



TMC M.M 1.1: Development and promotion of medium and long linted Diploid Cottons (*G.arboreum* & *G. herbaceum*)

Introduction:

Development of productive tetraploid cotton as well as Bt cotton lead to the significant decline in desi cotton cultivated area. Desi cotton being drought tolerant and pest resistant it is essential to promote cultivation of desi varieties. To achieve this we need to evolve desi cotton varieties with superior fibre quality and yield. This will be eventually helpful for marginal and poor farmers.

Objectives:

1. Development of medium and long linted diploid *G. arboreum* and *G. herbaceum* cottons.
2. Breeding desi cotton genotypes with low gossypol, naked seeded and high oil content.
3. Promotion of medium and long

linted staple *G. arboreum* / *G. herbaceum* genotypes.

Salient findings:

The main objective of the project is to develop desi cotton cultivars having high fibre qualities and productivity at par or even superior to tetraploid *hirsutum* cotton.

1. Under *G. arboreum* common trial, 18 entries were tested at 14 centres in North zone. The entries CISA-6-350, LD 960 and RG 514 showed promise in respect to yield and quality traits (2.5% span length >24mm, micronaire < 5.5 & strength >18.0 g/tex). However, they could not surpass the local check in respect to yield but quality wise there is lot of improvement and are coming to

the level of quality check i.e. PA 255. Other entries which were having good quality traits are JLA 505, AKA 9620, Sarvotam 16, AKA 9703, J Tapti 007, MDL 2617 & PA532, can be utilized in breeding programme for quality improvement of north zone coarse high yielding genotypes. In Central zone, only one entry JLA 505 (1853 kg/ha) gave significantly higher yield than common check PA255 (1426 kg/ha). In South zone also only one entry i.e. DLSa-8-26 (1384 kg/ha) gave significantly higher yield than the common check PA 255 (1130 kg/ha) and this genotype has performed well for quality also throughout the country. In overall performance, none of the entry could give



significantly, higher yield than the common check PA 255. Five entries namely, JLA 505 (1236 kg/ha), J Tapti 007 (1216 kg/ha), AKA 9703 (1157 kg/ha), PA 532 (1089 kg/ha) & Sarvotam 16 (1072 kg/ha) gave numerically, higher seed cotton yield than common check PA 255 (1066 kg/ha).

2. In north zone trial of *G. arboreum* where 11 entries tested at Hisar, Sirsa, Ludhiana & Sriganaganagar; two entries namely, OSA-6-295 & OSA-6-123 showed promise for yield and quality traits. The 2.5% span length was observed >25mm, micronaire less than 5.5 and strength > 19.0 g/tex.
3. In *G. herbaceum* trial of five genotypes, conducted at Oharwad, Banswara and Bharuch, only one entry, RBOV33 (1415 kg/ha) gave significantly, higher seed cotton yield than common check *arboreum* (1093 kg/ha) and numerically, higher than the local *herbaceum* check (1309 kg/ha). This entry, also had 2.5% span length of 26mm, micronaire of 4.4 and strength of 20.7 g/tex.
4. In the trial of high yielding better fibre quality, low gossypol and high oil content *G. arboreum* genotypes, on

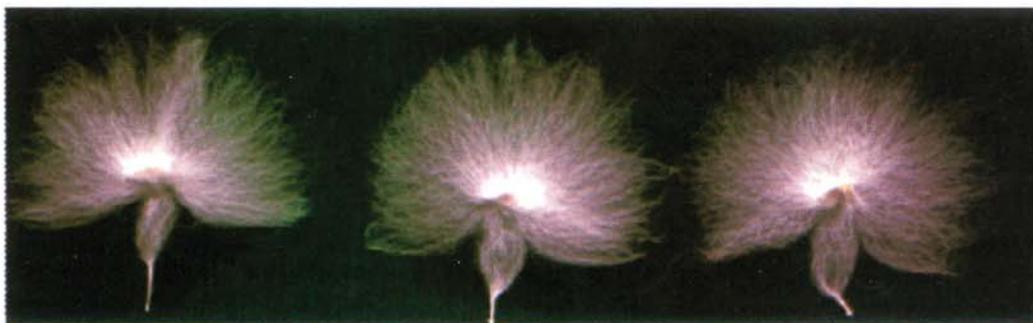
mean basis none of the entry, gave significantly higher seed cotton yield than the check, however; two entries namely PA 562 (1621 kg/ha) & PA 586 (1608 kg/ha) gave numerically higher seed cotton yield than the local check (1307 kg/ha). The oil content varied from 19.0% to 21.6 %.

5. Fourteen of the test entries of *G. herbaceum* had good yield potential of more than 600 gms seed cotton yield per row with the top entry, IOS-IPS-2 having 972 gms per row followed by IDS-4 with 885 gms per row. IDS-IPS-5 has recorded highest strength of 24 g/tex with a fibre length of 28.4 mm whereas IDS-25 has recorded highest fibre length of 30.8 mm with a strength of 22.6 g/tex.
6. In introgression trial having 17 entries conducted at Nagpur, Parbhani and Oharwad, only one genotype, line NO.6 gave higher seed cotton yield (1914 kg/ha) than the check PA 255 (1543 kg/ha). In case of quality traits, the genotype had 28.5 mm 2.5% span length, 4.8 micronaire and strength 22.3 g/tex.
7. More than 134 newly developed strains were tested for their yield potential and

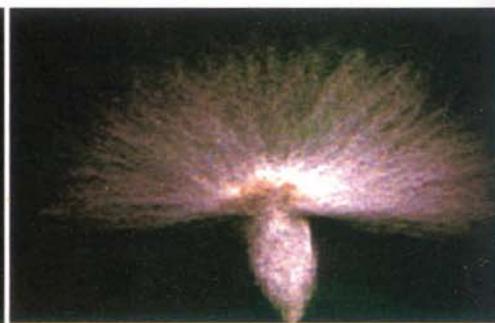
fibre traits, in comparison to *hirsutum* and *arboreum* checks, over 14 centres. In addition, 1075 single plant selections were made at various centres to create desirable variability, for enhancing genetic improvement of diploid cotton and 238 fresh crosses were attempted.

8. The released varieties, AKA 9602, PA 402, PA 405, PA 255, Partap Kapi I, GBhv 226, Veena, JLA 794 and MOL 2617 were demonstrated at farmer's field to popularize the long linted varieties.
9. The genotypes improved developed over the years using the genetic material generated & exchanged in TMC project are being sponsored in AICap trial. As many as 14 strains, viz. OSA-6-214, RG 585, RG 587, LD 944, LD 929, aNA 369, OLSa 1005, OLSa 1006, JLA 505, PA 532, PA 686, GBav 105, GBav 120 and MOL 2617 from various centres were sponsored during AICap meeting held at Hyderabad, April 6-8, 2009. Eight strains were promoted to respective zonal trials during 2009-10 viz. RG 542, LD 952, LD 936, JLA 802, PA 528, PA 08, PA 646, and aNA 1003.

STAPLE LENGTH OF INTROGRESSED HIRSUTIZED DESI COTTON IN COMPARISON WITH HIRSUTUM VARIETY NH 615



PAIG-83 (28-29 mm, 21.8 g/tex)



N H-615 (27.8 mm, 18.2 g/tex)