

Achievements

Crop improvement in the *G. herbaceum* started in 1913 with the establishment of Bharuch station in the middle Gujarat zone. Initial objectives were confined to effect improvement through selection and/or hybridization for wilt resistance, high GOT. Superior quality with satisfactory yield level and high GOT but poor fibre quality and with susceptible admixtures that the *G. herbaceum* had become by the beginning of 20th century. This was mainly ascribed to low GOT of the varieties that attracted the dejected grower to high GOT lines despite the poor fibre quality and disease tolerant status. The point can be elucidated with an example of Goghari in central Gujarat that damaged the reputation of Gujarat for quality of *G. herbaceum* besides making the whole tract wilt sick. Attempts were made to recover from dejection phase. Superior lines were selected from Bharuch local and developed as B.D.8 in 1936 which retrieved the reputation of Surat/Bharuchi cotton damaged by the intrusion of Goghari. However, it was wilt susceptible too.

By this time back - crossing programme initiated at the station and some excellent research materials found. In which, back cross (B.D. 8 x GA-26) x B.D.8 gave two similar sister lines namely BC-1-2 and BC-1-6 having desired combination of wilt tolerance, high GOT and good fibre quality. Synthetic of these two lines was found to be quite superior. However, only one, BC-1-2 was promoted as Vijay in 1943. It was appreciated both by growers and traders due to wilt tolerance and high GOT.

Vijay, however, evinced inconsistent spinning. Attempts to improve Vijay by back crossing (Vijay x 1027 ALF) x Vijay resulted in evolution of Digvijay in 1956 that still cover some area in Gujarat due to its superior spinning performance.

Declined trend in yield of Digvijay during early eighty decades, due to reasons Viz. bollworm, aphids and mites population in late maturing varieties. Such situation necessitated evolving of early variety without loss in fibre properties. As result of further research work carried out in *G. herbaceum*, early maturing strain Viz. 1449 evolved by

selection from the segregating population of cross MBC 3200 x EP2 given to farmers of these tract as a variety G.Cot-11 in 1979.

G.Cot-11 was spread in about 2.00 lakh hectares area of Middle Gujarat. However, it possessed low boll weight and there was still need and scope for further improvement in yield potential for the Zones and as a result of further work in new strain i.e. GBhv-46 was identified as promising. This strain GBhv-46 was derived from the cross of 1762 x Yerli-197-3 made in 1978-79 and released as a G.Cot-17 variety in 1995.

Day by day problems of non-availability of laborers for picking the seed cotton is becoming more difficult due to smaller boll size. In this situation farmers were turned to grow another non recommended variety "GHETI" having bigger boll size but very poor fibre quality. So, attempts had therefore been made to develop a variety with high yield, good fibre quality, bigger boll size, and particularly with good habit in opening for replacing the "GHETI" in the zone. The strain 625 B.B. having big boll size (3.0 g.) and erect growth habit was crossed with the promising strains GBhv-41 having good fibre quality in 1989-90. The F1 and subsequent segregating generation were studied and plants with desired characteristics were isolated. Among these, the GBhv-179 was identified as promising and released as a G.Cot-23 in the year 2000 for cultivation for this zone.

After releasing *G. herbaceum* variety G.Cot-23 had replaced existing varieties at that time, therefore the choice for the farmers was limited. Simultaneously, some farmers in the zone were growing a variety Punjab-55 which was very late in maturity and short staple compared to release variety. So there was need for more suitable desi cotton variety for Farmers. Attempts made through individual selected plants from the progenies of segregating generation from the cross 625B.B. x GBhv-41 as progeny 1942/98 in 1998-99 and tested as GBhv-226 under PRT, TMC and other Zonal and National trials. The new variety released as GN.Cot-25 in 2010 being superior to G.Cot-23 in yield.

High seed cotton yield, early maturity and high GOT are the haul marks of genotypes and some of the genotypes like GBhv-280, GBhv-291, GBhv-293, GBhv-297 in pipeline.

Achievements in *G.hirsutum* cotton:

The successful hirsutum cotton growing started in the state in 1951 with the release of Deviraj derived from interspecific cross. Deviraj is comparatively long duration type. G.Cot-10 is early, high yielding but due to its hairiness, it showed more susceptibility to whitefly. The strain G(B)-20 has been derived from the cross of Reba T.K.-1 x G.Cot-10. Original cross was made at Surat in 1974-75 but the material in F₃ brought at Bharuch. The single plants and bulks were carried forward and tested up to 1985-86 under different trials at Bharuch. Looking to its performance under various coordinated trials, the strain G(B)-20 was given to the farmers as variety G.Cot-16 in 1995 under rainfed area of middle Gujarat zone for harvesting higher seed cotton yield and GOT.





