CHAPTER -6

SUMMARY

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The present investigation entitled “stability and gentic studies of fruit yield and related traits in Okra [Abelmoschus esculents(L) Moench]” was carried out using eleven character viz. days to 50% flowering, plant height (cm), number of branches /plant, number of nodes/plant,number of first fruiting nodes, height of first fruiting node (cm), length of internodes, fruit length(cm), fruit width (cm), number of fruits/plant and fruit yield/plant(g) of 30 genotypes/ varieties. The experimental materials were grown in a randomized block design using three replications and under three artificially created environments i.e. E1=Nitrogen dose : 0kg/hectare, E2=Nitrogen dose:40 kg/hectare,E3=Nitrogen dose :80kg/hectare during year 2006-2007 and 2007-2008 in kharif season at crop Research Farm, post Graduate College, ghazipur .The row to row distance 60 cm and plant to plant distance 45 cm was kept. All other agronomical practices were provided to obtain the good crop.

The present investigation was undertaken with the following objectives:-

i-To study the variability , heritability and genetic advance for different traits.

ii-To study the correlation among fruit yield and related traits and path coefficient analysis.
To analyse the stability parameters over environments.

1. To find out the yield performance of different genotypes/ varieties of okra in different environments.
2. To identify the high yielding varieties suitable for different environments.
3. To identify the most stable high yielding varieties/genotypes of okra.
   i. The prominent findings from the present investigation are summarized as follows:
   ii. 1. The analysis of variance showed that the mean squares due to treatments were highly for all the characters, indicating the genetic variation among the characters. Similarly environment wise ANOVA showed the significant difference for all the characters in each environment and possess the variation among the characters. Therefore the data were subjected for further analysis.
   iii. 2. In both years and pooled over years higher estimates of GCV were recorded for length of internodes, plant height and number of branches/plant. Moderate estimates of GCV were recorded for height of
first fruiting node, fruit yield per plant, number of first fruiting node, number of fruit per plant and fruit length. whereas lower estimates of GCV were recorded for fruit width, days to 50% flowering and number of nodes/plant.

3. There were high estimates of PCV for length of internodes, plant height, number of branches/plant and height of first fruiting node. It was moderate for number of first fruiting node, number of fruits/plant, fruit yield/plant and fruit length whereas it was low for number of nodes per plant, fruit width and days to 50% flowering.

4. In all years higher estimates of heritability were recorded for length of internodes, plant height, fruit length, fruit width, height of first fruiting node, days to 50 flowering and number of first fruiting node. The moderate estimates of heritability were recorded for number of branches/ plant, number of nodes/ plant and fruit yield/ plant. The low estimates of heritability was recorded for number of fruits/ plant
5. In both years and pooled over years the higher estimates of genetic advance were recorded for plant height number of branches per plant, height of first fruiting node and length of internode, moderate for number of first fruiting node and length of internode, moderate for number of first fruiting node, fruit length, fruit width, number of fruits/ plant and fruit yield/ plant and low for number of nodes/ plant and days 50% flowering.

6. In I year, the maximum positive and significant phenotypic correlation coefficient (0.881) was found between length of internodes and plant height. The fruit yield per plant showed highly positive and significant phenotypic correlation with number of nodes per plant, fruit length, and number of fruits/ plant. Number of fruits/plant exhibited positive and high significant phenotypic correlation with plant height and number of nodes/ plant. The fruit width have positive and significant phenotypic correlation with number of branches per plant. On the other hand fruit length showed positive and significant correlation with number of first fruiting nodes, height of first fruiting node.
iv. Similarly height of first fruiting node have positive and significant correlation with plant height, number of nodes/plant, number of first fruiting nodes. The number of first fruiting nodes had highly significant and positive association with days to flowering, number of branches/plant, number of nodes per plant. Whereas, number of nodes per plant showed positive and significant correlation with plant height, number of branches/plant was positive and significant phenotypic correlation with days to 50% flowering.

v. In ii year, the maximum positive and significant phenotypic correlation (0.874) was found between length of internodes and plant height. Fruit yield/plant showed positive and significant phenotypic correlation with number of branches/plant, number of nodes/plant, number of first fruiting nodes, fruit length, number of fruit/plant. Number of fruits/plant showed positive and significant correlation with plant height and number of nodes per plant. The fruit width have positive and significant correlation with days to 50% flowering, number of branches/plant, number of nodes/plant. Similarly fruit length have positive and significant correlation with number of nodes/plant, number of first fruiting nodes, height of first fruiting node. On the
other hand length of internodes showed positive and significant correlation with plant height and height of first fruiting node. Whereas height of first fruiting node showed positive and significant correlation with days to 50% flowering, plant height, number of nodes/plant, number of first fruiting nodes. Similarly, number of first fruiting nodes have positive and significant number of nodes/plant. Similarly number of nodes/plant have positive and significant correlation with days to 50% flowering, number of branches per plant. Similarly number of branches have positive and significant correlation with days to 50% flowering.

