.0861 ^{NS}	0.1824 ^{NS}	0.3759*	0.2618 ^{NS}	0.1919 ^{NS}	0.2342 ^{NS}	0.215 ^{NS}	-0.3634*	-0.4866**
PDL	0.1046 ^{NS}	0.0067 ^{NS}	-0.0567 ^{NS}	-0.2808 ^{NS}	0.1836 ^{NS}	0.2012 ^{NS}	0.25 ^{NS}	-0.085 ^{NS}	-0.1236 ^{NS}	-0.2123 ^{NS}	-0.1471 ^{NS}
AFW	0.104 ^{NS}	-0.2531 ^{NS}	0.0262 ^{NS}	0.3331*	0.4338**	0.2355 ^{NS}	0.182 ^{NS}	0.1715 ^{NS}	0.2022 ^{NS}	0.1131 ^{NS}	0.1842 ^{NS}
NSF	-0.2304 ^{NS}	0.3472*	0.0863 ^{NS}	-0.0919 ^{NS}	0.0983 ^{NS}	0.1161 ^{NS}	0.0188 ^{NS}	-0.2341 ^{NS}	-0.2291 ^{NS}	0.1661 ^{NS}	0.2417 ^{NS}
SL	0.3664*	-0.0191 ^{NS}	0.0478 ^{NS}	-0.1294 ^{NS}	-0.1066 ^{NS}	0.1393 ^{NS}	-0.0068 ^{NS}	0.1758 ^{NS}	0.2882 ^{NS}	0.0654 ^{NS}	0.0715 ^{NS}
WS	0.1069 ^{NS}	0.0381 ^{NS}	-0.246 ^{NS}	-0.285 ^{NS}	-0.1494 ^{NS}	0.0085 ^{NS}	0.1479 ^{NS}	0.1888 ^{NS}	0.1177 ^{NS}	-0.0988 ^{NS}	0.0014 ^{NS}
FYV	0.0972 ^{NS}	-0.4233**	0.2134 ^{NS}	0.1875 ^{NS}	0.3625*	0.3456*	0.2774 ^{NS}	0.2772 ^{NS}	0.2593 ^{NS}	-0.1864 ^{NS}	-0.1166 ^{NS}
FYH	0.0978 ^{NS}	-0.4234**	0.2129 ^{NS}	0.1888 ^{NS}	0.3611*	0.3442*	0.2767 ^{NS}	0.2779 ^{NS}	0.2594 ^{NS}	-0.1876 ^{NS}	-0.1177 ^{NS}

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.6b: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.7657**	0.0891 ^{NS}	-0.3346*	-0.002 ^{NS}	0.1046 ^{NS}	0.104 ^{NS}	-0.2304 ^{NS}	0.3664*	0.1069 ^{NS}	0.0972 ^{NS}	0.0978 ^{NS}
NPB	-0.2366 ^{NS}	-0.4252**	0.1396 ^{NS}	-0.1875 ^{NS}	0.0067 ^{NS}	-0.2531 ^{NS}	0.3472*	-0.0191 ^{NS}	0.0381 ^{NS}	-0.4233**	-0.4234**
VL	0.2135 ^{NS}	0.2412 ^{NS}	0.0585 ^{NS}	-0.0861 ^{NS}	-0.0567 ^{NS}	0.0262 ^{NS}	0.0863 ^{NS}	0.0478 ^{NS}	-0.246 ^{NS}	0.2134 ^{NS}	0.2129 ^{NS}
SLI	-0.0276 ^{NS}	0.1212 ^{NS}	0.0723 ^{NS}	0.1824 ^{NS}	-0.2808 ^{NS}	0.3331*	-0.0919 ^{NS}	-0.1294 ^{NS}	-0.285 ^{NS}	0.1875 ^{NS}	0.1888 ^{NS}
LL	0.1025 ^{NS}	0.3045 ^{NS}	0.018 ^{NS}	0.3759*	0.1836 ^{NS}	0.4338**	0.0983 ^{NS}	-0.1066 ^{NS}	-0.1494 ^{NS}	0.3625*	0.3611*
LW	0.1637 ^{NS}	0.3395*	-0.0544 ^{NS}	0.2618 ^{NS}	0.2012 ^{NS}	0.2355 ^{NS}	0.1161 ^{NS}	0.1393 ^{NS}	0.0085 ^{NS}	0.3456*	0.3442*
PTL	-0.0414 ^{NS}	0.2741 ^{NS}	0.213 ^{NS}	0.1919 ^{NS}	0.25 ^{NS}	0.182 ^{NS}	0.0188 ^{NS}	-0.0068 ^{NS}	0.1479 ^{NS}	0.2774 ^{NS}	0.2767 ^{NS}
DFMF	0.9089**	0.2849 ^{NS}	-0.2394 ^{NS}	0.2342 ^{NS}	-0.085 ^{NS}	0.1715 ^{NS}	-0.2341 ^{NS}	0.1758 ^{NS}	0.1888 ^{NS}	0.2772 ^{NS}	0.2779 ^{NS}
DFFF	0.9459**	0.2468 ^{NS}	-0.3185*	0.215 ^{NS}	-0.1236 ^{NS}	0.2022 ^{NS}	-0.2291 ^{NS}	0.2882 ^{NS}	0.1177 ^{NS}	0.2593 ^{NS}	0.2594 ^{NS}
NFMF	-0.0301 ^{NS}	-0.2293 ^{NS}	-0.1876 ^{NS}	-0.3634*	-0.2123 ^{NS}	0.1131 ^{NS}	0.1661 ^{NS}	0.0654 ^{NS}	-0.0988 ^{NS}	-0.1864 ^{NS}	-0.1876 ^{NS}
NFFF	-0.115 ^{NS}	-0.1551 ^{NS}	-0.1854 ^{NS}	-0.4866**	-0.1471 ^{NS}	0.1842 ^{NS}	0.2417 ^{NS}	0.0715 ^{NS}	0.0014 ^{NS}	-0.1166 ^{NS}	-0.1177 ^{NS}
DFFH	1**	0.2857 ^{NS}	-0.3005 ^{NS}	0.2364 ^{NS}	-0.0911 ^{NS}	0.1943 ^{NS}	-0.1697 ^{NS}	0.3197*	0.1046 ^{NS}	0.2959 ^{NS}	0.2959 ^{NS}
NFV	0.2857 ^{NS}	1**	-0.0159 ^{NS}	0.1877 ^{NS}	-0.0033 ^{NS}	0.4733**	-0.3392*	0.1182 ^{NS}	-0.01 ^{NS}	0.9752**	0.9753**
FL	-0.3005 ^{NS}	-0.0159 ^{NS}	1**	0.0459 ^{NS}	0.2576 ^{NS}	0.1042 ^{NS}	0.2495 ^{NS}	-0.3207*	0.0171 ^{NS}	0.0172 ^{NS}	0.0173 ^{NS}
FD	0.2364 ^{NS}	0.1877 ^{NS}	0.0459 ^{NS}	1**	0.0878 ^{NS}	0.1381 ^{NS}	-0.0398 ^{NS}	-0.1072 ^{NS}	-0.0175 ^{NS}	0.2054 ^{NS}	0.206 ^{NS}
PDL	-0.0911 ^{NS}	-0.0033 ^{NS}	0.2576 ^{NS}	0.0878 ^{NS}	1**	0.0009 ^{NS}	0.1889 ^{NS}	0.0164 ^{NS}	0.1907 ^{NS}	-0.0049 ^{NS}	-0.0059 ^{NS}
AFW	0.1943 ^{NS}	0.4733**	0.1042 ^{NS}	0.1381 ^{NS}	0.0009 ^{NS}	1**	0.2546 ^{NS}	0.0479 ^{NS}	-0.2502 ^{NS}	0.6483**	0.648**
NSF	-0.1697 ^{NS}	-0.3392*	0.2495 ^{NS}	-0.0398 ^{NS}	0.1889 ^{NS}	0.2546 ^{NS}	1**	-0.2822 ^{NS}	-0.0686 ^{NS}	-0.2304 ^{NS}	-0.2311 ^{NS}
SL	0.3197*	0.1182 ^{NS}	-0.3207*	-0.1072 ^{NS}	0.0164 ^{NS}	0.0479 ^{NS}	-0.2822 ^{NS}	1**	0.2428 ^{NS}	0.1359 ^{NS}	0.1352 ^{NS}
WS	0.1046 ^{NS}	-0.01 ^{NS}	0.0171 ^{NS}	-0.0175 ^{NS}	0.1907 ^{NS}	-0.2502 ^{NS}	-0.0686 ^{NS}	0.2428 ^{NS}	1**	-0.0886 ^{NS}	-0.0888 ^{NS}
FYV	0.2959 ^{NS}	0.9752**	0.0172 ^{NS}	0.2054 ^{NS}	-0.0049 ^{NS}	0.6483**	-0.2304 ^{NS}	0.1359 ^{NS}	-0.0886 ^{NS}	1**	1**
FYH	0.2959 ^{NS}	0.9753**	0.0173 ^{NS}	0.206 ^{NS}	-0.0059 ^{NS}	0.648**	-0.2311 ^{NS}	0.1352 ^{NS}	-0.0888 ^{NS}	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

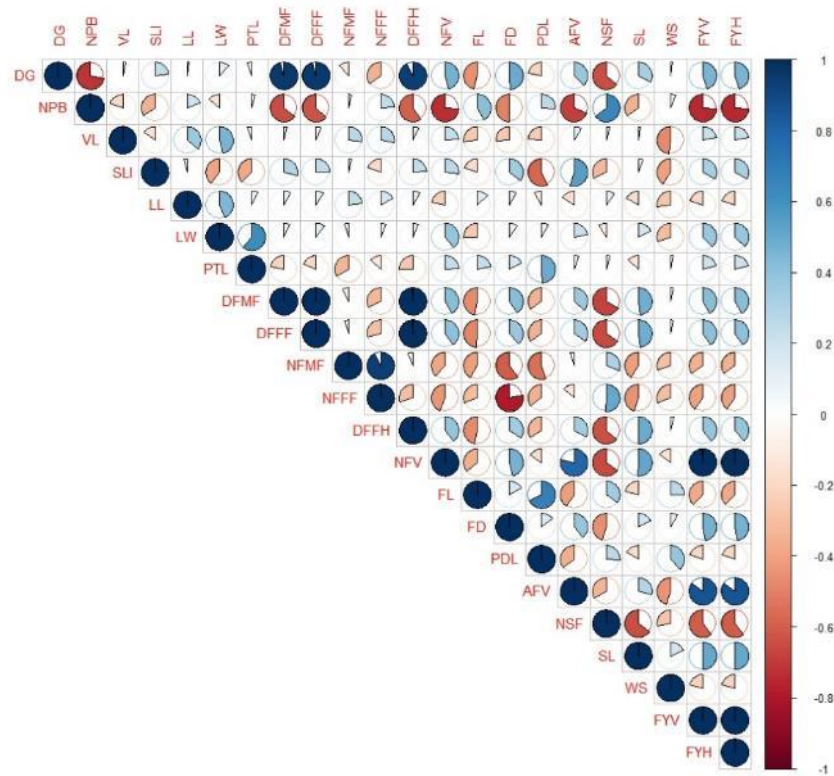


Fig. 4.5.5: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)

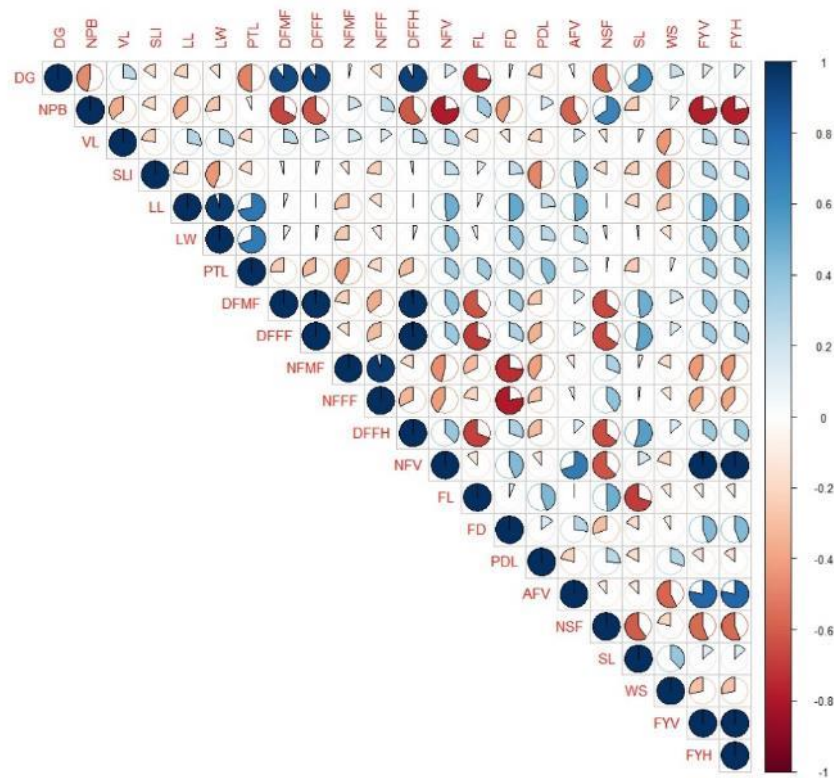


Fig. 4.5.6: Genotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)

4.5.4 Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022 and 2023)

Phenotypic correlation reported for all the characters in the second week of March, 2022 and 2023 are presented in Table 4.5.7a, 4.5.7b, 4.5.8a, 4.5.8b and Figure 4.5.7 and 4.5.8. The phenotypic correlation values of all the characters are reported below.

4.5.4.1 Days to 50% germination

In the second week of March in 2022, Days to 50% germination had significant positive phenotypic correlation with days to first male flower opening (0.7073), days to first female flower opening (0.7183), days to first fruit harvest (0.6434), number of fruits per vine (0.2482), fruit diameter (0.2418), fruit yield per vine (0.2319) and fruit yield per hectare (0.2309), while days to 50% germination had significant negative phenotypic correlation with number of primary branches per vine (-0.3464) and number of seeds per fruit (-0.2062). Whereas, in 2023 days to 50% germination had significant positive phenotypic correlation with days to first male flower opening (0.6681), days to first female flower opening (0.6548), days to first fruit harvest (0.6748) and seed length (0.2562), while days to 50% germination had significant negative phenotypic correlation with fruit length (-0.2621) and number of seed per fruit (-0.2113).

4.5.4.2 Number of primary branches per vine

Significant positive phenotypic correlation was recorded for number of primary branches per vine with number of seeds per fruit (0.2492 and 0.3472) in the second week of March in 2022 and 2023, respectively. Whereas, days to first male flower opening (-0.2714), days to first female flower opening (-0.2399), days to first fruit harvest (-0.1794), number of fruits per vine (-0.3408), average fruit weight (-0.2948), fruit yield per vine (-0.3691) and fruit yield per hectare (-0.3683) recorded significant negative phenotypic correlation in the year 2022, while in 2023 days to first male flower opening (-0.3732), number of fruits per vine (-0.4252), fruit yield per vine (-0.4233) and fruit yield per hectare (-0.4234) recorded significant negative phenotypic correlation

. 4.5.4.3 Vine length at final harvest

In the second week of March in 2022, vine length at final harvest had significant positive phenotypic correlation with leaf length (0.2935), leaf width (0.2054), number of fruits per vine (0.2237), fruit yield per vine (0.2023) and fruit yield per hectare (0.2029), while significant negative phenotypic correlation with weight of 100 seeds (0.2079). Whereas, leaf length (0.1925), leaf width (0.2417), days to first fruit harvest (0.1959), number of fruits per vine (0.2092), fruit yield per vine (0.1849) and fruit yield per hectare (0.1845) reported significant positive phenotypic correlation with vine length at final harvest.

4.5.4.4 Stem length of internodes

Significant positive phenotypic correlation was recorded for stem length of internodes with average fruit weight (0.3034 and 0.2519), whereas, leaf width (-0.2492 and -0.2674),

peduncle length (-0.2841 and -0.2618) and weight of 100 seeds (-0.2327 and -0.2327) reported significant negative phenotypic correlation in both the years of study in second week of March, respectively.

4.5.4.5 Leaf length

In the second week of March (2022), leaf length highly significant and positively correlated with leaf width (0.3397), days to first male flower opening (0.1957), days to first female flower opening (0.2052), nodes to first male flower (0.1973), days to first fruit harvest (0.248) and fruit length (0.2019). Whereas, in 2023 leaf length had significant and positive phenotypic correlation with leaf width (0.6827), petiole length (0.4033), number of fruit per vine (0.2384), fruit diameter (0.2084), average fruit weight (0.27), fruit yield per vine (0.284) and fruit yield per hectare (0.283), while significant negative phenotypic correlation with fruit length (-0.2238).

4.5.4.6 Leaf width

In the year 2022 in the second week of March, leaf width had significant positive phenotypic correlation with petiole length (0.356), number of fruits per vine (0.2531), average fruit weight (0.1802), seed length (0.1942), weight of 100 seeds, fruit yield per vine (0.2609) and fruit yield per hectare (0.262). In 2023, leaf width showed significant positive phenotypic correlation with petiole length (0.4374), number of fruits per vine (0.2657), fruit diameter (0.203), peduncle length (0.1794), fruit yield per vine (0.266) and fruit yield per hectare (0.2648).

4.5.4.7 Petiole length

Petiole length had significant positive phenotypic correlation with number of fruits per vine (0.2257), peduncle length (0.2613), fruit yield per vine (0.2182) and fruit yield per hectare (0.2185) in the second week of March in 2023. Significant positive phenotypic correlation was recorded for the trait petiole length with number of fruits per vine (0.2556), fruit length (0.2159), fruit diameter (0.1845), peduncle length (0.2493), fruit yield per vine (0.2653) and fruit yield per hectare (0.2645).

4.5.4.8 Days to first male flower opening

Days to first male flower opening was highly significant and positively correlated with days to first female flower opening (0.9675), days to first fruit harvest (0.929), number of fruits per vine (0.2544), fruit diameter (0.1933), average fruit weight (0.2335), seed length (0.2498), fruit yield per vine (0.2846) and fruit yield per hectare (0.2844), while number of seeds per fruit (-0.2405) recorded significant negative phenotypic correlation in the second week of March in the years 2022. Whereas, days to first female flower opening (0.879), days to first fruit harvest (0.8342), number of fruits per vine (0.2583), fruit diameter (0.1972), fruit yield per vine (0.2491) and fruit yield per hectare (0.2425) recorded significant positive phenotypic correlation, while fruit length (-0.2249) and number of seeds per fruit (-0.2183) reported significant negative phenotypic correlation in 2023.

4.5.4.9 Days to first female flower opening

In the second week of March (2022), days to first female flower opening was highly significant and positively correlated with days to first fruit harvest (0.9452), number of fruits per vine (0.2165), fruit diameter (0.241), peduncle length (0.1987), seed length (0.2136) fruit yield per vine (0.2242) and fruit yield per hectare (0.2234), while significant phenotypic negative correlation with number of seeds per fruit (-0.2155). Whereas, in 2023 the days to first female flower opening had significant positive correlation with days to first fruit harvest (0.921), number of fruits per vine (0.197), average fruit weight (0.1877), seed length (0.2115) fruit yield per vine (0.2134) and fruit yield per hectare (0.2138).

4.5.4.10 Nodes to first male flower

Nodes to first male flower was highly significant and positively correlated with nodes to first female flower (0.806 and 0.8005), while significant negative phenotypic correlation with number of fruits per vine (-0.186 and -0.1929), fruit diameter (-0.2327 and -0.3265) and peduncle length (-0.2933 and -0.2137) in the second week of March in 2022 and 2023, respectively.

4.5.4.11 Nodes to first female flower

Nodes to first female flower had significant positive phenotypic correlation with number of seeds per fruit (0.2288 and 0.218), while fruit diameter (-0.3464 and -0.4014) recorded significant negative phenotypic correlation in the second week of March in 2022 and 2023, respectively.

4.5.4.12 Days to first fruit harvest

In the second week of March in 2022, days to first harvest reported significant positive phenotypic correlation with number of fruits per vine (0.246), average fruit weight (0.2216), seed length (0.2678), fruit yield per vine (0.2723) and fruit yield per hectare (0.2721). Significant positive phenotypic correlation was recorded for the character days to first harvest with number of fruits per vine (0.2686), fruit diameter (0.2102), seed length (0.2579), fruit yield per vine (0.2848) and fruit yield per hectare (0.285), while significant negative phenotypic correlation with fruit length (-0.2631), in 2023.

4.5.4.13 Number of fruits per vine

Fruit diameter (0.1801), average fruit weight (0.4337), seed length (0.2131), fruit yield per vine (0.9501) and fruit yield per hectare (0.9499) had significant positive phenotypic correlation, in the second week of March in 2022. Whereas, number of fruits per vine had significant positive phenotypic correlation with average fruit weight (0.3633) fruit yield per vine (0.9577) and fruit yield per hectare (0.9578) in 2023, while significant negative phenotypic correlation with number of seeds per fruit (-0.2843 and -0.3045) in the years 2022 and 2023, respectively.

4.5.4.14 Fruit length

Fruit length had significant positive phenotypic correlation with fruit diameter (0.2132), peduncle length (0.366) and number of seeds per fruit (0.1954) in the second week of March, 2022, while in 2023 fruit length had significant positive phenotypic correlation with peduncle length (0.2366) and number of seeds per fruit (0.2144). Whereas, seed length (-0.2148) recorded significant negative phenotypic correlation.

4.5.4.15 Fruit diameter

In the years 2022 and 2023 in second week of March, fruit diameter had significant positive phenotypic correlation with fruit yield per vine (0.2017 and 0.1805) and fruit yield per hectare (0.2019 and 0.1806), respectively.

4.5.4.16 Peduncle length

No significant phenotypic correlation was reported for peduncle length in the second week of March (2022). Peduncle length had significant positive phenotypic correlation with number of seeds per fruit (0.1853) in 2023.

4.5.4.17 Average fruit weight

Average fruit length had significant positive phenotypic correlation with fruit yield per vine and fruit yield per hectare (0.6387 each and 0.603 each) in both the years of study in second week of March, respectively.

4.5.4.18 Number of seeds per fruit

In the second week of March in 2022 and 2023, number of seeds per fruit had significant negative phenotypic correlation with seed length (-0.2129 and -0.2278), fruit yield per vine (-0.2033 and -0.2143) and fruit yield per hectare (-0.2031 and -0.215), respectively.

4.5.4.19 Seed length

Seed length was highly significant and positively correlated with fruit yield per vine and fruit yield per hectare (0.2213 each) in the second week of March, 2022. Whereas, in 2023 no significant phenotypic correlation was observed for seed length.

4.5.4.20 Weight of 100 seeds

In the second week of March in 2022 and 2023, no significant phenotypic correlation was recorded for weight of 100 seeds.

4.5.4.21 Fruit yield per vine

Fruit yield per vine had significant positive phenotypic correlation with fruit yield per hectare (1.00 and 1.00) in both the years of study in second week of March.

