

INTERRELATIONSHIP OF QUANTITATIVE TRAITS IN EGG PLANT

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ABSTRACT

Twenty one varieties of brinjal (*Solanum melongena* L) were studied in kharif season for correlation analysis. The yield per plant showed significant positive association with flowers per cluster, fruit length, fruit value, primary branches per plant and fruits per plant but non significant correlation existed with fruit diameter. The correlation coefficients interse were also important. Most of the environmental correlation coefficients were not significant. Four characters i.e. fruit length, primary branches per plant, number of fruits per plant and early yield could form a sound basis for selection.

KEY WORDS: Brinjal, Quantitative traits, Correlation.

Brinjal is one of the important vegetables. It is grown in nearly all kitchen gardens. There is a pressing demand of high yielding varieties of brinjal. Therefore, to bring about any improvement in this crop, the knowledge of association of yield with other characters has been of immense help in selecting suitable type. However, yield itself is the result of the interaction of a number of factors inherent both in the plant as well as in the environment in which the plant grows. It therefore becomes difficult to evaluate or select for this complex character directly. Hence the objective of the present investigation was to screen the available varieties for yield and to work out its relationship with other important traits in brinjal which can prove highly useful in an objective selection of characters.

MATERIAL AND METHODS

Twenty one varieties of brinjal were selected for this study. These varieties were transplanted on 2nd April 1986. The plot size was three row plots containing 5 plants in each row at a distance of 60 cm from row to row

and plant to plant. The usual cultural operations were carried out regularly. The detailed observations on five plants per plot were recorded for days to flowering, days to first fruit set, flowers per cluster, fruit length, fruit diameter, fruit value, plant height, primary branches per plant, fruits per plant, fruit weight, early yield per plant and yield per plant. The correlation analysis was worked out according to the method suggested by Wright (1935).

RESULTS AND DISCUSSION

The estimates of phenotypic, genotypic and environmental correlation coefficient between yield per plant and its components are presented in Table 1. The values of genotypic correlation were greater than phenotypic correlation. It indicates the strong inherent association between the various character pairs studied. Johnson *et al* (1955) also observed higher genotypic correlation than phenotypic correlation coefficient between various pairs of characters in soybean.

The yield per plant showed significant positive association with flowers per cluster, fruit length, fruit value,

primary branches per plant and fruits per plant. Such correlations revealed the possibility that in this crop selection for strains with more number of flower per cluster, longer fruit length, large number of primary branches and fruits per plant can be expected to result in higher yielding strains. The positive and significant association of number of fruits per plant with yield suggested that the number of fruits was the principal yield attribute and indicated the importance of yield components in influencing fruit yield, as has also been reported by Singh and Singh (1979). Therefore, it could be given the due consideration while making selection in the segregating populations. Yield was also significantly and negatively correlated with days to flower, days to first fruit set, fruit diameter, plant height and fruit weight. These results are in conformity with the findings of Singh (1983).

The correlation coefficients inter-se were also important. The genotypic correlation coefficient revealed that the association of days to flowering with days to first fruit set, plant height and fruit weight was positive. This shows that selection for lateness will give more yield which is otherwise an undesirable trait. However, there was a negative significant genotypic association of this character with the fruit length, fruit value, primary branches per plant and fruits per plant. The positive association of days to first fruit set with fruit weight suggested that the selection of early fruit setting genotypes would help in isolating lines with larger fruit weight.

Flowers per cluster had negative association with fruit diameter, plant height and fruit weight indicating larger number of flowers would result in the diversion of food towards more number of fruits per cluster and consequently reduction in fruit diameter and weight.

The character fruit length was positively correlated phenotypically and genotypically with fruit value, primary branches per plant and fruits per plant as suggested by Baha-Eldin *et al.* (1969). The character was also negatively associated with fruit diameter, plant height and fruit weight. The positive significant association of fruit diameter and fruit weight indicated that selection of fruit with greater diameter genotypes would result in isolating strains with higher fruit weight.

The phenotypic and genotypic correlation coefficients revealed that the association of plant height with number of primary branches was low. The plant height showed negative genotypic correlation with number of fruits per plant. Similar were the findings of Srivastava and Sachan (1973). The present data also indicated that the number of primary branches per plant had significant genotypic and phenotypic correlation coefficient with early and total yield per plant. It revealed that the number of primary branches had direct significant effect on the total fruit yield and also influenced other yield contributing characters *viz.*, duration of flowering and fruit length.

Fruits per plant had positive significant correlation with flowers per cluster and as a consequence had positive significant association with earliness and total yield per plant which in turn led to high yield. Fruits per plant had also shown negative and significant correlation with fruit weight. With the increase of number of fruits per plant there was simultaneous decrease in fruit weight due to the fact that maximum nutrients have been utilized for the formation of number of fruits in the plant. This indicated that selection for one of these two charac-

ters would automatically decrease the other character. The negative significant associations were obtained between fruit weight and yield per plant. This character therefore, cannot form a sound basis for selection.

Most of the environmental correlation coefficients were non significant whereas phenotypic and genotypic, correlation coefficients were significant showing that the effect of environment on the expression of the association between the characters was not so

strong as to alter it markedly. However, the environmental correlations between the days to flower with days to fruit setting, fruit diameter and plant height, days to fruit set with plant height, flower per cluster with plant height and early yield were positive and significant. It may finally be concluded that for selecting high yielding genotypes, selection based on fruit length, primary branches per plant, number of fruits per plant and early yield would be quite rewarding.

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PERFORMANCE OF SOYBEAN TO SINGLE AND MULTISTRAIN RHIZOBIAL INOCULATION

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ABSTRACT

Under acid lateritic soil at Vamban, the seed bacterization of *Rhizobium japonicum* have significantly increased the nodulation, plant growth and yield attributes on soybean cultivars viz., CO 1 and KM 1. However, the inoculation of R japonicum as multistrains gave a better symbiotic performance over single strain inoculation. Among the cultivars, CO 1 recorded better symbiotic performance that the KM 1 in exhibiting better nodulation, plant growth and grain yield under field condition.

KEY WORDS: Soybean, Rhizobium, Symbiosis.

It is a well known fact that the inoculation of Rhizobium on legumes increases growth, nodulation and

nitrogen fixation efficiency (Kumar Rao and Patil, 1974; Raut *et al.*, 1980 and Pulvar, 1982). In comparison to single