

FRONT LINE DEMONSTRATION IN COTTON

ANNUAL REPORT (2001-02)
All India Coordinated Cotton Improvement Project
Coimbatore-641 003

Published by:

Project Coordinator (Cotton) & Head
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FOREWORD

Front Line Demonstrations (FLDs) were conducted during 2001-02 Kharif season in fifteen centres to transfer the path-breaking, significant technologies, developed by the centres of the All India Coordinated Cotton Improvement Project as well as the Central Institute for Cotton Research, in order to appraise their practical utility in efficient cotton production by the farmers of the ten cotton growing states. The significance of these 800 FLDs at an outlay of Rs. 39 lakhs is to enable cotton growers of the country to produce good quality cotton fibre.

Location specific efficient techniques to reduce cost of cultivation and sustained production of seed cotton through adoption of newer high yielding varieties and hybrids, suitable management of nutrients, weeds, pests and diseases have been included as themes of these FLDs. They also generated good interest in the extension functionaries of the State Agricultural Departments who could transfer such knowledge to larger profile of cotton growers in various districts.

The Annual Report of 2001-02 presents the various production technology demonstration activities as well as success stories of benefits reaped by farmers by whole-hearted adoption of various techniques to improve fibre production. The programme also organized Krishi Melas at various centers to ventilate these success stories to larger sections of cotton growers of the region. These FLDs have indeed created good impressions in the cotton growers of respective zones to practice the demonstrated techniques with zeal.

**Director,
CICR, Nagpur.**

ACKNOWLEDGEMENTS

It is gratifying to note that the fifteen centres of AICCIP could successfully conduct 800 Front Line Demonstrations during 2001-02. I, on behalf of the Department of Agriculture and cooperation and ICAR, place on record appreciation to the scientists of fifteen centres for wholeheartedly cooperating to achieve the desired objectives. Most deserving are those 800 farmers who participated in this programme to demonstrate various new techniques to produce good quality cotton in a sustainable and cost-effective manner to the villagers of three cotton-growing zones.

I acknowledge the funding for this programme provided by Dr. C.R. Hazra, Agricultural Commissioner, Government of India for his thoughtful planning and involvement of this programme. Thanks are also due to Additional Commissioner of Agriculture (Cotton), Deputy Commissioner of Agriculture (Cotton) as well as Director, Directorate of Cotton Development, Mumbai for their unstinted support. The Assistant Director General (Commercial Crops), ICAR and Director of Central Institute for Cotton Research, Nagpur offered their help to manage this programme successfully. The Departments of Agriculture of the various states in which this programme conducted co-operated well to make it successful. Their officials involved deeply in the programme and liaison with farmers and scientists.

It is significant to acknowledge the appreciation and gratitude to various scientists of CICR, Regional Station, Coimbatore, Viz., Ms. Usha Rani, Mr. A. Kannan, Dr. P. Chidambaram, Dr. N. Gopalakrishnan and many others. The successful management of this programme was possible due to the services of Shri. V. Rathanasabapathy and Smt. Lakshmi Krishnamurthy and Smt. Leelavathy Kannan others in PC's office.

***Project Co-ordinator (Cotton Improvement)
CICR, Regional Station, Coimbatore***

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FRONT LINE DEMONSTRATION IN COTTON 2001 – 2002

INTRODUCTION

The biological scientists as well as social scientists are working together at National level for the development of number of technologies on cotton cultivation. However, the technology spread and management and adoption are very poor. Hence, conducting demonstrations will improve confidence and adoption of technologies by the farmers. Therefore, the Front Line Demonstration (FLD) is being conducted since 1995 with AICCIP as nodal agency. The demonstrations conducted by the scientists themselves in the farmer's fields enable to get first hand information about the farming situations. Hence the problems prevailing in the farmers' fields could be identified easily by the scientists for which solutions would be given then and there.

OBJECTIVES

- ✓ To demonstrate the usefulness of the latest improved crop production and protection technologies to the farmers as well as extension workers with a view to reduce the time gap between technology generation and its adoption.
- ✓ To enable scientists obtain direct feed back from cotton farmers and suitably reorient their research programmes and develop appropriate technology packages.
- ✓ To create effective linkage among Scientists, Extension Personnel and Farmers.