Table 4.5.7a: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.3464**	0.0433 ^{NS}	0.0515 ^{NS}	0.0822 ^{NS}	0.0019 ^{NS}	0.0855 ^{NS}	0.7073**	0.7183**	0.0104 ^{NS}	-0.0933 ^{NS}
NPB	-0.3464**	1**	-0.106 ^{NS}	-0.0752 ^{NS}	0.1775 ^{NS}	0.0321 ^{NS}	0.0579 ^{NS}	-0.2714**	-0.2399**	-0.0902 ^{NS}	0.0493 ^{NS}
VL	0.0433 ^{NS}	-0.106 ^{NS}	1**	-0.0952 ^{NS}	0.2935**	0.2054*	-0.0226 ^{NS}	0.0719 ^{NS}	0.0916 ^{NS}	0.1519 ^{NS}	0.1597 ^{NS}
SLI	0.0515 ^{NS}	-0.0752 ^{NS}	-0.0952 ^{NS}	1**	0.0763 ^{NS}	-0.2492**	-0.1104 ^{NS}	0.1302 ^{NS}	0.1135 ^{NS}	0.0703 ^{NS}	-0.0966 ^{NS}
LL	0.0822 ^{NS}	0.1775 ^{NS}	0.2935**	0.0763 ^{NS}	1**	0.3397**	0.1421 ^{NS}	0.1957*	0.2052*	0.1973*	0.1237 ^{NS}
LW	0.0019 ^{NS}	0.0321 ^{NS}	0.2054*	-0.2492**	0.3397**	1**	0.356**	0.0981 ^{NS}	0.1469 ^{NS}	0.0479 ^{NS}	0.1147 ^{NS}
PTL	0.0855 ^{NS}	0.0579 ^{NS}	-0.0226 ^{NS}	-0.1104 ^{NS}	0.1421 ^{NS}	0.356**	1**	-0.0256 ^{NS}	0.0339 ^{NS}	-0.1209 ^{NS}	0.078 ^{NS}
DFMF	0.7073**	-0.2714**	0.0719 ^{NS}	0.1302 ^{NS}	0.1957*	0.0981 ^{NS}	-0.0256 ^{NS}	1**	0.9675**	0.0731 ^{NS}	-0.0847 ^{NS}
DFFF	0.7183**	-0.2399**	0.0916 ^{NS}	0.1135 ^{NS}	0.2052*	0.1469 ^{NS}	0.0339 ^{NS}	0.9675**	1**	0.0815 ^{NS}	-0.0698 ^{NS}
NFMF	0.0104 ^{NS}	-0.0902 ^{NS}	0.1519 ^{NS}	0.0703 ^{NS}	0.1973*	0.0479 ^{NS}	-0.1209 ^{NS}	0.0731 ^{NS}	0.0815 ^{NS}	1**	0.806**
NFFF	-0.0933 ^{NS}	0.0493 ^{NS}	0.1597 ^{NS}	-0.0966 ^{NS}	0.1237 ^{NS}	0.1147 ^{NS}	0.078 ^{NS}	-0.0847 ^{NS}	-0.0698 ^{NS}	0.806**	1**
DFFH	0.6434**	-0.1794*	0.109 ^{NS}	0.082 ^{NS}	0.248**	0.0782 ^{NS}	-0.0485 ^{NS}	0.929**	0.9366**	0.0735 ^{NS}	-0.0577 ^{NS}
NFV	0.2482**	-0.3408**	0.2237*	0.0952 ^{NS}	-0.0043 ^{NS}	0.2531**	0.2257*	0.2544**	0.2343*	-0.186*	-0.1732 ^{NS}
FL	-0.1955*	0.0901 ^{NS}	0.0027 ^{NS}	-0.004 ^{NS}	0.2019*	-0.0114 ^{NS}	0.1531 ^{NS}	-0.1064 ^{NS}	-0.1285 ^{NS}	-0.1394 ^{NS}	-0.1416 ^{NS}
FD	0.2418**	-0.1681 ^{NS}	-0.094 ^{NS}	0.1491 ^{NS}	0.1757 ^{NS}	0.1643 ^{NS}	0.0788 ^{NS}	0.1933*	0.1763 ^{NS}	-0.2327*	-0.3464**
PDL	0.033 ^{NS}	0.0418 ^{NS}	-0.0588 ^{NS}	-0.2841**	0.0218 ^{NS}	0.1092 ^{NS}	0.2613**	-0.0856 ^{NS}	-0.0938 ^{NS}	-0.2933**	-0.1513 ^{NS}
AFW	0.1274 ^{NS}	-0.2948**	0.0001 ^{NS}	0.3034**	0.0856 ^{NS}	0.1802*	0.1046 ^{NS}	0.2335*	0.2273*	0.0838 ^{NS}	0.076 ^{NS}
NSF	-0.2062*	0.2492**	0.0918 ^{NS}	-0.134 ^{NS}	0.0549 ^{NS}	0.0366 ^{NS}	0.0623 ^{NS}	-0.2405**	-0.2254*	0.1193 ^{NS}	0.2288*
SL	0.0677 ^{NS}	-0.0251 ^{NS}	0.044 ^{NS}	-0.0273 ^{NS}	0.0148 ^{NS}	0.1942*	-0.0682 ^{NS}	0.2498**	0.2455**	-0.174 ^{NS}	-0.1203 ^{NS}
WS	0.0231 ^{NS}	-0.0176 ^{NS}	-0.2079*	-0.2327*	-0.0169 ^{NS}	-0.0505 ^{NS}	0.0531 ^{NS}	0.0462 ^{NS}	0.0375 ^{NS}	-0.0854 ^{NS}	-0.1207 ^{NS}
FYV	0.2319*	-0.3691**	0.2023*	0.1584 ^{NS}	0.0054 ^{NS}	0.2609**	0.2182*	0.2846**	0.2674**	-0.1389 ^{NS}	-0.1451 ^{NS}
FYH	0.2309*	-0.3683**	0.2029*	0.1579 ^{NS}	0.0063 ^{NS}	0.262**	0.2185*	0.2844**	0.2672**	-0.1393 ^{NS}	-0.1452 ^{NS}

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.7b: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.6434**	0.2482**	-0.1955*	0.2418**	0.033 ^{NS}	0.1274 ^{NS}	-0.2062*	0.0677 ^{NS}	0.0231 ^{NS}	0.2319*	0.2309*
NPB	-0.1794*	-0.3408**	0.0901 ^{NS}	-0.1681 ^{NS}	0.0418 ^{NS}	-0.2948**	0.2492**	-0.0251 ^{NS}	-0.0176 ^{NS}	-0.3691**	-0.3683**
VL	0.109 ^{NS}	0.2237*	0.0027 ^{NS}	-0.094 ^{NS}	-0.0588 ^{NS}	0.0001 ^{NS}	0.0918 ^{NS}	0.044 ^{NS}	-0.2079*	0.2023*	0.2029*
SLI	0.082 ^{NS}	0.0952 ^{NS}	-0.004 ^{NS}	0.1491 ^{NS}	-0.2841**	0.3034**	-0.134 ^{NS}	-0.0273 ^{NS}	-0.2327*	0.1584 ^{NS}	0.1579 ^{NS}
LL	0.248**	-0.0043 ^{NS}	0.2019*	0.1757 ^{NS}	0.0218 ^{NS}	0.0856 ^{NS}	0.0549 ^{NS}	0.0148 ^{NS}	-0.0169 ^{NS}	0.0054 ^{NS}	0.0063 ^{NS}
LW	0.0782 ^{NS}	0.2531**	-0.0114 ^{NS}	0.1643 ^{NS}	0.1092 ^{NS}	0.1802*	0.0366 ^{NS}	0.1942*	-0.0505 ^{NS}	0.2609**	0.262**
PTL	-0.0485 ^{NS}	0.2257*	0.1531 ^{NS}	0.0788 ^{NS}	0.2613**	0.1046 ^{NS}	0.0623 ^{NS}	-0.0682 ^{NS}	0.0531 ^{NS}	0.2182*	0.2185*
DFMF	0.929**	0.2544**	-0.1064 ^{NS}	0.1933*	-0.0856 ^{NS}	0.2335*	-0.2405**	0.2498**	0.0462 ^{NS}	0.2846**	0.2844**
DFFF	0.9366**	0.2343*	-0.1285 ^{NS}	0.1763 ^{NS}	-0.0938 ^{NS}	0.2273*	-0.2254*	0.2455**	0.0375 ^{NS}	0.2674**	0.2672**
NFMF	0.0735 ^{NS}	-0.186*	-0.1394 ^{NS}	-0.2327*	-0.2933**	0.0838 ^{NS}	0.1193 ^{NS}	-0.174NS	-0.0854 ^{NS}	-0.1389 ^{NS}	-0.1393 ^{NS}
NFFF	-0.0577 ^{NS}	-0.1732 ^{NS}	-0.1416 ^{NS}	-0.3464**	-0.1513 ^{NS}	0.076 ^{NS}	0.2288*	-0.1203 ^{NS}	-0.1207 ^{NS}	-0.1451 ^{NS}	-0.1452 ^{NS}
DFFH	1**	0.246**	-0.054 ^{NS}	0.152NS	-0.0692 ^{NS}	0.2216*	-0.1688 ^{NS}	0.2678**	0.0668 ^{NS}	0.2723**	0.2721**
NFV	0.246**	1**	-0.0848 ^{NS}	0.1801*	-0.0188 ^{NS}	0.4337**	-0.2843**	0.2131*	0.0028 ^{NS}	0.9501**	0.9499**
FL	-0.054 ^{NS}	-0.0848 ^{NS}	1**	0.2132*	0.366**	-0.0524 ^{NS}	0.1954*	0.024 ^{NS}	0.0761 ^{NS}	-0.0802 ^{NS}	-0.0802 ^{NS}
FD	0.152 ^{NS}	0.1801*	0.2132*	1**	0.0523 ^{NS}	0.1412 ^{NS}	-0.0793 ^{NS}	-0.0542 ^{NS}	0.0051 ^{NS}	0.2017*	0.2019*
PDL	-0.0692 ^{NS}	-0.0188 ^{NS}	0.366**	0.0523 ^{NS}	1**	-0.0446 ^{NS}	0.1747 ^{NS}	-0.0263 ^{NS}	0.171 ^{NS}	-0.0186 ^{NS}	-0.0182 ^{NS}
AFW	0.2216*	0.4337**	-0.0524 ^{NS}	0.1412 ^{NS}	-0.0446 ^{NS}	1**	0.1023 ^{NS}	0.1349 ^{NS}	-0.1569 ^{NS}	0.6387**	0.6387**
NSF	-0.1688 ^{NS}	-0.2843**	0.1954*	-0.0793 ^{NS}	0.1747 ^{NS}	0.1023 ^{NS}	1**	-0.2129*	-0.1295 ^{NS}	-0.2033*	-0.2031*
SL	0.2678**	0.2131*	0.024 ^{NS}	-0.0542 ^{NS}	-0.0263 ^{NS}	0.1349 ^{NS}	-0.2129*	1**	0.1302 ^{NS}	0.2213*	0.2213*
WS	0.0668 ^{NS}	0.0028 ^{NS}	0.0761 ^{NS}	0.0051 ^{NS}	0.171 ^{NS}	-0.1569 ^{NS}	-0.1295 ^{NS}	0.1302 ^{NS}	1**	-0.0689 ^{NS}	-0.0695 ^{NS}
FYV	0.2723**	0.9501**	-0.0802 ^{NS}	0.2017*	-0.0186 ^{NS}	0.6387**	-0.2033*	0.2213*	-0.0689 ^{NS}	1**	1**
FYH	0.2721**	0.9499**	-0.0802 ^{NS}	0.2019*	-0.0182 ^{NS}	0.6387**	-0.2031*	0.2213*	-0.0695 ^{NS}	1**	1**

Signif. Codes: 0.001 ***, 0.01 **, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/h)

Table 4.5.8a: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	1**	-0.1706 ^{NS}	0.1578 ^{NS}	-0.1314 ^{NS}	-0.0545 ^{NS}	-0.0026 ^{NS}	-0.1762 ^{NS}	0.6681**	0.6548**	0.1033 ^{NS}	-0.0126 ^{NS}
NPB	-0.1706 ^{NS}	1**	-0.1161 ^{NS}	-0.0282 ^{NS}	-0.1102 ^{NS}	0.039 ^{NS}	0.0199 ^{NS}	-0.3199**	-0.2866**	-0.0056 ^{NS}	0.0977 ^{NS}
VL	0.1578 ^{NS}	-0.1161 ^{NS}	1**	-0.0998 ^{NS}	0.1925*	0.2417**	-0.0943 ^{NS}	0.1704 ^{NS}	0.0915 ^{NS}	0.161 ^{NS}	0.1014 ^{NS}
SLI	-0.1314 ^{NS}	-0.0282 ^{NS}	-0.0998 ^{NS}	1**	-0.1479 ^{NS}	-0.2674**	-0.0635 ^{NS}	-0.0677 ^{NS}	0.0844 ^{NS}	0.0076 ^{NS}	-0.128 ^{NS}
LL	-0.0545 ^{NS}	-0.1102 ^{NS}	0.1925*	-0.1479 ^{NS}	1**	0.6827**	0.4033**	0.1096 ^{NS}	0.1067 ^{NS}	-0.0654 ^{NS}	0.0183 ^{NS}
LW	-0.0026 ^{NS}	0.039 ^{NS}	0.2417**	-0.2674**	0.6827**	1**	0.4374**	0.1419 ^{NS}	0.1322 ^{NS}	-0.0255 ^{NS}	0.0921 ^{NS}
PTL	-0.1762 ^{NS}	0.0199 ^{NS}	-0.0943 ^{NS}	-0.0635 ^{NS}	0.4033**	0.4374**	1**	-0.0145 ^{NS}	-0.0605 ^{NS}	-0.1743 ^{NS}	0.0606 ^{NS}
DFMF	0.6681**	-0.3199**	0.1704 ^{NS}	-0.0677 ^{NS}	0.1096 ^{NS}	0.1419 ^{NS}	-0.0145 ^{NS}	1**	0.879**	-0.0795 ^{NS}	-0.1176 ^{NS}
DFFF	0.6548**	-0.2866**	0.0915 ^{NS}	0.0844 ^{NS}	0.1067 ^{NS}	0.1322 ^{NS}	-0.0605 ^{NS}	0.879**	1**	0.0082 ^{NS}	-0.0904 ^{NS}
NFMF	0.1033 ^{NS}	-0.0056 ^{NS}	0.161 ^{NS}	0.0076 ^{NS}	-0.0654 ^{NS}	-0.0255 ^{NS}	-0.1743 ^{NS}	-0.0795 ^{NS}	0.0082 ^{NS}	1**	0.8005**
NFFF	-0.0126 ^{NS}	0.0977 ^{NS}	0.1014 ^{NS}	-0.128 ^{NS}	0.0183 ^{NS}	0.0921 ^{NS}	0.0606 ^{NS}	-0.1176 ^{NS}	-0.0904 ^{NS}	0.8005**	1**
DFFH	0.6748**	-0.2189*	0.1959*	-0.0301 ^{NS}	0.0893 ^{NS}	0.1437 ^{NS}	-0.0343 ^{NS}	0.8342**	0.907**	-0.0188 ^{NS}	-0.0968 ^{NS}
NFV	0.0724 ^{NS}	-0.3697**	0.2092*	0.1094 ^{NS}	0.2384**	0.2657**	0.2556**	0.2583**	0.2319*	-0.1929*	-0.1541 ^{NS}
FL	-0.2621**	0.1093 ^{NS}	0.0619 ^{NS}	0.109 ^{NS}	0.0344 ^{NS}	-0.0375 ^{NS}	0.2159*	-0.2249*	-0.2881**	-0.1671 ^{NS}	-0.1558 ^{NS}
FD	-0.0373 ^{NS}	-0.1699 ^{NS}	-0.0747 ^{NS}	0.159 ^{NS}	0.2084*	0.203*	0.1845*	0.1972*	0.197*	-0.3265**	-0.4014**
PDL	0.0782 ^{NS}	-0.0003 ^{NS}	-0.0383 ^{NS}	-0.2618**	0.1467 ^{NS}	0.1794*	0.2493**	-0.0914 ^{NS}	-0.1204 ^{NS}	-0.2137*	-0.1315 ^{NS}
AFW	0.0667 ^{NS}	-0.2071*	0.0321 ^{NS}	0.2519**	0.27**	0.1543 ^{NS}	0.1615 ^{NS}	0.1366 ^{NS}	0.1617 ^{NS}	0.1084 ^{NS}	0.0602 ^{NS}
NSF	-0.2113*	0.312**	0.0975 ^{NS}	-0.0731 ^{NS}	0.0763 ^{NS}	0.0943 ^{NS}	0.014 ^{NS}	-0.2118*	-0.2183*	0.1519 ^{NS}	0.218*
SL	0.2562**	0.0356 ^{NS}	0.0196 ^{NS}	-0.0955 ^{NS}	0.0071 ^{NS}	0.1343 ^{NS}	-0.0186 ^{NS}	0.1273 ^{NS}	0.2376**	0.0339 ^{NS}	0.0022 ^{NS}
WS	0.1038 ^{NS}	0.028 ^{NS}	-0.1676 ^{NS}	-0.2327*	-0.1078 ^{NS}	-0.0232 ^{NS}	0.1274 ^{NS}	0.1721 ^{NS}	0.0796 ^{NS}	-0.0675 ^{NS}	-0.0246 ^{NS}
FYV	0.0739 ^{NS}	-0.3715**	0.1849*	0.1659 ^{NS}	0.284**	0.266**	0.2653**	0.2491**	0.2423**	-0.1493 ^{NS}	-0.1405 ^{NS}
FYH	0.0746 ^{NS}	-0.3716**	0.1845*	0.1672 ^{NS}	0.283**	0.2648**	0.2645**	0.2496**	0.2425**	-0.1503 ^{NS}	-0.1421 ^{NS}

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.5.8b: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV	FYH
DG	0.6748**	0.0724 ^{NS}	-0.2621**	-0.0373 ^{NS}	0.0782 ^{NS}	0.0667 ^{NS}	-0.2113*	0.2562**	0.1038 ^{NS}	0.0739 ^{NS}	0.0746 ^{NS}
NPB	-0.2189*	-0.3697**	0.1093 ^{NS}	-0.1699 ^{NS}	-0.0003 ^{NS}	-0.2071*	0.312**	0.0356 ^{NS}	0.028 ^{NS}	-0.3715**	-0.3716**
VL	0.1959*	0.2092*	0.0619 ^{NS}	-0.0747 ^{NS}	-0.0383 ^{NS}	0.0321 ^{NS}	0.0975 ^{NS}	0.0196 ^{NS}	-0.1676 ^{NS}	0.1849*	0.1845*
SLI	-0.0301 ^{NS}	0.1094 ^{NS}	0.109 ^{NS}	0.159 ^{NS}	-0.2618**	0.2519**	-0.0731 ^{NS}	-0.0955 ^{NS}	-0.2327*	0.1659 ^{NS}	0.1672 ^{NS}
LL	0.0893 ^{NS}	0.2384**	0.0344 ^{NS}	0.2084*	0.1467 ^{NS}	0.27**	0.0763 ^{NS}	0.0071 ^{NS}	-0.1078 ^{NS}	0.284**	0.283**
LW	0.1437 ^{NS}	0.2657**	-0.0375 ^{NS}	0.203*	0.1794*	0.1543 ^{NS}	0.0943 ^{NS}	0.1343 ^{NS}	-0.0232 ^{NS}	0.266**	0.2648**
PTL	-0.0343 ^{NS}	0.2556**	0.2159*	0.1845*	0.2493**	0.1615 ^{NS}	0.014 ^{NS}	-0.0186 ^{NS}	0.1274 ^{NS}	0.2653**	0.2645**
DFMF	0.8342**	0.2583**	-0.2249*	0.1972*	-0.0914 ^{NS}	0.1366 ^{NS}	-0.2118*	0.1273 ^{NS}	0.1721 ^{NS}	0.2491**	0.2496**
DFFF	0.907**	0.2319*	-0.2881**	0.197*	-0.1204 ^{NS}	0.1617 ^{NS}	-0.2183*	0.2376**	0.0796 ^{NS}	0.2423**	0.2425**
NFMF	-0.0188 ^{NS}	-0.1929*	-0.1671 ^{NS}	-0.3265**	-0.2137*	0.1084 ^{NS}	0.1519 ^{NS}	0.0339 ^{NS}	-0.0675 ^{NS}	-0.1493 ^{NS}	-0.1503 ^{NS}
NFFF	-0.0968 ^{NS}	-0.1541 ^{NS}	-0.1558 ^{NS}	-0.4014**	-0.1315 ^{NS}	0.0602 ^{NS}	0.218*	0.0022 ^{NS}	-0.0246 ^{NS}	-0.1405 ^{NS}	-0.1421 ^{NS}
DFFH	1**	0.2686**	-0.2631**	0.2102*	-0.0908 ^{NS}	0.1746 ^{NS}	-0.1663 ^{NS}	0.2579**	0.0931 ^{NS}	0.2848**	0.285**
NFV	0.2686**	1**	-0.0292 ^{NS}	0.1667 ^{NS}	-0.0096 ^{NS}	0.3633**	-0.3045**	0.1308 ^{NS}	-0.0354 ^{NS}	0.9577**	0.9578**
FL	-0.2631**	-0.0292 ^{NS}	1**	0.053 ^{NS}	0.2366**	0.0804 ^{NS}	0.2144*	-0.2148*	0.0166 ^{NS}	0.0088 ^{NS}	0.0084 ^{NS}
FD	0.2102*	0.1667 ^{NS}	0.053 ^{NS}	1**	0.0858 ^{NS}	0.0958 ^{NS}	-0.0266 ^{NS}	-0.1028 ^{NS}	0.0149 ^{NS}	0.1805*	0.1806*
PDL	-0.0908 ^{NS}	-0.0096 ^{NS}	0.2366**	0.0858 ^{NS}	1**	-0.0175 ^{NS}	0.1853*	-0.0002 ^{NS}	0.1582 ^{NS}	-0.0153 ^{NS}	-0.0164 ^{NS}
AFW	0.1746 ^{NS}	0.3633**	0.0804 ^{NS}	0.0958 ^{NS}	-0.0175 ^{NS}	1**	0.1764 ^{NS}	0.0121 ^{NS}	-0.0978 ^{NS}	0.6031**	0.603**
NSF	-0.1663 ^{NS}	-0.3045**	0.2144*	-0.0266 ^{NS}	0.1853*	0.1764 ^{NS}	1**	-0.2278*	-0.0711 ^{NS}	-0.2143*	-0.215*
SL	0.2579**	0.1308 ^{NS}	-0.2148*	-0.1028 ^{NS}	-0.0002 ^{NS}	0.0121 ^{NS}	-0.2278*	1**	0.1035 ^{NS}	0.1358 ^{NS}	0.1355 ^{NS}
WS	0.0931 ^{NS}	-0.0354 ^{NS}	0.0166 ^{NS}	0.0149 ^{NS}	0.1582 ^{NS}	-0.0978 ^{NS}	-0.0711 ^{NS}	0.1035 ^{NS}	1**	-0.067 ^{NS}	-0.0672 ^{NS}
FYV	0.2848**	0.9577**	0.0088 ^{NS}	0.1805*	-0.0153 ^{NS}	0.6031**	-0.2143*	0.1358 ^{NS}	-0.067 ^{NS}	1**	1**
FYH	0.285**	0.9578**	0.0084 ^{NS}	0.1806*	-0.0164 ^{NS}	0.603**	-0.215*	0.1355 ^{NS}	-0.0672 ^{NS}	1**	1**

Signif. Codes: 0.001 ‘***’, 0.01 ‘**’, NS: Non significant

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

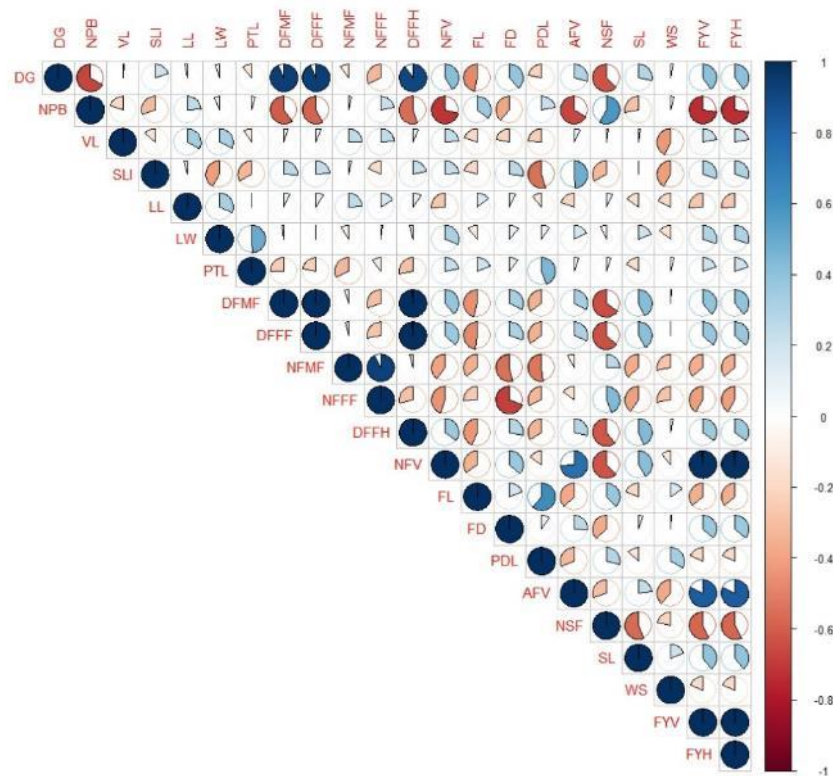


Fig. 4.5.7: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2022)

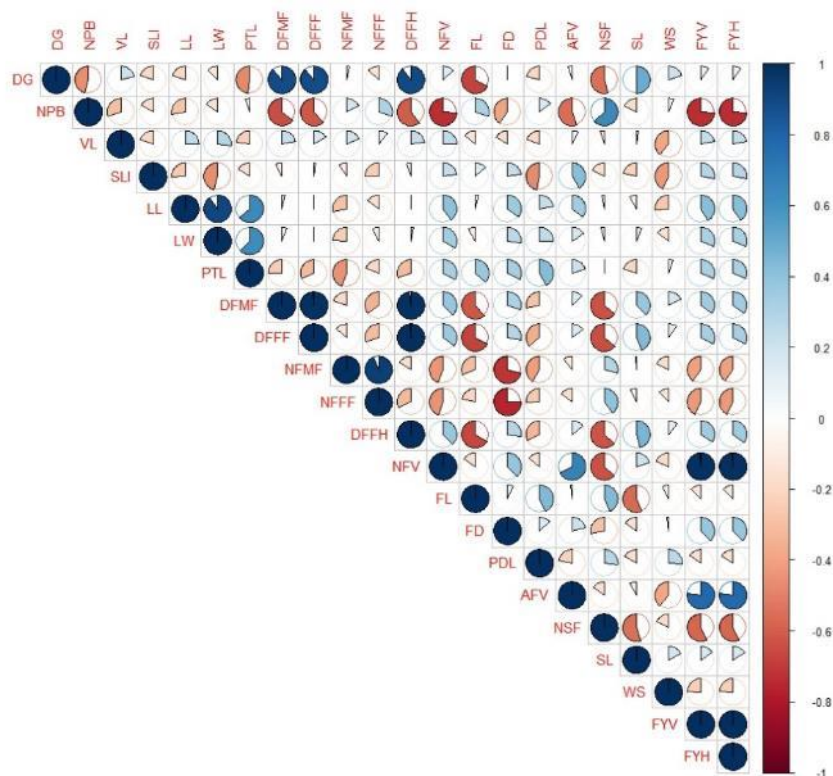


Fig. 4.5.8: Phenotypic correlation co-efficient for yield and yield contributing characters in ridge gourd genotypes (Second week of March, 2023)

4.6 Path co-efficient analysis

Correlation only indicates the common association between an independent trait and a dependent trait, without clarifying the direct and indirect effect of this relationship. In plant breeding, for a successful selection we should know the path analysis by which various characters are affecting the fruit yield, hence, this path analysis conducted.

4.6.1 Genotypic path co-efficient analysis (Last week of February, 2022 and 2023)

Genotypic path analysis was obtained from using genotypic correlation over fruit yield per hectare as dependable character. The results of path analysis showed for various characters of interest are presented in Table 4.6.1a, 4.6.1b, 4.6.2a and 4.6.2b in the last week of February in 2022 and 2023, respectively. The direct and indirect effect of various traits on fruit yield per hectare are discussed below.

4.6.1.1 Direct effect

In the last week of February in 2022, highest positive direct effect at genotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine (0.9845) followed by days to first fruit harvest (0.0512), nodes to first female flower (0.0316), days to 50% germination (0.0277), days to first male flower opening (0.0265), fruit diameter (0.0152), number of fruits per vine (0.0141), number of primary branches per vine (0.0135), stem length of internodes (0.0133), fruit length (0.0096) and weight of 100 seeds (0.0027), while highest negative genotypic direct effect was observed by days to first female flower opening (-0.0998) followed by nodes to first male flower (-0.0141), number of seeds per fruit (-0.0108), vine length at final harvest (-0.0065), leaf length (-0.0064), peduncle length (-0.0064), seed length (-0.0052), average fruit weight (-0.0047), leaf width (-0.0044) and petiole length (-0.0013).

In the year 2023 in last week of February, genotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine (0.8840) followed by number of fruits per vine (0.0969), days to first female flower opening (0.0426), average fruit weight (0.0281), days to first fruit harvest (0.0231), fruit diameter (0.0074), leaf width (0.0070), peduncle length (0.0053), stem length of internodes (0.0046), seed length (0.0045), petiole length (0.0033), nodes to first female flower (0.0025) and fruit length (0.0003), while highest genotypic negative direct effect was observed by days to first male flower opening (-0.0658) followed by leaf length (-0.0055), nodes to first male flower (-0.0039), number of seeds per fruit (-0.0032), number of primary branches per vine (-0.0029), weight of 100 seeds (-0.0016), vine length at final harvest (-0.0009) and days to 50% germination (-0.0007).

