

4. TECHNOLOGIES ASSESSED AND TRANSFERRED

4.1: Varieties released

4.1.1: Central Cotton CCH 12-2 (Suchitra)

The high yielding good quality variety Suchitra has been released for commercial cultivation in Central Zone States of Gujarat, Maharashtra and Madhya Pradesh under irrigated conditions during December, 2018. The variety recorded a mean seed cotton yield of 1767 kg/ha as against 1644 kg/ha of the Zonal check variety. However, the yield potential of the variety is 2598 kg/ha as has been recorded in the Preliminary Variety Trial at Junagadh centre during 2014-15. The long staple variety has an Upper Half Mean length of 28.0 mm, Micronaire of 4.2 and tenacity of 29.0 in HVI mode and is capable of spinning to 30s count yarn. The variety has a mean boll weight of 3.7 g/boll and it showed at par incidence majority of pest and diseases check varieties. The variety was tolerant to grey mildew and moderately tolerant to jassids. The new variety combines high yield potential, big boll size and basic tolerance to pests and diseases and the farmers will be highly benefitted by cultivating this genotype.



4.1.2: Central Cotton CCH 4474 (Subhiksha)

The high strength good quality variety Subhiksha has been released for commercial cultivation in South Zone States of Karnataka, Andhra Pradesh and Tamil Nadu under irrigated conditions during December, 2018. It recorded a mean seed cotton yield of 1542 kg/ha as against 1305 kg/ha of the Zonal check variety Surabhi under conventional spacing in AICRP

multi location trials with 24.7 per cent yield increase over check varieties. However, the variety was found to be compact and yielded better under closer spacing as evident in agronomic trial with to yield as high as 3325 kg/ha at Coimbatore and 4201 kg/ha at Guntur. In the large scale demonstration trial at ICAR-CICR, Regional Station, Coimbatore, the variety recorded higher seed cotton yield of 2800 kg/ha during 2015-16 and 2640 kg/ha during 2016-17 with good fibre quality as compared to the other long staple varieties viz., Surabhi and Suraj.

The variety recorded a mean Ginning Out turn of 35.4% as against 32.2% of the zonal check variety Surabhi. Because of the higher ginning out turn, the variety has recorded 38% higher lint yield over the zonal check variety. The variety has a 2.5 % Span length of 32.4 mm, Micronaire of 3.6 in the spinning test in ICC mode and Upper Half Mean Length of 32.7 mm, Micronaire of 3.7 and Tenacity of 33.8 g/tex in the spinning test in HVI mode and was found to spin up to 60s count yarn. The variety showed of pest and diseases at par with incidence vis-à-vis check varieties and showed field tolerance to jassids.



4.2.: On Farm Demonstration

During 2018-19, on farm demonstration of cotton variety Suraj with all recommended technologies of CICR and Bt cotton hybrid Mallika Bt BG II (half an acre each) were conducted at Coimbatore.

- ♦ Variety Suraj with all recommended technologies of CICR yielded 2081 kg/ha and the Bt cotton hybrid Mallika Bt BG II gave 2062 kg/ha of seed cotton yield.



- ◆ Around 1438 visitors viz., Scientists, Extension officials, Farmers, Farm women, Research

scholars and Students visited the institute and the demonstration plot.



Fig 41. On farm Demonstrations: Coimbatore

4.3: Front Line Demonstrations

4.3.1: Nagpur

One hundred cotton FLDs on Integrated Crop Management (ICM) and remunerative intercropping systems in Bt cotton was conducted in the districts of Wardha and Nagpur in Vidharbha—region of Maharashtra. Under ICM, Bt cotton hybrid H8 and in intercropping systems Moong var Utkarsha in between Bt cotton rows was demonstrated. Adopted farmers harvested seed cotton yields between 741-1976 kg/ha with an average yield of 1411 kg/ha under ICM cotton FLDs whereas it was 617 to 1729 kg/ha with an average yield of 1095 kg/ha under farmers' practice. Under remunerative intercropping systems in Bt cotton v/s sole Bt cotton, the yields ranged from 741 to 2779 kg/ha with an average yield of 11293 kg/ha of cotton while the intercrop moong yields ranged from 12 to 154 kg/h with an average yield of 70 kg/ha. Continuous rains during July affected intercrops adversely. Also early termination of rains in the second week of September affected the cotton crop.