NODAL AGENCY

The All India Coordinated Cotton Improvement Project (AICCIP) acts as the Nodal Agency for conducting the cotton Front Line Demonstration programme in the country. The Project Coordinator (Cotton) coordinates and monitors the implementation of the FLD Programme with Headquarters at the Central Institute for Cotton Research, Regional Station, Coimbatore. The FLDs are organized through fourteen centres of the AICCIP network spread over ten cotton-growing states. Besides, C.I.C.R, Nagpur also participated actively in the programme.

FINANCIAL OUTLAY

The Ministry of Agriculture and Cooperation, Government of India have sanctioned Rs. 39 lakhs for organizing 800 Front Line Demonstrations in all the cotton growing states of the country during the cropping season of 2001-2002.

LINKAGES WITH EXTENSION OFFICIALS

The **FLDs** offer a good opportunity for closer interaction between Scientists of different disciplines and the extension officials of cotton growing states. The coordinating centres organize *Krishi Melas* during the cropping season for highlighting the major achievements, packages of practices and newer technologies ready for transfer to farmers' fields. This has

facilitated better feedback from the farmers to the scientists.

DETAILS OF DEMONSTRATION

Each demonstration is held in an area of 1 ha. The farmers involved in this programme are provided with a subsidy of Rs. 2,500/- per demonstration towards purchase of inputs required for effective implementation of the technologies. Such selected farmers serve as 'Lead Farmers' and guide other farmers in the neighbouring areas for quicker adoption of the improved technologies.

The participating centres have the mandate to conduct one or two KrishiMelas at selected demonstration fields to enable the farming community to have first hand experience of the new technology working under field conditions. An amount of Rs. 400/- per demonstration has been allotted for arranging KrishiMelas. An amount of Rs. 700/- per demonstration has been provided for P.O.L. charges for effective monitoring of demonstrations in the organising centres. An amount of Rs. 675/- and Rs. 450/- per demonstration for TA and Printing & Stationary charges respectively have also been allotted (Table 1).

Table 1: Details of Front Line Demonstrations (Centre - wise breakup figures) for the year 2001 - 2002

CENTRE	No. of demonstrations	Area (ha)	Grant for Demo @ Rs.2500 per dem	Funds for <i>Krishi Mela</i> @Rs. 400 per demn.	POL charges @Rs. 700 per demn.	T.A.@ Rs.675 per demn.	Ptg.** @Rs. 450 per demn.	TOTAL (Rs.)
North Zone								
PAU, Ludhiana	60	60	1,50,000	24,000	42,000	40,500	27,000	2,83,500
HAU, Hisar	60	60	1,50,000	24,000	42,000	40,500	27,000	2,83,500
RAU, Sriganaganagar	40	40	1,00,000	16,000	28,000	27,000	18,000	1,89,000
UAU, Banswara	15	15	37,500	6,000	10,500	10,125	6,750	70,875
CSAUAT, Mathura	10	10	25,000	4,000	7,000	6,750	4,500	47,250

CENTRE	No. of demonstrations	Area (ha)	Grant for Demo @ Rs.2500 per demn.	Funds for <i>Krishi Mela</i> @ Rs.400 per demn.	POL charges @ Rs. 700 per demn	T.A.@ Rs.675 Per demn.	Ptg. ** @Rs.450 per demn.	TOTAL (Rs.)
Central Zone								
GAU, Surat	100	100	2,50,000	40,000	70,000	67,500	45,000	4,72,500
JNKVV, Khandwa	50	50	1,25,000	20,000	35,000	33,750	22,500	2,36,250
PDKV, Akola	50	50	1,25,000	20,000	35,000	33,750	22,500	2,36,250
MAU, Nanded	50	50	1,25,000	20,000	35,000	33,750	22,500	2,36,250
MPKV, Rahuri	50	50	1,25,000	20,000	35,000	33,750	22,500	2,36,250
OUAT, Bhavanipatna	25	25	62,500	10,000	17,500	16,875	11,250	1,18,125
CICR, Nagpur	50	50	1,25,000	20,000	35,000	33,750	22,500	2,36,250
South Zone								
ANGRAU, Guntur	100	100	2,50,000	40,000	70,000	67,500	45,000	4,72,500
UAS, Dharwad	100	100	2,50,000	40,000	70,000	67,500	45,000	4,72,500
TNAU, Coimbatore	40	40	1,00,000	16,000	28,000	27,000	18,000	1,89,000

