



Plant ideotype of Indian mustard (*Brassica juncea*) for late sown conditions

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(Received: April 2003; Revised: October 2003; Accepted: November 2003)

The present investigation was aimed to contribute toward development of a model and propose a suitable ideotype which may help in directing efforts for selecting desirable plant type for late sown condition.

Twenty one genotypes of Indian mustard derived from varied genetic background and source were studied for their morpho-physio-biochemical traits under late sown condition. These genotypes were seeded on 30th November in randomized complete block design in three replications. Each genotype was represented by two rows/ plot of 3 meter length and 0.90 m width. A distance of 45 cm was maintained between rows, the plant to plant distance within a row was 15 cm. Five competitive plants from each plot were chosen randomly to record the data on various plant traits and analysis were carried out on mean per replication.

Analysis of variance found highly significant differences among the genotypes for all morpho-physio-biochemical characters. The phenotypic correlation for character seed yield was highly significant and positive with oil yield and both were found to be positively and significantly correlated with plant height, primary branches, similar findings reported by Kumar *et al.* [1] and total chlorophyll supported by Thakral *et al.* [2] which tend support to present finding but negatively correlated with protine content and seed test weight (Table 1). Economic yield under late sown condition has been compensated through other attributes, most probably through number of seeds/plant. Seed oil content had not shown correlation with seed yield and oil yield/plant. Among other pairs of character a phenotypically highly significant positive correlation was observed between days to flowering and plant height, seed oil content, similar findings reported by Labana *et al.* [3] and days to maturity whereas it was negatively correlated with seed test weight. The character plant height was positively correlated with days to maturity, seed oil content and total chlorophyll but negatively correlated with protein content. While the character seed test weight was found to be negatively correlated with days to maturity and total chlorophyll. The character days to maturity was positively correlated with seed oil content and the character primary branches/plant showed positive correlation with erucic acid in oil while the character total chlorophyll was negatively correlated with proline content.

Alongwith correlation study, path analysis is essential to assess the direct influence of the

independent characters over the dependent characters. Days to flowering, plant height, days to maturity and oil yield contributed directly and considerably towards seed yield (Table 2) both at the phenotypic and genotypic levels. Plant height, seed test weight, primary branches, total chlorophyll and proline content have contributed towards seed yield only indirectly via oil yield whereas characters seed oil content, total seed protein and erucic acid in oil have contributed considerably towards seed yield indirectly via days to maturity at the phenotypic and genotypic levels. Although negative high direct effect of total chlorophyll content was observed, it expressed in positive correlation with seed yield. Negative high direct effect may be neutralised by some other positive indirect effects. Contrary to this the high positive direct effect of days to flowering was neutralised by indirect effect via plant height and days to maturity and failed to express in correlation with seed yield. Although plant height, primary branches and total chlorophyll content express negative direct effect on seed yield but due to high indirect effects via various component (plant height via days to flowering and via oil yield; primary branches via oil yield and total chlorophyll via oil yield) resulted in positive correlation with yield. With increase in days to flowering and corresponding increase in days to maturity may result in significant reduction in seed test weight probably due to shortening of reproductive phase.

It is postulated that a genotype having impressive vegetative structure, i.e. taller in height and higher number of primary branches associated with modest seed test weight, deep green leaves having high chlorophyll content and lower range of proline content would be ideal for late sown Indian mustard.

References

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