

SYSTEMATIC EVALUATION, DOCUMENTATION AND UTILIZATION OF COTTON GERMPLASM — A SUCCESS STORY

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Germplasm holds the key for crop improvement. In cotton, both traditional varieties and hybrid cottons are commercially cultivated in India. Breeding of improved cultivars and development of hybrids represent a continuous process for ensuring successive increases in crop production. Two successful achievements through the most scientific and effective utilisation of genetic resources at CICR, Nagpur leading to release of a *hirsutum* cultivar CNH 36 and an intra- *hirsutum* hybrid CICR HH 1 (Kirti) are reported in this paper, particularly highlighting their characteristics.

Based on diallel analysis and other means of heterosis evaluation, two specific accessions were identified as potential parents for heterosis breeding. These two, namely CP 15/2 (Sel.) and Bikaneri Narma (Sel.) were crossed by conventional hand emasculation and hand pollination technique and the hybrid systematically tested at CICR and in All India Coordinated Cotton Improvement Project, multilocation trials. Again with the help of pathologists, three bacterial blight resistant/immune germplasm were selected and a large number of crosses utilizing the 3 donors for bacterial blight resistance with several agronomic types and elite germplasm were screened continuously through five filial generations with some selected inter-crossing in F₃. This effort resulted in identification of 19 multiracial, bacterial blight resistant selections/cultures.

These materials were also added to the genebank. A few of these elite cultures were further purified and tested for seed-cotton yield, bacterial blight resistance and fibre quality at CICR and AICCIP trials at several locations. The efforts to developing a superior medium staple hybrid cotton with early maturity, high pest escape and high yield potential over the existing long

duration hybrid resulted in the release of a new hybrid CICR HH 1, popularly named as KIRTI, for Marathwada region of Maharashtra state. The detailed

Table 1. Important characteristics of CICR HH 1 (Kirti)

Yield potential (q/ha) (Seed-cotton)	15-25
Boll weight (g)	4.0
Seed index (g)	10.0
Lint index (g)	5.7
Plant height (cm)	110-115
Maturity (days)	160
Seed oil (%)	22.6
Bacterial blight grade	MR
Jassid grade	MR
Ginning Outturn (%)	35.0
2.5 % span length (mm)	25.8
Fibre fineness (mv)	4.2
Fibre strength (g/t) ('O' gauge)	42.9
Spinning potential (HSC)	40s Counts
Yarn tenacity (corrected)	
40s CSP	2272
50s CSP	2130
Region suitable	Marathwada (M.S.)
Expected potential coverage (lakh hectares)	1.0
Potential expected contribution to additional annual production (tons of seed-cotton)	20,000

characters and potential of the hybrid are presented in Table 1. In the next five years, its cultivation can spread and thereafter contribute to an additional production of 20,000 tons of seed-cotton per year. The second endeavour resulted in the release of a superior medium staple, high yielding and early maturing *hirsutum* variety designated as CNH 36 for irrigated tracts of Maharashtra and Gujarat. The attributes of CNH 36 is documented in Table 2 alongwith its potential for increasing the cotton production to the extent of 40,000 tons seed cotton per annum. The merit of these two improved types have been presented and discussed in detail by Singh *et. al.*, 1993). In conclusion, the success in developing two cultivars indicate the critical role of systematic

Table 2. Important characteristics of CNH 36

Yield potential (irrigated)	25-30 (I)
(Seed-Cotton) (q/ha) (Rainfed)	12-15 (R)
Boll weight (g)	3.2
Seed index (g)	7.7
Lint index (g)	4.4
Plant height (cm)	105-120
Maturity (days)	145-150
Seed oil (%)	22.3
Bacterial blight grade	Mod. resistant
Jssid grade	Mod. resistant
Ginning Outturn (%)	35.0
2.5 % Span length (mm)	26.3
Fibre fineness (mv)	4.0
Fibre strength (g/t) ('O' gauge)	47.3
Spinning potential (HSC)	40s
Region suitable	Irrigated tracts of Maharashtra and Gujarat
Expected potential coverage (lakh hectares)	2.0
Potential expected contribution to additional annual production (tons of seed-cotton)	40,000

evaluation, documentation as well as planned and effective utilization of genetic resources in cotton.

REFERENCES

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