Research Paper

Genetic divergence in bunch groundnut (*Arachis hypogaea* L.)

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ABSTRACT

Divergence analysis among fifty groundnut genotypes was carried out using Mahalanobis's D^2 statistic. The genotypes were grouped into thirteen clusters. The maximum inter-cluster distance (D=327.33) was found between clusters III and XIII followed by clusters III and IX (D=267.26) and III and V (D=253.94) indicated that these groups of genotypes were highly divergent from each other. The genotypes in above clusters revealed substantial difference in the means for important yield contributing characters suggesting that the genotypes belonging to these clusters from ideal parents for improvement in groundnut.

INTRODUCTION

Success of plant breeding programme depends largely on the choice of appropriate parents. It is expected that the utilization of divergent parents in hybridization results in promising recombinants. Genetic improvement mainly depends upon the amount of genetic variability present in the population. The use of Mahalanobis's D^2 statistics for estimating genetic divergence have been emphasized by many workers (Murthy and Arunachalam, 1966) because it permits precise comparison among all the population in given any group before effecting actual crosses.

MATERIALS AND METHODS

Fifty genotypes of groundnut were sown in a Randomized Block Design with three replications during *Kharif* 2009. Each entry was accommodated in a single row of 3.0 m length with a spacing of 45 cm between rows and 10 cm between plants within the row. The fertilizer in the experimental area was applied at the rate of 25.0 kg N and 50.0 kg P_2O_5 ha⁻¹ as it is a recommended dose for *Kharif* cultivation of groundnut in the region. All

the recommended packages of practices were followed for raising healthy crop. Data were recorded for days to first flower, days to 50% flowering, days to maturity, plant height, primary branches per plant, number of mature pods per plant, number of immature pods per plant, 100-pod weight, 100- kernel weight, shelling out-turn, oil content, protein content, kernel yield per pod, pod yield per plant, biological yield per plant and harvest index. The analysis of genetic divergence using Mahalanobis's D^2 (1936) statistics was carried out as described by Rao (1952).

RESULTS AND DISCUSSION

Analysis of variance revealed that highly significant differences among the genotypes were observed for all the traits except oil content, which indicating the presence of good amount of genetic variability. On the basis of D^2-values, 13 clusters were formed from 50 genotypes. The cluster I was the largest having 23 genotypes followed by cluster II and cluster III having 12 and five genotypes, respectively (Table 1). Cluster IV to XIII included a single genotype and remained solitary. The grouping of genotypes revealed that there was no perfect relationship between genetic diversity and geographical diversity as genotypes