4.3.2.: Sirsa

Front Line Demonstrations (FLDs) of ICM on *Gossypium hirsutum* varieties CSH-3129 (67.5 x 30 cm normal spacing) on 20 hectares and CSH 3075 (67.5 x 10 cm under HDPS) on 40 hectares were conducted in the cotton growing districts of Punjab, Haryana and Rajasthan.

Average seed cotton yield of 40 FLD's (one acre each) on CSH-3129 was 2,154 kg/hectare with a cost benefit ratio of 1.99. Whereas average seed cotton yield of Bt hybrids at farmers' field was 2,115 kg/hectare with accost benefit ratio of 1.74. The additional monitory benefit in the demonstrations was Rs 2067/- per ha.

Average seed cotton yield of 90 FLD's (one acre each) on CSH-3075 (HDPS) was 2,088 kg/hectare with a cost benefit ratio of 1.92. Whereas average seed cotton yield of Bt hybrids at farmers field was 2,013 kg/hectare with a cost benefit ratio of 1.66. The additional monitory benefit by growing CSH-3075 under HDPS system was Rs 3975/- per ha.

4.3.3.: Coimbatore

Fifteen NFSM-FLD demonstrations in 43 farmers' fields were conducted in Ariyalur district during winter irrigated season. The technologies demonstrated were cotton variety Suraj, Integrated Weed Management, Integrated Nutrient Management and Integrated Pest Management in cotton. The average seed cotton yield obtained was 1275 kg/ha as against the average yield 970 kg/ha under farmers' practice. Similarly, ten demonstrations on cotton variety Suraj with intercrop black gram were conducted in 25 farmers' fields in Senthurai taluk of Ariyalur district. The average seed cotton yield obtained was 1298 kg /ha seed cotton yield with 156 kg/ha intercrop yield in FLDs and 1043 kg/ha seed cotton yield in farmers'

practice of cultivating cotton alone.

During the summer irrigated season, 10 demonstrations on cotton variety Surabhi conducted in twenty five farmers' fields of Vennanthur block of Namakkal district in Tamil Nadu. The technologies

viz., Integrated Weed Management, Integrated Nutrient Management and Integrated Pest Management, application of growth regulators and soil test based fertilizer recommendation are being demonstrated in 25 farmers' fields.



Fig 40. Front Line Demonstrations: Coimbatore

4.4: Implementation of TSP

Under Tribal Sub Plan (TSP), High Density Planting System (HDPS) technology for cotton was demonstrated to 20 tribal farmers in village of Umred Taluka, Nagpur district under MGMG.

On-Farm training/advice was given to the tribal farmers during crop season from time to time in 6 adopted villages (Dhwalapur (Gram Panchayat), Narhar, Kolitmara (Gram Panchayat), Ambazarighat, Saleghat and Ghatpendri of Parsheoni tehsil through Institute's farmer outreach programme Mera Gaon Mera Gaurav (MGMG). Inputs like Seeds of Public sector Bt hybrid Cotton G. Cot Hy8 Bt alongwith Red Gram and Cluster bean were distributed to 103 Tribal Farmers in 6 villages. TFL seed production of cotton was taken up for non-Bt varieties like Suraj, LRK 516, NH 615, PKV 081, Phule Dhanvantari & AKA-7 in Participatory mode in 21 acres including 6 tribal Farmers. The necessary inputs were timely provided from TSP fund under NSP. They were trained in various aspects of Cotton Seed Production including maintenance of isolation distance, rouging and other care to be taken during seed production. Most of the area is rainfed hence the yields were minimal and also flood like situation during rainy season reduced the yields. The yields ranged from 6 q/acre in *G.hirsutum* varieties and 7 q per acre in *G.arboreum* variety. It was noticed that farmers were satisfied with the seeds of supplied cotton varieties

and are volunteering to take up cotton seed production. As per MOU, they have been paid 10% extra for seed cotton over the market price prevailing during that time.

