

Effect of Removal of Bracts and Bagging the Flowers on Boll and Seed set in CBS 156 Hybrid Cotton*

K. VANANGAMUDI¹ and K. R. RAMASAMY²

With the parents of CBS 156 hybrid cotton viz., Glandless Acala and SB 1085-6 studies were conducted to find out the effect of removal of bracts and bagging the flowers on seed set. Removal of bracts significantly reduced the boll maturation period, number and weight of seeds per boll and 100-seed weight. However, there was no significant reduction in the percentage of bolls set.

The three triangular shaped green leaflets which completely enclose and protect the tender, growing flower parts are called as bracts, or bracteoles or bractlets. (Berger, 1969). Jones and Andries (1969) reported that the bracts were unnecessary and they added to the trash content of seed cotton as they dried up following the boll cracking. They were also harbouring insects and thus increased the incidence of boll rot. Bracts in cotton appeared to play a similar role in contributing towards dry matter production of bolls. Ter-Avanesyan and Senoedov (1970) reported that the absence of bracts would facilitate harvesting and ginning of seed cotton. The present study was conducted to find out the effect of removal and non-removal of bracts and bagging and non-bagging of crossed flowers on the setting of boll maturation period, kapas weight per boll, number of unfertilized ovules and seeds per boll, weight of seeds per boll and 100 seed weight.

MATERIAL AND METHODS

A field trial was laid out adopting randomised block design with five replication during summer season of 1976. The Glandless Acala was raised in 4x2 m plot with a spacing of 90 cm between rows and 60 cm between plants in the row. The manures applied and the cultural operations adopted were as per recommendations. The experiment consisted of the following four treatments viz., (1) bagging the emasculated flower buds with bracts intact (T₁); (2) leaving the emasculated flower buds with bracts intact without bagging (T₂); (3) bagging the emasculated flower buds after removing the bracts (T₃) and (4) leaving the emasculated flower buds after removing the bracts without bagging (T₄). The treatments in each replication were randomised by referring to the table of one digit random numbers. About 250 flower buds were taken for each treatment. The emasculated flower buds were protect-

* Part of M. Sc (Ag.) thesis submitted to TNAU, Coimbatore-3 for the award of M. Sc(Ag.) degree in Seed Technology

¹ and ², Department of Seed Technology, TNAU, Coimbatore-3

ed against contamination by covering with red colour paper bags of size 9x6 cm. The next day morning, between 9 a.m and 12 noon dusting of pollen was effected. Flower buds in T₁ and T₂ only were covered with white colour paper bags after dusting, allowed to remain for 3 to 4 days. Then, the dusted flowers were marked with labels. The dates of opening of individual bolls were recorded and harvested immediately. The number of days from flowering to the opening of the boll was also calculated. The percentage of boll retained was also calculated. The harvested bolls were dried and the flowering observations were made from individual bolls; (i) weight of kapas, (ii) number of seeds, (iii) number of unfertilized ovules, (iv) weight of seeds and (v) 100 seed weight.

RESULTS AND DISCUSSION

The percentage of bolls retained was not significantly affected by the removal of bracts. Similar results have been reported by Peebles (1929) and Kearney (1929). Saunders (1955) found that the use of paper bags considerably increased the number of bolls set.

Peebles (1929), Kearney (1929) and Ter - Avanesyan and Senoedov (1970) reported that removal of bracts resulted in shortening the maturation period. In the present study, the length of the period from fertilization to the opening of the bolls was shortened by 2.1 days on an average. According to Kearney (1929), boll maturation period was shortened by 3

to 4½ days on an average due to removal of bracts and stated that the more rapid drying of the walls of the boll due to full exposure to light was the chief factor responsible for hastening the opening of the bolls deprived of bracts.

Removal of bracts significantly reduced the weight of kapas (seed cotton) per boll. Similar results have been reported by Kearney (1929), Peebles (1929) and Morris (1965).

Highly significant differences were observed among the treatments for the number of unfertilized ovules and seeds per boll. The mean number of seeds per boll was reduced by the removal of the bracts. According to Peebles (1929), this was due to undernutrition and resulting sterility of some of the ovules.

Significant differences were observed for weight of seeds and 100 seed weight due to removal of bracts. Peebles (1929) and Kearney (1929) stated that weight of seeds can be significantly reduced by the removal of bracts, and that the bracts played an important part in the nutrition of the boll subtended by it. Dock (1934) reported that covering bags exclude the light and, of course, may reduce photosynthesis in the bracts. In the present investigation, bagging of flowers without removal of bracts resulted in the loss of seed weight per boll and 100 seed weight.

REFERENCES

- BERGER, J. 1969. *The world's major fibre crops*, Centre d' Etude de l' Azote, Switzerland.

- DOAK, C. C. 1934. A new technique in cotton hybridizing. Suggested changes in existing methods of emasculating and bagging cotton flowers. *J. Hered.*, 25 : 201-4.
- JONES, J. E. and J. A. ANDRIES. 1969. Effect of frego bract on the incidence of cotton boll rot. *Crop Sci.*, 9 : 426-8.
- KEARNEY, T. H. 1929. Development of cotton boll as affected by removal of the involucre. *J. agric. Res.*, 38 : 341-93.
- MORRIS, D. A. 1964. Variation in the boll maturation period of cotton. *Emp. Cott. Gr. Rev.*, 47 : 114-23.
- PEEBLES, R. H. 1929. Removal of the involucre before anthesis. *J. agric. Res.*, 38 : 389-93.
- SAUNDERS, J. H. 1955. Bagging cotton flowers for breeding (A special use for paper bags in selfing and crossing). *Emp. Cott. Gr.-Rev.*, 32 : 215-21.
- TER-AVANESYAN, D. V. and V. P. SENOEDOV. 1970. The role of bracts in the development of cotton boll. *Trudy. Prikl. Bot. Genet. Selekt.*, 42 : 164-71. (*Fld. Crop Abstr.*, 24).

Table 1 Effect of removal of bracts and bagging the flowers on boll and seed set

Treatments	Boll setting (%)	Boll maturation period (days)	Kapas weight/ boll (gm)	Number of unfertilized ovules/boll	Number of seeds/boll	weight of seeds/boll (gm)	100 seed weight (gm)
T ₁	42.0	47.6	5.85	5.1	33.2	3.71	11.2
T ₂	41.2	47.7	5.69	4.7	31.9	3.72	11.6
T ₃	40.4	45.5	4.70	7.7	28.9	2.99	10.4
T ₄	38.8	45.8	4.09	8.5	26.4	2.65	0.4
C.D. (P=0.05)	NS	1.0	0.55	1.9	2.6	0.38	1.0