

Path Coefficient Analysis in Castor

Castor (*Ricinus communis* L.) is an important oil producing crop of India, hence the knowledge about the breeding behaviour of castor and its plant type is very essential for launching efficient breeding technology. The correlation which is primary tool of breeding programme only provides the amount of association of the character while path coefficient gives the relative importance and true picture of the character by partitioning the correlation coefficient into direct and indirect effects which helps directly in selection programme. Such information is lacking in this crop, therefore, the present investigation was undertaken to know the important oil producing components in castor.

The experiment was laid out with 40 strains of castor from exotic and indigenous sources (*Ricinus communis* L.) in randomised block design with three replications at C S. A. University of Agriculture and Technology, Kanpur. The plot size was 3 x 1.5m with inter row and intra row spacing of 90cm and 50cm, respectively. Five plants were selected at random and observations on yield/plant, number of capsules/plant, test-weight, seed coat thickness and oil content were recorded. The analysis of variance was done on the mean basis of each plot. The genotypic correlation of all the characters with oil content was worked out according to formula of Robinson *et al.* (1951) and path

coefficient as per formula of Dewey and Lu (1959).

The genotypic correlation of yield/plant, number of capsules/plant, test-weight and seed coat thickness with oil content (Table 1) indicated that there was no significant positive association between oil content and above mentioned characters except test-weight which showed highly significant positive association with oil content. Similar result was also reported by Sindagi (1965) in castor. The yield/plant exhibited negative correlation with oil content but it showed direct positive effect (Table 1) on oil content. The remaining studied characters had no direct positive effect on oil content but they indirectly affected the oil content through other components viz. number of capsules/plant through yield and test-weight and seed coat thickness through test-weight. The testweight also had no direct effect on oil content although had significant positive association with it. This might be due to indirect effect of test-weight via number of capsules/plant, yield and seed coat thickness (Table 1).

In general it was found that yield and its direct contribution like number of capsules/plant and test-weight are the important characters which may enhance the oil content in this crop.

The residual effect (0.793) revealed that there might be some more impor-

tant attributes other than those studied in the present investigation which have been responsible for increasing oil content in castor.

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TABLE 1. Direct and indirect effects of oil contributing components on oil content in castor

Characters	Via				
	Yield/plant	Number of capsules/	Testweight	Seed coat thickness	Genotypic correlation with oil content
Yield/plant	0.534	-0.725	-0.390	0.481	-0.120
Number of cap./ plant	0.384	-1.007	0.410	-0.117	-0.220
Testweight	0.315	0.824	0.661	0.240	0.520
Seed coat thickness	-0.502	-0.242	0.324	-0.490	-0.910**
Residual effects	0.793				

**Significant at 1% level of probability.

- Under line denotes direct effects.