

Stability analysis in groundnut for pod yield and its component traits

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SUMMARY

Evaluation of sixteen groundnut genotypes alongwith three checks in three replications under three environmental locations was carried out to know the role of G x E interaction and also to study the stability of the same genotypes. Environments in which genotypes were grown, differed significantly for days to maturity, number of mature pods per plant, shelling percentage, strong mature kernels, 100 kernel weight and late leaf spot severity. Genotypes x environment interaction variances were also highly significant for all the characters studied. The genotypes LGN-107, LGN-110, LGN-121, LGN-125, LGN-126, LGN-128, LGN-129, LGN-130, LGN-117, LGN-162, LGN-1 and AK-159 were stable over the environments for pod yield per plant. . Among them, LGN-110, LGN-112, LGN-115 and LGN-163 showed wider adaptability for shelling percentage. While LGN-111 and LGN-115 were adapted specifically to better environment and showed a high degree of stability for 100 kernel weight. Thus, present investigation helps to isolate genotypes adapted to particular location due to the better expression of certain characters under specific environment.

Key words : Stability, G x E interactions, Yield components and groundnut

Groundnut (*Arachis hypogaea* L.) is the most important oilseed crop of tropical, sub-tropical and warm temperate regions of the world. It is an annual legume crop, grown mainly for quality edible oil (40-50%) and easily digestible protein (25%) in its seeds. India ranks second in the world regarding groundnut production, but still the country is in deficit in productivity as compared to the world average. The low yield levels are attributed to the cultivation of crop on marginal and sub-marginal lands under rainfed conditions, low input use, lack of plant protections and use of low yielding varieties. Under such situations and in the fluctuating environments, adaptability of varieties becomes far more important. Also yield is polygenically controlled complex character and is determined by a number of yield components, since greatly affected by environmental factors. Thus, ultimately needs to develop stable genotypes. Therefore an attempt has been made in the present study to evaluate different groundnut genotypes across the locations to know the role of G X E interactions and also to analyze the stability of genotypes for different traits.

MATERIALS AND METHODS

Sixteen groundnut genotypes *viz.*, LGN-107, LGN-110, LGN-111, LGN-112, LGN-113, LGN-115, LGN-125, LGN-126, LGN-127, LGN-128, LGN-129, LGN-130,

LGN-136, LGN-117, LGN-162 and LGN-163 with three checks (LGN-1, JL-220 and AK-159) were obtained from Oilseeds Research Station, Latur. A field experiment involving all the genotypes was laid out in Randomized Block Design (RBD) with three replications under rainfed conditions at Oilseeds Research Station, Latur (E_1), Pulses Research Station, Badnapur (E_2) and Oilseed Sub research Station, Ambajogai (E_3). The sowing was carried out at the spacing of 30 cm and 15 cm between the rows and plants, respectively. The method of sowing followed was dibbling. One plant per hill was maintained by thinning 15 days after sowing. The gross plot size was 5.0 m x 0.60 m, while net plot size was 4.8 m x 0.60 m. The recommended dose of fertilizers 25 kg N: 50 kg P_2O_5 per hectare was applied at time of sowing. All other cultural practices were undertaken to maintain healthy crop. Five plants were selected from each treatment randomly for recording observations *viz.*, days to maturity, number of mature pods per plant, pod yield per plant, kernel yield per plant, shelling percentage, 100 kernel weight, strong mature kernel percentage, oil content and late leaf spot severity. Data collected were subjected to two way analysis of variance and the stability parameters were computed following the model proposed by Eberhart and Russell (1966).

RESULTS AND DISCUSSION

The results of pooled analysis of variances over environments (Table 1) revealed that the variance due to genotypes was highly significant except oil content indicating the presence of variability in the material. Similarly, environments in which the genotypes were

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