4.6.1.2 Indirect effect

In the last week of February in 2022, days to 50% germination had indirect positive effect at genotypic level on fruit yield per hectare via days to first male flower opening (0.0266) and negative indirect effect via number of seeds per fruit (-0.0085). Number of primary branches per vine had genotypic positive indirect effect on fruit yield per hectare via leaf width

(0.0038) and negative indirect effect via fruit length (-0.0056) and peduncle length (-0.0037). Vine length at final harvest had genotypic positive indirect effect on fruit yield per hectare via seed length (0.0014) and leaf length (0.0013), while negative indirect effect was observed via stem length of internodes (-0.0024). Stem length of internodes had genotypic positive indirect effect via vine length at final harvest (0.0050) and peduncle length (0.0048) and genotypic negative indirect effect via days to first fruit harvest (-0.0020). Further, positive indirect effect on fruit yield per hectare was recorded by leaf length via vine length at final harvest (0.0013) and genotypic negative indirect effect via fruit length (-0.0015). Leaf width had genotypic positive indirect effect via peduncle length (0.0008) and genotypic negative indirect effect via leaf length (-0.0020). However, positive indirect effect on fruit yield per hectare was recorded by petiole length via number of seeds per fruit (0.0003) and petiole length had negative indirect effect on fruit yield per hectare via number of fruits per vine (-0.0003). Days to first male flower opening had genotypic positive indirect effect on fruit yield per hectare via days to first female flower opening (0.0264) and days to first fruit harvest (0.0257) and genotypic negative indirect effect via number of seeds per fruit (-0.0063). Days to first female flower opening had genotypic positive indirect effect on fruit yield per hectare via number of seeds per fruit (0.0242) and genotypic negative indirect effect via days to first male flower opening (-0.0995). However, nodes to first male flower had genotypic positive indirect effect on fruit yield per hectare via fruit diameter (0.0031) and genotypic negative indirect effect via nodes to first female flower (-0.0120). Nodes to first female flower had genotypic positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0270) and genotypic negative indirect effect via fruit diameter (-0.0144).

Days to first fruit harvest had genotypic positive indirect effect on fruit yield per hectare through days to first male flower opening (0.0497) and days to first female flower opening (0.0496), while genotypic negative indirect effect via petiole length (-0.0111). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through fruit yield per vine (0.0137) and genotypic negative indirect effect via number of seeds per fruit (-0.0048). Fruit length had genotypic positive indirect effect on fruit yield per hectare through leaf length (0.0023), while genotypic negative indirect effect via petiole length (-0.0040). Fruit diameter had positive indirect effect on fruit yield per hectare through days to first female flower opening (0.0039) and genotypic negative indirect effect through nodes to first female flower (-0.0069). However, peduncle length had positive indirect effect on fruit yield per hectare through number of primary branches (0.0018) and genotypic negative indirect effect through stem length of internodes (-0.0023). Average fruit weight had positive indirect effect on fruit yield per hectare via weight of 100 seeds (0.0011) and genotypic negative indirect effect through fruit yield per vine (-0.0032). number of seeds per fruit had positive indirect effect on fruit yield per hectare via number of fruits per vine (0.0037) and genotypic negative indirect effect through nodes to first female flower (-0.0031). Seed length had genotypic positive

indirect effect on fruit yield per hectare via number of seeds per fruit (0.0012), while negative indirect effect was observed via stem length of internodes (-0.0015). Weight of 100 seeds had positive indirect effect on fruit yield per hectare through vine length at final harvest (0.0006), while negative indirect effect was recorded through average fruit weight (-0.0006). However, Fruit yield per vine was recorded to have positive indirect effect on fruit yield per hectare via number of fruits per vine (0.9601), average fruit weight (0.6787), days to 50% germination (0.3289), days to first male flower opening (0.2517), fruit diameter (0.2446), days to first female flower opening (0.2442), days to first fruit harvest (0.2114), peduncle length (0.1872), seed length (0.1776), petiole length (0.1603) and leaf width (0.0191) and negative indirect effect via number of seeds per fruit (-0.2523), vine length at final harvest (-0.1378), nodes to first male flower (-0.1073), nodes to first female flower (-0.0902), weight of 100 seeds (-0.0710), number of primary branches (-0.0445), leaf length (-0.0387), stem length of internodes (-0.0307) and fruit length (-0.0018) in the last week of February in 2022.

In the last week of February in 2023, days to 50% germination had indirect positive effect at genotypic level on fruit yield per hectare via days to first male flower opening (0.0006) and negative indirect effect via number of seeds per fruit (-0.0020). Number of primary branches per vine had positive indirect effect on fruit yield per hectare via stem length of internodes (0.0013) and negative indirect effect via fruit diameter and number of seeds per fruit (-0.0009 each). Vine length at final harvest had positive indirect effect on fruit yield per hectare through number of primary branches per vine (0.0003), while negative indirect effect was observed via peduncle length (-0.0007). Stem length of internodes had genotypic positive indirect effect via peduncle length (0.0020) and genotypic negative indirect effect via number of primary branches per vine (-0.0020). Further, positive indirect effect on fruit yield per hectare was recorded by leaf length via fruit length (0.0018) and genotypic negative indirect effect via leaf width (-0.0052). Leaf width had positive indirect effect via leaf length (0.0066) and genotypic negative indirect effect via fruit diameter (-0.0021). However, positive indirect effect on fruit yield per hectare was recorded by petiole length through leaf length (0.0011) and petiole length had negative indirect effect on fruit yield per hectare via number of seeds per fruit (-0.0010). Days to first male flower opening had genotypic positive indirect effect on fruit yield per hectare via number of seeds per fruit (0.0154) and negative indirect effect via days to first female flower opening (-0.0650). Days to first female flower opening had genotypic positive indirect effect on fruit yield per hectare via days to first male flower opening (0.0421) and genotypic negative indirect effect via number of seeds per fruit (-0.0080). However, nodes to first male flower had positive indirect effect on fruit yield per hectare via number of primary branches per vine (0.0013) and negative indirect effect via nodes to first female flower (-0.0035). Nodes to first female flower had positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0025) and genotypic negative indirect effect via fruit diameter (-0.0010).

Days to first fruit harvest had genotypic positive indirect effect on fruit yield per hectare through days to first male flower opening (0.0219) and days to first female flower opening (0.0220), while genotypic negative indirect effect via stem length of internodes (-0.0049). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through fruit yield per vine (0.0948) and average fruit weight (0.0514) and genotypic negative indirect effect via number of seeds per fruit (-0.0345). Fruit diameter had positive indirect effect on fruit yield per hectare through average fruit weight (0.0019) and fruit yield per vine (0.0015), while genotypic negative indirect effect through leaf width (-0.0023). However, peduncle length had positive indirect effect on fruit yield per hectare through vine length at final harvest (0.0040) and genotypic negative indirect effect through number of primary branches per vine (-0.0022). Average fruit weight had positive indirect effect on fruit yield per hectare via fruit yield per vine (0.194) and genotypic negative indirect effect through weight of 100 seeds (-0.0066). Number of seeds per fruit had positive indirect effect on fruit yield per hectare via number of fruits per vine (0.0011) and genotypic negative indirect effect through nodes to first female flower (-0.0010). Seed length had genotypic positive indirect effect on fruit yield per hectare days to first male flower opening (0.0012), while negative indirect effect was observed via peduncle length (-0.0006). Weight of 100 seeds had positive indirect effect on fruit yield per hectare through average fruit weight (0.0004), while negative indirect effect was recorded through vine length at final harvest and seed length (-0.0003). However, Fruit yield per vine was recorded to have positive indirect effect on fruit yield per hectare via number of fruits per vine (0.8642), average fruit weight (0.6101), days to first male flower opening (0.2226), days to first female flower opening (0.2016), fruit diameter (0.1823), days to first fruit harvest (0.1810), peduncle length (0.1363), days to 50% germination (0.1347), leaf length (0.1118), petiole length (0.1043), fruit length (0.0474), leaf width (0.0297), vine length at final harvest (0.0186), stem length of internodes (0.0115) and seed length (0.0079), while negative indirect effect via number of seeds per fruit (-0.2421), nodes to first male flower (-0.1397), weight of 100 seeds (-0.0624), number of primary branches per vine (-0.0551) and nodes to first female flower (-0.0510) in the last week of February in 2023.

Table 4.6.1a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	0.0277	-0.0014	0.0003	-0.0006	-0.0008	-0.0003	0.0001	0.0254	-0.0933	0.0009	-0.0047
NPB	-0.0028	0.0135	0.0010	-0.0016	0.0000	-0.0012	0.0002	-0.0015	0.0045	0.0022	-0.0059
VL	-0.0014	-0.0021	-0.0065	0.0050	0.0013	0.0008	0.0000	0.0009	-0.0001	-0.0038	0.0044
SLI	-0.0013	-0.0016	-0.0024	0.0133	0.0006	-0.0001	0.0001	-0.0009	0.0043	-0.0026	0.0009
LL	0.0035	-0.0001	0.0013	-0.0012	-0.0064	-0.0020	0.0001	0.0048	-0.0189	-0.0012	0.0038
LW	0.0018	0.0038	0.0011	0.0001	-0.0030	-0.0044	-0.0002	0.0035	-0.0114	0.0015	-0.0006
PTL	-0.0029	-0.0016	0.0001	-0.0012	0.0004	-0.0008	-0.0013	-0.0056	0.0174	0.0004	0.0053
DFMF	0.0266	-0.0007	-0.0002	-0.0005	-0.0012	-0.0006	0.0003	0.0265	-0.0995	-0.0002	-0.0033
DFFF	0.0259	-0.0006	0.0000	-0.0006	-0.0012	-0.0005	0.0002	0.0264	-0.0998	-0.0007	-0.0023
NFMF	-0.0018	-0.0021	-0.0017	0.0025	-0.0006	0.0005	0.0000	0.0004	-0.0046	-0.0141	0.0270
NFFF	-0.0041	-0.0025	-0.0009	0.0004	-0.0008	0.0001	-0.0002	-0.0027	0.0073	-0.0120	0.0316
DFFH	0.0242	-0.0011	0.0002	-0.0020	-0.0013	-0.0005	0.0003	0.0257	-0.0965	-0.0004	-0.0020
NFV	0.0086	-0.0008	0.0008	-0.0008	0.0003	-0.0002	-0.0003	0.0064	-0.0239	0.0020	-0.0042
FL	0.0006	-0.0056	-0.0008	0.0016	-0.0015	0.0000	-0.0001	0.0013	-0.0038	0.0028	-0.0052
FD	0.0067	-0.0006	0.0006	-0.0007	-0.0013	0.0004	0.0002	0.0062	-0.0253	0.0031	-0.0144
PDL	0.0097	-0.0037	-0.0017	0.0047	0.0007	0.0008	-0.0003	0.0060	-0.0205	0.0008	-0.0010
AFW	0.0082	-0.0005	0.0011	0.0005	-0.0002	0.0005	0.0002	0.0059	-0.0200	-0.0008	0.0049
NSF	-0.0085	0.0009	0.0007	0.0009	0.0001	0.0004	0.0003	-0.0063	0.0242	-0.0020	0.0091
SL	0.0081	0.0021	0.0014	-0.0011	-0.0001	0.0002	0.0001	0.0067	-0.0292	0.0006	-0.0008
WS	0.0007	0.0009	-0.0014	-0.0003	0.0004	-0.0004	0.0001	0.0025	-0.0085	0.0010	-0.0050
FYV	0.0093	-0.0006	0.0009	-0.0004	0.0003	-0.0001	-0.0002	0.0068	-0.0247	0.0015	-0.0029

Residual: 0; Diagonal values: Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.1b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYPV
DG	0.0448	0.0044	0.0002	0.0037	-0.0022	-0.0014	0.0033	-0.0015	0.0001	0.3289
NPB	-0.0041	-0.0008	-0.0040	-0.0007	0.0018	0.0002	-0.0007	-0.0008	0.0002	-0.0445
VL	-0.0012	-0.0017	0.0011	-0.0014	-0.0017	0.0008	0.0012	0.0011	0.0006	-0.1378
SLI	-0.0075	-0.0009	0.0011	-0.0008	-0.0023	-0.0002	-0.0007	0.0004	-0.0001	-0.0307
LL	0.0106	-0.0006	0.0023	0.0031	0.0007	-0.0001	0.0001	-0.0001	-0.0001	-0.0387
LW	0.0058	0.0006	0.0000	-0.0013	0.0012	0.0006	0.0010	0.0002	0.0003	0.0191
PTL	-0.0111	0.0034	0.0007	-0.0027	-0.0015	0.0008	0.0028	0.0003	-0.0003	0.1603
DFMF	0.0497	0.0034	0.0005	0.0035	-0.0015	-0.0011	0.0026	-0.0013	0.0003	0.2517
DFFF	0.0496	0.0034	0.0004	0.0039	-0.0013	-0.0009	0.0026	-0.0015	0.0002	0.2442
NFMF	0.0013	-0.0020	-0.0019	-0.0033	0.0004	-0.0003	-0.0015	0.0002	-0.0002	-0.1073
NFFF	-0.0032	-0.0019	-0.0016	-0.0069	0.0002	-0.0007	-0.0031	0.0001	-0.0004	-0.0902
DFFH	0.0512	0.0029	0.0003	0.0031	-0.0007	-0.0009	0.0015	-0.0015	0.0002	0.2114
NFV	0.0105	0.0141	-0.0001	0.0034	-0.0013	-0.0024	0.0037	-0.0008	0.0000	0.9601
FL	0.0014	-0.0001	0.0096	0.0013	-0.0013	0.0001	-0.0002	0.0000	-0.0002	-0.0018
FD	0.0106	0.0032	0.0008	0.0152	-0.0007	-0.0009	0.0007	0.0004	0.0001	0.2446
PDL	0.0059	0.0028	0.0019	0.0017	-0.0064	-0.0003	0.0014	0.0007	0.0000	0.1872
AFW	0.0093	0.0073	-0.0001	0.0029	-0.0004	-0.0047	-0.0016	-0.0006	-0.0006	0.6787
NSF	-0.0072	-0.0048	0.0002	-0.0010	0.0008	-0.0007	-0.0108	0.0012	-0.0005	-0.2523
SL	0.0147	0.0023	0.0000	-0.0011	0.0009	-0.0005	0.0025	-0.0052	0.0004	0.1776
WS	0.0041	0.0000	-0.0008	0.0005	-0.0001	0.0011	0.0021	-0.0009	0.0027	-0.0710
FYV	0.0110	0.0137	0.0000	0.0038	-0.0012	-0.0032	0.0028	-0.0009	-0.0002	0.9846

Residual: 0; Diagonal values: Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.2a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	-0.0007	-0.0001	-0.0003	-0.0001	-0.0006	0.0004	-0.0003	-0.0568	0.0355	-0.0008	-0.0001
NPB	0.0000	-0.0029	0.0003	-0.0020	0.0012	-0.0013	-0.0005	-0.0101	0.0095	0.0013	-0.0006
VL	-0.0002	0.0009	-0.0009	0.0018	-0.0009	0.0001	0.0006	-0.0067	0.0024	-0.0002	-0.0003
SLI	0.0000	0.0013	-0.0004	0.0046	-0.0021	0.0020	-0.0002	-0.0002	-0.0006	-0.0008	0.0000
LL	-0.0001	0.0006	-0.0002	0.0018	-0.0055	0.0066	0.0011	-0.0131	0.0075	0.0001	-0.0002
LW	0.0000	0.0005	0.0000	0.0013	-0.0052	0.0070	0.0009	-0.0050	0.0035	-0.0003	0.0003
PTL	0.0001	0.0004	-0.0002	-0.0003	-0.0018	0.0018	0.0033	0.0074	-0.0077	0.0004	0.0003
DFMF	-0.0006	-0.0004	-0.0001	0.0000	-0.0011	0.0005	-0.0004	-0.0658	0.0421	0.0000	-0.0003
DFFF	-0.0006	-0.0007	-0.0001	-0.0001	-0.0010	0.0006	-0.0006	-0.0650	0.0426	0.0001	-0.0003
NFMF	-0.0002	0.0010	-0.0001	0.0009	0.0002	0.0005	-0.0004	0.0007	-0.0006	-0.0039	0.0022
NFFF	0.0000	0.0007	0.0001	-0.0001	0.0004	0.0008	0.0004	0.0078	-0.0059	-0.0035	0.0025
DFFH	-0.0006	-0.0008	0.0000	-0.0010	-0.0004	-0.0001	-0.0006	-0.0622	0.0404	0.0000	-0.0003
NFV	-0.0001	0.0002	0.0000	0.0000	-0.0009	0.0004	0.0006	-0.0159	0.0091	0.0007	-0.0002
FL	0.0002	0.0007	-0.0001	0.0001	0.0018	-0.0020	-0.0002	0.0093	-0.0058	0.0013	-0.0006
FD	0.0000	-0.0009	-0.0001	-0.0003	0.0006	-0.0021	-0.0006	-0.0101	0.0054	0.0010	-0.0010
PDL	-0.0002	0.0012	-0.0007	0.0020	-0.0011	0.0008	0.0008	-0.0126	0.0053	0.0000	-0.0003
AFW	-0.0001	0.0001	0.0001	0.0001	0.0004	-0.0005	-0.0007	-0.0150	0.0095	-0.0001	0.0004
NSF	0.0002	-0.0009	0.0002	-0.0001	0.0011	-0.0009	-0.0010	0.0154	-0.0080	-0.0008	0.0008
SL	-0.0002	-0.0002	0.0001	0.0002	0.0000	-0.0009	0.0002	-0.0176	0.0101	-0.0001	-0.0001
WS	-0.0001	-0.0002	-0.0002	0.0002	-0.0006	-0.0009	0.0000	-0.0074	0.0050	-0.0001	-0.0001
FYV	-0.0001	0.0002	0.0000	0.0001	-0.0007	0.0002	0.0004	-0.0166	0.0097	0.0006	-0.0001

Residual: 0; Diagonal values: Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.2b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Last week of February, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV
DG	0.0195	0.0132	-0.0001	0.0001	0.0017	0.0048	0.0009	0.0015	-0.0001	0.1347
NPB	0.0066	-0.0070	-0.0001	0.0022	-0.0022	-0.0009	-0.0009	0.0004	-0.0001	-0.0551
VL	-0.0010	0.0035	0.0000	0.0009	0.0040	-0.0014	0.0008	-0.0005	-0.0003	0.0186
SLI	-0.0049	0.0001	0.0000	-0.0004	0.0023	0.0008	0.0001	0.0002	-0.0001	0.0115
LL	0.0016	0.0160	-0.0001	-0.0008	0.0011	-0.0022	0.0007	0.0000	-0.0002	0.1118
LW	-0.0004	0.0052	-0.0001	-0.0023	0.0006	-0.0022	0.0004	-0.0006	0.0002	0.0297
PTL	-0.0044	0.0186	0.0000	-0.0013	0.0013	-0.0059	0.0010	0.0002	0.0000	0.1043
DFMF	0.0219	0.0235	0.0000	0.0011	0.0010	0.0064	0.0007	0.0012	-0.0002	0.2226
DFFF	0.0220	0.0206	0.0000	0.0009	0.0007	0.0063	0.0006	0.0011	-0.0002	0.2016
NFMF	-0.0001	-0.0176	-0.0001	-0.0020	0.0000	0.0007	-0.0006	0.0001	0.0000	-0.1397
NFFF	-0.0023	-0.0088	-0.0001	-0.0031	-0.0006	0.0045	-0.0010	-0.0002	0.0001	-0.0510
DFFH	0.0231	0.0183	0.0000	0.0012	-0.0001	0.0054	0.0004	0.0014	-0.0002	0.1810
NFV	0.0044	0.0970	0.0000	0.0011	0.0010	0.0149	0.0011	0.0000	0.0000	0.8642
FL	-0.0040	0.0030	0.0003	0.0000	0.0009	0.0027	-0.0004	-0.0003	0.0003	0.0474
FD	0.0039	0.0142	0.0000	0.0074	0.0001	0.0074	0.0001	-0.0004	-0.0001	0.1823
PDL	-0.0006	0.0176	0.0000	0.0001	0.0053	0.0003	0.0008	-0.0006	-0.0001	0.1363
AFW	0.0045	0.0514	0.0000	0.0019	0.0001	0.0281	-0.0005	0.0001	0.0004	0.6101
NSF	-0.0028	-0.0345	0.0000	-0.0003	-0.0013	0.0040	-0.0032	-0.0005	0.0002	-0.2421
SL	0.0071	-0.0008	0.0000	-0.0006	-0.0007	0.0006	0.0003	0.0045	-0.0003	0.0079
WS	0.0021	-0.0002	-0.0001	0.0003	0.0003	-0.0066	0.0004	0.0009	-0.0016	-0.0624
FYV	0.0047	0.0948	0.0000	0.0015	0.0008	0.0194	0.0009	0.0000	0.0001	0.8840

Residual: 0; Diagonal values: Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

4.6.2 Phenotypic path co-efficient analysis (Last week of February, 2022 and 2023)

The data presented in Table 4.6.3a, 4.6.3b, 4.6.4a and 4.6.4b, path analysis was conducted using phenotypic correlation. Path analysis results were obtained for the years 2022 and 2023 in the last week of February. These analyses considered the fruit yield per hectare as the dependable trait under investigation.

4.6.2.1 Direct effect

In the last week of February in 2022, highest positive direct effect at phenotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine (0.9554) followed by number of fruits per vine (0.0362), average fruit weight (0.0170), days to first fruit harvest (0.0103), days to first female flower opening (0.0097), number of primary branches per vine (0.0045), fruit length (0.0024), nodes to first female flower (0.0022), stem length of internodes (0.0015), weight of 100 seeds (0.0013) and petiole length (0.0010), while highest negative phenotypic direct effect was observed by days to first male flower opening (-0.0175) followed by seed length (-0.0139), number of seeds per fruit (-0.0044), nodes to first male flower (-0.0022), vine length at final harvest (-0.0020), leaf width (-0.0011), leaf length (-0.0011), peduncle length (-0.0007), days to 50% germination (-0.0007) and fruit diameter (-0.0005).

In the year 2023 in last week of February, phenotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine (0.7854) followed by number of fruits per vine (0.1800), average fruit weight (0.0653), days to first fruit harvest (0.0138), days to 50% germination (0.0082), petiole length (0.0053), nodes to first male flower (-0.0050), stem length of internodes (0.0047), fruit length (0.0044), leaf length (0.0037), fruit diameter (0.0074), number of primary branches per vine (0.0019) and leaf width (0.0055), while highest phenotypic negative direct effect was recorded by days to first male flower opening (-0.0129) followed by nodes to first female flower (-0.0090), seed length (-0.0070), days to first female flower opening (-0.0068), peduncle length (-0.0043), number of seeds per fruit (-0.0034), weight of 100 seeds (-0.0016) and vine length at final harvest (-0.0015).

4.6.2.2 Indirect effect

In the last week of February in 2022, days to 50% germination had indirect positive effect at phenotypic level on fruit yield per hectare via number of seeds per fruit (0.0002) and negative indirect effect via days to first male flower opening and days to first female flower opening (-0.0006 each). Number of primary branches per vine had phenotypic positive indirect effect on fruit yield per hectare via leaf width (0.0009) and negative indirect effect via fruit length (-0.0015) and peduncle length (-0.0010). Vine length at final harvest had phenotypic positive indirect effect on fruit yield per hectare through seed length (0.0014) and number of primary branches, leaf length and seed length (0.0003 each), while negative indirect effect was observed via stem length of internodes (-0.0005). Stem length of internodes had positive indirect effect via peduncle length (0.0005) and vine length at final harvest (0.0004) and phenotypic negative indirect effect via days to first fruit harvest (-0.0002). Further, positive

indirect effect on fruit yield per hectare was recorded by leaf length via vine length at final harvest (0.0002) and phenotypic negative indirect effect via leaf width (-0.0003). Leaf width had phenotypic positive indirect effect via peduncle length (0.0002) and negative indirect effect via leaf length (-0.0004). However, positive indirect effect on fruit yield per hectare was recorded by petiole length via peduncle length (0.0002) and petiole length had negative indirect effect on fruit yield per hectare via number of seeds per fruit (-0.0002). Days to first male flower opening had phenotypic positive indirect effect on fruit yield per hectare via nodes to first female flower (0.0016) and phenotypic negative indirect effect via number of seeds per fruit (-0.0040). Days to first female flower opening had phenotypic positive indirect effect on fruit yield per hectare via days to first fruit harvest (0.0091) and phenotypic negative indirect effect via number of seeds per fruit (-0.0021). However, nodes to first male flower had phenotypic positive indirect effect on fruit yield per hectare via fruit diameter (0.0005) and phenotypic negative indirect effect via nodes to first female flower (-0.0016). Nodes to first female flower had phenotypic positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0014) and negative indirect effect via fruit diameter (-0.0007).

Days to first fruit harvest had phenotypic positive indirect effect on fruit yield per hectare through days to first female flower opening (0.0097) and days to first male flower opening (0.0097), while negative indirect effect via petiole length (-0.0021). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through fruit yield per vine (0.0347) and phenotypic negative indirect effect via number of seeds per fruit (-0.0111). Fruit length had phenotypic positive indirect effect on fruit yield per hectare through leaf length (0.0005), while negative indirect effect via number of primary branches per vine (-0.0008). Fruit diameter had positive indirect effect on fruit yield per hectare through nodes to first female flower (0.0002) and phenotypic negative indirect effect through days to first female flower opening (-0.0001). However, peduncle length had positive indirect effect on fruit yield per hectare through number of primary branches (0.0002) and phenotypic negative indirect effect through stem length of internodes (-0.0002). Average fruit weight had positive indirect effect on fruit yield per hectare via fruit yield per vine (0.0107) and negative indirect effect through weight of 100 seeds (-0.0028). Number of seeds per fruit had positive indirect effect on fruit yield per hectare via number of fruits per vine (0.0013) and phenotypic negative indirect effect through nodes to first female flower (-0.0011). Seed length had phenotypic positive indirect effect on fruit yield per hectare via number of seeds per fruit (0.0027), while negative indirect effect was observed via days to first fruit harvest (-0.0031). Weight of 100 seeds had positive indirect effect on fruit yield per hectare through leaf width and vine length at final harvest (0.0002 each), while negative indirect effect was recorded through number of seeds per fruit and average fruit weight (-0.0002). However, Fruit yield per vine was recorded to have positive indirect effect on fruit yield per hectare via number of fruits per vine (0.9134), average fruit weight (0.6157), days to 50% germination (0.2820), days to first male flower opening (0.2251),

days to first female flower opening (0.2140), fruit diameter (0.2005), days to first fruit harvest (0.1897), peduncle length (0.1568), petiole length (0.1473), seed length (0.1156) and fruit length (0.0097), while negative indirect effect via number of seeds per fruit (-0.2102), nodes to first male flower (-0.0899), nodes to first female flower (-0.0898), weight of 100 seeds (-0.0720), vine length at final harvest (-0.0678), stem length of internodes (-0.0263), leaf length (-0.0259), number of primary branches (-0.0233) and leaf width (0.0065) in the last week of February in 2022.

