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CORRELATION BETWEEN YIELD AND YIELD COMPONENTS IN SUNFLOWER

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ABSTRACT

Correlation between seed yield and other characters in 15 parents and 36 hybrids of sunflower revealed that plant height, head diameter and 100 seed weight had highly significant and positive correlation with seed yield. Among them, the plant height and head diameter had significant and positive intercorrelation among themselves. A significant and positive intercorrelation was noticed between harvest index and oil content which indicated the importance of harvest index for improving the oil content on sunflower.

KEY WORDS : Sunflower, Correlation

Though sunflower has many desirable agronomic qualities, the yield of the crop is low and unstable in India which necessitates the improvement of this crop by adopting suitable plant breeding methods. The reason for low production is mainly due to the low per hectare yield. So, productivity of this important oilseed crop has to be stepped up by evolving high yielding varieties. For this, the plant breeders must know the relationship between yield contributing characters and their association with yield and oil content. With this main objective, correlation studies were taken up in sunflower.

MATERIALS AND METHODS

A total of 12 lines (female parents) of different geographical origin and 3 testers (male parents) of improved and well adapted varieties of sunflower were crossed in a line x tester model during March-June 1985 to generate materials with wide variability. The 15 parents and the 36 hybrids were raised in a randomised block design with three replications during November 1985 at the Agricultural Research Station, Kovilpatti. The materials were studies for nine characters viz., days to 50 per cent flowering, days to maturity, plant height, head diameter, number of leaves, 100 seed weight, harvest index, seed yield per plant and oil content for finding out the correlation for various characters with seed yield.

RESULTS AND DISCUSSION

The data on days to 50 per cent flowering, days to maturity, plant height, head diameter, number of leaves, 100 seed weight, harvest index, seed yield per plant and oil content were highly significant. Wide variability was noticed among the materials studied for all the characters. Hence there is scope for selection in the materials for improving the different characters.

The characters which are positively or negatively correlated to seed yield and oil content should be known to the breeder so as to select the desirable materials. Therefore correlation between seed yield and other characters was worked out (Table 1).

Days to 50 per cent flowering had significant and positive correlations with all the other characters except oil content. Head diameter and number of leaves had significant and positive correlation with all the characters except harvest index, 100 seed weight and oil content. 100 seed weight had significant and positive correlation with harvest index and seed yield per plant. Putt (1943), Burns (1970), Anand and Chandra (1979) and Makne *et al.* (1979) reported similar findings in sunflower. Days to maturity and plant height had significant and

Table 1. Correlation co-efficient of yield and yield components

	Days to 50% flowering	Days to maturity	Plant height	Head dia meter	Number of leaves	100 seed weight	Harvest index	Oil content	Seed yield per plant
Days to 50% flowering	-	0.88**	0.89**	0.82**	0.80**	0.45**	0.69**	0.25	0.32**
Days to maturity	-	-	0.86**	0.76**	0.77**	0.23	0.41**	0.18	0.55**
Plant height	-	-	-	0.91**	0.85**	0.26	0.55**	0.09	0.59**
Head diameter	-	-	-	-	0.78**	-0.18	0.60**	-0.07	0.56**
Number of leaves	-	-	-	-	-	-0.13	-0.41**	-0.11	0.59**
100 seed weight	-	-	-	-	-	-	0.51**	0.21	0.37**
Harvest index	-	-	-	-	-	-	-	0.32*	0.21
Oil content	-	-	-	-	-	-	-	-	0.14

* Significant at 5% level ** Significant at 1% level

positive correlations with all the other characters except 100 seed weight and oil content. Skovic (1979) and Chaudhary and Anand (1985) observed similar findings in sunflower. In contrast to this, Shabana (1978) reported that the oil content was influenced by plant height.

Harvest index had significant and positive correlation with oil content and no correlation with seed yield. There are conflicting views in the association of harvest index and seed yield. Pathak (1978) inferred that seed yield per plant showed significant and positive correlations in decreasing order with total dry matter. So, it was inferred that harvest index did not seem to be a decisive factor for determining seed yield in sunflower.

There was no significant and positive correlation between seed yield and oil content. This is in accordance with the earlier results reported by Srinivasa (1980) and Dhaduk *et al.* (1985).

In the present study, three characters viz., plant height, head diameter and 100 seed weight were found to be the important yield contributing factors in sunflower. Among them, plant height and head diameter possessed significant and positive inter correlation among themselves. So, selection for the improvement of the three characters *viz.*, plant height, head diameter and 100 seed weight would ultimately result in the improvement of seed yield in sunflower. A significant and positive intercorrelation was noticed between harvest index and oil content which indicated the importance of harvest index for improving the oil content in sunflower.

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