

Short-cut-Method to Isolate Varieties of Cotton (*Gossypium arboreum* L.) for Good Bearing, Earliness and Bollworm Tolerance

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ABSTRACT

While handling the breeding material in advanced generations, it is essential for the breeder to isolate promising varieties for bearing, earliness and bollworm tolerance from the field trials. In this study, efforts were made to find out short-cut-method to isolate cotton varieties with good bearing, earliness and bollworm tolerance. S.C.-97, S.C.-117, AKH-496 and AKH-607 varieties under test showed good bearing, earliness and bollworm tolerance. These types also gave good yield of seed cotton per hectare.

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INTRODUCTION

The essential features of a cotton variety which could be successfully grown under rainfed conditions are, firstly, it should have good bearing capacity because it is positively correlated ($r = +0.94$) with yield of seed cotton (Rana, 1952). Secondly, it should be early in maturity because it has to depend entirely on monsoon rainfall without any irrigation and thirdly, it should be bollworm tolerant because it would reduce the cost on plant protection and shedding of the buds, flowers and bolls due to bollworm attack. This short-cut-method would enable the breeder to isolate cotton varieties with good bearing, earliness and bollworm tolerance from the breeding material in advanced generations under field test.

MATERIALS AND METHODS

To illustrate the procedure for isolating a variety with good bearing,

earliness and bollworm tolerance, observations were recorded, when crop was 120 days old, from the coordinated varietal trial of *G. arboreum*, L. conducted with for replications at Agricultural Research Station, Amreli (Gujarat). The net and gross plot sizes were 5.40 m x 8.40 m, and 5.40 m x 9.00 m respectively. The inter and intra row spacing followed were 0.9 m and 0.3 m respectively. Five plants were selected at random from each replication for recording (i) number of bolls per plant, (ii) number of bolls bursted per plant, and (iii) number of bolls infested by bollworm per plant.

From the observations recorded, mean value per plant of each observation for each variety was worked out. Mean values were used to compute boll bursting and bollworm infestation for each variety. From the compiled data, it would be easy to isolate a variety with good bearing, earliness and bollworm tolerance. Number of bolls

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per plant would indicate the bearing capacity, percentage of bursted bolls would indicate earliness, and percentage of bollworm infestation would indicate the bollworm tolerance of the varieties under test. Lower is the per-

centage of bollworm infestation, higher would be the bollworm tolerance and vice versa.

RESULTS AND DISCUSSION

The yield level under rainfed conditions was good (Table-1) during

TABLE 1

Number of bolls, percentage boll bursting and bollworm infestation in some varieties of *G. arboreum* L.

Variety	Number of bolls/plant	Percentage of boll bursting	Percentage of bollworm infestation	Yield of seed cotton kg/ha
1	2	3	4	5
S.C. 97 (Gujarat)	8	72.9	37.6	748
S.C.-117 (")	10	76.2	32.6	713
10-2-3-Y (")	5	60.9	40.9	417
AKH-487 (Maharashtra)	3	63.1	42.1	289
AKH-605 (")	4	57.3	40.0	416
AKH-597 (")	5	74.4	44.6	476
AKH-171 (")	4	76.1	45.2	542
JLA-9 (")	4	90.5	45.9	373
AKH-496 (")	9	65.7	34.7	602
AKH-607 (")	6	78.1	35.2	623
AKH-4 (") (Control)	4	77.3	48.8	389
Sanjay (Gujarat) (Local Control)	10	64.2	38.3	543
S.E.				48.3
C.D.				138.6
C.V. %				9.5

the year 1977-78 when this trial was conducted. The number of bolls per plant ranged from 3 in AKH-487 to 10 of S.C.-117. Percentage bollbursting (earliness) ranged from 57.3 (AKH-605) to 90.5 (JLA-9). Percentage bollworm infestation (bollworm tolerance) ranged from 32.6 (S.C.-117) to 48.8 (AKH-4). Lower is the percentage of bollworm infestation, higher would be the bollworm tolerance and vice-versa. Yield of seed cotton ranged from 289 kg/ha (AKH-487) to 748 kg/ha (S.C.-97). From the data, it was also revealed that high yield is

apparently correlated with high number of bolls per plant and low percentage of bollworm attack. It was interesting to note that the varieties, S.C.-97, S.C.-117, AKH-496 and AKH-607 gave good yield of seed cotton and were also having good bearing and bollworm tolerance. Varieties S.C.-97 and S.C.-117 of Amreli gave significantly superior yield of seed cotton as compared to both the controls.

REFERENCE

- Rana, S. S., 1952, Correlation studies in arboreum cotton crosses unpublished M.Sc. (Agri.), thesis, Univ. Punjab (India)