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Effect of Method of Dusting Pollen on the Setting of bolls. Number of seeds and Seed quality in CBS 156 Hybrid Cotton

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With the parents of CBS 156 hybird cotton viz., Glandless Acala and SB 1085-6 studies were initiated to determine the effect of different methods of dusting pollen on the stigmatic lobes on seed set. Dusting of pollen on all sides of the stigmatic lobes significantly increased the percentage of boll setting, kapas weight per boll, number and weight of seeds per boll than dusting either on top or on two sides of the stigmatic lobes.

Though the occurrence of heterosis in characters of economic value has been reported many decades ago, unlike in crop like Maize, Bajra and Sorghum, the production on hybrid seeds in cotton is still to be done by manual labour, which means involvement of more labour, cost and time. The cost of hybird cotton seed is very high when compared to that of varieties. This is mainly because standardised procedures which can minimise the production costs have yet to be evolved.

The extent to which the stigmatic lobes are to be dusted with the pollen to ensure the maximum seed set is yet to be studied in detail. So, studies were initiated with the parents of CBS 156 hybird cotton determine the effect of different method of dusting of pollen on the stigmatic lobes on seed set and seed quality and the results obtained are furnished in this paper.

MATERIAL AND METHODS

A field trial was laid out adopting randomised block design with sevenreplications during the Winter season of 1976. The Glandless Acala was raised in 4x1m plot adopting a spacing of 90 cm between rows and 60 cm between plants in the row. The male parent viz. SB 1085-6 was raised on the outskirts of the experimental plot. Recommened package of practices were followed.

At flowering the flowers in the female parent was emasclated and bagged. The next day pollen collected from the male parent was dusted. as follows: (i) on the top (TI)' (ii) on two sides (T2), and (iii) on all sides (T3) of the stigmatic lobes of the female parent. The dusted flowers were labelled with details such as date and mode of dusting etc.

The bolls were harvested as soon as they burst and the seeds extracted

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and dried. The following observations were made from individual bolls; (i) weight of kapas, (ii) number of seeds, (iii) number of unfertilised ovules, (iv) weight of seeds per boll and (v) 100 seed weight. The number of bolls retained was arrived at by deducting the number of bolls harvested from number of bolls labelled. Germination and vigour tests were conducted with seeds obtained from the treatments (Anon, 1976).

RESULTS AND DISCUSSION

The differences in boll setting due to method of dusting of pollen were significant. A maximum of 38.86 per cent seed set was recorded in T3 while, the minimum of 21.86 per cent in T1 (Table 1) Doak (1934) reported that the pollen should be dusted on all the sides of the stigmatic portion of the emasulated flower buds. Kearney (1921) stated that thorough pollination resulted in an increased yield of fibre. In this study, also, dusting of pollen on all the sides of stigmatic lobes sig. nificantly increased the weight of kapas (seed cotton) which ranged from 4.44 g (T1) to 5.71 g (T3).

The number to unfertilized ovules ranged from 12.5 in T1 to 3.5 in T3 and the differences due to treatments were significant. The treatment differences were also significant for the number of seeds per boll. It was maximum in T3 and minimum in T1. According to Mamedov (1965) and Kearney (1921), the quant ty of pollen used for dusting influenced seed set. Ter-Avanesyan and Kameneva (1969) reported that pollination with a small quantity of pollen resulted in the reduction of the number of seeds per boll.

The weight of seeds per boll also showed significant differences due to treatment was maximum in T3 and minimum in T1. Similar results have been reported by Kearney (1921), Mamedov (1965) and Ter-Avanesyan and Kameneva (1969). The treatment effect was not perceptible in the germination of seed 100 seed weight and vigour of the seedlings. The germination percentage ranged from 84.43(T1) to 84.86 (T3), while the vigour index values from 3594.11 (T1) to 3653.39 (T3). The dry matter production was maximum in T2 and minimum in T3.

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Table 1. Effect of pollen dusting on top, two and four sides of the stigmatic lobes.

Character	T_1	T_2	T_3	C.D
Boll-setting (%)	22.8	23.4	38.8	5.3
Kapas weight per bool (g)	4.44	4.66	5.77	0.37
Number of unfertilised ovule/boll	12.5	12.0	3.5	3.7
Number of seeds/boll	27.9	28.7	33.3	3.1
Weight of seeds/boll (g)	2.86	2.96	3.62	0.34