

## 4. TECHNOLOGY ASSESSED AND TRANSFERRED

### Dissemination of Insecticide Resistance Management Programme

#### Nagpur

During crop season 2015-16, the IRM strategies were disseminated to 9849 farmers in 26011.42 acres in a total of 345 villages of 19 districts from 12 different states across India. In IRM fields, farmers sprayed on an average 3.86 sprays/ha as compared to 6.07 sprays/ha over non-IRM fields. Average yield of IRM and non-IRM fields was 16.75 and 15.12 q/ha. Implementation of the programme resulted an increase in yield estimated at a net additional benefit of Rs 6.76 crores and a saving in insecticide use accounting for Rs 1.89 crores, thus adding up to a total additional benefit of Rs 8.65 crores. A total of 984 field visits, 388 group meetings, 25 field days and 126 training programmes were organized for dissemination of the IRM strategies.

#### Sirsa

A total of 1375 acre area was covered for the implementation of IRM strategies in four villages of Sirsa. The weekly data on insect pest and beneficial insects was recorded in villages and used for decision making interventions. Major emphasis was given on the management of resistance in sucking pests against insecticides and bollworms against cry toxins and farmers were encouraged to grow refugia around Bt cotton hybrids. This was followed by collecting information on insecticide consumption and number of sprays. On the basis of 9 observations recorded under IRM field with Bt genotype, the population (per 3 leaves) of whitefly ranged between 16.28-36.28, thrips between 0.00-7.49 and leafhopper ranged between 0.04-2.43 where as in Non-IRM field the population of whitefly, thrips and leafhopper recorded was 28.65-56.2, 0.00-8.10 and 1.05-3.85/3 leaves. The average yields obtained under IRM and Non IRM was 15.10 q/ha and 12.25 q/ha respectively. Reduction in number of sprays applied by IRM farmers was 20.27% recorded over Non IRM and 17.24% reduction in pesticide consumption was recorded.

Under high density planting system, in *G. arboreum*

varieties (normal sown) population of whitefly, thrips and leaf hopper ranged between 1.69 to 27.9; 0.00 to 4.88 and 0.00 to 3.05 and while in HDPS it was 1.14 to 22.3; 0.00 to 5.5 and 0.00 to 2.36 / 3 leaves respectively. The average yield obtained under HDPS in CICR-1 was 7.2 q/acre (5.0-9.2 q/acre), CICR-3 was 9.50 q/acre (7.0-12.50 q/acre). In case of HDPS CICR-3, 8.75- 27.37% increase in yield was recorded over normal sown Bt cotton hybrid whereas under CICR-1, the percent increase in yield obtained was 6.67-20.0 %.

Under Online Pest Monitoring and Advisory Services (NFMS-OPMAS) advisories were issued to 1333 farmers belonging to 9 villages of district Sirsa and Fatehabad. Based on the data recorded for pests and diseases from random and fixed locations the advisory were issued to the farmers through E-Kapas network. The population of sucking pests was less in adopted farmer's fields. Average number of spray applied by adopted farmers was 5.06 to 5.95/ha and by nonparticipatory farmers was 6.46 to 6.91/ha. The yield obtained in adopted farmers fields (1527 and 1641 kg/ha in Sirsa and Fatehabad) was higher than non participatory farmers field (1340 and 1410 kg/ha in Sirsa and Fatehabad).

#### Coimbatore

Tamil Nadu : IRM strategies were successfully disseminated in eight districts of Tamilnadu namely Virudhunagar, Coimbatore, Vellore, Erode, Dharmapuri, Tirunelveli, Perambalur and Madurai districts covering 2000 acres and were successfully adopted by 667 farmers. Impact analysis of the dissemination of IRM strategies in these districts indicated an average number of sprays of 2.6 in IRM farmers fields when compared 4.6 in Non-IRM farmers' fields. A gross income of Rs. 75,500 and Rs. 70,166 and a net profit of Rs 51,525 and Rs. 38,026 plant protection cost of Rs. 3,270 and Rs. 7,508 in IRM and Non-IRM fields was recorded respectively. Extension programmes such as field visits, training programmes and farmer group meetings enhanced the farmer's knowledge about the cotton pests, symptoms, natural enemies and the IRM strategies of pest management. Overall progress of the project was satisfactory and adop-

tion of the technologies by the farmers was encouraging. Knowledge about the pests of cotton, their symptom, and the natural enemies are the additional gain by the farmers apart from the economic advantage by adopting IRM strategies under HDPS.

