

5. Technology Assessed and Transferred

Nagpur

Integrated Nutrient Management

Integrated Nutrient Management (INM) of 60:13:26 kg NPK per hectare with application of 8 kg boron and 10 kg Zn was demonstrated on ten farmer's field. The average seed cotton yield of 1001 kg/ha was registered with INM practice as against farmers practice of 911 kg/ha under rainfed condition.

Intercropping of cotton with soybean

Twelve demonstrations were conducted on inter-cropping of cotton + soybean under rainfed condition in comparison with sole cotton as well as sole soybean. Mean seed cotton yield harvested from cotton + soybean intercrop (947 kg/ha) and sole crop (1017 kg/ha) did not suffer significant loss. However, average yield difference was noticed to 6.84% but additional yield from soybean (445 kg/ha) helped realize higher gross returns with increase in profitability of 14.99% and an average additional benefit of Rs. 6863 per hectare.

Foliar application of DAP and MgSO₄ to control reddening

Eleven demonstrations were conducted with foliar spraying of 2.0 per cent DAP during boll development stage and spraying of 1% MgSO₄ and 1% urea during flowering stage as soon as reddening symptoms appear in the leaves. The foliar application has increased the seed cotton yield up to 1075.27 kg/ha as compared to farmers practice (952.27 kg/ha).

Crop pest surveillance and advisory for cotton in Maharashtra

Crop pest surveillance was carried out in 29 districts of Maharashtra comprising of 75 subdivisions. Under the project IPM strategies have been formulated in advance and circulated among all the stakeholders for further dissemination. Guidance and assistance in monitoring for surveillance and advisory work was provided. Field visits were carried out particularly in area where pests showed heavy infestation and remedial measures were suggested. The team at CICR kept constant watch on online data entry and advisory was issued. During the season low to moderate infestation of leaf hopper was recorded in all the districts, however, heavy infestation was recorded in Aurangabad and Wardha districts. Leaf reddening was severe during 39-46th standard week in the districts Ahmednagar, Akola, Amravati, Aurangabad, Beed, Buldhana, Jalna, Latur, Nagpur, Nanded, Nasik, Parbhani, Wardha and Washim.

NAIP Cotton Value Chain - An innovation for higher economic returns to farmers and allied stake holders

Nagpur

During 2010-11, 33 farmers were adopted in two identified villages, Nandura and Loni from Yavatmal district. With the adoption of cotton production technologies for Bunny Bt grown on 66 acres, total seed cotton yield of 440 quintals was produced and procured by CIRCOT, Mumbai. Higher seed cotton yield (2350 kg/ha) was recorded in closer spacing (75 x 60 cm) followed by INM practices (2165 kg/ha) as compared to farmers' practice (1190 kg/ha). Technology on protective irrigations (two times) with 90 x 60cm spacing produced higher yield of seed cotton (2400 kg/ha).

Coimbatore

Adoption of integrated cotton production technologies of CICR in the last two years and successful implementation of programme of NAIP project established an increase of ELS cotton area from 6 to 140 acres in that selected village. As per the specific objectives of production component of the project, ELS cotton production was executed in a 100 acre of land in the year of 2010-11. The mean yield of 8.96 q/acre was harvested, which was 46.8 and 61.6% higher than base line year (6.1 q/acre) and non project farmers (5.5 q/acre), respectively. However, mean cost of cultivation increased to 70.8% in 2010-11 in comparison to baseline years (Rs 7, 317/acre). The mean average gross return of Rs. 63,616 and net return of Rs. 51,123 were calculated per acre with benefit cost ratio of 5.1 in 2010-11. The baseline survey values had gross return of Rs. 18,220 and net return of Rs. 10,903 per acre with benefit cost ratio of 1.67. The economics revealed that higher of 249 and 61.6 % gross return, 368 and 103 % of net return realized in 2010-11 respectively in comparison to baseline year and non project farmers.

Demonstration of low cost drip irrigation system in cotton

Low cost poly-tubes drip system with polytubes of 150 micron was demonstrated at NAIP Project implemented village. Poly tubes were punctured at single side at regular intervals (60 cm) and placed within the pair (60 cm) of paired rows planted cotton. Poly tubes were laid in such a way that punctured holes face towards bottom side of the earth for water delivery. Poly tube drip system (150 micron) was cheaper by 57.8% in comparison to existing drip system. The demonstration indicated, water saving to the tune of 30-45% and yield increase of 20-40%. The economics of adoption of low cost system found that higher gross return (Rs. 82,147/acre) and net return (Rs 48,812 /acre) realized as compared to conventional method of irrigation, which calculated gross return of Rs.63,190/acre and net return of Rs. 31,955/acre.