In the last week of February in 2023, days to 50% germination had indirect positive effect at phenotypic level on fruit yield per hectare via days to first male flower opening (0.0060) and negative indirect effect via number of seeds per fruit (-0.0019). Number of primary branches per vine had positive indirect effect on fruit yield per hectare via fruit diameter (0.0004) and negative indirect effect via stem length of internodes (-0.0007). Vine length at final harvest had positive indirect effect on fruit yield per hectare through number of seeds per fruit (0.0004), while negative indirect effect was observed via peduncle length (-0.0010). Stem length of internodes had phenotypic positive indirect effect via peduncle length (0.0019) and phenotypic negative indirect effect via number of primary branches per vine (-0.0016). Further, positive indirect effect on fruit yield per hectare was recorded by leaf length through leaf width (0.0025) and phenotypic negative indirect effect via fruit length (-0.0082). Leaf width had positive indirect effect via leaf length (0.0037) and phenotypic negative indirect effect via fruit diameter (-0.0015). However, positive indirect effect on fruit yield per hectare was recorded by petiole length through leaf length (0.0014) and petiole length had negative indirect effect on fruit yield per hectare via number of seeds per fruit (-0.0015). Days to first male flower opening had phenotypic positive indirect effect on fruit yield per hectare via days to number of seeds per fruit (0.0028) and negative indirect effect via days to first female flower opening (-0.0121). Days to first female flower opening had phenotypic positive indirect effect on fruit yield per hectare via number of seeds per fruit (0.0012) and negative indirect effect via days to first male flower opening (-0.0064). However, nodes to first male flower had positive indirect effect on fruit yield per hectare via nodes to first female flower (0.0037) and negative indirect effect via fruit length (-0.0013). Nodes to first female flower had positive indirect effect on fruit yield per hectare via fruit diameter (0.0032) and phenotypic negative indirect effect via nodes to first male flower (-0.0067).

Days to first fruit harvest had positive indirect effect on fruit yield per hectare through days to first female flower opening (0.0127) and days to first male flower opening (0.0122), while negative indirect effect via stem length of internodes (-0.0026). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through fruit yield per vine (0.1728) and average fruit weight (0.0729) and phenotypic negative indirect effect via number of seeds per fruit (-0.0577). Fruit length had positive indirect effect on fruit yield per hectare through average vine length at final harvest (0.0007), while phenotypic negative indirect effect

through leaf width (-0.0012). Fruit diameter had positive indirect effect on fruit yield per hectare through number of primary branches (0.0005), average fruit weight and fruit yield per vine (0.0004 each), while phenotypic negative indirect effect through leaf width (-0.0007). However, peduncle length had positive indirect effect on fruit yield per hectare through number of primary branches (0.0013) and negative indirect effect through vine length at final harvest (-0.0029). Average fruit weight had positive indirect effect on fruit yield per hectare via fruit yield per vine (0.0412) and phenotypic negative indirect effect through petiole length (-0.0125). Number of seeds per fruit had positive indirect effect on fruit yield per hectare via number of fruits per vine (0.0011) and phenotypic negative indirect effect through nodes to first female flower (-0.0010). Seed length had positive indirect effect on fruit yield per hectare number of seeds per fruit (0.0008), while negative indirect effect was observed via days to 50% germination (-0.0020). Weight of 100 seeds had positive indirect effect on fruit yield per hectare through average fruit weight (0.0002), while negative indirect effect was recorded through vine length at final harvest and seed length (-0.0003). However, Fruit yield per vine was recorded to have phenotypic positive indirect effect on fruit yield per hectare via number of fruits per vine (0.7528), average fruit weight (0.4948), days to first male flower opening (0.1835), days to first female flower opening (0.1674), days to first fruit harvest (0.1513), fruit diameter (0.1278), peduncle length (0.1025), days to 50% germination (0.0896), petiole length (0.0888), leaf length (0.0683), seed length (0.0303), leaf width (0.0299), fruit length (0.0200), vine length at final harvest (0.0041) and stem length of internodes (0.0034), while negative indirect effect via number of seeds per fruit (-0.1981), nodes to first male flower (-0.0996), weight of 100 seeds (-0.0452), nodes to first female flower (-0.0417) and number of primary branches (-0.0323) in the last week of February in 2023.

Table 4.6.3a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	-0.0007	-0.0002	0.0000	0.0000	-0.0001	-0.0001	-0.0001	-0.0145	0.0080	0.0001	-0.0003
NPB	0.0000	0.0045	0.0003	-0.0001	0.0000	-0.0002	-0.0001	0.0012	-0.0004	0.0003	-0.0003
VL	0.0000	-0.0006	-0.0020	0.0004	0.0002	0.0001	0.0000	-0.0001	0.0000	-0.0004	0.0002
SLI	0.0000	-0.0003	-0.0005	0.0015	0.0001	0.0000	-0.0001	0.0008	-0.0004	-0.0004	0.0001
LL	-0.0001	-0.0001	0.0003	-0.0001	-0.0011	-0.0004	-0.0001	-0.0026	0.0016	-0.0002	0.0002
LW	-0.0001	0.0009	0.0002	0.0000	-0.0003	-0.0011	0.0002	-0.0018	0.0011	0.0002	0.0000
PTL	0.0001	-0.0005	0.0000	-0.0001	0.0001	-0.0002	0.0010	0.0031	-0.0016	0.0001	0.0003
DFMF	-0.0006	-0.0003	0.0000	-0.0001	-0.0002	-0.0001	-0.0002	-0.0175	0.0094	0.0000	-0.0002
DFFF	-0.0006	-0.0002	0.0000	-0.0001	-0.0002	-0.0001	-0.0002	-0.0170	0.0097	-0.0001	-0.0001
NFMF	0.0000	-0.0005	-0.0004	0.0002	-0.0001	0.0001	0.0000	-0.0002	0.0004	-0.0022	0.0014
NFFF	0.0001	-0.0008	-0.0002	0.0001	-0.0001	0.0000	0.0002	0.0016	-0.0006	-0.0016	0.0019
DFFH	-0.0005	-0.0003	0.0001	-0.0002	-0.0002	-0.0001	-0.0002	-0.0165	0.0091	-0.0001	-0.0001
NFV	-0.0002	-0.0002	0.0002	-0.0001	0.0000	0.0000	0.0002	-0.0039	0.0021	0.0003	-0.0002
FL	0.0000	-0.0015	-0.0002	0.0002	-0.0002	0.0000	0.0001	-0.0004	0.0003	0.0004	-0.0003
FD	-0.0001	-0.0002	0.0002	-0.0001	-0.0002	0.0001	-0.0001	-0.0040	0.0023	0.0005	-0.0007
PDL	-0.0002	-0.0010	-0.0004	0.0005	0.0001	0.0002	0.0002	-0.0039	0.0019	0.0001	-0.0001
AFW	-0.0001	-0.0001	0.0001	0.0000	0.0000	0.0001	-0.0001	-0.0034	0.0017	-0.0001	0.0001
NSF	0.0002	0.0002	0.0002	0.0001	0.0000	0.0000	-0.0002	0.0040	-0.0021	-0.0003	0.0005
SL	-0.0001	0.0006	0.0003	-0.0001	0.0000	0.0000	0.0000	-0.0030	0.0021	0.0001	0.0000
WS	-0.0001	0.0001	-0.0002	-0.0001	0.0000	-0.0002	-0.0001	-0.0012	0.0007	0.0001	-0.0002
FYV	-0.0002	-0.0001	0.0001	0.0000	0.0000	0.0000	0.0002	-0.0041	0.0022	0.0002	-0.0002

Residual: 0.0004; **Diagonal values:** Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.3b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYPV
DG	0.0079	0.0102	0.0001	-0.0001	-0.0002	0.0037	0.0011	-0.0025	0.0001	0.2820
NPB	-0.0007	-0.0015	-0.0008	0.0000	0.0002	-0.0003	-0.0002	-0.0019	0.0000	-0.0233
VL	-0.0002	-0.0027	0.0003	0.0000	-0.0001	-0.0011	0.0003	0.0019	0.0002	-0.0678
SLI	-0.0015	-0.0018	0.0003	0.0000	-0.0002	0.0003	-0.0003	0.0006	-0.0001	-0.0263
LL	0.0018	-0.0010	0.0005	-0.0001	0.0001	0.0001	-0.0001	-0.0001	0.0000	-0.0259
LW	0.0009	0.0003	0.0000	0.0000	0.0001	-0.0013	0.0002	-0.0002	0.0002	-0.0065
PTL	-0.0021	0.0082	0.0001	0.0001	-0.0001	-0.0024	0.0010	0.0006	-0.0001	0.1473
DFMF	0.0097	0.0081	0.0001	-0.0001	-0.0002	0.0033	0.0010	-0.0025	0.0001	0.2251
DFFF	0.0097	0.0079	0.0001	-0.0001	-0.0001	0.0030	0.0009	-0.0031	0.0001	0.2140
NFMF	0.0003	-0.0044	-0.0004	0.0001	0.0000	0.0008	-0.0005	0.0006	-0.0001	-0.0899
NFFF	-0.0005	-0.0040	-0.0003	0.0002	0.0000	0.0013	-0.0011	-0.0002	-0.0002	-0.0898
DFFH	0.0103	0.0068	0.0000	-0.0001	-0.0001	0.0027	0.0005	-0.0030	0.0001	0.1897
NFV	0.0019	0.0362	0.0000	-0.0001	-0.0001	0.0070	0.0013	-0.0015	0.0000	0.9134
FL	0.0001	0.0004	0.0024	0.0000	-0.0001	-0.0005	-0.0003	0.0004	-0.0001	0.0097
FD	0.0020	0.0068	0.0001	-0.0005	-0.0001	0.0028	0.0004	0.0008	0.0001	0.2005
PDL	0.0012	0.0063	0.0004	-0.0001	-0.0007	0.0011	0.0005	0.0017	0.0000	0.1568
AFW	0.0016	0.0149	-0.0001	-0.0001	-0.0001	0.0170	-0.0006	-0.0013	-0.0002	0.6157
NSF	-0.0012	-0.0111	0.0002	0.0000	0.0001	0.0022	-0.0044	0.0027	-0.0002	-0.2102
SL	0.0022	0.0037	-0.0001	0.0000	0.0001	0.0015	0.0008	-0.0139	0.0001	0.1156
WS	0.0006	-0.0002	-0.0002	0.0000	0.0000	-0.0028	0.0008	-0.0014	0.0013	-0.0720
FYV	0.0020	0.0347	0.0000	-0.0001	-0.0001	0.0110	0.0010	-0.0018	-0.0001	0.9554

Residual: 0.0004; Diagonal values: Direct Effects

DG: Days to 50% germination; NPB: Number of primary branches per vine; VL: Vine length at final harvest (m); SLI: Stem length of internodes (cm); LL: Leaf length (cm); LW: Leaf width (cm); PL: Petiole length (cm); DFMF: Days to first male flower opening; DFFF: Days to first female flower opening; NFMF: Nodes to first male flower; NFFF: Nodes to first female flower; DFFH: Days to first fruit harvest; NFV: Number of fruits per vine; FL: Fruit length (cm); FD: Fruit diameter (cm); PDL: Peduncle length (cm); AFW: Average fruit weight (g); NSF: Number of seeds per fruit; SL: Seed length (cm); WS: Weight of 100 seeds (g); FYV: Fruit yield per vine (kg); FYH: Fruit yield per ha (q/ha)

Table 4.6.4a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	0.0082	0.0000	-0.0003	-0.0001	0.0003	0.0000	-0.0003	-0.0095	-0.0049	0.0007	-0.0003
NPB	-0.0002	0.0019	0.0003	-0.0016	-0.0006	-0.0001	-0.0008	-0.0015	-0.0012	-0.0010	0.0016
VL	0.0017	-0.0004	-0.0015	0.0016	0.0005	0.0000	0.0009	-0.0011	-0.0003	0.0004	0.0011
SLI	-0.0001	-0.0007	-0.0005	0.0047	0.0011	0.0001	-0.0003	0.0001	0.0001	0.0009	0.0001
LL	0.0007	-0.0003	-0.0002	0.0015	0.0037	0.0004	0.0014	-0.0019	-0.0010	-0.0001	0.0002
LW	0.0005	-0.0003	0.0000	0.0010	0.0025	0.0006	0.0013	-0.0011	-0.0005	0.0003	-0.0007
PTL	-0.0004	-0.0003	-0.0002	-0.0003	0.0010	0.0001	0.0053	0.0014	0.0012	-0.0005	-0.0013
DFMF	0.0060	0.0002	-0.0001	0.0000	0.0005	0.0001	-0.0006	-0.0129	-0.0064	-0.0001	0.0011
DFFF	0.0059	0.0003	-0.0001	-0.0001	0.0005	0.0000	-0.0009	-0.0121	-0.0068	0.0000	0.0010
NFMF	0.0012	-0.0004	-0.0001	0.0009	-0.0001	0.0000	-0.0005	0.0004	0.0001	0.0050	-0.0067
NFFF	0.0002	-0.0003	0.0002	-0.0001	-0.0001	0.0000	0.0008	0.0015	0.0008	0.0037	-0.0090
DFFH	0.0058	0.0005	0.0001	-0.0009	0.0002	0.0000	-0.0010	-0.0114	-0.0062	0.0000	0.0007
NFV	0.0007	-0.0001	0.0000	-0.0001	0.0004	0.0000	0.0010	-0.0029	-0.0013	-0.0008	0.0007
FL	-0.0015	-0.0002	-0.0002	0.0002	-0.0008	-0.0001	-0.0003	0.0018	0.0008	-0.0013	0.0017
FD	0.0002	0.0004	-0.0002	-0.0003	-0.0004	-0.0002	-0.0009	-0.0018	-0.0008	-0.0012	0.0032
PDL	0.0021	-0.0006	-0.0010	0.0019	0.0006	0.0000	0.0011	-0.0022	-0.0008	0.0000	0.0009
AFW	0.0011	0.0001	0.0001	0.0002	-0.0002	0.0000	-0.0010	-0.0024	-0.0013	0.0002	-0.0009
NSF	-0.0019	0.0003	0.0004	-0.0001	-0.0006	-0.0001	-0.0015	0.0028	0.0012	0.0008	-0.0026
SL	0.0023	0.0002	0.0002	0.0003	0.0001	-0.0001	0.0002	-0.0028	-0.0014	0.0003	0.0002
WS	0.0006	0.0000	-0.0002	0.0001	0.0001	-0.0001	0.0001	-0.0009	-0.0007	0.0000	-0.0001
FYV	0.0009	-0.0001	0.0000	0.0000	0.0003	0.0000	0.0006	-0.0030	-0.0014	-0.0006	0.0005

Residual: 0.0014; **Diagonal values:** Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.4b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Last week of February, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV
DG	0.0098	0.0159	-0.0008	0.0001	-0.0011	0.0085	0.0008	-0.0020	-0.0001	0.0896
NPB	0.0033	-0.0121	-0.0004	0.0005	0.0013	0.0024	-0.0006	-0.0007	0.0000	-0.0323
VL	-0.0006	0.0039	0.0007	0.0003	-0.0029	-0.0026	0.0009	0.0007	-0.0002	0.0041
SLI	-0.0026	-0.0019	0.0002	-0.0002	-0.0018	0.0021	0.0001	-0.0004	-0.0001	0.0034
LL	0.0006	0.0194	-0.0010	-0.0003	-0.0007	-0.0038	0.0006	-0.0001	-0.0001	0.0683
LW	-0.0004	0.0096	-0.0012	-0.0007	-0.0003	-0.0028	0.0004	0.0007	0.0002	0.0299
PTL	-0.0025	0.0341	-0.0002	-0.0004	-0.0009	-0.0125	0.0010	-0.0003	0.0000	0.0888
DFMF	0.0122	0.0406	-0.0006	0.0004	-0.0007	0.0123	0.0008	-0.0016	-0.0001	0.1835
DFFF	0.0127	0.0355	-0.0005	0.0003	-0.0005	0.0123	0.0006	-0.0015	-0.0002	0.1674
NFMF	0.0000	-0.0275	-0.0011	-0.0006	0.0000	0.0021	-0.0006	-0.0004	0.0000	-0.0996
NFFF	-0.0011	-0.0138	-0.0008	-0.0009	0.0004	0.0067	-0.0010	0.0002	0.0000	-0.0417
DFFH	0.0138	0.0323	-0.0007	0.0004	0.0001	0.0103	0.0004	-0.0019	-0.0002	0.1513
NFV	0.0025	0.1800	-0.0001	0.0003	-0.0007	0.0265	0.0011	0.0000	0.0000	0.7528
FL	-0.0022	-0.0018	0.0044	0.0000	-0.0006	0.0059	-0.0003	0.0005	0.0002	0.0200
FD	0.0023	0.0209	0.0000	0.0025	-0.0001	0.0116	0.0001	0.0004	0.0000	0.1278
PDL	-0.0003	0.0282	0.0006	0.0000	-0.0043	0.0006	0.0008	0.0006	-0.0001	0.1025
AFW	0.0022	0.0729	0.0004	0.0004	0.0000	0.0653	-0.0003	-0.0004	0.0002	0.4948
NSF	-0.0016	-0.0577	0.0004	-0.0001	0.0010	0.0062	-0.0034	0.0008	0.0002	-0.1981
SL	0.0036	0.0003	-0.0003	-0.0002	0.0004	0.0032	0.0004	-0.0070	-0.0003	0.0303
WS	0.0014	-0.0011	-0.0005	0.0001	-0.0002	-0.0097	0.0004	-0.0012	-0.0016	-0.0452
FYV	0.0027	0.1728	0.0001	0.0004	-0.0006	0.0412	0.0009	-0.0003	0.0001	0.7854

Residual: 0.0014; **Diagonal values:** Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

4.6.3 Genotypic path co-efficient analysis (Second week of March, 2022 and 2023)

The results of path analysis exhibited for different traits of interest are presented in Table 4.6.5a, 4.6.5b, 4.6.6a and 4.6.6b in the second week of March during 2022 and 2023, respectively. Genotypic path analysis was obtained from using genotypic correlation over fruit yield per hectare as dependable characters. The direct and indirect effect of various traits on fruit yield per hectare are mentioned below.

4.6.3.1 Direct effect

In the second week of March during 2022, highest positive direct effect at genotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine (0.9468) followed by days to first fruit harvest (0.2220), leaf width (0.1207), stem length of internodes (0.0475), days to 50% germination (0.0469), fruit length (0.0463), weight of 100 seeds (0.0372), average fruit weight (0.0371), days to first male flower opening (0.0345), nodes to first female flower (0.0127) and vine length at final harvest (0.0071), while highest negative genotypic direct effect was recorded by days to first female flower opening (-0.2822) followed by leaf length (-0.0626), peduncle length (-0.0364), nodes to first male flower (-0.0346), seed length (-0.0293), petiole length (-0.0255), fruit diameter (-0.0210), number of seeds per fruit (-0.0200), number of fruits per vine (-0.0142), and number of primary branches per vine (-0.0083).

Genotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine (0.9479) followed by number of fruits per vine (0.0457), average fruit weight (0.0125), nodes to first male flower (0.0079), days to first male flower opening (0.0041), petiole length (0.0025), days to first fruit harvest (0.0023), number of seeds per fruit (0.0019), days to 50% germination (0.0018), seed length (0.0015), leaf width (0.0007) and stem length of internodes (0.0006), while highest genotypic negative direct effect was observed by nodes to first female flower (-0.0109) followed by days to first female flower opening (-0.0085), peduncle length (-0.0021), vine length at final harvest (-0.0018), leaf length (-0.0016), weight of 100 seeds (-0.0014), fruit diameter (-0.0012), fruit length (-0.0003) and number of primary branches per vine (-0.0003) during 2023 in second week of March.

4.6.3.2 Indirect effect

In the second week of March in 2022, days to 50% germination had indirect positive effect at genotypic level on fruit yield per hectare via days to first male flower opening (0.0385) and days to first female flower opening (0.0380), while negative indirect effect via number of seeds per fruit (-0.0118). Number of primary branches per vine had genotypic positive indirect effect on fruit yield per hectare via days to 50% germination (0.0036), and fruit yield per vine and number of fruit per vine (0.0032 each), while negative indirect effect via number of seeds per fruit (-0.0027). Vine length at final harvest had genotypic positive indirect effect on fruit yield per hectare via number of fruits per vine (0.0017) and fruit yield per vine (0.0014), while negative indirect effect was observed via weight of 100 seeds (-0.0017). Stem length of internodes had genotypic positive indirect effect via average fruit weight (0.0171) and

genotypic negative indirect effect via peduncle length (-0.0154). However, positive indirect effect on fruit yield per hectare was recorded by leaf length via weight of 100 seeds (0.0046) and genotypic negative indirect effect via leaf width (-0.0295). Leaf width had genotypic positive indirect effect via petiole length (0.0624) and genotypic negative indirect effect via stem length of internodes (-0.0392). Further, positive indirect effect on fruit yield per hectare was reported by petiole length via stem length of internodes (0.0033) and petiole length had negative indirect effect on fruit yield per hectare via leaf width (-0.0132). Days to first male flower opening had genotypic positive indirect effect on fruit yield per hectare via days to first female flower opening (0.0346) and days to first fruit harvest (0.0337) and genotypic negative indirect effect via number of primary branches per vine (-0.0101). Days to first female flower opening had genotypic positive indirect effect on fruit yield per hectare via number of primary branches per vine (0.0781) and genotypic negative indirect effect via days to first male flower opening (-0.2818). However, nodes to first male flower had genotypic positive indirect effect on fruit yield per hectare via peduncle length (0.0113) and fruit diameter (0.0101), while genotypic negative indirect effect via nodes to first female flower (-0.0310). Nodes to first female flower had genotypic positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0114) and genotypic negative indirect effect via fruit diameter (-0.066).

Days to first fruit harvest had genotypic positive indirect effect on fruit yield per hectare through days to first male flower opening (0.2160) and days to first female flower opening (0.2155), while genotypic negative indirect effect via number of primary branches per vine (-0.0468). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through number of primary branches per vine (0.0054) and genotypic negative indirect effect via fruit yield per vine (-0.0139). Fruit length had genotypic positive indirect effect on fruit yield per hectare through peduncle length (0.0199), while genotypic negative indirect effect via days to 50% germination (-0.0094). Fruit diameter had positive indirect effect on fruit yield per hectare through nodes to first female flower (0.0110) and genotypic negative indirect effect through days to 50% germination (-0.0069). However, peduncle length had positive indirect effect on fruit yield per hectare through nodes to first male flower (0.0119) and genotypic negative indirect effect through fruit length (-0.0156). Average fruit weight had positive indirect effect on fruit yield per hectare via fruit yield per vine (0.0262) and genotypic negative indirect effect through number of primary branches per vine (-0.0122). Number of seeds per fruit had positive indirect effect on fruit yield per hectare via number of fruits per vine (0.0064) and genotypic negative indirect effect through number of primary branches per vine (-0.0066). Seed length had genotypic positive indirect effect on fruit yield per hectare via number of seeds per fruit (0.0079), while negative indirect effect was observed via days to first fruit harvest (-0.0096). Weight of 100 seeds had positive indirect effect on fruit yield per hectare through peduncle length (0.0080), while negative indirect effect was recorded through stem length of internodes (-0.0105). However, Fruit yield per vine was recorded to have positive

indirect effect on fruit yield per hectare via number of fruits per vine (0.9284), average fruit weight (0.6691), leaf width (0.3064), days to first fruit harvest (0.2801), seed length (0.2779), days to first male flower opening (0.2806), days to first female flower opening (0.2638), days to 50% germination (0.2619), fruit diameter (0.2531), petiole length (0.2231), vine length at final harvest (0.1918), stem length of internodes (0.1635) and leaf length (0.0332), while negative indirect effect via number of primary branches (-0.3736), number of seeds per fruit (-0.2176), nodes to first female flower (-0.1451), nodes to first male flower (-0.1337), weight of 100 seeds (-0.0849), fruit length (-0.0831) and peduncle length (0.0247) in the second week of March in 2022.

In the second week of March during 2023, days to 50% germination had indirect positive effect at genotypic level on fruit yield per hectare via days to first fruit harvest (0.0013) and negative indirect effect via fruit length (-0.0006). Number of primary branches per vine had positive indirect effect on fruit yield per hectare via number of fruits per vine, fruit yield per vine and days to first male flower opening (0.0001 each), while negative indirect effect via number of seeds per fruit (-0.0001). Vine length at final harvest had positive indirect effect on fruit yield per hectare through weight of 100 seeds (0.0004), while negative indirect effect was observed via leaf width (-0.0005). Stem length of internodes had genotypic positive indirect effect via average fruit weight (0.0002) and genotypic negative indirect effect via leaf width (-0.0002). Further, positive indirect effect on fruit yield per hectare was recorded by leaf length via number of primary branches per vine (0.0003) and genotypic negative indirect effect via leaf width (-0.0015). Leaf width had positive indirect effect via leaf length (0.0007) and genotypic negative indirect effect via stem length of internodes (-0.0002). However, positive indirect effect on fruit yield per hectare was recorded by petiole length through leaf length and leaf width (0.0013 each), while petiole length had negative indirect effect on fruit yield per hectare via days to 50% germination (-0.0005). Days to first male flower opening had genotypic positive indirect effect on fruit yield per hectare via days to first female flower opening (0.0038) and negative indirect effect via number of primary branches per vine (-0.0015). Days to first female flower opening had genotypic positive indirect effect on fruit yield per hectare via fruit length (0.0027) and genotypic negative indirect effect via days to first fruit harvest (-0.0080). However, nodes to first male flower had positive indirect effect on fruit yield per hectare via nodes to first female flower (0.0073) and negative indirect effect via fruit diameter (-0.0029). Nodes to first female flower had positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0101) and genotypic negative indirect effect via fruit diameter (-0.0053).