Promising Entry of *G. herbaceum* cotton

**HIRSUTUM COTTON VARIETY
GBHV 170
(PROPOSED NAME: GN.Cot-26)**

Salient Features:

- GBHV 170 is most suitable for rainfed areas of cotton.
- GBHV 170 has recorded 22.4 and 40.2 per cent higher seed cotton yield than checks *viz.*, G.Cot.16 and NH 615, respectively at state level under rainfed condition.
- It has also recorded 13.3 and 18.0 per cent higher seed cotton yield than G.Cot.16 and NH 615 in National trials other than Gujarat state.
- It had made its position in top yielder entries at National level in AICCIP trials.
- GBHV 170 gave mean lint yield of 538 kg/ha which was 28.4 and 38.3 per cent higher than checks G.Cot.16 and NH 615, respectively in overall performance.
- It possessed medium long fibres (25.9 mm) with average fine fibres (4.5 mv) with average fibre strength (21.4 g/tex).
- It has recorded lower population of sucking pests and as far as, damage to open boll and locules by pink bollworm larva concerned the performance of a tested variety was more or less similar compared to little bit more damage in checks.
- The variety exhibited disease free reaction for wilt and alternaria leaf spot and observed resistant for bacterial leaf blight.
- The variety is responsive to fertilizer.
- It possessed 17.1 % oil content.



