

## Correlation studies in maize (*Zea mays* L.) evaluated for grain yield and other yield attributes

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### ABSTRACT

An experimental study was conducted to evaluate the relationship between yield and its components in maize through correlation studies. Yield is the foremost consideration in the breeding of any crop. Since the yield depends upon many yield contributing characters, it becomes essential to study the contribution of each character to the yield. Correlation is an important in estimating the relative importance of various characters on grain yield. From this studies, Ear girth recorded significant and highest positive correlation on grain yield followed by kernel rows, grains per row, grain weight, ear length, shelling percentage and crude protein. Plant height was significantly and positively correlated with grain yield. Days to maturity, days to silking and days to tasselling were negatively and significantly correlated with grain yield. These characters were significantly and positively inter correlated among the yield components. Hence ear girth, kernel rows, grains per row, grain weight and ear length should be given more importance while formulating selection indices for grain yield improvement in maize.

**Key words :** Correlation, Grain yield, Maize, *Zea mays* L.

### INTRODUCTION

Maize (*Zea mays* L.) occupies a prominent position in global agriculture and is an important cereal crop of India. Maize is used as human food, animal feed and industrial raw materials and also used as source for more number of industrial products. Grain yield in maize is a complex characters controlled by many factors. Selection for desirable genotypes should be made based on grain yield and also other yield component characters which influence the yield. Studies on correlation coefficients of different plant characters are useful criterion to identify desirable traits that contribute to improve the dependent variable. Correlation coefficient is one of the important biometrical tools for formulating a selection index as it reveals the strength of relationship among the group of characters. This also helps to decide the dependability of the characters that have little or no importance. The relationship of a character with yield and other component characters could also be useful for the proper choice of parents for hybridization programme. Yield being a complex character, direct selection could be an efficient approach without knowing its genetic background (Roy *et al.*, 1995). Grain yield is also one of the such dependent trait, which is influenced by many independent characters. The present study was conducted to assess the genetic relationships among yield components, through association analysis for enhancing the usefulness of selection for grain yield improvement in maize.

### MATERIALS AND METHODS

The experimental material for the study was undertaken at Agricultural College and Research Institute, Tamil Nadu Agricultural University, Killikulam during February 2004. Individual seven lines *viz.*, UMI 82, UMI 112, UMI 123, UMI 124, UMI 154, UMI 176 and UMI 198 and seven testers *viz.*, UMI 203, UMI 208, UMI 213, UMI 221, UMI 228, UMI 246 and UMI 303 obtained from Millet Breeding Station (MBS), Tamil Nadu Agricultural University, Coimbatore. These were crossed in a Line x Tester model of mating design was followed in which all the seven lines were crossed with each of the seven testers and a total of forty nine cross combinations were obtained. The hybrid seeds were utilized for raising the  $F_1$ 's along with the parents and one check variety (CO 1) were raised in a Randomized Block Design (RBD) with three replications during July 2004 under irrigated condition. Each genotype was planted in one row plots of four meter length adopting spacing of 60 x 20 cm for varieties and 60 x 30 cm for hybrids. All the recommended agronomic practices were followed throughout the cropping period. Observations were recorded from five randomly selected plants in each treatment, all the three replications for fourteen characters *viz.*, days to tasselling, days to silking, plant height (cm), leaves above uppermost ear (no), days to maturity, ear length (cm), ear girth (cm), kernel rows (no), grains per row (no), grain weight (g), grain yield (g), shelling percentage and biochemical characters like crude protein

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