Days to first fruit harvest had genotypic positive indirect effect on fruit yield per hectare through days to first female flower opening (0.0022) and days to first male flower opening (0.0021), while genotypic negative indirect effect via fruit length (-0.0007). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through fruit yield per vine (0.0445) and average fruit weight (0.0216), while genotypic negative indirect effect via number

of primary branches per vine (-0.0194). Fruit diameter had positive indirect effect on fruit yield per hectare through average nodes to first female flower (0.0006), while genotypic negative indirect effect through leaf length (-0.0004). However, peduncle length had positive indirect effect on fruit yield per hectare through stem length of internodes (0.0004) and genotypic negative indirect effect through petiole length (-0.0005). Average fruit weight had positive indirect effect on fruit yield per hectare via fruit yield per vine (0.0081) and genotypic negative indirect effect through number of primary branches per vine (-0.0032). Number of seeds per fruit had positive indirect effect on fruit yield per hectare via number of primary branches per vine (0.0006) and genotypic negative indirect effect through number of fruits per vine (-0.0006). Seed length had genotypic positive indirect effect on fruit yield per hectare days to 50% germination (0.0006), while negative indirect effect was observed via fruit length (-0.0005). Weight of 100 seeds had positive indirect effect on fruit yield per hectare through stem length of internodes (0.0004), while negative indirect effect was recorded through vine length at final harvest and seed length (-0.0003). However, Fruit yield per vine was recorded to have positive indirect effect on fruit yield per hectare via number of fruits per vine (0.9243), average fruit weight (0.6145), leaf length (0.3436), leaf width (0.3276), days to first fruit harvest (0.2805), petiole length (0.2629), days to first male flower opening (0.2627), days to first female flower opening (0.2458), vine length at final harvest (0.2022), fruit diameter (0.1947), stem length of internodes (0.1778), seed length (0.1289), days to 50% germination (0.0922) and fruit length (0.0163), while negative indirect effect via number of primary branches per vine (-0.4012), number of seeds per fruit (-0.2184), nodes to first male flower (-0.1767), nodes to first female flower (-0.1105), weight of 100 seeds (-0.0840) and peduncle length (0.0046) in the second week of March in 2023.

Table 4.6.5a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	0.0469	0.0036	0.0003	0.0032	-0.0060	0.0119	-0.0037	0.0285	-0.2288	-0.0002	-0.0017
NPB	-0.0202	-0.0083	-0.0010	-0.0039	-0.0107	0.0015	-0.0015	-0.0101	0.0781	0.0041	0.0006
VL	0.0020	0.0012	0.0071	-0.0049	-0.0190	0.0352	0.0004	0.0025	-0.0242	-0.0055	0.0020
SLI	0.0032	0.0007	-0.0007	0.0475	-0.0055	-0.0392	0.0033	0.0051	-0.0318	-0.0031	-0.0015
LL	0.0045	-0.0014	0.0022	0.0042	-0.0626	0.0569	-0.0041	0.0077	-0.0636	-0.0077	0.0019
LW	0.0046	-0.0001	0.0021	-0.0154	-0.0295	0.1207	-0.0132	0.0051	-0.0533	-0.0018	0.0019
PTL	0.0068	-0.0005	-0.0001	-0.0061	-0.0101	0.0624	-0.0255	-0.0004	-0.0120	0.0042	0.0008
DFMF	0.0385	0.0024	0.0005	0.0069	-0.0139	0.0176	0.0003	0.0347	-0.2818	-0.0024	-0.0014
DFFF	0.0380	0.0023	0.0006	0.0053	-0.0141	0.0228	-0.0011	0.0346	-0.2822	-0.0027	-0.0011
NFMF	0.0003	0.0010	0.0011	0.0042	-0.0140	0.0063	0.0031	0.0024	-0.0219	-0.0346	0.0114
NFFF	-0.0061	-0.0004	0.0011	-0.0057	-0.0092	0.0180	-0.0015	-0.0037	0.0253	-0.0310	0.0127
DFFH	0.0363	0.0017	0.0008	0.0041	-0.0168	0.0127	0.0009	0.0337	-0.2739	-0.0025	-0.0010
NFV	0.0137	0.0032	0.0017	0.0052	0.0002	0.0387	-0.0063	0.0093	-0.0710	0.0065	-0.0024
FL	-0.0095	-0.0011	-0.0002	-0.0004	-0.0159	-0.0167	-0.0053	-0.0040	0.0423	0.0064	-0.0024
FD	0.0154	0.0023	-0.0011	0.0106	-0.0145	0.0197	-0.0031	0.0092	-0.0603	0.0101	-0.0066
PDL	0.0017	-0.0005	-0.0005	-0.0154	-0.0021	0.0173	-0.0077	-0.0035	0.0297	0.0113	-0.0024
AFW	0.0075	0.0027	-0.0001	0.0171	-0.0065	0.0209	-0.0036	0.0098	-0.0741	-0.0039	0.0013
NSF	-0.0118	-0.0027	0.0008	-0.0069	-0.0037	0.0035	-0.0019	-0.0088	0.0681	-0.0053	0.0039
SL	0.0007	0.0004	0.0003	-0.0009	0.0000	0.0238	0.0016	0.0104	-0.0858	0.0074	-0.0022
WS	-0.0006	0.0000	-0.0017	-0.0134	0.0046	-0.0232	-0.0018	0.0021	-0.0147	0.0027	-0.0017
FYV	0.0130	0.0033	0.0014	0.0082	-0.0022	0.0391	-0.0060	0.0103	-0.0786	0.0049	-0.0019

Residual: 0; Diagonal values: Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.5b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV
DG	0.1719	-0.0041	-0.0094	-0.0069	-0.0013	0.0060	0.0050	-0.0004	-0.0005	0.2619
NPB	-0.0468	0.0054	0.0060	0.0058	-0.0021	-0.0122	-0.0066	0.0014	0.0000	-0.3736
VL	0.0263	-0.0033	-0.0012	0.0032	0.0024	-0.0007	-0.0022	-0.0010	-0.0089	0.1918
SLI	0.0191	-0.0015	-0.0004	-0.0047	0.0118	0.0134	0.0029	0.0006	-0.0105	0.1635
LL	0.0595	0.0001	0.0117	-0.0048	-0.0012	0.0038	-0.0012	0.0000	-0.0028	0.0332
LW	0.0234	-0.0045	-0.0064	-0.0034	-0.0052	0.0064	-0.0006	-0.0058	-0.0072	0.3064
PTL	-0.0075	-0.0035	0.0097	-0.0026	-0.0109	0.0053	-0.0015	0.0019	0.0026	0.2231
DFMF	0.2160	-0.0038	-0.0054	-0.0056	0.0037	0.0105	0.0051	-0.0088	0.0023	0.2806
DFFF	0.2155	-0.0036	-0.0069	-0.0045	0.0038	0.0097	0.0048	-0.0089	0.0019	0.2638
NFMF	0.0159	0.0027	-0.0086	0.0062	0.0119	0.0042	-0.0031	0.0063	-0.0029	-0.1337
NFFF	-0.0177	0.0027	-0.0088	0.0110	0.0070	0.0038	-0.0062	0.0051	-0.0050	-0.1451
DFFH	0.2220	-0.0038	-0.0046	-0.0034	0.0025	0.0098	0.0036	-0.0096	0.0030	0.2801
NFV	0.0597	-0.0142	-0.0046	-0.0050	0.0002	0.0196	0.0064	-0.0077	-0.0009	0.9284
FL	-0.0220	0.0014	0.0463	-0.0047	-0.0156	-0.0028	-0.0039	-0.0008	0.0042	-0.0831
FD	0.0355	-0.0034	0.0103	-0.0210	-0.0032	0.0090	0.0016	0.0009	0.0027	0.2531
PDL	-0.0150	0.0001	0.0199	-0.0019	-0.0364	-0.0024	-0.0037	0.0019	0.0080	-0.0247
AFW	0.0584	-0.0075	-0.0035	-0.0051	0.0023	0.0371	-0.0022	-0.0044	-0.0087	0.6691
NSF	-0.0398	0.0045	0.0091	0.0017	-0.0067	0.0041	-0.0200	0.0079	-0.0078	-0.2176
SL	0.0729	-0.0037	0.0013	0.0007	0.0023	0.0056	0.0054	-0.0293	0.0053	0.2779
WS	0.0179	0.0003	0.0052	-0.0015	-0.0079	-0.0087	0.0042	-0.0042	0.0372	-0.0849
FYV	0.0657	-0.0139	-0.0041	-0.0056	0.0010	0.0262	0.0046	-0.0086	-0.0033	0.9468

Residual: 0; Diagonal values: Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.6a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	0.0018	0.0001	-0.0004	-0.0001	0.0002	0.0000	-0.0005	0.0031	-0.0063	0.0009	0.0000
NPB	-0.0003	-0.0003	0.0003	0.0000	0.0003	0.0000	0.0001	-0.0015	0.0026	-0.0001	-0.0008
VL	0.0004	0.0001	-0.0018	-0.0001	-0.0004	0.0002	-0.0002	0.0008	-0.0008	0.0015	-0.0015
SLI	-0.0002	0.0000	0.0003	0.0006	0.0003	-0.0002	-0.0002	-0.0003	-0.0008	0.0000	0.0015
LL	-0.0002	0.0001	-0.0004	-0.0001	-0.0016	0.0007	0.0013	0.0005	-0.0011	-0.0004	-0.0002
LW	0.0000	0.0000	-0.0005	-0.0002	-0.0015	0.0007	0.0013	0.0007	-0.0013	-0.0002	-0.0009
PTL	-0.0004	0.0000	0.0002	-0.0001	-0.0008	0.0004	0.0025	0.0000	0.0005	-0.0014	-0.0008
DFMF	0.0013	0.0001	-0.0004	0.0000	-0.0002	0.0001	0.0000	0.0041	-0.0079	-0.0007	0.0018
DFFF	0.0013	0.0001	-0.0002	0.0001	-0.0002	0.0001	-0.0002	0.0038	-0.0085	0.0001	0.0012
NFMF	0.0002	0.0000	-0.0003	0.0000	0.0001	0.0000	-0.0004	-0.0004	-0.0001	0.0079	-0.0101
NFFF	0.0000	0.0000	-0.0002	-0.0001	0.0000	0.0001	0.0002	-0.0007	0.0009	0.0073	-0.0109
DFFH	0.0013	0.0001	-0.0004	0.0000	-0.0002	0.0001	-0.0001	0.0038	-0.0080	-0.0002	0.0013
NFV	0.0002	0.0001	-0.0004	0.0001	-0.0005	0.0002	0.0007	0.0012	-0.0021	-0.0018	0.0017
FL	-0.0006	0.0000	-0.0001	0.0001	0.0000	0.0000	0.0005	-0.0010	0.0027	-0.0015	0.0020
FD	0.0000	0.0001	0.0002	0.0001	-0.0006	0.0002	0.0005	0.0010	-0.0018	-0.0029	0.0053
PDL	0.0002	0.0000	0.0001	-0.0002	-0.0003	0.0001	0.0006	-0.0004	0.0011	-0.0017	0.0016
AFW	0.0002	0.0001	-0.0001	0.0002	-0.0007	0.0002	0.0005	0.0007	-0.0017	0.0009	-0.0020
NSF	-0.0004	-0.0001	-0.0002	-0.0001	-0.0002	0.0001	0.0001	-0.0010	0.0020	0.0013	-0.0026
SL	0.0006	0.0000	-0.0001	-0.0001	0.0002	0.0001	0.0000	0.0007	-0.0025	0.0005	-0.0008
WS	0.0002	0.0000	0.0004	-0.0002	0.0002	0.0000	0.0004	0.0008	-0.0010	-0.0008	0.0000
FYV	0.0002	0.0001	-0.0004	0.0001	-0.0006	0.0002	0.0007	0.0011	-0.0022	-0.0015	0.0013

Residual: 0; Diagonal values: Direct and Indirect Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.6b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at genotypic level (Second week of March, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV
DG	0.0018	0.0041	0.0001	0.0000	-0.0002	0.0013	-0.0004	0.0006	-0.0001	0.0922
NPB	-0.0006	-0.0194	0.0000	0.0002	0.0000	-0.0032	0.0006	0.0000	-0.0001	-0.4012
VL	0.0005	0.0110	0.0000	0.0001	0.0001	0.0003	0.0002	0.0001	0.0003	0.2022
SLI	-0.0001	0.0055	0.0000	-0.0002	0.0006	0.0042	-0.0002	-0.0002	0.0004	0.1778
LL	0.0002	0.0139	0.0000	-0.0004	-0.0004	0.0054	0.0002	-0.0002	0.0002	0.3436
LW	0.0004	0.0155	0.0000	-0.0003	-0.0004	0.0030	0.0002	0.0002	0.0000	0.3276
PTL	-0.0001	0.0125	-0.0001	-0.0002	-0.0005	0.0023	0.0000	0.0000	-0.0002	0.2629
DFMF	0.0021	0.0130	0.0001	-0.0003	0.0002	0.0022	-0.0004	0.0003	-0.0003	0.2627
DFFF	0.0022	0.0113	0.0001	-0.0003	0.0003	0.0025	-0.0004	0.0004	-0.0002	0.2458
NFMF	-0.0001	-0.0105	0.0001	0.0004	0.0004	0.0014	0.0003	0.0001	0.0001	-0.1767
NFFF	-0.0003	-0.0071	0.0001	0.0006	0.0003	0.0023	0.0005	0.0001	0.0000	-0.1105
DFFH	0.0023	0.0130	0.0001	-0.0003	0.0002	0.0024	-0.0003	0.0005	-0.0001	0.2805
NFV	0.0007	0.0457	0.0000	-0.0002	0.0000	0.0059	-0.0006	0.0002	0.0000	0.9243
FL	-0.0007	-0.0007	-0.0003	-0.0001	-0.0005	0.0013	0.0005	-0.0005	0.0000	0.0163
FD	0.0006	0.0086	0.0000	-0.0012	-0.0002	0.0017	-0.0001	-0.0002	0.0000	0.1947
PDL	-0.0002	-0.0002	-0.0001	-0.0001	-0.0021	0.0000	0.0004	0.0000	-0.0003	-0.0046
AFW	0.0005	0.0216	0.0000	-0.0002	0.0000	0.0125	0.0005	0.0001	0.0003	0.6145
NSF	-0.0004	-0.0155	-0.0001	0.0001	-0.0004	0.0032	0.0019	-0.0004	0.0001	-0.2184
SL	0.0008	0.0054	0.0001	0.0001	0.0000	0.0006	-0.0005	0.0015	-0.0003	0.1289
WS	0.0002	-0.0005	0.0000	0.0000	-0.0004	-0.0031	-0.0001	0.0004	-0.0014	-0.0840
FYV	0.0007	0.0445	0.0000	-0.0002	0.0000	0.0081	-0.0004	0.0002	0.0001	0.9479

Residual: 0; **Diagonal values:** Direct and Indirect Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

4.6.4 Phenotypic path co-efficient analysis (Second week of March, 2022 and 2023)

As shown in Table 4.6.7a, 4.6.7b, 4.6.8a and 4.6.8b, path analysis was conducted using phenotypic correlation. Path analysis results were obtained for the years, 2022 and 2023 in the second week of March. These analysis considered the fruit yield per hectare as the dependable trait under investigation.

4.6.4.1 Direct effect

In the second week of March in 2022, highest positive direct effect at phenotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine (0.9681) followed by number of fruits per vine (0.0261), average fruit weight (0.0111), days to first male flower opening (0.0066), vine length at final harvest (0.0038), number of primary branches per vine (0.0021), fruit diameter (0.0018), nodes to first female flower (0.0016), petiole length (0.0006) and peduncle length (0.0004), while highest negative phenotypic direct effect was observed by days to 50% germination (-0.0037) followed by nodes to first male flower (-0.0034), days to first fruit harvest (-0.0027), seed length (-0.0027), stem length of internodes (-0.0015), number of seeds per fruit (-0.0015), leaf width (-0.0012), weight of 100 seeds (-0.0007), fruit length (-0.0006), leaf length (-0.0004) and days to first female flower opening (-0.0003).

Phenotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine (0.9999) followed by seed length (0.0032), days to first fruit harvest (0.0027), days to first male flower opening (0.0027), days to 50% germination (0.0019), stem length of internodes (0.0018), fruit diameter (0.0016), nodes to first female flower (0.0012), number of seeds per fruit (0.0012), leaf width (0.0004) and fruit length (0.0004), while highest phenotypic negative direct effect was recorded by days to first female flower opening (-0.0071) followed by vine length at final harvest (-0.0023), nodes to first male flower (-0.0023), number of primary branches per vine (-0.0018) peduncle length (-0.0013), petiole length (-0.0013), leaf length (-0.0009), weight of 100 seeds (-0.0007), average fruit weight (-0.0006) and number of fruits per vine (-0.0002) in the year 2023 in second week of March.

4.6.4.2 Indirect effect

In the second week of March in 2022, days to 50% germination had indirect positive effect at phenotypic level on fruit yield per hectare via number of primary branches per vine (0.0013) and negative indirect effect via days to first male flower opening and days to first female flower opening (-0.0026 each). Number of primary branches per vine had phenotypic positive indirect effect on fruit yield per hectare via number of seeds per fruit (0.0005) and negative indirect effect via days to 50% germination (-0.0072). Vine length at final harvest had phenotypic positive indirect effect on fruit yield per hectare through leaf length (0.0011), while negative indirect effect was observed via weight of 100 seeds (-0.0008). Stem length of internodes had positive indirect effect via leaf width (0.0004), while phenotypic negative indirect effect via average fruit weight (-0.0005). Days to first male flower opening had

phenotypic positive indirect effect on fruit yield per hectare via nodes to first female flower (0.0064) and phenotypic negative indirect effect through number of primary branches per vine (-0.0018). However, nodes to first male flower had phenotypic positive indirect effect on fruit yield per hectare via peduncle length (0.0010) and phenotypic negative indirect effect via nodes to first female flower (-0.0027). Nodes to first female flower had phenotypic positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0013) and phenotypic negative indirect effect via fruit diameter (-0.0005).

Days to first fruit harvest had phenotypic positive indirect effect on fruit yield per hectare through number of primary branches per vine (0.0005), while negative indirect effect via days to first female flower opening (0.0026) and days to first male flower opening (0.0025). Further, number of fruits per vine had positive indirect effect on fruit yield per hectare through fruit yield per vine (0.0248) and average fruit weight (0.0113), while phenotypic negative indirect effect via number of primary branches per vine (-0.0089). Fruit diameter had positive indirect effect on fruit yield per hectare through days to 50% germination (0.0004) and phenotypic negative indirect effect through nodes to first female flower (-0.0006). Average fruit weight had positive indirect effect on fruit yield per hectare via fruit yield per vine (0.0071) and negative indirect effect through number of primary branches (-0.0033). However, Fruit yield per vine was recorded to have positive indirect effect on fruit yield per hectare via number of fruits per vine (0.9186), average fruit weight (0.6175), days to first male flower opening (0.2750), days to first fruit harvest (0.2633), days to first female flower opening (0.2586), leaf width (0.2531), days to 50% germination (0.2241), seed length (0.2155), petiole length (0.2107), fruit diameter (0.1946), vine length at final harvest (0.1944), stem length of internodes (0.1533) and leaf length (0.0050), while negative indirect effect via number of primary branches per vine (-0.3577), number of seeds per fruit (-0.1965), nodes to first female flower (-0.1406), nodes to first male flower (-0.1335), fruit length (-0.0776), weight of 100 seeds (-0.0668) and peduncle length (-0.0178) in the second week of March in 2022.

In the second week of March in 2023, days to 50% germination had indirect positive effect at phenotypic level on fruit yield per hectare via days to first male flower opening and days to first fruit harvest (0.0013 each), while negative indirect effect via fruit length and seed length (-0.0005). Number of primary branches per vine had positive indirect effect on fruit yield per hectare via number of fruit per vine (0.0007) and negative indirect effect number of seeds per fruit (-0.0006). Vine length at final harvest had positive indirect effect on fruit yield per hectare through weight of 100 seeds (0.0004), while negative indirect effect was observed via leaf width (-0.0006). Days to first male flower opening had phenotypic positive indirect effect on fruit yield per hectare via days to first female flower opening (0.0023) and negative indirect effect via number of primary branches (-0.0009). Days to first female flower opening had phenotypic positive indirect effect on fruit yield per hectare via number of primary branches per vine and fruit length (0.0020) and negative indirect effect through days to first fruit harvest

(-0.064) and days to first male flower opening (-0.0062). However, nodes to first male flower had positive indirect effect on fruit yield per hectare via fruit diameter (0.0007) and negative indirect effect via nodes to first female flower (-0.0018). Nodes to first female flower had positive indirect effect on fruit yield per hectare via nodes to first male flower (0.0010) and phenotypic negative indirect effect via fruit diameter (-0.0005).

Days to first fruit harvest had positive indirect effect on fruit yield per hectare through days to first female flower opening (0.0025) and days to first male flower opening (0.0023), while negative indirect effect via number of primary branches per vine (-0.0006). Further, number of fruits per vine had phenotypic negative indirect effect via fruit yield per vine (-0.0002). Average fruit weight had positive indirect effect on fruit yield per hectare via number of primary branches per vine (0.0001) and phenotypic negative indirect effect through fruit yield per vine (-0.0004). However, Fruit yield per vine was recorded to have phenotypic positive indirect effect on fruit yield per hectare via number of fruits per vine (0.9577), average fruit weight (0.6032), leaf length (0.2847), days to first fruit harvest (0.2846), leaf width (0.2662), petiole length (0.2657), days to first male flower opening (0.2493), days to first female flower opening (0.2425), vine length at final harvest (0.1862), fruit diameter (0.1793), stem length of internodes (0.1661), seed length (0.1330), days to 50% germination (0.0738) and fruit length (0.0088), while negative indirect effect through number of primary branches per vine (-0.3710), number of seeds per fruit (-0.2143), nodes to first male flower (-0.1488), nodes to first female flower (-0.1406), weight of 100 seeds (-0.0670) and peduncle length (0.0155) in the second week of March in 2023.

Table 4.6.7a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2022)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	-0.0037	-0.0007	0.0002	-0.0001	0.0000	0.0000	0.0001	0.0047	-0.0002	0.0000	-0.0002
NPB	0.0013	0.0021	-0.0004	0.0001	-0.0001	0.0000	0.0000	-0.0018	0.0001	0.0003	0.0001
VL	-0.0002	-0.0002	0.0038	0.0001	-0.0001	-0.0002	0.0000	0.0005	0.0000	-0.0005	0.0003
SLI	-0.0002	-0.0002	-0.0004	-0.0015	0.0000	0.0003	-0.0001	0.0009	0.0000	-0.0002	-0.0002
LL	-0.0003	0.0004	0.0011	-0.0001	-0.0004	-0.0004	0.0001	0.0013	-0.0001	-0.0007	0.0002
LW	0.0000	0.0001	0.0008	0.0004	-0.0001	-0.0012	0.0002	0.0007	0.0000	-0.0002	0.0002
PTL	-0.0003	0.0001	-0.0001	0.0002	-0.0001	-0.0004	0.0006	-0.0002	0.0000	0.0004	0.0001
DFMF	-0.0026	-0.0006	0.0003	-0.0002	-0.0001	-0.0001	0.0000	0.0066	-0.0003	-0.0003	-0.0001
DFFF	-0.0026	-0.0005	0.0004	-0.0002	-0.0001	-0.0002	0.0000	0.0064	-0.0003	-0.0003	-0.0001
NFMF	0.0000	-0.0002	0.0006	-0.0001	-0.0001	-0.0001	-0.0001	0.0005	0.0000	-0.0034	0.0013
NFFF	0.0003	0.0001	0.0006	0.0002	-0.0001	-0.0001	0.0001	-0.0006	0.0000	-0.0027	0.0016
DFFH	-0.0024	-0.0004	0.0004	-0.0001	-0.0001	-0.0001	0.0000	0.0061	-0.0003	-0.0003	-0.0001
NFV	-0.0009	-0.0007	0.0009	-0.0001	0.0000	-0.0003	0.0001	0.0017	-0.0001	0.0006	-0.0003
FL	0.0007	0.0002	0.0000	0.0000	-0.0001	0.0000	0.0001	-0.0007	0.0000	0.0005	-0.0002
FD	-0.0009	-0.0004	-0.0004	-0.0002	-0.0001	-0.0002	0.0001	0.0013	-0.0001	0.0008	-0.0006
PDL	-0.0001	0.0001	-0.0002	0.0004	0.0000	-0.0001	0.0002	-0.0006	0.0000	0.0010	-0.0002
AFW	-0.0005	-0.0006	0.0000	-0.0005	0.0000	-0.0002	0.0001	0.0015	-0.0001	-0.0003	0.0001
NSF	0.0008	0.0005	0.0004	0.0002	0.0000	0.0000	0.0000	-0.0016	0.0001	-0.0004	0.0004
SL	-0.0002	-0.0001	0.0002	0.0000	0.0000	-0.0002	0.0000	0.0016	-0.0001	0.0006	-0.0002
WS	-0.0001	0.0000	-0.0008	0.0004	0.0000	0.0001	0.0000	0.0003	0.0000	0.0003	-0.0002
FYV	-0.0009	-0.0008	0.0008	-0.0002	0.0000	-0.0003	0.0001	0.0019	-0.0001	0.0005	-0.0002

Residual: 0.0012; **Diagonal values:** Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.7b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2022)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV
DG	-0.0018	0.0065	0.0001	0.0004	0.0000	0.0014	0.0003	-0.0002	0.0000	0.2241
NPB	0.0005	-0.0089	-0.0001	-0.0003	0.0000	-0.0033	-0.0004	0.0001	0.0000	-0.3577
VL	-0.0003	0.0058	0.0000	-0.0002	0.0000	0.0000	-0.0001	-0.0001	0.0001	0.1944
SLI	-0.0002	0.0025	0.0000	0.0003	-0.0001	0.0034	0.0002	0.0001	0.0002	0.1533
LL	-0.0007	-0.0001	-0.0001	0.0003	0.0000	0.0010	-0.0001	-0.0001	0.0000	0.0050
LW	-0.0002	0.0066	0.0000	0.0003	0.0000	0.0020	-0.0001	-0.0005	0.0000	0.2531
PTL	0.0001	0.0059	-0.0001	0.0001	0.0001	0.0012	-0.0001	0.0002	0.0000	0.2107
DFMF	-0.0025	0.0066	0.0001	0.0003	0.0000	0.0026	0.0004	-0.0007	0.0000	0.2750
DFFF	-0.0026	0.0061	0.0001	0.0003	0.0000	0.0025	0.0003	-0.0007	0.0000	0.2586
NFMF	-0.0002	-0.0049	0.0001	-0.0004	-0.0001	0.0009	-0.0002	0.0005	0.0001	-0.1335
NFFF	0.0002	-0.0045	0.0001	-0.0006	-0.0001	0.0008	-0.0003	0.0003	0.0001	-0.1406
DFFH	-0.0027	0.0064	0.0000	0.0003	0.0000	0.0025	0.0003	-0.0007	0.0000	0.2633
NFV	-0.0007	0.0261	0.0001	0.0003	0.0000	0.0048	0.0004	-0.0006	0.0000	0.9186
FL	0.0002	-0.0022	-0.0006	0.0004	0.0001	-0.0006	-0.0003	-0.0001	-0.0001	-0.0776
FD	-0.0004	0.0047	-0.0001	0.0018	0.0000	0.0016	0.0001	0.0002	0.0000	0.1946
PDL	0.0002	-0.0005	-0.0002	0.0001	0.0004	-0.0005	-0.0003	0.0001	-0.0001	-0.0178
AFW	-0.0006	0.0113	0.0000	0.0003	0.0000	0.0111	-0.0002	-0.0004	0.0001	0.6175
NSF	0.0005	-0.0074	-0.0001	-0.0001	0.0001	0.0011	-0.0015	0.0006	0.0001	-0.1965
SL	-0.0007	0.0056	0.0000	-0.0001	0.0000	0.0015	0.0003	-0.0027	-0.0001	0.2155
WS	-0.0002	0.0001	0.0000	0.0000	0.0001	-0.0017	0.0002	-0.0004	-0.0007	-0.0668
FYV	-0.0007	0.0248	0.0001	0.0004	0.0000	0.0071	0.0003	-0.0006	0.0001	0.9681

