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Stability for seed yield and its components in mungbean [*Vigna radiata* (L.) Wilczek]

S.S. GOMASHE[1]*, J.V. PATIL[1], S.B.DESHMUKH[1], S.B. SARODE[2] AND P.P. PISE[1]
[1]Department of Agricultural Botany, Mahatma Phule Krishi Vidyapeeth,Rahuri, AHMEDNAGAR (MS) INDIA
[2]Department of Agricultural Botany, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.) INDIA

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Twelve genotypes of mungbean [*Vigna radiata* (L.) Wilczek] were evaluated for seven quantitative traits in three environments. Genotype x Environment interaction was found significant for all the traits. The major portion of G x E interaction was due to the linear component. Hence, the prediction of genotypic performance could be possible over environments. The genotypes TARM 18, PM 9377 and Vaibhav were found high yielding, responsive with non significant deviation mean square for most of the yield traits.

Keywords: Mungbean, Stability analysis, G x E interaction.

INTRODUCTION

Among pulses, mungbean has an important place as it contains more digestible protein than the other pulses alongwith a reasonably good yield. Mungbean is traditionally grown under diverse climatic conditions. One of the major factors responsible for low yield is lack of stability in yield as compared to cereal crops. Therefore, a study of genotype x environment interaction and stability of genotypes for yield and its components is essential to the breeders. In view of the scanty information available in mungbean, efforts were made to ascertain whether genotypes differ in their response to environment, and exhibit stability for yield and yield components.

MATERIALS AND METHODS

Twelve genotypes of mungbean were evaluated during *kharif* 2002. These genotypes were sown on three different sowing dates *viz*., 5th June, 20th June and 5th July in randomized block design with three replications. Each genotype was represented by eight rows of 4 metre long and 30 cm apart. Data were recorded on 5 random plants from each plot for days to 50 percent flowering, days to maturity, plant height (cm), pod clusters per plant, pods per plant, seeds per pod, 100 seed weight (g) and yield per plot (g). The data were subjected to stability analysis using the model of Eberhart and Russell (1966).

RESULTS AND DISCUSSION

The analysis of variance for stability (Table 1) revealed significant difference among genotypes for all characters. The significance of mean squares due to environments indicated variability among the environments. The significance of mean squares due to G x E for all the traits indicated that the genotypes interacted significantly with the environments. In case linear and non linear components of G x E interaction the magnitude of the former was higher that the latter for most of the traits. This showed that the prediction of the genotypic performance over the environments was possible for these traits. Similar results regarding seed yield in mungbean and mothbean were reported by Gupta *et al.* (19991), Pathak *et al.* (1990) and Henery and Daulay (1983).

The three parameters of stability namely (xi), regression coefficient (bi) and deviation from the regression (S^2di) have been presented in Table 2. TARM 18 gave the highest seed yield followed by PM 9377, BM 4, Vaibhav and PM 2. However PM 2 and BM 4 were unstable having significant S^2di value (Fig.1). Genotypes Vaibhav and TARM 18 were found below average ($bi<1$) and above average ($bi>1$) stable and hence were suitable for growing under poor and rich environmental conditions, respectively. Out of highest yielding genotypes only PM 9377 was found average stable and suitable for varied environmental conditions.

For 100 seed weight genotype, AKM 8802 and PM 9341 showed higher seed weight, above average response with non-significant deviation mean square and hence were specifically suitable for favourable environments. PM 9376 which recorded highest seed weight was found below average stable with $bi<1$ and non significant S^2di, suitable for poor environment. Whereas PM 9357 and

* Author for Correspondence