LINE X TESTER ANALYSIS IN RIDGE GOURD

*(Luffa acutangula* (Roxb.) L.)*

**ABSTRACT**

**Keywords** :- Heterosis, combining ability, gene action, L x T analysis and ridge gourd

The present investigation on “Line x Tester analysis in Ridge gourd (*Luffa acutangula* (Roxb.) L.)” was carried out at Instructional Farm, Junagadh Agricultural University, Junagadh in Randomized Block Design with three replications during summer-2016. The experimental material comprised of seven lines, three testers, their resulting 21 hybrids and standard check (GJRGH-1) to estimate heterosis, combining ability and gene action involved in the inheritance of fruit yield and its 16 component traits.

Analysis of variance revealed highly significant differences among genotypes, parents, hybrids and parents v/s hybrids in all the traits except number of fruits per vine, girth of fruit and rind thickness for parents; fruit length for hybrids and rind thickness and 100-seed weight for parents v/s hybrids.

The heterobeltiosis for fruit yield per vine ranged from -24.22 to 36.69%, while the standard heterosis ranged from -17.23 to 26.55%. The cross JRG-13-04 x Jaipur Long recorded the highest standard heterosis for fruit yield per vine followed by JRG-13-04 x Arka Sujat, JRG-13-04 x Pusa Nasdar, JRG-13-02 x Jaipur Long and JRG-13-06 x Jaipur Long. These crosses also exhibited desirable heterosis for important yield attributes suggesting that the heterosis for fruit yield was associated with heterosis for component characters.
Analysis of variance for combining ability revealed that mean squares due to lines were significant for all the characters except length of fruit, while, mean squares due testers were significant for all characters except days to opening of first male flower, node number of first female flower, node number of first male flower, number of primary branches per vine, length of fruit, girth of fruit, rind thickness and number of seeds per fruit. Mean square due to lines x testers interaction, were also significant for all the characters except days to opening of first male flower, days to opening of first female flower, length of fruit, rind thickness, number of seeds per fruit and 100-seed weight. The results indicated the importance of both additive and non-additive genetic variances in the expression of these characters.

The ratio of $\sigma^2$gca:$\sigma^2$sca was greater than unity for days to opening of first female flower, days to opening of first male flower, days to first picking, number of fruits per vine, fruit weight, length of fruit, fruit yield per vine, number of seeds per fruit and 100-seed weight indicated that these characters were governed by additive gene action. When rest to the traits were predominately under the control of non-additive gene action.

The lines JRG-13-04, JRG-13-06 and JRG-13-07 and the tester Jaipur Long displayed high gca effect and good per se performance for fruit yield per vine and some desirable traits could be utilized in multiple crossing programmes. The sca effect of the crosses indicated that eight hybrids manifested significant and positive sca effect for fruit yield per vine. The best three specific combiners were JRG-13-07 x Pusa Nasdar, JRG-13-06 x Arka Sujat and JRG-13-05 x Jaipur Long. These crosses also showed desirable sca effect for important yield traits. The crosses exhibiting high sca effect involved either good x poor general combiners for majority of characters indicating the presence of additive x dominance type of gene interactions.

It is concluded that reciprocal recurrent selection procedure would be followed for genetic interaction in ridge gourd. Biparental mating may also be used in the segregating generations to break the undesirable linkages and to isolate superior transgressive segregants in later segregating generations.