Residual: 0.0012; **Diagonal values:** Direct Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.8a: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2023)

TRAITS	DG	NPB	VL	SLI	LL	LW	PTL	DFMF	DFFF	NFMF	NFFF
DG	0.0019	0.0003	-0.0004	-0.0002	0.0001	0.0000	0.0002	0.0018	-0.0046	-0.0002	0.0000
NPB	-0.0003	-0.0018	0.0003	-0.0001	0.0001	0.0000	0.0000	-0.0009	0.0020	0.0000	0.0001
VL	0.0003	0.0002	-0.0023	-0.0002	-0.0002	0.0001	0.0001	0.0005	-0.0007	-0.0004	0.0001
SLI	-0.0003	0.0001	0.0002	0.0018	0.0001	-0.0001	0.0001	-0.0002	-0.0006	0.0000	-0.0002
LL	-0.0001	0.0002	-0.0005	-0.0003	-0.0009	0.0003	-0.0005	0.0003	-0.0008	0.0002	0.0000
LW	0.0000	-0.0001	-0.0006	-0.0005	-0.0006	0.0004	-0.0006	0.0004	-0.0009	0.0001	0.0001
PTL	-0.0003	0.0000	0.0002	-0.0001	-0.0004	0.0002	-0.0013	0.0000	0.0004	0.0004	0.0001
DFMF	0.0013	0.0006	-0.0004	-0.0001	-0.0001	0.0001	0.0000	0.0027	-0.0062	0.0002	-0.0001
DFFF	0.0012	0.0005	-0.0002	0.0002	-0.0001	0.0001	0.0001	0.0023	-0.0071	0.0000	-0.0001
NFMF	0.0002	0.0000	-0.0004	0.0000	0.0001	0.0000	0.0002	-0.0002	-0.0001	-0.0023	0.0010
NFFF	0.0000	-0.0002	-0.0002	-0.0002	0.0000	0.0000	-0.0001	-0.0003	0.0006	-0.0018	0.0012
DFFH	0.0013	0.0004	-0.0005	-0.0001	-0.0001	0.0001	0.0000	0.0022	-0.0064	0.0000	-0.0001
NFV	0.0001	0.0007	-0.0005	0.0002	-0.0002	0.0001	-0.0003	0.0007	-0.0016	0.0004	-0.0002
FL	-0.0005	-0.0002	-0.0001	0.0002	0.0000	0.0000	-0.0003	-0.0006	0.0020	0.0004	-0.0002
FD	-0.0001	0.0003	0.0002	0.0003	-0.0002	0.0001	-0.0002	0.0005	-0.0014	0.0007	-0.0005
PDL	0.0002	0.0000	0.0001	-0.0005	-0.0001	0.0001	-0.0003	-0.0002	0.0009	0.0005	-0.0002
AFW	0.0001	0.0004	-0.0001	0.0005	-0.0003	0.0001	-0.0002	0.0004	-0.0011	-0.0003	0.0001
NSF	-0.0004	-0.0006	-0.0002	-0.0001	-0.0001	0.0000	0.0000	-0.0006	0.0015	-0.0004	0.0003
SL	0.0005	-0.0001	0.0000	-0.0002	0.0000	0.0001	0.0000	0.0003	-0.0017	-0.0001	0.0000
WS	0.0002	-0.0001	0.0004	-0.0004	0.0001	0.0000	-0.0002	0.0005	-0.0006	0.0002	0.0000
FYV	0.0001	0.0007	-0.0004	0.0003	-0.0003	0.0001	-0.0003	0.0007	-0.0017	0.0003	-0.0002

Residual: 0; Diagonal values: Direct and Indirect Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

Table 4.6.8b: Estimates of direct (diagonal values) and indirect effects of various characters on fruit yield (q/ha) of ridge gourd genotypes at phenotypic level (Second week of March, 2023)

TRAITS	DFFH	NFV	FL	FD	PDL	AFW	NSF	SL	WS	FYV
DG	0.0018	0.0000	-0.0001	-0.0001	-0.0001	0.0000	-0.0002	0.0009	-0.0001	0.0738
NPB	-0.0006	0.0001	0.0000	-0.0003	0.0000	0.0001	0.0004	0.0001	0.0000	-0.3710
VL	0.0005	0.0000	0.0000	-0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.1862
SLI	-0.0001	0.0000	0.0000	0.0003	0.0004	-0.0002	-0.0001	-0.0003	0.0002	0.1661
LL	0.0002	0.0000	0.0000	0.0003	-0.0002	-0.0002	0.0001	0.0000	0.0001	0.2847
LW	0.0004	-0.0001	0.0000	0.0003	-0.0002	-0.0001	0.0001	0.0004	0.0000	0.2662
PTL	-0.0001	0.0000	0.0001	0.0003	-0.0003	-0.0001	0.0000	-0.0001	-0.0001	0.2657
DFMF	0.0023	0.0000	-0.0001	0.0003	0.0001	-0.0001	-0.0002	0.0004	-0.0001	0.2493
DFFF	0.0025	0.0000	-0.0001	0.0003	0.0002	-0.0001	-0.0003	0.0008	-0.0001	0.2425
NFMF	-0.0001	0.0000	-0.0001	-0.0005	0.0003	-0.0001	0.0002	0.0001	0.0001	-0.1488
NFFF	-0.0003	0.0000	-0.0001	-0.0006	0.0002	0.0000	0.0003	0.0000	0.0000	-0.1406
DFFH	0.0027	-0.0001	-0.0001	0.0003	0.0001	-0.0001	-0.0002	0.0009	-0.0001	0.2846
NFV	0.0007	-0.0002	0.0000	0.0003	0.0000	-0.0002	-0.0004	0.0004	0.0000	0.9577
FL	-0.0007	0.0000	0.0004	0.0001	-0.0003	-0.0001	0.0003	-0.0007	0.0000	0.0088
FD	0.0006	0.0000	0.0000	0.0016	-0.0001	-0.0001	0.0000	-0.0003	0.0000	0.1793
PDL	-0.0003	0.0000	0.0001	0.0001	-0.0013	0.0000	0.0002	0.0000	-0.0001	-0.0155
AFW	0.0005	-0.0001	0.0000	0.0002	0.0000	-0.0006	0.0002	0.0000	0.0001	0.6032
NSF	-0.0005	0.0001	0.0001	0.0000	-0.0003	-0.0001	0.0012	-0.0008	0.0001	-0.2143
SL	0.0007	0.0000	-0.0001	-0.0002	0.0000	0.0000	-0.0003	0.0032	-0.0001	0.1330
WS	0.0003	0.0000	0.0000	0.0000	-0.0002	0.0001	-0.0001	0.0003	-0.0007	-0.0670
FYV	0.0008	-0.0002	0.0000	0.0003	0.0000	-0.0004	-0.0003	0.0004	0.0000	0.9999

Residual: 0; **Diagonal values:** Direct and Indirect Effects

DG: Days to 50% germination; **NPB:** Number of primary branches per vine; **VL:** Vine length at final harvest (m); **SLI:** Stem length of internodes (cm); **LL:** Leaf length (cm); **LW:** Leaf width (cm); **PL:** Petiole length (cm); **DFMF:** Days to first male flower opening; **DFFF:** Days to first female flower opening; **NFMF:** Nodes to first male flower; **NFFF:** Nodes to first female flower; **DFFH:** Days to first fruit harvest; **NFV:** Number of fruits per vine; **FL:** Fruit length (cm); **FD:** Fruit diameter (cm); **PDL:** Peduncle length (cm); **AFW:** Average fruit weight (g); **NSF:** Number of seeds per fruit; **SL:** Seed length (cm); **WS:** Weight of 100 seeds (g); **FYV:** Fruit yield per vine (kg); **FYH:** Fruit yield per ha (q/ha)

The increasing human population and faster urbanization have led to a reduction in land resources and inputs. As a result, it is difficult to produce vegetables in sufficient amounts to meet the food and nutritional needs of the current population. One way to overcome these problems is to increase productivity through genetic means. Crop yield is a complex trait and it is important to select for yield and quality parameters. Therefore, the main goal of any plant breeding program is to develop high-yielding hybrids or varieties with novel traits. To achieve this goal, the breeding program can be efficiently planned with prior knowledge of the genetic makeup of complex quantitative traits such as yield and its attributes. The purpose of genotypes characterization is to identify qualitative traits that can be used in an improvement program. Genotypes characterization is mainly based on the ideotype concept to ensure their uniqueness in the form of distinctness, uniformity and stability (DUS) as laid down by the International Union for Protection of Plant Varieties and Seed Act 1964, Government of India. Improvement of the economic yield of ridge gourd, which is a complex trait influenced by many factors, breeders need to have a clear understanding of its genetic background and select the best genotype based on their performance and potential. A key step for any breeding programme is to assess the variability in germplasm. The success of a crop improvement programme depends on the degree of genetic variability present in the population or genotype. The higher the variability among the genotypes, the better the opportunity for further improvement of the crop. The amount of genetic variability indicates the importance of genetic enhancement through selection or hybridization followed by selection. The aim of this study was to evaluate the variability and characterization of different ridge gourd genotypes using different statistical parameters. These parameters included range, mean, GCV, PCV, heritability, genetic advance as per cent of mean, correlation co-efficient and path co-efficient analysis. The results were compared with the current literature on the topic and discussed in this chapter which are categorized given below.

5.1 Characterization of different ridge gourd genotypes**5.2 Mean performance****5.3 Analysis of variance****5.4 Genetic variability****5.5 Correlation analysis****5.6 Path co-efficient analysis****5.1 Characterization of different ridge gourd genotypes**

According to the DUS characterization forty genotypes were classified under different categories based on the phenotypic characters. The observations were made on 15 different morphological characters in the forty genotypes and the obtained data were estimated. In the

fifteen morphological characters, no variations between genotypes were determined for leaf pubescence, stem shape, stem pubescence, flower colour, fruit shape of blossom end, fruit shape at peduncle end, fruit skin luster, flesh texture and flesh colour. The genotypes based on the plant growth habit were grouped under short, medium and long. Out of forty genotypes, thirty-six genotypes had short viny and four genotypes had medium viny, in the last week of February (2022) and in 2023, nineteen genotypes had short viny and twenty-one genotypes had medium viny. Similarly in the second week of March, 2022 and 2023 only five genotypes had medium viny plant growth habit as against short viny in the remaining others. Based on leaf shape, out of forty genotypes, thirty-three genotypes had orbicular and seven genotypes had reniform leaf shape. Among genotypes, twenty-nine genotypes recorded 5 lobes, two genotypes observed 3 lobes, while more than 5 lobes were observed in the seven genotypes based on the leaf blade: Number of lobes. The genotypes were classified as present or absent based on the leaf pubescence and all the genotypes were recorded as present leaf pubescence. The genotypes based on stem shape were grouped as rounded and angular. All the forty genotypes recorded angular stem shape. The genotypes were classified under absent or present with respect to stem pubescence and all the genotypes were reported as absent stem pubescence. With respect to flower colour, all the genotypes were observed light yellow coloured flower. Fruit shape was clustered into three types *i.e.*, oblong, elongate and elliptical, out of forty genotypes, twenty-seven genotypes recorded elongate fruit shape and thirteen genotypes had elliptical fruit shape. Out of forty genotypes, thirty-seven as green-coloured, two as dark green-coloured and one as light green coloured based on the fruit skin colour. Grouping based on rounded or pointed of fruit shape of blossom end and fruit shape at peduncle end reported all the genotypes rounded. The genotypes were classified under matt or glossy with respect to fruit skin luster and all the genotypes had matt luster. Based on observation for fruit ridge shape thirty-four genotypes recorded with medium and six genotypes observed with deep fruit ridge shape. The genotypes were grouped under smooth, soft/spongy and fibrous/gelatinous on the basis of the flesh texture and all the genotypes recorded soft/spongy flesh texture. All the forty genotypes observed cream colour in case of flesh colour in the last week of February and second week of March during 2022 and 2023. Aktar (2015) and Mavi *et al.* (2021) in sponge gourd; Choudhary *et al.* (2015) in muskmelon; Choudhary *et al.* (2016) and Mashilo *et al.* (2017) in watermelon; Kalyanrao *et al.* (2016) in bottle gourd; Jahan *et al.* (2019) and Mitu *et al.* (2018) in ridge gourd; Sekerci *et al.* (2020) in pumpkin; Saputro *et al.* (2020) in apple cucumber and Rahman *et al.* (2021) in bitter gourd, they found that one or more of the morphological characters mentioned above exhibited similar variations in their respective genetic materials.

5.2 Mean performance

Days to 50% germination is important for plant breeders to select seeds that have a shorter time to germinate as this can lead to higher yields. It was reported minimum days for the genotype IC-392535 (8.04 and 8.03) and IC-341110 (16.07 and 17.35) recorded the

maximum days in the last week of February in 2022 and 2023, respectively. Whereas, in the second week of March in 2022 and 2023, the genotype IC-355967 (6.83 and 6.44) observed minimum days for 50% germination and the maximum days was recorded for the genotype IC-341110 (14.42 and 15.90), respectively. Similar findings were also reported by Kurre *et al.* (2022).

The maximum number of primary branches in different ridge gourd genotypes can affect the yield and quality of fruits parameters because, it can increase the number of nodes per main stem and the number of nodes per unit length of vine. This can lead to an increase in growth, yield and yield attributes with good quality ridge gourd. In the last week of February in 2022, it was observed in the genotype IC-341161 (6.87) and the genotype IC-345576 (3.33) recorded minimum, while in 2023 the maximum number of primary branches was recorded in the genotype IC-341161 (7.44) and minimum in the genotype IC-355952 (4.67). Whereas, in the second week of March in 2022 and 2023, the genotype Pusa Nasdar (8.00 and 8.57) observed maximum number of primary branches per vine and minimum number of primary branches was observed in the genotype IC-345576 (3.00 and 2.99), respectively. Similar results were also recorded by Bhargava *et al.* (2017), Karthik *et al.* (2017), Harshitha *et al.* (2019), Chauhan *et al.* (2023) and Kurre *et al.* (2022).

Vine length play an important role in increasing yield, which influences the leaf number and the exposure to sunlight (increasing photosynthetic activity) and ventilation. Longer vines can enhance the growth, yield and quality of different ridge gourd genotypes by increasing these factors, therefore, the maximum vine length was reported in the genotype IC-393305 (4.24 m) and minimum in the genotype IC-392535 (1.67 m) in the last week of February (2022), while in 2023, IC-341122 (5.13 m) recorded maximum vine length and minimum was observed in the genotype IC-392535 (2.31 m). Whereas, in the second week of March 2022 and 2023, IC-279691 (4.62 m and 4.67 m) recorded the maximum vine length and IC-264830 (1.84 m and 1.96 m) recorded minimum vine length, respectively. The present study had similar results with that of Rabbani *et al.* (2012), Khatoon *et al.* (2016), Karthik *et al.* (2017), Ramesh *et al.* (2018a), Chauhan *et al.* (2023), Kurre *et al.* (2022) and Harshitha *et al.* (2019).

In the last week of February (2022), the maximum stem length of internodes was reported for the genotype IC-341122 (20.95 cm) and the genotype IC-392544 (11.76 cm) reported minimum stem length of internodes. Higher stem length of internodes is useful for increasing vine length, better plant coverage and increasing production of fruits and the internodal length may be an indicator of a ridge gourd genotypes to tolerate stress. Whereas, in the year 2023, the maximum stem length of internodes was observed in the genotype IC-356037 (22.82 cm), while the minimum stem length of internodes was noted in the genotype Konkan Harita (12.41 cm). In the second week of March in both years of study, the genotype IC-392531 (16.11 cm and 18.32 cm) was recorded maximum stem length of internodes and the minimum

stem length of internodes was recorded in the genotype IC-392555 (7.69 cm and 8.14 cm), respectively. Similar findings were also cited by Harshitha *et al.* (2019).

Among the forty genotypes, the maximum leaf length is important for efficient photosynthesis, nutrient storage and water regulation, eventually leading to improved fruit yield, quality and plant resilience against pests and diseases. It was reported maximum in the genotype Akola-01 (9.47 cm) and the genotype IC-355967 (6.31 cm) recorded the minimum leaf length in the last week of February, 2022. Whereas, in 2023 the maximum leaf length was recorded in the genotype DARL/SS/238 (10.83 cm), while the genotype IC-262265 (7.57 cm) recorded the minimum leaf length. In the second week of March (2022), the maximum leaf length was noted in the genotype IC-341116 (9.58 cm) and minimum was recorded in the genotype IC-356037 (5.26 cm). In 2023, the maximum leaf length was observed in the genotype IC-355967 (11.40 cm), while the minimum was recorded in the genotype IC-392535 (7.58 cm).

The maximum leaf width was reported in the genotype DARL/SS/238 (15.05 cm and 16.97 cm), while the genotype IC-392544 (10.60 cm and 11.35 cm) recorded minimum leaf width in the last week of February during 2022 and 2023, respectively. It is important for increasing photosynthetic capacity and nutrient production, essential for healthy plant growth and higher fruit yields. The genotype IC-262188 (16.43 cm and 17.33 cm) recorded maximum leaf width in the second week of March in 2022 and 2023, respectively. Whereas, the minimum leaf width was reported in the genotype IC-392535 (10.06 cm) in the second week of March during 2022, while in the year 2023, the minimum leaf width was reported in the genotype IC-262265 (10.75 cm).

The maximum petiole length was reported in the genotype IC-355974 (11.99 cm) and the genotype IC-341110 (5.70 cm) recorded minimum petiole length during 2022 in the last week of February. The petiole length play important role in the nutrient and water transportation to the leaf and also optimizing leaf exposure to sunlight, increasing photosynthesis and promoting healthy fruit development. Whereas, the maximum petiole length was observed in the genotype DARL/SS/238 (13.25 cm), while the minimum petiole length was reported in the genotype IC-341110 (6.10 cm) in 2023. In the second week of March in 2022 and 2023, the maximum petiole length was recorded in the genotype IC-341161 (15.04 cm and 17.02 cm) and the minimum was observed in the genotype IC-392544 (5.78 cm and 6.74 cm), respectively.

Genotype IC-392535 (36.40) reported the minimum number of days for the first male flower opening and the maximum number of days was noted in the genotype IC-392531 (54.01). Whereas, the minimum number of days for the first male flower opening was observed in the genotype IC-392535 (37.98), while the maximum number of days was observed in the genotype DARL/SS/60 (54.88) in the last week of February, 2022 and 2023, respectively. In the second week of March, 2022, the genotype IC-392535 observed the minimum number of days (34.90) for the first male flower opening and the maximum number of days for first male

flower opening was observed in the genotype IC-392531 (52.16), while in 2023 genotype IC-392535 (36.04) reported the minimum number of days, while the maximum number of days was noted in the genotype IC-341161 (51.79). Earliness for opening of male flowers in different ridge gourd genotypes is important for ensuring timely pollination and successive fruit set, foremost to better yield and crop productivity. Khatoon *et al.* (2016), Karthik *et al.* (2017) and Bhargava *et al.* (2017), Triveni *et al.* (2020), Chauhan *et al.* (2023), Kurre *et al.* (2022) and Harshitha *et al.* (2019) also noted wide variation in days to first male flower opening for their respective genetic material.

Early opening of female flower in ridge gourd is important for ensuring early fruit set, achieving shorter production cycles and also increasing crop yield efficiency. The genotype IC-392535 (40.36) reported the minimum number of days for the first female flower opening and the maximum number of days was noted in the genotype IC-392531 (59.84), while the minimum number of days for first female flower opening was observed in the genotype IC-355961 (39.01) and the maximum number of days was observed in the genotype DARL/SS/60 (57.89) in the last week of February, 2022 and 2023, respectively. In the second week of March (2022), genotype IC-392535 (38.52) observed the minimum number of days for the first female flower opening and the maximum number of days was observed in the genotype IC-341161 (56.20), while in 2023 genotype IC-392535 (40.18) reported the minimum number of days for the first female flower opening and the maximum number of days for the first female flower opening was noted in the genotype IC-392531 (57.20). These findings are confirmed by Khatoon *et al.* (2016), Karthik *et al.* (2017), Bhargava *et al.* (2017), Harshitha *et al.* (2019), Triveni *et al.* (2020), Chauhan *et al.* (2023) and Kurre *et al.* (2022).

In the last week of February, 2022, the minimum number of nodes for the first male flower was reported in the genotype IC-429949 (3.24) and IC-392534 (8.25) recorded the maximum number of nodes for first male flower, while genotype IC-341161 (4.00) reported minimum number of nodes for first male flower and maximum number of nodes was noted in the genotype IC-392534 (9.53) in 2023. In the second week of March, 2022, the minimum number of nodes for the first male flower was reported in the genotype IC-264908 (3.12) and the genotype DARL/SS/238 (7.30) noted maximum number of nodes, while in 2023 the minimum number of nodes (3.02) for the first male flower was observed in the genotype IC-341161 and the genotype Akola-01 (7.78) observed the maximum number of nodes for the first male flower in 2023. The appearance of male flower comparatively at a lower node position on the vine is considered beneficial in ridge gourd because it can lead to an increase in the number of female flowers and longer fruits. These results are harmony with Gautam *et al.* (2017), Chauhan *et al.* (2023), Kurre *et al.* (2022) and Harshitha *et al.* (2019).

In ridge gourd, it is advantageous to have female flowers emerge at lower nodes on the vine. This allows for more effective pollination and fruit yield. The minimum number of nodes

for the first female flower was observed in the genotype IC-355967 (7.06 and 7.92) and the maximum number of nodes for the first female flower was observed in the genotype Akola-01 (18.65 and 19.00) in the last week of February during 2022 and 2023, respectively. In the second week of March 2022 and 2023, the minimum number of nodes for the first female flower was reported in the genotype IC-355967 (6.13 and 7.22), respectively. The maximum number of nodes for the first female flower was reported in the genotype Akola-01 (16.10) in 2022, while in 2023, the maximum number of nodes for the first female flower opening was noted in the genotype DARL/SS/238 (16.88). Similar results were noted by, Gautam *et al.* (2017), Chauhan *et al.* (2023) and Harshitha *et al.* (2019).

With respect to the days to first fruit harvest in last week of February, 2022, the minimum number of days for first fruit harvest was recorded in the genotype IC-355967 (46.36) and the maximum number of days for first fruit harvest was reported in the genotype IC-341110 (70.49), while in 2023 the genotype IC-264971 (47.60) reported minimum number of days for first fruit harvest and the maximum number of days for first fruit harvest was recorded in the genotype IC-392544 (70.53). In the second week of March, 2022, the minimum number of days for first harvest was observed in the genotype IC-355967 (43.96) and the maximum number of days for first fruit harvest was recorded in the genotype IC-392531 (66.90), while the minimum number of days for first fruit harvest was reported in the genotype IC-355967 (47.39) and the maximum number of days for first fruit harvest was noted in the genotype IC-279691 (67.89) in 2023. Early fruit harvesting in ridge gourd is important for early crop availability, catch the early market, fetch higher price and also efficient land use. These results are harmony with Harshitha *et al.* (2019), Khatoon *et al.* (2016), Bhargava *et al.* (2017), Chauhan *et al.* (2023) and Kurre *et al.* (2022).

The more fruits per vine, the higher the yield potential. Therefore, estimating the fruit number per vine is a useful way to monitor and evaluate the performance of different ridge gourd genotypes, cultivation practices and environmental conditions. The maximum number of fruits was recorded in the genotype IC-345576 (27.80 and 28.58) and the minimum number of fruits was recorded in the genotype IC-264830 (6.53 and 6.48) in the last week of February in 2022 and 2023, respectively. In second week of March (2022 and 2023), the genotype IC-345576 (26.37 and 27.27) reported maximum number of fruits per vine, while the minimum number of fruits was recorded in the genotype IC-264830 (5.75 and 5.96). Similar results were reported by Harshitha *et al.* (2019), Yadav *et al.* (2017), Chauhan *et al.* (2023) and Kurre *et al.* (2022).

Medium-sized ridge gourd fruits are more suitable for small families and suitable for packing. Therefore, they have higher market demand than larger or smaller ones. Fruit length was reported maximum in the genotype IC-393298 (19.72 cm) and the minimum fruit length was noted in the genotype IC-356037 (13.21 cm) in the last week of February, 2022, while in

2023, the maximum fruit length was noted in the genotype Pusa Nasdar (24.58 cm) and the genotype IC-356037 (13.98 cm) reported the minimum fruit length. In the second week of March (2022), the maximum fruit length was reported in the genotype IC-393298 (20.83 cm) and the minimum was observed in the genotype IC-392544 (13.21 cm) and in 2023, the genotype Pusa Nasdar (24.58 cm) recorded maximum fruit length and the minimum was recorded in the genotype IC-356037 (13.56 cm). These findings are confirmed by Rabbani *et al.* (2012), Khatoon *et al.* (2016), Bhargava *et al.* (2017) and Karthik *et al.* (2017), Chauhan *et al.* (2023) Kurre *et al.* (2022) and Harshitha *et al.* (2019).