4. In pooled over years, the maximum positive and significant phenotypic correlation coefficient (0.903) was recorded between length of internodes and plant height followed by height of first fruiting node. The fruit yield were positively and significantly associated with number of branches/plant, number of nodes/plant, fruit length and number of fruit/plant. The number of fruits/plant was positively and significantly associated with plant height, number of nodes/plant. Similarly fruit width have positive and significant correlation with days to 50% flowering, number of branches/plant. Similarly fruit length have positive and significant
correlation with days to 50% flowering, number of first fruiting nodes, height of first fruiting node. The height of first fruiting node showed positive and significant phenotypic correlation with days to 50% flowering gap, plant height, number of nodes/plant, number of first fruiting nodes. Similarly number of first fruiting nodes have positive and significant correlation with days to 50% flowering, number of branches/plant, number of nodes/plant. Whereas, number of branches/plant showed positive and significant correlation with plant height, number of branches/plant. Similarly number of branches per plant was positively associated with days to flowering.

In I year, the positive and high phenotypic direct effect on fruit yield were observed for plant height, fruit length, number of first fruiting nodes, number of fruits/plant, fruit width, number of branches/plant whereas height of first fruiting node, length of internodes, days to 50% flowering, number of nodes/plant showed negative and low phenotypic direct effect on fruit yield. The high positive and phenotypic indirect effect were observed for length of internodes, height of first fruiting node, number of fruits/plant, number of
nodes/plant via plant height. Negative and high phenotypic indirect effect were observed for length of internodes, plant height, number of first fruiting nodes, and fruit length via, height of first fruiting node.

10. In II year, the positive and high phenotypic direct effect on fruit yield were observed for number of nodes per plant, height of first fruiting node, fruit length and number of branches per plant. Whereas the number of first fruiting nodes, days to 50% flowering, number fruits per plant, fruit width, length of internodes, plant height showed negative phenotypic direct effect on fruit yield. The high positive and phenotypic indirect effect were observed for number of first fruiting nodes, number of branches per plant, days to 50% flowering, fruit width, fruit length, height of first fruiting node via number of nodes per plant. The low positive and phenotypic indirect effect were observed for number of fruits/plant, plant height and length of internodes via indirect effect were observed for number of nodes per plant, fruit length, height
of first fruiting node, days to 50% flowering and number of branches/plant via number of first fruiting nodes. Similarly length of internodes, plant height and fruit width showed low and negative phenotypic indirect effect on fruit yield via number of nodes per plant.

11-In pooled over years, the positive and high phenotypic direct effect on fruit yield were observed for height of first fruiting node, No. of branches/plant, No. of branches/plant, No. of first fruiting nodes and fruit length. Similarly positive and low phenotypic direct effect were observed for length of internodes, No. of fruits/plant and fruit width. The negative and high phenotypic direct effect on fruit yield were observed for plant height and days to 50% flowering. Positive and high phenotypic indirect effect on fruit yield were observed for number of nodes per plant, plant height and length of internodes, vio number of fruits/plant. Negative and high phenotypic indirect effect were observed
for days to 50% flowering, fruit length, height of first fruiting node and Number of first fruiting nodes via number of fruits/plant.

i. The 30 genotypes were grown in three environments for two years and tested for stability parameters. The patterns of G x E interaction of first year was significant character only plant height. Second year and pooled over years G x E interaction found in significant for the character of number of branches per plant.

ii. The majority of genotypes for number of branches per plant, length of internodes and fruit length showed non-significant regression coefficient and non significant deviation from regression (S2di) and hence, were stable and suitable for unfavourable environment.

439, 315, KS-446, IIVR-10, KS-433, KS-445 were stable for fruit length. 315, KS-
423, KS-415, KS-404, KS-

450, Selection-10 IIVR-10 were stable for fruit width. Panjab Padmini, Selection-10, KS-423, KS-
450, VRO-5, Parbhani Kranti, KS-433 were stable for number of fruits per plant. Lerm was stable for yield per plant.