4.5: Insecticide Resistance Management: Dissemination of Pink Bollworm Management Strategies

"Insecticide Resistance Management: Dissemination of Pink Bollworm management strategies" under Centrally sponsored scheme on "NFSM: Commercial Crops" was implemented during 2018-19. ICAR-CICR, Nagpur served as the Nodal Institute for implementation and overall coordination of the project through 100 State Agricultural Universities and KVKs in 105 villages covering 21 districts from seven selected major cotton growing States of the country. The major outputs of this programme were

- ♦ Skill Enhancement of 1050 beneficiary farmers, input dealers, and other stakeholders
- ♦ Reduction in pink bollworm damage by 70% due to timely interventions and integrated management approach
- ♦ Increased cost: benefit ratio (1:2.16) for IRM adapted farmers
- ♦ Improvement in quality of cotton for textile industry
- ♦ Reduced environment health hazards



4.6: Mera Gaon Mera Gaurav

Mera Gaon Mera Gaurav is being implemented by ICAR- CICR Nagpur and its Regional Stations ICAR-CICR, Coimbatore and ICAR-CICR, Sirsa as per the guidelines. The Scientists remained in touch with the adopted villages and provided information to farmers on technical and other related aspects in the time frame through personal visits to hasten the process of Lab to Land. During the year the programme was implemented in 71 adopted villages in 14 clusters (nine, four and one from Nagpur, Coimbatore and Sirsa respectively). Dr S. M. Wasnik, Principal Scientist, Extension as a Nodal Officer Coordinated the MGMG activities implemented by scientists in clusters of adopted villages.

Broad areas of activities undertaken

- ♦ Field crop demonstrations on tribal farmers fields
- ♦ Extending technical advices on integrated cotton production to the farmers of adopted villages
- ♦ Monitoring of insects/pests, updating with latest measures of controlling diseases and insect pests of major crops of locality
- ♦ Delivering need based weekly mobile advisory also to the farmers registered with Institute e-Kapas/Communication advisory system
- ♦ Organising meetings/ Goshthies at villages
- ♦ Providing literature support to farmers
- ♦ Creating linkages with other Departments/ Organizations/NGOs

- ♦ Updating farmers about soil health card importance
- ♦ Creating awareness about Pradhan Mantri Fasal Bima Yojana
- ♦ Providing technical inputs related to Goat farming for better farm profitability
- ♦ Creating awareness about cleanliness of village premises

Demonstrations at farmer's fields

During kharif 2018-19, one packet (450g each) of Bt Cotton hybrid (H-8) BGII seeds was given to 250 farmers of Nagpur and Wardha district of Maharashtra for demonstrations in tribal farmers fields of Umred (Nagpur), Samudrapur (Wardha), Parshivani (Nagpur), Hingna (Nagpur), Ganeshpur (Wardha), Nandura (Wardha), Kalmeshwar (Nagpur), Navegaon (Nagpur) and Dongargaon (Nagpur) clusters. During the crop season, pheromone traps were also distributed to the farmers for monitoring of pink bollworm infestation, Awareness camps were organised for the management of pink bollworm. Weeds were severe in shallow soils and most difficult to control even after using herbicides. Farmers were satisfied with the performance of Bt Cotton Hybrid H8 BGII as it gave yields ranging from 10-20 q/ha. Pheromone traps and implementation of plant protection strategy was effective in management of pink bollworm during the cropping season.

S. No.	Name of activity	No. of activities conducted	No. of farmers participated & benefitted
1.	Visit to villages by teams	35	1289
2.	Interface meeting/ <i>Goshthies</i>	50	2159
3.	Training organized/ workshops	25	2750
4.	Demonstrations conducted	250	250
5.	Mobile based advisories (No of message)	39	6950
6.	Literature support provided (No)	8	1600
7.	Awareness created (No)	19	1810
8.	Linkage developed with other agencies	6	8775
9.	Facilitation for new varieties	36	36
10.	Other, if any	1	25
	Encouraged farmers to participate in Kisan Samridhhi Mela organised by ICAR during 24 - 26th August, 2018 at CODISSIA Trade Fair Complex, Avinashi Road, Coimbatore		Mr. Selvaraj from Allapalayam Village was bestowed with best farmer award during the Mela
	Total	454	25644

Other activities:

The various teams organised interactive meets with farmers to have Scientists – farmers interface on the issues i.e. soil health management, crop residue composting, weed and nutrient management, whitefly management in Sirsa locations, mobile based advisories under e-kapas/ communication,

Cotton IPM & Package of Practices, fertilizers applications, plant protection, physiological disorders, various pests and disease management options, technologies on flowering and post pink bollworm management and parawilt management in cotton, workshops also held on integrated management of pink bollworm. The other various activities organised are given in **Table 1**.

**Girad Cluster****Ganeshpur Cluster****Hingna Cluster****Dongargaon Cluster****Parsheoni Cluster****Sirsa Cluster****Coimbatore Cluster**