

## Genetic analysis and character association studies for yield and different phenotypic characters in maize (*Zea mays* L.)

■ SURESH HANDI, N. SASIDHARAN, SUDESHNA CHAKRABORTY, J.N. PATEL, RUCHI TRIVEDI, BHUPENDRA SINGH PANWAR AND ASHISH VALA

### SUMMARY

The present study was conducted to investigate genetic variability, correlation, path coefficient and genetic diversity in maize. The analysis of variance indicated highly significant differences among genotypes for all the traits studied except ear diameter (significant at  $p > 0.05$ ). Kernel yield per plant, length of peduncle, leaf angle between blade and stem, angle between main axis and lateral branches, number of primary lateral branches of tassel, registered high to moderately high genetic variability, heritability and genetic advance. Significant and positive genotypic and phenotypic association were observed for kernel yield with plant length, width of leaf blade, ear length, ear diameter without husk, shelling percentage and 100 kernel weight. Path analysis revealed the improvement in kernel yield through positive direct effects of time of anthesis, ear placement, ear length, number of rows of grain, length of peduncle and shelling percentage.

**Key Words :** Maize, Variability, Yield, Divergence, Genotypes

**How to cite this article :** Handi, Suresh, Sasidharan, N., Chakraborty, Sudeshna, Patel, J.N., Trivedi, Ruchi, Panwar, Bhupendra Singh and Vala, Ashish (2012). Genetic analysis and character association studies for yield and different phenotypic characters in maize [*Zea mays* (L.)]. *Internat. J. Plant Sci.*, 7 (2) : 341-350.

**Article chronicle :** Received : 27.03.2012; Revised : 20.05.2012; Accepted : 10.06.2012

Maize (*Zea mays* L.) is the third most important cereal grain in the world after wheat and rice. The varieties and hybrids developed from the indigenous germplasm were not very successful in improving the productivity which is far below that of the world average. Poor yield levels along with poor nutritional status of maize grain present a challenging proposition to plant breeders for improvement of this crop. In this context, assessing the existing variability and selection of genotypes with due selection pressure on yield component characters is of prime

importance to either exploit heterosis or to generate productive recombinants. Therefore, in the present investigation an attempt was made for assessing 56 genotypes for genetic variability and diversity, where yield is considered as important criterion.

### MATERIALS AND METHODS

For the present investigation 56 maize genotypes (Table A) supplied from Main Maize Research Station, Anand Agricultural University, Godhra (Panchmahal) were selfed. The experiment was laid out in Randomized Block Design (RBD) with three replications. During the present investigation eighteen phenotypic traits were considered viz., (1) leaf angle between blade and stem, (2) time of anthesis, (3) angle between main axis and lateral branches, number of primary lateral branches, (4) length of main axis above lowest side branch, (5) length of main axis above upper side branch, (6) length of side branches, (7) plant length, (8) width of blade, (9) time of silk emergence, (10) cob placement, (11) width of blade, (12) cob diameter without husk, (13) length of peduncle, (14)

#### MEMBERS OF THE RESEARCH FORUM

**Author to be contacted :**

SUDESHNA CHAKRABORTY, Department of Agricultural Botany, Anand Agricultural University, ANAND (GUJARAT) INDIA  
Email: [sudi.bot@gmail.com](mailto:sudi.bot@gmail.com)

**Address of the Co-authors:**

SURESH HANDI, N. SASIDHARAN, J.N. PATEL, RUCHI TRIVEDI, BHUPENDRA SINGH PANWAR AND ASHISH VALA, Department of Agricultural Botany, Anand Agricultural University, ANAND (GUJARAT) INDIA