



TECHNOLOGY ASSESSED AND TRANSFERRED

Nagpur

- Demonstration on promising and newly released Bt hybrid- NHH-44 Bt, Bunny BG II and Rasi-2 Bt
- Cotton based soybean intercropping systems cotton + soybean
- Opening of ridges and furrows for moisture conservation
- Integrated Nutrient Management in cotton
- Foliar spray of MgSO₄ and DAP
- Integrated Pests Management in cotton

Coimbatore

Cotton Value Chain

Successful implementation of the project during last year by adopting integrated cotton production technologies developed at CICR resulted in 25 and 67 per cent of yield and net profit increase, respectively. This led to increase in area of ELS cotton in the village clusters of Kinathukadavu block in Coimbatore district. ELS cotton production was executed in 110 acre in the year of 2009-10. Nearly 955 quintal of ELS Bt hybrid (RCHB 708 Bt) seed cotton was harvested from 110 acre land with uniform quality for value addition research. The mean cost of cultivation is arrived for base year is Rs. 10,903/acre as compared to second year of the project being Rs. 17,237/acre. Mean seed cotton yield of 8.7 q/acre harvested, which is 42.6 per cent higher as compared to base value (6.1 q/acre). The average gross return of Rs. 40,380 and net return of Rs. 23,143 were calculated per acre with benefit cost ratio of 2.34. The base line survey values for gross return is Rs. 18,220 and net return is Rs. 10,903 for acre of land with benefit cost ratio of 1.67.

Demonstration of low cost drip irrigation system in cotton

Low cost drip systems (poly tube drip systems) was developed at CICR, Coimbatore and was demonstrated at NAIP village. Polytube drip system, polytubes (150 micron thickness) punctured at regular intervals (60 cm) on single side were placed in planted rows. Poly tubes (Rs 31,252/ha) drip systems is 60 per cent cheaper as compared to the existing drip system (Rs 74080/ha). Water saving to the tune of 40-50 per cent and

yield increase of 25-97 per cent were recorded following the adoption of low cost drip system.



Demonstration of Multi-tier cropping system

Multi-tier vegetable intercropping including coriander, radish and cluster bean with cotton was demonstrated at NAIP project village at Vadapudur. RCHB 708 Bt Hybrid cotton was planted at 120 x 60 cm. Two ridges at 60 cm apart are formed making 120 cm. Cotton, radish, cluster bean and corianders are planted on 4 sides of the 2 ridges in sequence. Periodic harvest of intercrops (coriander at 35 DAS, radish at 45 DAS and cluster bean at 75 DAS) resulted in less competition within the component of multi-tier crops leading to yield almost equal to sale cotton. Per hectare gross return of RS.1,32,500, net return of Rs. 77,598, B:C ratio of 3.2 and per day return of Rs 517 were realized with multi-tier system involving radish, cluster bean, coriander with cotton. Sale cotton registered the gross return of Rs 69,000/ha, net return of Rs. 36500/ha and per day return of Rs 243.



Front line Demonstrations in Cotton

During the year 2009-10, the CICR, Coimbatore centre had conducted seventy five demonstrations on cotton production technology, one unit demonstration on cotton IPM and one unit demonstration on cotton farm implements. The technologies demonstrated under cotton production technology were improved variety Suraj, Bt cotton hybrids RCH 2Bt, RCH 20 Bt and RCH 530 Bt and RCH 708 Bt with improved package of practices, intercropping with cowpea and green gram, application of Bio-fertilizers, pre emergence application of weedicides, management of leaf reddening, management of mealy bugs and stem weevil and soil test based nutrients management. The demonstration resulted in an average seed cotton yield of 1717 kg/ha as compared to the local farmers' practices (1505 kg/ha). One unit demonstration on cotton IPM was demonstrated in 50 hectares using the IPM module developed by the institute. The IPM demonstrated fields gave the average seed cotton yield of 1615 kg/ha as against the non-IPM fields (1426 kg/ha). The implements viz., power weeder, Roto slasher and junior hoe were demonstrated under the component of demonstrations on farm implements.