Total	800	800	20,00,000	3,20,000	5,60,000	5,40,000	3,60,000	37,80,000
PC Cell						50,000	70,000	1,20,000
Grand Total	800	800	20,00,000	3,20,000	5,60,000	5,90,000	4,30,000	39,00,000

* POL charges include Hire, Repair of vehicles & purchase of spare parts besides cost of fuel.

** Printing includes cost of Stationary, actual printing charges and other miscellaneous expenditure.

The centre wise details of the technologies taken up for demonstrations are given in Table 2.

Table 2: Technologies demonstrated under FLD during 2001-2002

Centre	No. of FLD trials conducted	Achievements
NORTH ZONE		
PAD, Ludhiana	60	1. Demonstration for popularization of Improved varieties / hybrids - F 846, F 1378, LH 1556, LD 491, ID 694 2. Weed control. 3. Maintenance of plant population 4. Balanced Nutrition 5. Integrated Pest Management (IPM) 6. Disease management
HAU, Hisar	60	1. Varietal demonstration of HD 107, HD 123, RG8 (<i>arboreum</i>), HS 6, H 1098, H 777 and H 1117; new genotypes like Dhawal 2, Sandcot, H 1226, HHH 81. 2. Yield maximization technologies like Plant density, DAP application and thinning, Integrated Nutrient Management (INM), IPM and Integrated Disease Management (IDM)
RAU, Sriganaganagar	40	1. Varietal demonstration of RS 810, RS 875, RS 2013 and RST 9 2. INM
MPUAT, Banswara	15	1. IPM technology on H-8
CENTRAL ZONE		
GAU, Surat	100	1. Varietal demonstrations on G.Cot Hy.8, G.Cot.Hy.10, G.Cot.Hy.23, G.Cot.Hy.19, G.Cot.Hy.18, G.Cot. Hy.21 and Shankar 10. 2. Improved agronomical practices. 3. IPM
JNKVV, Khandwa	50	1. Varietal demonstrations on improved varieties and hybrids. 2. IPM
PDKV, Akola	50	1. Popularization of varieties / hybrids like PKV Hy.5, PKV.Hy.4
MAU,Nanded	50	1. Demonstration on intercropping of Urd in rainfed cotton. 2. Plant population / plant geometry in cotton with IPM. 3. Soil moisture conservation techniques. 4. Spraying of DAP. 5. Time and method of basal dose of fertilizer application. 6. Spraying of MgSO ₄ / ZnSO ₄ on rainfed cotton, evaluation of yield potential of cotton varieties / hybrids PA 183 and NHH 44.

MPKV, Rahuri	50	<ol style="list-style-type: none"> 1. Demonstration on intercropping of summer groundnut in cotton. 2. Intercropping of cotton in sugarcane ratoon crop. 3. Yield potential of released varieties / hybrids Phule 492, NHS 44 and RHB 388. 4. Yield maximization practices. 5. Integrated Weed Management (IWM) 6. Growing of cotton after harvest of sugarcane without preparatory tillage. 7. Relay cropping of cotton. 8. IPM
OUAT, Bhawanipatna	25	<ol style="list-style-type: none"> 1. Popularization of new hybrids 2. INM
CICR, Nagpur	50	<ol style="list-style-type: none"> 1. Seed production of cotton. 2. Balanced crop nutrition. 3. Residue management including vermi composting and trench composting
SOUTH ZONE		
ANGRAU, Guntur	100	<ol style="list-style-type: none"> 1. Popularization of varieties / hybrids LAHH 4, Narasimha and Arvinda; Pre released culture MDL 1875, NA 1588, NA 1325, NA 1678. 2. Seed village concept 3. IPM
UAS, Dharwad	100	<ol style="list-style-type: none"> 1. Popularization of hybrids / varieties. 2. IPM. 3. Leaf reddening management in cotton. 4. Spraying of growth regulator NAA in cotton 5. Intercropping in cotton. 7. Allocate furrow irrigation 8. Fertilizer management
TNAU, Coimbatore	40	<ol style="list-style-type: none"> 1. Popularization of varieties / hybrids Viz., MCU 12, TCHB 213