### Front Line Demonstrations (FLDs)

#### Integrated Cotton Management

##### Nagpur

Sixty five FLDs on interventions of Integrated Cotton Management (ICM) (41), *Desi* Cotton (15) and intercropping (9) on farmers field in villages, Shivanfad, Pipri, Khandala, Ashta, Girad, Govindpur in Samudrapur and Vijaygopal in Deoli tehsils of Wardha district and Navarmati in Nagpur tehsil of Nagpur district. The ICM technologies included integrated nutrient management in cotton, control of leaf reddening by foliar application of DAP and  $MgSO_4$ , plant protection and weed management. *Desi* varieties included Phule Dhanwantary and Roja while in cotton

intercropping, Suraj was intercropped with soybean, green gram and black gram. The seeds of Suraj, Phule Dhanwantary and Roja along with the package of practices was provided to farmers. The data on yields of FLD interventions and farmers practices was recorded. Average productivity of 718 kg/ha was recorded in ICM as compared to the farmers practice of 682 kg/ha. In *desi* cotton FLD's productivity of 1013 kg/ha was recorded as against the farmers practice of 809 kg/ha. With intercropping system, productivity of cotton was 910 kg/ha with additional yield of intercrop (177 kg/ha) as compared to sole cotton of farmers practice 875 kg/ha. Thus, additional profit of Rs 8434/ha was recorded under cotton intercropping technology compared to sole cotton.

##### Coimbatore

Under winter irrigated condition, 25 demonstrations on cotton ICM were conducted on 10 hectares area in twenty five farmers' fields of Erode district. The technologies *viz.*, improved variety Suraj, Integrated Weed Management, Integrated Nutrient



Management and Integrated Pest Management, application of growth regulators and soil test based fertilizer recommendation were demonstrated. The average seed cotton yield obtained in FLD on ICM was 1235 kg/ha as against the farmers' practice yield of 1094 kg/ha.



### HDPS Planter

#### Coimbatore

High Density planting system in cotton for rainfed crop was demonstrated under National Food Security Mission (NFSM) sponsored Front Line Demonstration (FLD) programme by Central Institute for Cotton Research, Regional Station, Coimbatore with the collaboration of MYRADA, Krishi Vigyan Kendra (KVK) at Anthiyur, Gopichettipalayam taluk, Erode district on 10<sup>th</sup> September 2015. The farmers gathering was addressed by Dr. (Mrs.) B. Dhara Jothi, Principal



Scientist about the High Density planting System in cotton and its advantages over normal cotton planting system. She also spoke on effective pest management strategies to be followed for the management of cotton pests. Dr. K. Sanakarnarayanan, Principal Scientist, briefed about the effective fertilizer usage under High Density Planting System and the methods to be followed for the sustainable cotton production. Dr. T. Senthil Kumar, Senior Scientist, Central Institute of Agricultural Engineering, Coimbatore explained about the mechanization methods developed for sowing, weeding and for other cultural operations for cotton under HDPS. Non- Bt cotton seeds as input were distributed to the farmers and a field demonstration was conducted by sowing cotton using tractor drawn mechanical device.

### On Farm Demonstrations

#### Coimbatore

During the year 2015-16, a total of ten varieties, one production technology on multi tier cropping system and one protection technology of application of bio-pesticides for management of sucking pests were assessed and demonstrated in the institute farm at CICR, Regional Station, Coimbatore. The varieties demonstrated were Suvin, LRA 5166, MCU 5 VT, Supriya, Anjali, Surabhi, Sumangala, Suraj, CCH 2623 and CCH 4474. The bio-pesticides demonstrated were *Metarhizium anisopliae* and *Lecanicillium lecanii* for the management of sucking pests in cotton. Under the multitier cropping system along with cotton, vegetable crops viz., beetroot, radish, coriander and cluster bean were demonstrated.