**ARBOREUM
COTTON VARIETY
GBav - 106
(PROPOSED NAME: GN.Cot-29)**

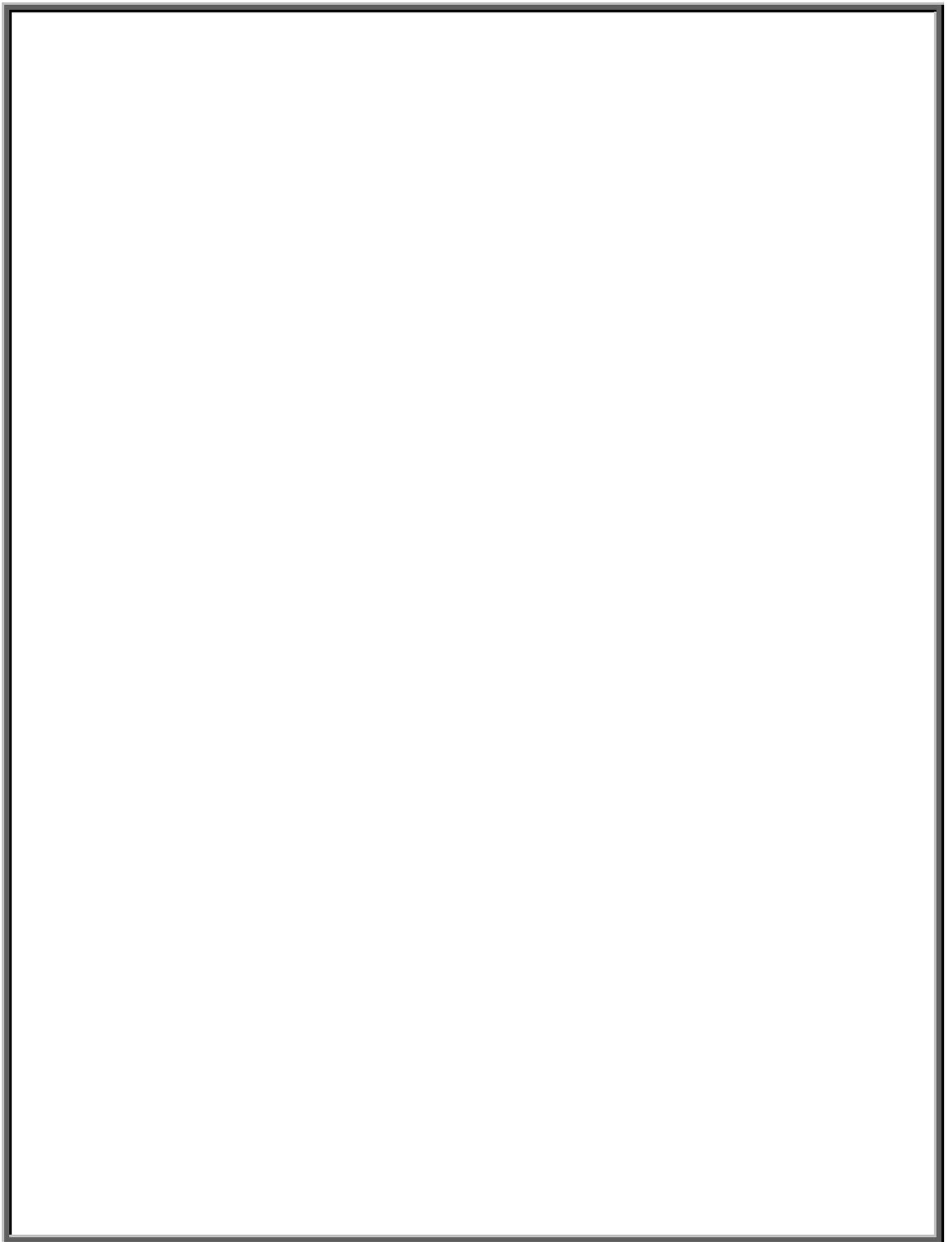
Recommendation for farmers

Arboreum cotton genotype GBav-106 had recorded 1493 kg/ha seed cotton yield which was 16.2 % higher than G.Cot.19 under rainfed condition. This genotype was observed as disease free against Wilt, Alternaria Leaf Spot and Bacterial Leaf Blight. This genotype had recorded below ETL population of sucking pests so it is recommended for cultivation in rainfed area of South Gujarat as GN.Cot.-29.

બેડૂતો માટે ભલામણ

દેશી કપાસની સ્થાયી જાત જીબીએવી ૧૦૬ નું બિનપિયત પરિસ્થિતિમાં પ્રતિ હેક્ટરે ૧૪૯૩ કિગ્રા કપાસનું ઉત્પાદન મળેલ હતુ કે જે નિયંત્રિત કપાસની જાત ગુ.કપાસ.-૧૯ કરતા ૧૬.૨ ટકા વધુ હતુ. આ જાત સુકારા, અલ્ટરનેરીયા લીફ સ્પોટ અને બેક્ટેરિયલ લીફ બ્લાઈટ સામે રોગ મુક્ત માલુમ પડેલ હતી. આ સ્થાયી જાતમાં યુસિયા પ્રકારની જીવાતો ક્ષમ્ય માત્રા કરતા ઓછી નોંધાયેલ હતી તેથી આ જાત જીબીએવી ૧૦૬ ને દક્ષિણ ગુજરાતના બિનપિયત વિસ્તારમાં ગુન.કપાસ-૨૯ તરીકે વાવેતર માટે ભલામણ કરવામાં આવે છે.





Crop Improvement : Cotton

| S r. N o. | Name of released variety | Pedigree | Year of release | Average yield (kg/ha) | Maturity days | 2.5 Span | G.P. | Fibre fineness | LUR | Fibre strength |
|--------------------|--------------------------------|-------------------------------|-----------------------|-----------------------------|------------------|-------------|------|-------------------|-----|-------------------|
| 1 | BD-8 | Sel. from Bharuch Local | 1936 | 850 | 300 | 22 | 34 | - | - | - |
| 2 | Vijay | (BD-8 x GA-26) x BD-8 | 1943 | 900 | 300 | 22 | 39.6 | - | - | - |
| 3 | Digvijay | Vijay x (Vijay x 1027 ALF) | 1956 | 940 | 260 | 23.1 | 39 | 4.4 | 50 | 9.5(PSI) |
| 4 | G.Cot-11 | MBC 3200 x EP-2 | 1979 | 1100 | 245 | 23 | 37.5 | 4.6 | - | - |
| 5 | G.Cot-16 | Reba TK 1 x G.Cot-10 | 1995 | 1600 | 135-140 | 26.8 | 36.7 | 4.2 | 49 | 47.9 (Omm) |
| 6 | G.Cot-17 | 1762 x Yerli 197-3 | 1995 | 1283 | 200-230 | 22.5 | 40.5 | 4.1 | 51 | 47.1 (Omm) |
| 7 | G.Cot-23 | 625 B.B. x GBhv-41 | 2000 | 1300 | 190-210 | 22.4 | 39.1 | 4.2 | 52 | 22.9 (3.2mm) |
| 8 | GN.Cot-25 | 625 B.B. x GBhv-41 | 2010 | 1500 | 190-200 | 23.1 | 39.3 | 4.8 | 52 | 17.65 (3.2mm) |