The consumers prefer a ridge gourd fruit that has a diameter of 4 to 7 cm. Therefore, the breeder should focus on increasing the fruit diameter as well. This is an important trait for improving the quality and yield of the ridge gourd genotypes. In the last week of February (2022), genotype IC-345576 (4.37 cm) recorded maximum fruit diameter, while in 2023 the genotype IC-355967 (4.50 cm) reported maximum fruit diameter. In the second week of March (2022), the maximum fruit diameter was reported in the genotype IC-355967 (4.71 cm), while in 2023 the maximum fruit diameter was recorded in the genotype IC-393298 (4.82 cm), whereas, minimum fruit diameter was recorded in the genotype IC-392535 (2.56 cm and 2.77 cm, 2.79 cm and 2.90 cm) in the last week of February and the second week of March in the years 2022 and 2023, respectively. Kurre *et al.* (2022), Chauhan *et al.* (2023) and Harshitha *et al.* (2019) also observed wide variation in fruit diameter for their respective genetic material.

The longer peduncle length is provide better support to the fruit and also long peduncle produce large fruit. In the last week of February (2022 and 2023) the genotype IC-341122 (11.35 cm and 11.69 cm) recorded maximum peduncle length and minimum peduncle length was reported in the genotype Konkan Harita (5.06 cm and 5.49 cm), respectively. The maximum peduncle length was recorded in the genotype IC-393305 (11.19 cm and 12.33 cm), while the minimum peduncle length was reported in the genotype IC-262231 (3.70 cm and 4.22 cm) in the second week of March in both year of study, respectively.

The size of the fruit is an important factor that affects the yield of ridge gourd genotypes, as it determines the number of harvest. The larger the fruit, the higher the yield potential. Among genotypes, IC-262265 (101.41 and 102.87 g) reported maximum average weight of fruit, while minimum average weight of fruit was observed in genotype Konkan Harita (64.91 and 65.77 g) in the last week of February and the second week of March (2022), respectively. The genotype IC-262265 (102.59 and 104.85 g) noted maximum average weight of fruit, while the minimum average weight of fruit was reported in the genotype IC-392535 (66.90 and 65.75 g) in the last week of February and the second week of March (2023), respectively. These findings are confirmed by Rabbani *et al.* (2012), Karthik *et al.* (2017), Bhargava *et al.* (2017), Chauhan *et al.* (2023) and Kurre *et al.* (2022).

Fruit yield per vine, the genotype IC-345576 (2.44 kg) reported maximum fruit yield per vine and the minimum fruit yield per vine was recorded in the genotype IC-264830 (0.54 kg) in the last week of February (2022), while the maximum fruit yield per vine was recorded in the genotype IC-341161 (2.65 kg) and the minimum fruit yield per vine was recorded in the genotype IC-264830 (0.47 kg) in 2023. In the second week of March, the maximum fruit yield per vine was recorded in the genotype IC-341161 (2.44 kg) and IC-345576 (2.30 kg) and minimum fruit yield per vine was reported in the genotype IC-264830 (0.47 and 0.50 kg) in the years of 2022 and 2023, respectively. These results are confirmed by Triveni *et al.* (2020), Harshitha *et al.* (2019), Chauhan *et al.* (2023) and Kurre *et al.* (2022)

In the last week of February, 2022 and 2023, the genotype IC-345576 (146.32 q/ha) and IC-341161 (159.40 q/ha) recorded maximum fruit yield per hectare and the minimum fruit yield per hectare was recorded in the genotype IC-264830 (32.25 q/ha and 32.72 q/ha), respectively. In the second week of March, the maximum fruit yield per hectare was reported in the genotype IC-341161 (146.56 q/ha) and IC-345576 (138.25 q/ha) and minimum fruit yield per hectare was recorded in the genotype IC-264830 (28.05 and 29.92 q/ha) in the years of 2022 and 2023, respectively. Similar findings were also cited by Harshitha *et al.* (2019), Kurre *et al.* (2022) and Chauhan *et al.* (2023)

The genotype Akola-01 (149.92 and 169.00, 153.12 and 163.40) recorded maximum number of seed per fruit, while the minimum number of seed per fruit reported in the genotype IC-355974 (55.28 and 57.98) and IC-393298 (57.82 and 65.42) in the last week of February and the second week of March in 2022 and 2023, respectively. Similar results were reported by Harshitha *et al.* (2019)

The maximum seed length was reported in the genotype IC-392544 (1.45 cm and 1.52 cm) and the minimum seed length was recorded in the genotype IC-264830 (0.93 cm) and IC-264908 (0.96 cm) in the last week of February in the years 2022 and 2023, respectively. In the second week of March, 2022 and 2023, the maximum seed length was observed in the genotype IC-279691 (1.29 cm and 1.33 cm) and the minimum seed length was recorded in genotype Akola-01 (0.90 cm) and IC-355967 (0.98 cm), respectively.

Weight of 100 seed was recorded maximum in the genotype IC-392534 (14.79 and 15.40 g) and the minimum weight of 100 seed was reported in the genotype Akola-01 (7.73 and 8.13 g) in both the year of study in the last week of February. In the second week of March, 2022 and 2023, the maximum weight of 100 seed was noted in the genotype IC-392534 (15.05 and 14.71 g), while the minimum weight of 100 seed was recorded in the genotype IC-341116 (7.48 g) and Akola-01 (7.79 g), respectively. Similar findings were observed by Ram *et al.* (2006) and Mohan *et al.* (2004) in ridge gourd.

5.3 Analysis of variance

The basic requirement for successful selection is the existence of genetic variability among the genotypes for the characters to be improved. The analysis of variance in the last week of February and the second week of March during 2022 and 2023 the presence of significant variances among genotypes and a wide range of variability in all the twenty two characters considered for the study. This means that there was enough variability for all the characters and most of these characters could be improved by selection. However, the analysis of variance alone is not sufficient and conclusive to explain all the characteristic genotypic variance in the collections. One of the way to assess the variability of these characters is through a simple approach of examining the range of variation. The present study observed a range of variation for all the traits, which indicated the presence of sufficient amount of variation among the genotypes for all the characters studied. The similar result were found by Abhijeet *et al.* (2018) in sponge gourd; Harshitha *et al.* (2019), Vinitha *et al.* (2021) and Panda *et al.* (2022) in ridge gourd.

5.4 Genetic variability

5.4.1 Mean and range of variability

Variability is a key factor for enhancing any crop with desirable character and yield characters. A breeder can evaluate the genotype based on the variability exhibited by them and use it to improve the characters. The present study of forty genotypes and two date of sowing reported a wide range of variability for all the parameters studied. The range was similar for all the traits in the last week of February and the second week of March in the years 2023 and 2023, respectively.

The variability of different traits was not much different between last week of February and the second week of March in the years 2022 and 2023 for most of the characters. However, some important factors for fruit yield decreased from last week of February to Second week of March in both the years of study, such as days to first fruit harvest, number of fruits per vine, average fruit weight, fruit yield per vine and fruit yield per hectare in last week of February to Second week of March evaluated. This could be because of the different date of sowing of study of two years in 2022 and 2023, as the high temperature in March as compared to the February may affect the flowering and fruiting behavior. The results of the present study are in equal with that of Harshitha *et al.* (2019) who recorded similar range of values for the characters, number of primary branches, vine length, number of nodes per vine, internodal length, number of nodes to first male and female flower, number of fruits per vine, fruit yield per vine, while Panda *et al.* (2022) indicated wide variation ranging from yield per vine to vine length. Similarly, Vinitha *et al.* (2021) observed similar days to first fruit harvest, number of fruits per vine, fruit weight fruit length, fruit girth, node to first female flower, vine length and fruit yield per vine.

5.4.2 Genotypic and phenotypic co-efficient of variation

To improve crop yield, it is important to understand and degree the genetic variability of the characters that affect yield. The phenotypic variation of a character can be divided into genotypic variation and environmental variation, which help to estimate the heritability and the expected genetic gain from selection. Plant breeders can use the genotypic variation to select and hybridize the best genotypes for a character. In this investigation, we analyzed the phenotypic and genotypic variation of twenty-two quantitative traits in the forty genotypes during last week of February and second week of March in the years 2022 and 2023, respectively and compared our results with previous studies in related fields.

The analysis of variance revealed significant variation among the genotypes during the last week of February and second week of March in the years 2022 and 2023, respectively for all the characters studied. The phenotypic co-efficient of variation (PCV) was slightly higher than the genotypic co-efficient of variation (GCV) for most of the traits, indicating a narrow difference between them. This suggests that these traits are mainly governed by genetic factors and the environmental influence is minimal. However, some traits showed a wide variation between GCV and PCV values, implying that the environment also affects their expression. Also, the values were comparable in the last week of February and second week of March in the years 2022 and 2023, respectively in the ridge gourd genotypes. Likewise, higher PCV values than corresponding GCV values were recorded by Panda *et al.* (2022), Vinitha *et al.* (2021), Radha Rani *et al.* (2012), Akhila and Singh (2020), Harshitha *et al.* (2019) in ridge gourd, Kumar *et al.* (2020) and Abhijeet *et al.* (2018) in sponge gourd.

The characters with high GCV observed that they were less affected by environmental factors and controlled by additive genetic effects. Therefore, phenotypic selection would be effective for improving these characters. In the last week of February in the years 2022 and 2023, high estimates of GCV were observed for the traits nodes to first male flower, nodes to first female flower, number of fruits per vine, number of seeds per fruit, fruit yield per vine and fruit yield per hectare, respectively. The traits days to 50% germination, number of primary branches, vine length at final harvest, stem length of internodes, leaf length, petiole length, days to first male flower opening, days to first female flower opening, days to first fruit harvest, fruit diameter, peduncle length, average fruit weight and weight of 100 seeds reported moderate GCV values in the last week of February in 2022. In 2023, Moderate GCV value were observed for the traits days to 50% germination, number of primary branches, vine length at final harvest, stem length of internodes, petiole length, days to first fruit harvest, fruit length, fruit diameter, peduncle length, average fruit weight, seed length and weight of 100 seeds. In the last week of February in 2022 the traits, leaf width, fruit length and seed length recorded low GCV value. In 2023, the low GCV value observed for the traits, leaf length, leaf width, days to first male flower opening and days to first female flower opening. In the last week of February, 2022 and

2023 the high PCV value reported for the traits, nodes to first male flower, nodes to first female flower, number of fruits per vine, number of seeds per fruit, fruit yield per vine and fruit yield per hectare. Except days to 50% germination and vine length at final harvest reported high PCV value in 2022. Moderate PCV value was observed for the traits, number of primary branches, stem length of internodes, leaf length, leaf width, petiole length, days to first male flower opening, days to first female flower opening, days to first fruit harvest, fruit length, fruit diameter, peduncle length, average fruit weight, seed length and weight of 100 seeds in the last week of February in 2022. Whereas, In 2023 the traits days to 50% germination, number of primary branches per vine, vine length at final harvest, stem length of internodes, leaf width, petiole length, days to first male flower opening, days to first fruit harvest, fruit length, fruit diameter, peduncle length, average fruit weight, seed length and weight of 100 seeds had moderate level of PCV. In the last week of February in 2023, the low PCV value was recorded for the trait leaf length (9.71%) and days to first female flower opening (9.73%).

In the second week of March in 2022 and 2023, the high GCV were recorded for the traits number of primary branches per vine, petiole length, nodes to first male flower, nodes to first female flower, number of fruits per vine, peduncle length, number of seeds per fruit, fruit yield per vine and fruit yield per hectare, while vine length at final harvest recorded high GCV in the year 2022. Moderate values of GCV was observed for the characters days to 50% germination, stem length of internodes, leaf length, days to first male flower opening, days to first female flower opening, days to first fruit harvest, fruit length, fruit diameter, average fruit weight and weight of 100 seeds in the year 2022 in second week of March. In 2023, Moderate GCV was noted for the traits days to 50% germination, vine length at final harvest, stem length of internodes, leaf width, days to first female flower opening, fruit length, fruit diameter, average fruit weight and weight of 100 seeds. In 2022 in the second week of March the traits leaf width and seed length reported low values of GCV. Similarly, in 2023 low GCV were noted for the characters leaf length, days to first male flower opening, days to first fruit harvest and seed length. Days to 50% germination, number of primary branches per vine, vine length at final harvest, petiole length, nodes to first male flower, nodes to first female flower, number of fruits per vine, peduncle length, number of seeds per fruit, fruit yield per vine and fruit yield per hectare recorded high PCV in the second week of March in 2022. Whereas, in the year 2023 high PCV was observed for the characters *i.e.*, days to 50% germination, number of primary branches per vine, vine length at final harvest, petiole length, nodes to first male flower, nodes to first female flower, number of fruits per vine, peduncle length, number of seeds per fruit, fruit yield per vine and fruit yield per hectare. Moderate values of PCV were recorded for stem length of internodes, leaf length, leaf width, days to first male flower opening, days to first female flower opening, days to first fruit harvest, fruit length, fruit diameter, average fruit weight and weight of 100 seeds in the year 2022 in second week of March. Similarly, in 2023

for the traits for the stem length of internodes, leaf length, leaf width, days to first male flower opening, days to first female flower opening, fruit length, fruit diameter, average fruit weight and weight of 100 seeds were reported moderate PCV value. Seed length showed low PCV values in 2022 in the second week of March. Whereas, in 2023 for the traits days to first harvest and seed length had low levels of PCV. Similar findings were also recorded by Vinita *et al.* (2021) in ridge gourd also found that vine length, fruit weight and fruit yield per vine had high GCV and PCV values, Similar results were also reported by Panda *et al.* (2022), Radha Rani *et al.* (2012), Akhila and Singh (2020), Harshitha *et al.* (2019), Kumar *et al.* (2019), Khatoon *et al.* (2016), Rabbani *et al.* (2012), Koppad *et al.* (2015), Dubey *et al.* (2013), Bhargava *et al.* (2017), Choudhary *et al.* (2014) in ridge gourd, Kumar *et al.* (2020) and Abhijeet *et al.* (2018) in sponge gourd.

Crop improvement programmes can advantage from the characters that exhibit high PCV and GCV values, as they indicate a large variation among the individuals. These characters can be improved by simple selection methods. However, the characters with moderate PCV and GCV values also have some variability and can be improved by selection to some extent. The characters with low PCV and GCV values are not suitable for direct selection, as they show very slight variation and have reached homozygosity. These characters cannot be improved further by conventional methods.

5.4.3 Heritability and genetic advance as per cent of mean

The heritable variation of a trait is measured by heritability, which indicates how much of the phenotypic variation is due to genetic factors. Characters with high heritability are more influenced by genetic composition and are more suitable for breeding purposes. The effectiveness of selecting a trait depends on how well the phenotypic differences reflect the genotypic differences among individuals in a population. Heritability is an important principle for selection, but it is not enough by itself. Genetic advance, which shows the expected change in the trait value after one generation of selection, is also a useful indicator for selection efficiency. In this section, the estimates of heritability and genetic advance as per cent of mean obtained in this study are compared with previous studies on the same or similar traits.

The results of the analysis indicated that most of the characters examined had high heritability values along with low to high genetic advance per cent of the mean in both the years of study in the last week of February and second week of March. This suggests that these traits are controlled by additive gene effects and that selection based on phenotypic performance would be effective in improving them. For the days to 50% germination, high heritability estimates with high estimate of genetic advance as per cent of mean and moderate estimates of heritability with high estimate of genetic advance as per cent of mean in 2022 and 2023 in the last week of February, respectively. High heritability estimates were recorded with high estimate of genetic advance as per cent of mean for number of primary branches per vine

in the year 2022 in last week of February, while moderate heritability estimates with moderate estimates of genetic advance as per cent of mean were reported in 2023. Moderate estimates of heritability in the last week of February (2022) coupled with high genetic advance as per cent of mean and high estimates of heritability with high genetic advance as per cent of mean in 2023 were observed for vine length at final harvest. In the last week of February in the years 2022 and 2023, high heritability estimates were observed with high estimates of genetic advance as per cent of mean for the traits stem length of internodes, petiole length, nodes to first male flower, nodes to first female flower, days to first fruit harvest, number of fruits per vine, fruit diameter, peduncle length, number of seed per fruit, fruit yield per vine and fruit yield per hectare, respectively. For leaf length high estimates of heritability coupled with high estimates of genetic advance as per cent of mean was reported in the last week of February (2022), while in 2023 moderate heritability estimates with moderate estimates of genetic advance as per cent of mean was recorded. Leaf width in the last week of February showed to have moderate estimates of heritability of coupled with moderate estimates of genetic advance as per cent of mean, whereas, in 2023, leaf width recorded high estimates of heritability with moderate estimates of genetic advance as per cent of mean. Days to first male flower opening exhibited high heritability with high level of genetic advance as per cent of mean in the last week of February (2022), whereas, in 2023 high estimates of heritability coupled with moderate values of genetic advance as per cent of mean was noted. In the last week of February in 2022, days to first female flower opening recorded high heritability with high level of genetic advance as per cent of mean, while in 2023, high heritability days to first female flower opening recorded high heritability with high level of genetic advance as per cent of mean. Fruit length in 2022 in the last week of February, showed moderate estimates of heritability coupled with moderate estimates of genetic advance as per cent of mean, whereas, in 2023 fruit length recorded high estimates of heritability value with high estimates of genetic advance as per cent of mean. In the last week of February in both the year of study, average fruit weight reported moderate heritability estimates of with moderate estimates of genetic advance as per cent of mean, respectively. Moderate heritability estimates with moderate estimate of genetic advance as per cent of mean for seed length in the year 2022 in last week of February, while high heritability estimates with moderate estimates of genetic advance as per cent of mean were reported in 2023. For the weight of 100 seeds, moderate heritability estimates with high estimate of genetic advance as per cent of mean in 2022 and 2023 in the last week of February, respectively.

High heritability coupled with high genetic advance as per cent of mean for nodes to first female flower, fruit length, number of fruits per vine, fruit weight and yield per plant in different ridge gourd was reported by Panda *et al.* (2022). The results achieved from the present study for vine length, number of nodes per vine, days to anthesis of first male flower and

number of nodes to first male and female flower was in accordance with Harshitha *et al.* (2019) who studied genetic variability in ridge gourd and Sponge gourd Kumar *et al.* (2019) found high heritability and genetic advance as a per cent of mean estimates for vine length, number of primary branches, number of fruiting nodes on main stem, fruits per vine, yield per vine, days to pistillate flower opening, node at first female flower, fruit length, fruit diameter, fruit weight and number of seeds per fruit, respectively. The similar findings were reported by Kumar *et al.* (2020) who studied high heritability coupled with high genetic advance was estimated for vine length, number of node to anthesis of first male flower and number of fruits per vine in sponge gourd. The results were also in harmony with Vinitha *et al.* (2021) in ridge gourd.

For the traits days to 50% germination, number of primary branches per vine, vine length at final harvest, stem length of internodes petiole length, days to first female flower opening, nodes to first male flower, nodes to first female flower, peduncle length, number of seeds per fruit, weight of 100 seeds, fruit yield per vine and fruit yield per hectare recorded high heritability with high estimates of genetic advance as per cent of mean in the year 2022 and 2023 in the second week of March, respectively. Leaf length reported high heritability with high estimates of genetic advance as per cent of mean in the second week of March in 2022 and in the year 2023 moderate heritability estimates with moderate estimates of genetic advance per cent of mean. In the second week of March in 2022, leaf width reported moderate heritability estimates with moderate estimates of genetic advance as per cent of mean and high heritability estimates with moderate estimates of genetic advance as per cent of mean in the year 2023. The trait days to first male flower opening was reported to have high heritability with high genetic advance as per cent of mean in 2022 in the second week of March and high heritability with moderate genetic advance as per cent of mean in 2023. Days to first fruit harvest reported high heritability with high estimates of genetic advance as per cent of mean in the second week of March 2022, while in 2023 high heritability of coupled with moderate estimates of genetic advance as per cent of mean. High estimates of heritability along with moderate estimates of genetic advance as per cent of mean was recorded for the trait number of fruits per vine in the second week of March in 2022 and 2023, respectively. High heritability estimates with moderate estimates of genetic advance as per cent of mean in the second week of March in 2022, while high estimates of heritability estimates with high genetic advance as per cent of mean was recorded in 2023 for fruit length. Moderate heritability estimates with high estimates of genetic advance as per cent of mean in in the second week of March in 2022, whereas, high estimate of heritability value with high estimate of genetic advance as per cent of mean was recorded in 2023 for the trait fruit diameter. Average fruit weight recorded moderate estimates heritability (74.83% and 68.33%) with moderate estimates of genetic advance as per cent of mean (19.76% and 18.17%), in the second week of March in the years 2022 and 2023,

respectively. seed length observed moderate estimates of heritability along with high estimates of genetic advance as per cent of mean in 2022 and 2023 in the second week of March, respectively. High heritability coupled with high genetic advance as per cent of mean for the traits vine length, fruit yield per hectare and fruit yield per hectare was noted by Akhila and Singh (2020) in ridge gourd. For the traits days to first harvest, fruit yield per vine and fruit yield per hectare in ridge gourd similar findings were achieved by Manoj *et al.* (2018). Kumar *et al.* (2020) in sponge gourd found similar results as the present investigation for the vine length and number of fruits per vine. The results of the present study were also in confirmation with Chinthalapudi *et al.* (2021), Vinitha *et al.* (2021), Vijayakumar *et al.* (2020) and Bhargava *et al.* (2017).

The heritability of most traits was moderate to high in the last week of February and the second week of March in the years 2022 and 2023, as well as low to high genetic advance per cent of mean values. This means that the environment had little effect on these traits and that they were mainly controlled by additive genes. These traits had high heritability and high genetic advance as per cent of mean, which means that the environment had slight effect on the trait expression and that additive gene action was the main factor in the trait inheritance. These traits can be improved by direct selection based on the phenotype, since they reflect the genetic potential of the plants. The expression of some characters is influenced by both additive and non-additive gene action, as specified by the high heritability and moderate genetic advance observed for these characters. These traits may not respond well to selection because of the complex genetic interactions involved. On the other hand, the traits that showed high heritability but low genetic advance are governed by dominant and non-additive gene action, which also makes them difficult to improve by selection. The traits that exhibited moderate heritability and low to moderate genetic advance as per cent of mean are affected by environmental factors in their expression, but they have some potential for transmitting genes to the next generations.

The heritability and genetic advance as per cent of mean estimate values for all the traits studied varied between last week of February and second week of March in the years 2022 and 2023. However, there was no consistent pattern in the variation. The higher heritability values in last week of February and second week of March in the years 2023 than in the year 2022 could be attributed to the increased homozygosity for the genes controlling those characters.

5.5 Correlation analysis

The aim of this investigation was to analyze the relationship between different traits and yield in forty ridge gourd genotypes using correlation analysis. Correlation analysis is a statistical method that studies the nature and degree of relationship between various characters and how they affect each other. Yield is a complex character that is influenced by many factors,

such as fruit size, number, quality, and disease resistance. Improving some of these factors may have adverse effects on others, resulting in lower yield or quality. Therefore, it is important to measure the degree of association for all the desired characters and select the ones that have positive and significant correlation with yield. Correlation co-efficients can also indicate the possibility of simultaneous improvement of related character by selecting for one of them. Correlation co-efficients are also useful for planning and estimating breeding programmes, as they estimate the genotypic and phenotypic variation among different traits and their heritability. In this study, considered the genotypic and phenotypic correlation co-efficients for various yield and its attributing traits of forty genotypes in the last week of February and second week of March in the years 2022 and 2023. The genotypic and phenotypic correlation co-efficients were calculated using the method of analysis of variance and covariance. The significance of the correlation co-efficients was tested using the t-test. The results are presented and discussed below.

In the last week of February in 2022, fruit yield per hectare had significant positive genotypic correlation with days to 50% germination, number of fruits per vine, average fruit weight and fruit yield per vine, while in 2023 number of fruits per vine, average fruit weight and fruit yield per vine. Whereas, in the last week of February, 2022, fruit yield per hectare had significant positive phenotypic correlation with days to 50% germination, days to first male flower opening, days to first female flower opening, days to first fruit harvest, number of fruits per vine, fruit diameter, average fruit weight and fruit yield per vine, while highly significant and negatively correlated with number of seeds per fruit. In 2023, days to first male flower opening, days to first female flower opening, days to first fruit harvest, number of fruits per vine, fruit diameter, average fruit weight and fruit yield per vine, while highly significant and negatively correlated with number of seeds per fruit. Gautam *et al.* (2017) also reported that the average fruit weight, number of primary branches, number of fruits per vine had significant positive genotypic correlation with fruit yield. Harshitha *et al.* (2019a), Akhila and Singh (2020) and Srikanth *et al.* (2021) recorded correlation analysis between yield and yield attributes of ridge gourd genotypes and found similar associations for one or more traits.

In the second week of March, 2022, Association of leaf width, number of fruits per vine, average fruit weight and fruit yield per vine reported significant positive genotypic correlation with fruit yield per hectare, while number of primary branches per vine recorded significant negative genotypic correlation. Whereas, in the 2023, leaf length, leaf width, number of fruits per vine, average fruit weight and fruit yield per vine observed significant positive genotypic correlation with fruit yield per hectare, while number of primary branches per vine recorded significant negative genotypic correlation. Fruit yield per hectare had significant positive phenotypic correlation with days to 50% germination, leaf width, petiole length, days to first male flower opening, days to first female flower opening, days to first fruit harvest,

number of fruits per vine, seed length and fruit yield per vine, significant negative phenotypic correlated with number of primary branches per vine and number of seeds per fruit in the second week of March in 2022 and 2023. The size of the fruit is determined by fruit diameter which are important traits for this crop. The fruit yield per hectare is positively correlated with these traits, as well as with the number of fruits per vine and the average fruit weight. The earliness of the crop is measured by the days to first male and flower opening and the days to first harvest. A shorter duration for these measures shows a higher fruit yield per hectare. Vinitha *et al.* (2021) also reported first female flower appear and days to first harvest had significant positive genotypic correlation with fruit yield. The above results were in related with the research work of Koppad *et al.* (2015a), Khatoon *et al.* (2016), Ananthan and Krishnamoorthy (2017), Ramesh *et al.* (2018) and Singh *et al.* (2019) for number of fruits, average fruit weight and fruit diameter in ridge gourd. Vijayakumar *et al.* (2020) for days to first pistillate flower, node to first staminate flower, and days to first harvest in ridge gourd.

The correlation studies revealed that the fruit yield and yield attributes that contributed to it had a similar pattern of association in 2022 and 2023 in the last week of February and the second week of March. This specified that the genetic factors influencing these characters are stable and consistent in both the years and both dates of sowing. The results also suggest that these traits can be used as selection criteria for improving fruit yield in future breeding programs.

The study discovered a significant association between fruit yield and yield contributing characters at both genotypic and phenotypic levels. This suggested that these characters can be improved simultaneously through selection based on their correlation co-efficients. In the present study the characters, days to 50% germination, leaf width, petiole length, days to first male flower opening, days to first female flower opening, days to first fruit harvest, number of fruits per vine, average fruit weight, seed length and fruit yield per vine, were recorded to have significant correlation with fruit yield per hectare at both genotypic and phenotypic level, considered in the last week of February and second week of March in 2022 and 2023. By including these characters in the breeding program, fruit yield can be increased effectively.