Impact analysis of IRM strategies

The impact analysis of the project activities indicated that the implementation of IRM strategies in the project villages resulted in the reduction of number of insecticidal sprays from 2.60 to 1.26, reduction of quantity of insecticides from 562.13 to 232.70 g a.i./ha, reduction of plant protection cost from Rs. 2,182.20 to 800.60/ha and an increase in yield from 10.54 to 11.86 q/ha in IRM villages as compared to non-IRM villages

Increased yield	1.32 q/ha
Increased profit	Rs. 5433/ ha
Saving on plant protection	Rs. 1380/ ha
Increased additional income	Rs. 1928/ ha
Saving from other cultivation cost	Rs. 1118/ha
Total	Rs. 9,859 ha

Sirsa

Demonstration of variety CISA310(*G. arboreum*)

Average yield of 9 demonstrations conducted at 5 locations was 22.3 q/ha, whereas the average yield of check variety was 18.2 q/ha., thus registering an increase of 22.5% over the check variety.

Demonstration of GMS based hybrid CICR 2 (*G. arboreum*)

Average yield of 31 demonstrations conducted at 23 locations of CICR 2 hybrid was recorded 27.0 q/ha, in comparison to 22.6 q/ha in case of check hybrid thereby registering an increase of 19.4% over the check hybrid.

Hybrid seed production of CICR 2 and CSHH 198 at Farmers' field

The main objective was to educate farmers to produce their own good quality F₁ hybrid seed at a lower price with their limited resources and skill. Training for sowing procedures and desired spacing for successful crossing programme was imparted to the farmers at research station as well as at their fields. Parents of Hybrid CSHH 198 and CICR 2 were sown on farmers' fields under supervision of the scientists and good hybrid seed was obtained by Sh Raja Ram and Sh Rati Ram from Shahpur Begu Distt Sirsa and Sh Trilok Chand from Fatehabad. The farmers were trained for every important step involved in crossing programme for hybrid seed production such as rouging of off types, emasculation, pollination, crop management, etc. In case of CICR 2 the process of hand emasculation of flowers was avoided due to male sterility.

Integrated Pest Management (IPM) technology

During the current season five adjoining villages' viz., Bhadra, Jodhkan, Panjawana, Jodhpuria, and Jhopra were selected for disseminating the IPM strategies. In total 12 farmers from these villages covering an area of 50 hectares were adopted under IPM. The emphasis was made in selection of recommended varieties/hybrids viz., MRC-7017 BG-II, MRC-6025, Bioseed-6488-BG-II, RCH-134-BG-II, MRC-6304 and RCH-134.

The average population of sucking pests in IPM was comparatively less than Non-IPM practices but the damage to the fruiting bodies like square and bolls is significantly more in non-IPM (1.22 & 0.30) where as the population of natural enemies like spider, *Chrysoperla* and Coccinellids was observed higher in IPM fields.

The maximum pheromone traps catch (39.81/traps/week) was found to be of *Spodoptera litura* followed by *Earias* spp. (30.88/traps), while it was found minimum in Pink bollworm (15.34/traps) and the trap catch of *Helicoverpa* (0.58/traps).

The average yield obtained in IPM and non-IPM plots of Bt cotton hybrids was 22.43q and 20 q/ha. The number of sprays applied both in IPM and Non-IPM are 3 and 5 in Bt hybrids but in non-IPM plots the mixture of insecticides was used. Similarly the spot application of some insecticides for the management of mealy bug infested plants reduced the total insecticide quantity up to 75 % than the non IPM plots where the blanket sprays for the management of mealy bug were applied. The total reduction in cost in IPM plots of Bt cotton/ hybrid was Rs 1970. The net profit gained per hectare was Rs.45165 and RS.35905 in IPM and non-IPM plots of hybrids along with C: B ratio of 1: 3.04 and 1: 2.49.

IRM

The IRM strategies were disseminated in 75 villages of Sirsa (30 village), Hisar (15 village) and Fatehabad (30 village) to cover a total of 15658 (fifteen thousand six hundred and fifty eight) hectares area with 3870 farmers. Maximum net profit of rupees 45257, 52584 and 56133 and C: B ratio of IRM farmers were 1:3.05, 1:3.47 and 1:3.52 as compared to non IRM farmers 1: 2.61, 1: 2.93 and 1:2.99 in Sirsa, Hisar and Fatehabad was observed. The net profit per ha of IRM farmers over Non IRM was 7125,9483 and 9145 rupees in respective districts.