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Correlation and path analysis of rice germplasm accessions

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SUMMARY

An experiment was conducted during *kharif* 2000 comprised, of 100 genotypes to study character interrelationship using correlation and path analysis. Correlation coefficient revealed that days to 50 per cent flowering, number of effective tillers per plant and number of filled grains per panicle showed positive significant correlation with grain yield per plant. Path analysis revealed that days to 50 per cent flowering, plant height, panicle length, number of effective tillers per plant, number of filled grains per panicle and 100 seed weight had direct positive effect on grain yield per plant.

Key words : Correlation, Grain yield, Path analysis, Rice

Yield is complex character and is associated with number of component characters which are themselves interrelated. Such interdependence often affects their relationship with yield, thereby making correlation coefficient ineffective to get the information on actual contribution of each character to yield. Thus, correlations in conjunction with path analysis could give a better insight into cause and effect relationship between different pairs of characters. This will help in the simultaneous improvement of characters along with grain yield in breeding programme. Therefore, the present study was undertaken to study the association of different characters of rice germplasm accession

MATERIALS AND METHODS

The present research work was conducted at Research Farm, Department of Plant Breeding and Genetics, Indira Gandhi Agricultural University, Raipur (Chhattisgarh) during *kharif* 2000. The experimental material for this study was comprised of 100 genotypes. Each genotype was grown in single row in each replication. Normal agronomic practices were followed throughout the crop period. Five plants from each row were randomly selected and were tagged for recording characters *viz*., days to 50 per cent flowering, flag leaf length, plant height, panicle length, number of effective tillers per plant, number of filled grains per panicle, 100 seed weight and grain yield per plants. Correlation coefficients were calculated for all the character combinations at genotypic and phenotypic level by the formula given by Miller *et al.* (1958) while, path coefficient analysis was carried by Dewey and Lu (1959).

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RESULTS AND DISCUSSION

The genotypic correlation coefficients were higher than phenotypic correlation in general (Table 1). This indicated phenotypic correlation might be due to masking effect of environment in genetic association between the characters (Johnson *et al.*, 1955).

Grain yield per plant expressed positive significant correlation association with days to 50 per cent flowering, number of effective tillers per plant and number of fertile grains per panicle at both genotypic and phenotypic levels. Similar results have been reported by Choudhary and Das (1998), Shanthakumar *et al.* (1998a) who reported positive significant association of grain yield per plant with days to 50 per cent flowering. Sarawgi *et al.* (1997), and Rao and Shrivastava (1999) reported positive correlation of grain yield with fertile spikelets (filled grains) per panicle.

Days to 50 per cent flowering had positive significant correlation with number of filled grains per panicle and grain yield per plant at phenotypic and genotypic levels. It also expressed negative significant correlation with plant height, panicle length and 100 grain weight at phenotypic and genotypic levels. The correlation. of this trait suggests that if genotypes with late maturity are selected then number of filled grains per panicle will be increased as these have shown high positive correlation association with this trait. Similar result was obtained by Shanthakumar *et al.* (1998a) for days to 50 per cent flowering, who observed significant correlation with yield per plant in wet season.

Flag leaf length showed positive significant