The genotypic correlation co-efficient was higher than the phenotypic correlation co-efficient for most of the characters studied in both the dates of sowing in 2022 and 2023. This suggested that the genetic makeup of the plants has a stronger effect on the expression of these characters than the environmental factors. The same pattern of association between yield and major yield contributing traits was observed in the last week of February and second week of March in 2022 and 2023. This shows that the inheritance of these traits is consistent in both years of study and both date of sowing.

5.6 Path co-efficient analysis

Simple correlation studies are a useful method for determining the strength of the relationship between two characters. However, the interaction between these traits become complicated as the number of characters involved increases. Correlation is bivariate analysis, so it might not be effective for selection of multivariate factor like yield. Path analysis is most important to understand the magnitude and direction of relationship between two characters. It is necessary to have the knowledge of direct and indirect influence of various yield attributing characters towards the improvement for the enhancement of economic yield, where it measures the relative importance of all the characters under study simultaneously. Path co-efficient analysis is a method that allows us to study the significant relationships between different pairs of traits and their impact on fruit yield. By using this method, we can estimate the direct and indirect effects of each traits on the yield and identify the most important ones. This helps us to understand the relationship between characters better and plan more effective crop improvement programmes.

The path co-efficient analysis was performed for two date of sowings (last week of February and second week of March) during 2022 and 2023, using the genotypic correlation co-efficient as a measure of relationship. The fruit yield per hectare was the dependent variable, and the direct and indirect effects of other traits were assessed. The results exhibited that the following traits had significant direct and indirect effects on fruit yield per hectare. In the last week of February in 2022, highest positive direct effect at genotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine followed by days to first fruit harvest, nodes to first female flower, days to 50% germination, days to first male flower opening, fruit diameter, number of fruits per vine, number of primary branches per vine, stem length of internodes, fruit length and weight of 100 seeds, while highest negative genotypic direct effect was observed by days to first female flower opening followed by nodes to first male flower, number of seeds per fruit, vine length at final harvest, leaf length, peduncle length, seed length, average fruit weight, leaf width and petiole length. In the year 2023 in last week of February, genotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine followed by number of fruits per vine, days to first female flower opening, average fruit weight, days to first fruit harvest, fruit diameter, leaf width, peduncle length, stem length of internodes, seed length, petiole length, nodes to first female flower and fruit length, while highest genotypic negative direct effect was observed by days to first male flower opening followed by leaf length, nodes to first male flower, number of seeds per fruit, number of primary branches per vine, weight of 100 seeds, vine length at final harvest and days to 50% germination. In the last week of February in 2022, highest positive direct effect at phenotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine followed by number of fruits per vine, average fruit weight, days to first fruit harvest, days to first female flower opening, number of primary

branches per vine, fruit length, nodes to first female flower, stem length of internodes, weight of 100 seeds and petiole length, while highest negative phenotypic direct effect was observed by days to first male flower opening followed by seed length, number of seeds per fruit, nodes to first male flower, vine length at final harvest, leaf width, leaf length, peduncle length, days to 50% germination and fruit diameter. In the year 2023 in last week of February, phenotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine followed by number of fruits per vine, average fruit weight, days to first fruit harvest, days to 50% germination, petiole length, nodes to first male flower, stem length of internodes, fruit length, leaf length, fruit diameter, number of primary branches per vine and leaf width, while highest phenotypic negative direct effect was recorded by days to first male flower opening followed by nodes to first female flower, seed length, days to first female flower opening, peduncle length, number of seeds per fruit, weight of 100 seeds and vine length at final harvest.

In the last week of February in 2022, fruit yield per vine was recorded to have genotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, days to 50% germination, days to first male flower opening, fruit diameter, days to first female flower opening, days to first fruit harvest, peduncle length, seed length, petiole length and leaf width and negative indirect effect via number of seeds per fruit, vine length at final harvest, nodes to first male flower, nodes to first female flower, weight of 100 seeds, number of primary branches, leaf length, stem length of internodes and fruit length. Fruit yield per vine was recorded to have genotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, days to first male flower opening, days to first female flower opening, fruit diameter, days to first fruit harvest, peduncle length, days to 50% germination, leaf length, petiole length, fruit length, leaf width, vine length at final harvest, stem length of internodes and seed length, while negative indirect effect via number of seeds per fruit, nodes to first male flower, weight of 100 seeds, number of primary branches per vine and nodes to first female flower in the last week of February in 2023. Fruit yield per vine was recorded to have phenotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, days to 50% germination, days to first male flower opening, days to first female flower opening, fruit diameter, days to first fruit harvest, peduncle length, petiole length, seed length and fruit length, while negative indirect effect via number of seeds per fruit, nodes to first male flower, nodes to first female flower, weight of 100 seeds, vine length at final harvest, stem length of internodes, leaf length, number of primary branches and leaf width in the last week of February in 2022. Whereas, in the last week of February in 2023, fruit yield per vine was recorded to have phenotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, days to first male flower opening, days to first female flower opening, days to first fruit harvest, fruit diameter, peduncle length, days to 50% germination, petiole length, leaf length, seed length, leaf width, fruit length, vine

length at final harvest and stem length of internodes, while negative indirect effect via number of seeds per fruit, nodes to first male flower, weight of 100 seeds, nodes to first female flower and number of primary branches. Radha Rani (2012) also reported at the genotypic and phenotypic level average fruit weight and number of fruits per vine had the most positive direct effect on yield in ridge gourd. Kumar *et al.* (2013) noted in bitter gourd for the fruit diameter, number of primary branches, average fruit weight and number of fruits per vine had positive direct effects on fruit yield per vine. The similar findings were reported by Khatoon *et al.* (2016), Ananthan and Krishnamoorthy (2017), Mitu *et al.* (2018), Harshitha *et al.* (2019a), Vijayakumar *et al.* (2020) and Vinitha *et al.* (2021) in ridge gourd.

The path analysis of the second week of March discovered the direct and indirect effects of various characters on fruit yield per hectare, which was the dependent variable in this study. The results are discussed as follows.

In the second week of March during 2022, highest positive direct effect at genotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine followed by days to first fruit harvest, leaf width, stem length of internodes, days to 50% germination, fruit length, weight of 100 seeds, average fruit weight, days to first male flower opening, nodes to first female flower and vine length at final harvest, while highest negative genotypic direct effect was recorded by days to first female flower opening followed by leaf length, peduncle length, nodes to first male flower, seed length, petiole length, fruit diameter, number of seeds per fruit, number of fruits per vine, and number of primary branches per vine. Genotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine followed by number of fruits per vine, average fruit weight, nodes to first male flower, days to first male flower opening, petiole length, days to first fruit harvest, number of seeds per fruit, days to 50% germination, seed length, leaf width and stem length of internodes, while highest genotypic negative direct effect was observed by nodes to first female flower followed by days to first female flower opening, peduncle length, vine length at final harvest, leaf length, weight of 100 seeds, fruit diameter, fruit length and number of primary branches per vine during 2023 in second week of March. In the second week of March in 2022, highest positive direct effect at phenotypic level on fruit yield per hectare was recorded by the trait fruit yield per vine followed by number of fruits per vine, average fruit weight, days to first male flower opening, vine length at final harvest, number of primary branches per vine, fruit diameter, nodes to first female flower, petiole length and peduncle length, while highest negative phenotypic direct effect was observed by days to 50% germination followed by nodes to first male flower, days to first fruit harvest, seed length, stem length of internodes, number of seeds per fruit, leaf width, weight of 100 seeds, fruit length, leaf length and days to first female flower opening. Phenotypic positive direct effect on fruit yield per hectare was observed by fruit yield per vine followed by seed length, days to first fruit harvest, days to first male flower opening, days to 50% germination,

stem length of internodes, fruit diameter, nodes to first female flower, number of seeds per fruit, leaf width and fruit length, while highest phenotypic negative direct effect was recorded by days to first female flower opening followed by vine length at final harvest, nodes to first male flower, number of primary branches per vine peduncle length, petiole length, leaf length, weight of 100 seeds, average fruit weight and number of fruits per vine in the year 2023 in second week of March.

Fruit yield per vine was recorded to have genotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, leaf width, days to first fruit harvest, seed length, days to first male flower opening, days to first female flower opening, days to 50% germination, fruit diameter, petiole length, vine length at final harvest, stem length of internodes and leaf length, while negative indirect effect via number of primary branches, number of seeds per fruit, nodes to first female flower, nodes to first male flower, weight of 100 seeds, fruit length and peduncle length in the second week of March in 2022. At genotypic level, fruit yield per vine was recorded to have positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, leaf length, leaf width, days to first fruit harvest, petiole length, days to first male flower opening, days to first female flower opening, vine length at final harvest, fruit diameter, stem length of internodes, seed length, days to 50% germination and fruit length, while negative indirect effect via number of primary branches per vine, number of seeds per fruit, nodes to first male flower, nodes to first female flower, weight of 100 seeds and peduncle length in the second week of March in 2023. Fruit yield per vine was recorded to have phenotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, days to first male flower opening, days to first fruit harvest, days to first female flower opening, leaf width, days to 50% germination, seed length, petiole length, fruit diameter, vine length at final harvest, stem length of internodes and leaf length, while negative indirect effect via number of primary branches per vine, number of seeds per fruit, nodes to first female flower, nodes to first male flower, fruit length, weight of 100 seeds and peduncle length in the second week of March in 2022. In the second week of March in 2023, fruit yield per vine was recorded to have phenotypic positive indirect effect on fruit yield per hectare via number of fruits per vine, average fruit weight, leaf length, days to first fruit harvest, leaf width, petiole length, days to first male flower opening, days to first female flower opening, vine length at final harvest, fruit diameter, stem length of internodes, seed length, days to 50% germination and fruit length, while negative indirect effect through number of primary branches per vine, number of seeds per fruit, nodes to first male flower, nodes to first female flower, weight of 100 seeds and peduncle length. The genotypic and phenotypic, positive and negative, direct and indirect effects reported in this study were similar to the results of Radha Rani (2012), Rabbani *et al.* (2012), Dubey *et al.* (2013a), Dubey *et al.* (2013), Choudhary *et al.* (2014), Narasannavar *et al.* (2014), Khatoon *et al.* (2016), Harshitha *et al.*

(2019a), Vijayakumar *et al.* (2020) and Vinitha *et al.* (2021) in ridge gourd. Sharma *et al.* (2017) and Kumar *et al.* (2019) in sponge gourd.

The path analysis study revealed that fruit yield per hectare was positively influenced by fruit yield per vine, number of fruits per vine, average fruit weight, nodes to first male flower, days to first male flower opening, petiole length, days to first fruit harvest, number of seeds per fruit, days to 50% germination seed length leaf width, peduncle length, fruit length, fruit diameter, weight of 100 seeds and stem length of internodes. These traits had significant positive correlation and direct positive effect on the yield. Hence, these traits should be prioritized in the selection of plants for ridge gourd cultivation. Plants with longer and wider fruits, heavier fruits and more fruits per vine should be selected for increasing fruit yield per hectare. All the characters considered had positive direct or indirect effects on the yield.

The present investigation entitled “**Characterization and variability studies in ridge gourd genotypes**” was conducted to evaluate the performance of forty ridge gourd genotypes, morphological characterization, genetic variability and correlation and path co-efficient analysis of various traits. The experiment was carried out, at Research Farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar during last week of February and second week of March of 2022 and 2023, respectively. To ensure the validity and reliability of the results, the experiment followed a randomized block design (RBD) with three replications.

The experimental material was consisted of forty ridge gourd genotypes with two date of sowings (Last week of February and Second week of March) in each in the years 2022 and 2023. The estimation was done for fifteen morphological traits and twenty two quantitative traits. Morphological characters included plant growth habit, leaf shape, leaf blade: Number of lobes, leaf pubescence, stem shape, stem pubescence, flower colour, fruit shape, fruit skin colour, fruit shape of blossom end, fruit shape at peduncle end, fruit skin luster, fruit ridge (rib) shape, flesh texture and flesh colour, while in quantitative characters included days to 50% germination, number of primary branches per vine, days to first male flower opening, days to first female flower opening, nodes to first male flower, nodes to first female flower, leaf length (cm), leaf width (cm), petiole length (cm), peduncle length (cm), fruit length (cm), fruit diameter (cm), stem length of internodes (cm), number of fruits per vine, days to first fruit harvest, average fruit weight (g), vine length at final harvest (m), number of seeds per fruit, seed length (cm), weight of 100 seeds (g), fruit yield per vine (kg) and fruit yield per hectare (q/ha). Important findings of the study have been presented here below:

6.1 Morphological characterization (Last week of February and Second week of March, 2022 and 2023)

- With respect to plant growth habit in both the years of study in last week of February, all the genotypes recorded short viny except T₁₅ (IC-341122) and T₃₁ (IC-393305) which recorded medium viny. Similarly in the second week of March in both the years only T₈ (IC-264971), T₁₁ (IC-279691), T₁₅ (IC-341122), T₁₇ (IC-345576) and T₂₉ (IC-392555) indicated medium viny growth habit as against short viny in the remaining others.
- With respect to leaf shape, all the genotypes recorded orbicular leaf shape except T₂ (IC-262231), T₅ (IC-262258), T₆ (IC-264830), T₈ (IC-264971), T₂₂ (IC-355974), T₂₉ (IC-392555) and T₃₀ (IC-393298) in which leaf shape was found to be reniform.
- The treatments T₄ (IC-262265) and T₁₀ (IC-278358) recorded three lobes per leaf blade and the treatment T₅ (IC-262258), T₂₃ (IC-356037), T₂₄ (IC-392531), T₂₆ (IC-392535), T₂₇ (IC-392538), T₂₈ (IC-392544) and T₄₀ (Pusa Nasdar) recorded more than 5 lobes per leaf,

whereas, the remaining others had 5 lobes per leaf.

- In all the genotypes the stem shape was found to be angular, leaf pubescence was present, stem pubescence was absent and the flower had light yellow colour in both the years.
- The fruit shape of T₂ (IC-262231), T₃ (IC-262245), T₅ (IC-262258), T₆ (IC-264830), T₇ (IC-264908), T₈ (IC-264971), T₁₁ (IC-279691), T₁₅ (IC-341122), T₁₉ (IC-355959), T₂₇ (IC-392538), T₂₈ (IC-392544), T₃₅ (IC-429970) and T₃₇ (DARL/SS/60) was found to be elliptical, while the other genotypes had elongated fruit shape.
- All the genotypes had green coloured fruit skin except T₃ (IC-262245) and T₈ (IC-264971) where it was dark green and T₁₄ (IC-341116) where it was light green.
- In both the years all the genotypes recorded rounded fruit shape of blossom end and peduncle end.
- With respect to luster fruit skin all the genotypes showed matt fruit luster.
- The treatment T₁₄ (IC-341116), T₂₄ (IC-392531), T₂₃ (IC-356037), T₂₈ (IC-392544), T₃₃ (IC-429949) and T₃₅ (IC-429970) had deep fruit ridges, while the others had medium ridges.
- In all the genotypes the flesh texture was found to be soft/spongy and flesh colour was found to be cream in both the years.

6.2. Last week of February, 2022 and 2023

6.2.1 Mean performance of different ridge gourd genotypes

- Among all the genotypes studied under in the last week of February in both year the best result revealed that the genotype T₂₆ (IC-392535) recorded the minimum days to 50% germination, days to first male flower and female flower opening, whereas, the genotype T₁₅ (IC-341122) had the maximum number of primary branches per vine, vine length at final harvest, stem length of internode and peduncle length.
- The genotype T₃₆ (DARL/SS/238) observed the maximum leaf length, leaf width and petiole length. Minimum nodes to first male flower was recorded in the genotype T₁₆ (IC-341161), while, T₂₁ (IC-355967) had observed minimum nodes to first female flower, days to first fruit harvest and maximum fruit diameter. The genotype T₁₇ (IC-345576) recorded the maximum number of fruits per vine, fruit yield per vine and fruit yield per hectare.
- Maximum average fruit weight was observed in the genotype T₄ (IC-262265), whereas, the maximum number of seed/fruit was observed in the genotype T₃₈ (Akola-01) and maximum fruit length was recorded in the genotypes T₃₀ (IC-393298). The genotype T₂₈ (IC-392544) recorded the maximum seed length (cm), while test weight of seed was observed in the genotype T₂₅ (IC-392534).

6.2.2 Genetic variability

- High GCV and PCV were observed for the traits, viz., nodes to the first male and female flower, number of fruits per vine, number of seeds per fruit, fruit yield per vine and per hectare in last week of February (2022 and 2023). Meanwhile, days to 50% germination

and vine length at final harvest recorded high PCV in the last week of February in 2022.

- High heritability was observed for days to 50% germination, number of primary branches per vine, stem length of internode, leaf length, petiole length, days to first male and female flower opening, nodes to first male and female flower, days to first fruit harvest, number of fruits per vine, fruit diameter, peduncle length, number of seeds per fruit, fruit yield per vine and per hectare in both years in the last week of February.
- High genetic advance as per cent of mean was recorded for days to 50% germination, number of primary branches per vine, vine length at final harvest, stem length of internode, leaf length, petiole length, nodes to first male and female flower, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, fruit diameter, peduncle length, number of seeds per fruit, test weight of seeds, fruit yield per vine and per hectare in both years in the last week of February.

6.2.3 Correlation co-efficient

- In the last week of February (2022), fruit yield per hectare had significant positive genotypic correlation with days to 50% germination, number of fruits per vine, average fruit weight and fruit yield per vine.
- In the last week of February (2022), fruit yield per hectare had significant positive phenotypic correlation with days to 50% germination, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, average fruit weight, fruit diameter and fruit yield per vine, whereas, significant negative phenotypic correlation with number of seeds per fruit was recorded.
- In the last week of February (2023), fruit yield per hectare had significant positive genotypic correlation with number of fruits per vine, average fruit weight and fruit yield per vine.
- In the last week of February (2023), fruit yield per hectare had significant positive phenotypic correlation with days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, average fruit weight, fruit diameter and fruit yield per vine, whereas, significant negative phenotypic correlation with number of seeds per fruit was recorded.

6.3 Second week of March, 2022 and 2023

6.3.1 Mean performance of different ridge gourd genotypes

- Among all the genotypes studied under the second week of March in both year the result revealed that the genotype T₂₁ (IC-355967) recorded the minimum days to 50% germination, node to first female flower, days to first fruit harvest and maximum fruit diameter. Whereas, maximum number of primary branches per vine was recorded in the genotype T₄₀ (Pusa Nasdar).
- The genotype T₁₇ (IC-345576) recorded maximum vine length at final harvest, number of

fruits per vine, fruit yield per vine and per hectare. Maximum stem length of internode was observed in the genotype T₂₄ (IC-392531). Maximum leaf length was recorded in the genotype T₁₄ (IC-341116), maximum leaf width was recorded in the genotype T₁ (IC-262188) and maximum petiole length was observed in the genotype T₁₆ (IC-341161).

- The genotype T₂₆ (IC-392535) recorded minimum days to first male and female flower opening, whereas, the maximum fruit length was noted in the genotypes T₃₀ (IC-393298). Maximum peduncle length was observed in the genotype T₃₁ (IC-393305). Maximum average fruit weight was recorded in the genotype T₄ (IC-262265), maximum number of seed/fruit was observed in the genotype T₃₈ (Akola-01). The genotype T₁₁ (IC-279691) recorded the maximum seed length while, maximum test weight of seed was observed in the genotype T₂₅ (IC-392534).

6.3.2 Genetic variability

- High GCV and PCV were observed for the traits, viz., number of primary branches per vine, petiole length, nodes to the first male and female flower, number of fruits per vine, peduncle length, number of seeds per fruit, fruit yield per vine and per hectare. Meanwhile, high PCV for days to 50% germination and vine length at final harvest was recorded in in the second week of March in 2023 and vine length at final harvest recorded high GCV in the second week of March in 2022.
- High heritability was observed for days to 50% germination, number of primary branches per vine, vine length at final harvest, stem length of internode, leaf length, petiole length, days to first male and female flower opening, nodes to first male and female flower, days to first fruit harvest, number of fruits per vine, fruit length, peduncle length, number of seeds per fruit, fruit yield per vine and per hectare in both years in the second week of March.
- High genetic advance as per cent of mean were recorded for days to 50% germination, number of primary branches per vine, vine length at final harvest, stem length of internode, leaf length, petiole length, nodes to first male and female flower opening, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, fruit diameter, peduncle length, number of seeds per fruit, weight of 100 seeds, fruit yield per vine and per hectare in both years of in the second week of March.

6.3.3 Correlation co-efficient

- In the second week of March (2022), fruit yield per hectare had significant positive genotypic correlation with leaf width, number of fruits per vine, average fruit weight and fruit yield per vine, whereas, significant negative genotypic correlation was recorded with number of primary branches per vine.
- In the second week of March (2022), fruit yield per hectare had significant positive phenotypic correlation with days to 50% germination, vine length at final harvest, leaf

width, petiole length, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, average fruit weight, fruit diameter, seed length and fruit yield per vine, whereas, significant negative phenotypic correlation with number of primary branches per vine and number of seeds per fruit was recorded.

- In the second week of March (2023), fruit yield per hectare had significant positive genotypic correlation with leaf length, leaf width, number of fruits per vine, average fruit weight and fruit yield per vine, whereas, significant negative genotypic correlation was observed with number of primary branches per vine.
- In the second week of March (2023), fruit yield per hectare had significant positive phenotypic correlation with vine length at final harvest, leaf length and width, petiole length, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, average fruit weight, fruit diameter, seed length and fruit yield per vine, whereas, significant negative phenotypic correlation with number of primary branches per vine and number of seeds per fruit was recorded.

6.4 Path analysis

- Path analysis was conducted to study the magnitude of association between various traits considering fruit yield per hectare as dependable character using genotypic correlation.
- In the last week of February and second week of March in both the years, number of fruits per vine recorded positive direct effect on fruit yield per hectare at the genotypic and phenotypic level.

CONCLUSION

Among all the genotypes of ridge gourd studied in last week of February and second week of March in 2022 and 2023, the genotype T₁₇ (IC-345576) was recorded superior for fruit yield and its contributing traits followed by the genotype T₁₆ (IC-341161) and T₁₅ (IC-341122). Based on the results of variability parameters, days to 50% germination, number of primary branches per vine, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, fruit diameter, number of seeds per fruit, fruit yield per vine and per hectare. The above traits could be used in future ridge gourd improvement programme. From the study of correlation and path analysis, it may be concluded that flowering traits (days to first male and female flower opening and days to first fruit harvest) and fruit yield contributing traits (number of fruits per vine, average fruit weight and fruit yield per vine) recorded positive significant effect on fruit yield per hectare.

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ABSTRACT

Title of thesis : **Characterization and variability studies in ridge gourd genotypes**
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Key words: Ridge gourd, characterization, correlation, variability, heritability and path analysis

The present study entitled “Characterization and variability studies in ridge gourd genotypes” was conducted at the Research Farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar. Forty ridge gourd genotypes were used as experimental material and evaluated according to the objectives of the study during the last week of February and the second week of March of 2022 and 2023 to assess the performance of morphological characterization, genetic variability, correlation and path co-efficient analysis of various traits. The study involved determining morphological traits of ridge gourd such as vine, leaf, flower, fruit and seed traits. A list of fifteen morphological descriptors was taken from NBPGR guidelines and applied for characterization. The study performed ANOVA, mean performance and variability on the data for quantitative traits using R software. The doebioresearch package was used for RBD design and the variability package was used for variability studies. The study confirmed the effects as significant at the 5% level. Considerable variability for morphological characters (fifteen) and quantitative characters (twenty-two) was observed for this study. The high morphological variation observed for the traits plant growth habit, leaf shape, leaf blade: Number of lobes, fruit shape and fruit ridge shape in all the genotypes, while for the quantitative traits, among all the genotypes of ridge gourd observed in the last week of February and second week of March in 2022 and 2023, the genotype T₁₇ (IC-345576) was recorded superior for fruit yield and its contributing traits followed by the genotypes T₁₆ (IC-341161) and T₁₅ (IC-341122). The traits namely days to 50% germination, number of primary branches per vine, days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, fruit diameter, number of seeds per fruit, fruit yield per vine and per hectare exhibited considerable variability in terms of GCV, PCV, heritability and genetic advance as per cent of mean in the last week of February and second week of March in 2022 and 2023, respectively. Correlation and path analysis studies indicated that the days to first male and female flower opening, days to first fruit harvest, number of fruits per vine, average fruit weight and fruit yield per vine recorded positive significant effect on fruit yield per hectare and these characters can be considered for improvement of fruit yield by various breeding programmes.

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Karande, P.J., Kale, V.S., Mane, N.V., Sonkamble, A.M., Wagh, A.P. and Ingle, Y.V. (2020). Evaluation of garlic mutants for yield and quality attributes, *Journal of Pharmacognosy and Phytochemistry*, **9**(6): 1356-1358.

Mane, N.V., Kale, V.S., **Karande, P.J.,** Umbarkar, S.P., Nagre, P.K. and Sonkamble, A.M. (2020). Storage studies in Onion (*Allium cepa* L.) varieties and genotypes. *Journal of Pharmacognosy and Phytochemistry*, **9**(6): 1359-1360.

Mane, N.V., Kale, V.S., **Karande, P.J.,** Nagre, P.K., Sonkamble, A.M. and Kayande, N.V. (2020). Evaluation of different onion varieties and genotypes. *Journal of Pharmacognosy and Phytochemistry*, **9**(6): 1108-1110.

Duhan, D.S., Gill, V., Panghal, V.P.S. and **Karande, P.J.** (2022). Studies on genetic variability, heritability, genetic advance and character association for various quantitative traits in bottle gourd [*Lagenaria siceraria* (Mol.) Standl.] genotypes. *Vegetable Science*, **49**(2): 204-210.

(ii) Review paper

Hegde, S.G., Duhan, D.S. and **Karande, P.J.** (2022). A review on biopriming in vegetable crops for yield and quality traits. *Vegetable Science*, **49**(2): 248-258.

I hereby declare that all the information given in the resume are true to the best of my knowledge

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UNDERTAKING OF THE COPY RIGHT

I, **Karande Priyanka Jalindar**, Admission No. **2020A78D**, undertake that I give copyright to the CCS HAU, Hisar of my thesis entitled **“Characterization and variability studies in ridge gourd genotypes”**. I also undertake that patent, if any, arising out of the research work conducted during the programme shall be filed by me only with due permission of the competent authority of CCS HAU, Hisar.

SIGNATURE OF THE STUDENT