

## Genotype x environment interaction and screening saline tolerant genotypes in okra [*Abelmoschus esculentus* (L.) Moench.]

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### SUMMARY

Thirty five okra genotypes were evaluated in three different environments for their stability. G x E interaction was significant for days to first flowering, number of fruits per plant, plant height and single plant yield. The genotypes viz., Pusa A4, Parbhani Kranti, Varsha Uphar, Punjab Padmini, Hissar Unnat, PB 266, CO 1, Harbhajan, Arka Abhay and AOL-03-01 were found to have significantly higher regression coefficients along with desirable mean value for the trait pod yield per plant. These genotypes said to be average responsive and suitable for all the environments.

**Key words :** Stability analysis, Regression coefficient, Okra, Saline tolerance okra

Okra [*Abelmoschus esculentus* (L.) Moench.] is an annual vegetable crop grown throughout the tropics and warmer parts of temperate regions. It is an important vegetable crop for nutritional as well as economic point of view. Okra is special valued for its tender and delicious fruits all over the country. So there is a need to develop varieties with high yield potential and stable performance over wide range of environments. Genotype x environment interaction are important in developing stable genotypes which interact less with the environments. If stability of performance is a genetic characteristic, then preliminary evaluation could be planned to identify the stable genotypes. For developing stable varieties, some stability parameters for which Finlay and Wilkinson (1963), Eberhart and Russel (1966), Perkins and Jinks (1968) and Freeman and Perkins (1971) have given some models. The present study was, therefore, conducted to identify stable okra genotypes for further use in breeding programme.

### MATERIALS AND METHODS

The material consisted of 35 genotypes viz., OKH 666, NOH 303, Arka Anamika, S51, Lakshmi, Ankur 40, DOV 1, Hisar Unnat, Varsha Uphar, Arya 351, PB 7, Pusa A4, Indol 03-01, Arka Abhay, Dov 2, MBORH 93, AOL 03-01, OKH 333, Kamini, Parbhani Kranti, Bakra, DSU 1, P7, MBORH 311, DSN 1, PB 266, Pusa Sawani, Pusa Makhmali, CO 1, MDU 1, Punjab Padmini, Gujarat

Bhindi 1, Harbhajan, Selection 2 and EMS 8 were studied to assess the stability performance under three different locations (Location I – soil with EC of 0.65 dSm<sup>-1</sup>, location II – soil with EC of 2.65 dSm<sup>-1</sup>, location III – soil with EC of 3.25 dSm<sup>-1</sup>). The experiment was carried out in a randomized block design with three replication of spacing 30 x 45 cm during the year 2008. Recommended cultural practices were followed to raise the crop. Five competitive plants from each genotype in each replication were selected at random to record the data. Observations were recorded for 10 characters viz., days to first flowering, number of nodes to first pod, days to first pod harvest, number of branches per plant, number of pods per plant, single pod weight, length of edible pod, girth of edible pod, plant height and pod yield per plant. Statistical constants of mean for all the characters, regression coefficient (bi) and deviation from regression (S<sup>2</sup>di) for the characters where G x E interaction was significant, were estimated following the method proposed by Eberhart and Russell (1966).

### RESULTS AND DISCUSSION

The analysis of variance revealed that highly significant differences existed among the genotypes (G) for all the traits except number of branches per plant and fruit girth. Further, the significant mean square due to (environment + genotype) x environment [E + (G x E)] for the trait number of fruits per plant, plant height and single plant yield depicted the existence of genotype x environment interaction. The linear contribution of the environmental effects on the performance of genotype was reflected by highly significant mean square due to environment (linear). The mean square due to G x E interaction (linear) was also important for days to first flowering, number of fruits per plant, plant height and

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