Demonstration of multitier cropping system

Multitier vegetable intercropping including radish, vegetable cowpea and coriander with cotton was demonstrated at NAIP project implementation village. RCHB 708 Bt Hybrid cotton was planted at 120 x 60 cm. Two ridges at 60 cm apart were formed making 120 cm. Cotton, radish, vegetable cowpea and coriander were planted on 4 sides of the 2 ridges in sequence. Periodic harvest of intercrops (coriander at 35 DAS, radish at 45 DAS and vegetable cowpea at 75 DAS) resulted in less competition to sole cotton. Demonstration of Multi-tier cropping system, cotton intercropped with radish, vegetable cowpea, coriander realized gross return of Rs. 85,138/ha and net return of Rs. 63,958/ha, whereas sole cotton system registered the gross return of Rs 63,619/ha and net return of Rs, 51,122/ha.

Front line Demonstrations in Cotton

Coimbatore

During the year 2010-11, CICR, Regional Station, Coimbatore conducted seventy five demonstrations on cotton production technology, one unit demonstration on cotton IPM and one unit demonstration on cotton farm implements in the villages

Vazhukkuparai, Meenaktchipuram, Kumarapalayam, Pachapalyam and Chattakalpur of Madukarai block of Coimbatore district. The technologies demonstrated under cotton production technology were improved variety Suraj, Bt cotton hybrids RCH 2Bt, RCH 20Bt and RCH 530Bt BG II, RCH 625Bt and RCH 708Bt with improved package of practices, intercropping with cowpea and green gram, application of bio-fertilizers, pre emergence application of weedicides, management of micronutrient deficiencies, management of mealy bugs and stem weevil and soil test based nutrient management. The demonstration resulted in average yield enhancement of 1951 kg/ha as compared to the local farmers' practices (1464 kg/ha). One unit demonstration on cotton IPM was demonstrated in 50 hectares using the IPM module developed by the institute. Implements like power weeder, roto slasher and rotavator were demonstrated under the component of demonstrations on farm implements.

Sirsa

Fifty front line demonstrations were conducted during 2010-11 in Sirsa. Thirty FLDs were conducted on demonstration of *G. arboreum* varieties CISA-310 & CISA-614. The demonstration recorded average yield 1720 kg/ha (CISA-310) and 1610 kg/ha (CISA-614), whereas, under farmer practice average yield of 1300 kg/ha for CISA-310 and 1310 kg/ha for CISA-614 recorded and which shows 24 and 18% increase in yield achieved by FLD over Farmer practice, respectively. Seed production of hybrid CICR-2 (GMS based intra *arboreum* hybrid) by 16 farmers produced on an average hybrid seeds of 443 kg/ha and income per ha (@Rs. 500/kg) amounts to Rs. 2, 21,500. Seed production of *G. arboreum* varieties CISA-310 & CISA-614 by four farmers gave average yield under FLD is 1131 kg/ha with income (@Rs. 50/kg) of Rs. 56,550/ha.

Impact analysis of IRM strategies

During the year 2010-2011, the IRM strategies were successfully implemented in 15 villages of Gudimangalam Block at Tirupur district. In total 188 farmers from 15 villages

covering an area of 143 ha were covered under the project TMC-MM II-IRM. Implementation of IRM strategies resulted in reduction of number of sprays from 7 to 4 and plant protection cost from Rs.7,248/ha to Rs. 4,483/ha besides an increase in yield from 32.3 to 33.4 q/ha between Non IRM and IRM farmers.

Yield difference and additional financial benefit

Increased yield	1.1 q/ha
Reduction in sprays	3
Reduction in Insecticide usage	1271 g a.i/ ha
Savings on plant protection	Rs. 2765 / ha
Increased profit	Rs. 9056/ ha
Savings by the farmers of IRM village	Rs. 12,91,343/-

Sirsa

Crop Management Practices

An area of around 50 acres was selected in three villages Nejadela, Khurd and Jhonpara with 24 farmers and Bt cotton hybrid Bioseed-6488 BG was planted. The farmers were trained in best management practices like application of fertilizer based on soil test, maintenance of proper plant stand through gap filling from a separately raised nursery of seedlings, training on identification of pests and beneficial pest and need based interventions based at economic threshold levels. Farmers were also trained about the various contaminants and trash and benefits of clean picking at their own fields. The B:C ratio of project farmers was 1.88 compared to 1.19 in case of non project farmers. In terms of quality also the trash content in the lint of project farmers was reduced to 2.4% when compared with non projects farmers at 5%. The procurement of seed cotton and its ginning in TMC approved factory was carried out followed by tagging of individual bales and making of yarn. The process of preparation of finished goods like towels and other apparels is in progress.

