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Correlation studies in maize (*Zea mays* L.)

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Grain yield in maize is a complex character controlled by many factors. The knowledge of the degree of relationship between yield and yield component characters will aid the breeders to launch successful crop improvement programmes. Grain yield per plant had highest positive and significant genotypic correlation with cob weight, dry matter yield per plant, leaf breadth, harvest index, leaf area per plant, number of grains per row, stem girth, ear height, 100- grain weight, shelling percentage, plant height, cob length, leaf length, cob girth, number of rows per cob, number of leaves per plant. Days to 50 per cent tasseling and days to 50 per cent silking recorded significant and negative association with grain yield. Protein content and oil content showed positive and non-significant association with yield.

Maize (*Zea mays* L.) is the third important major cereal crop in the world after rice and wheat. Maize has several uses for human consumption, industrial purposes and animal feeds. Grain yield in maize is a complex character controlled by many factors. The correlation analysis is usually taken up to measure the relative magnitude of influence of each of this independent variable on a dependent variable like yield. Selection for desirable genotypes should be made based on grain yield and also other yield component characters which influence the yield. It has been generally accepted that correlation between different character pairs represents a co-ordination of physiological processes, which is often achieved through favourable gene linkages (Mather and Harrison, 1949). Knowledge of the strength and type of association is an important prerequisite for the formulation of breeding procedures (Breese and Haywards, 1972). The knowledge of the degree of relationship between yield and yield component characters will aid the breeders to launch successful crop improvement programmes. This review briefly deals about the association between grain yield and yield attributing traits.

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Correlation between yield and growth attributes:

Tyagi *et al*.(1988) and Basheeruddin *et al*. (1999) reported that number of leaves per plant was associated positively and significantly with grain yield per plant. Malhotra and Khehra (1986), Saha and Mukherjee (1993), Singh and Singh (1993) and Umakanth and Khan (2001) reported positive correlation of cob girth with grain yield per plant. Cob girth was positively and significantly correlated with all other traits except days to 50 per cent tasseling and days to 50 per cent silking.

Correlation between yield and yield attributes:

Dornescu (1973) reported that grain weight per ear was mainly dependent on ear weight. Probrecky (1976) concluded that yield depended primarily on the number of grains per plant, which in turn depended mainly on the number of grains in the row. Ear length had been a good indicator of this trait. 1000-grain weight and the number of rows in the ear were uncorrelated with grain yield. Utkhede and Shukla (1976) revealed highly significant positive genotypic and phenotypic correlation between yield and number of grain rows per ear, weight of ear, ear height and ear length. Ear height and dry ear weight contributed substantially to yield. Singh and Nigam (1977) found that grain yield was positively and significantly correlated with yield components. Zaika *et al*. (1978) reported fairly high correlation between mean ear weight and ear diameter and yield was closely correlated with mean ear weight.

Saha and Mukherjee (1985) observed that grain yield per plant was significantly correlated with ovules per ear, ovules per row, grains per ear, grains per row and 100-grain weight. Malhotra and Khehra (1986) concluded by studying 256 genotypes that grain yield was positively correlated with the yield components like ear length, ear circumference, number of rows per ear, 1000-grain weight, shelling percentage, days to silking, ear height and plant height. Singh *et al*. (1987) reported that 1000-grain weight and number of grains per ear were the most important components of yield, having the greatest and most direct effects. Yield was positively and significantly correlated with all other characters. Tyagi *et al*. (1988) in their study of correlation coefficients and path analysis have indicated that components effecting grain yield were ear weight,