HIGHLIGHTS OF FRONT LINE DEMONSTRATIONS

The detailed centre-wise report on participating farmers and the results of individual demonstrations are reported in **Annexure-I**. The salient features of the results of FLD conducted in each centre are discussed below.

NORTH ZONE

Sixty demonstrations each were allotted to PAU, Ludhiana and CCS Haryana Agricultural University, Hisar while RAU, Sriganaganagar was allotted 40 demonstrations and MPUAT, Banswara with 15 demonstrations.

PAU, Ludhiana

Season and Crop Production

The weather conditions during the sowing period and early period of crop were quite favourable. Due to rainfall during the sowing period, the seed germination was affected and due to the early appearance of *Heliothis*, yield was drastically reduced in some area.

During the year 2001-2002 the PAU, Ludhiana conducted 59 demonstrations. The technologies demonstrated were popularization of improved varieties / hybrids F 846, F 1378, LH 1556, LD 327, LD 694, weed control, maintenance of optimum plant population, Disease Management and IPM. Demonstrations on improved variety LH 1556 with recommended package of practices has yielded the highest yield of 2120 Kg/ha.

Extension Activities

The centre has conducted seven Kisan Melas, one cotton field day, two exhibitions and four training lectures during this year.

HAU, Hisar

Season and Crop Production

Due to high rainfall, low temperature and high humidity prevailed at fruiting and flowering stages of the crop the pest incidence was more during this year in Haryana. This resulted in poor seed cotton yield.

A total of sixty demonstrations were conducted on improved varieties / hybrids, Yield maximization, IPNM, IPM and Disease Management.

Thirteen varietal trials have been laid out on Arboreum cotton against farmers' practices. In those trials seed cotton yield varied from 300-3010 kg/ha of recommended new genotypes against 125-1350 kg/ha of farmers' practices.

Seventeen varietal demonstrations have been laid out during this crop season on new genotypes Dhawal2, Sand cot, H 1226, H 1224, H 1117, H 1098, H 1556 and HHH 81 against local check. Seed cotton yield of recommended genotypes was 150-1900 Kg/ha against local check 110-1275 kg/ha.

Ten demonstrations on yield maximization were carried out with recommended packages like DAP application, thinning and recommended spacing along with farmer's practice. On an average the seed cotton yield obtained was 725 kg/ha, which was 57% higher than the yield obtained by farmer's practice.

Ten demonstrations on INM were conducted during the crop season. On an average 992 kg/ha seed cotton yield was obtained which was 48% higher than the yield obtained by farmers' practice (472 kg/ha).

Five demonstrations on IPM have been laid out. The highest seed cotton yield 1350 kg/has was obtained in the trail where specific pesticides, good quality seed, wider spacing and Use of DAP application were followed. It was 25% higher than the yield obtained from the farmer's practices.

Five demonstrations on Disease Management were conducted. The seed treatment on fungicides and cultural practices were projected in demonstration. The highest seed cotton yield (1650 kg/ha) was obtained in FLD plot where application of FYM along with deep ploughing was followed. It was 64 % higher than the yield obtained by farmer's practices.

Extension Activities

S.No.	Particulars	Place	Date	No. of farmers attended
1.	Kapas Gyan Diwas	Darbi	14.03.2001	70
2.	Kapas Gyan Diwas	Sherpura	17.03.2001	40
3.	Kapas Gyan Diwas	Bawan	21.03.2001	110
4.	Field day	Gigorani	18.03.2001	85
5.	Kapas Gyan Diwas	Odan	26.03.2001	150
6.	Kapas Gyan Diwas	Sukhchain	27.03.2001	90
7.	Kapas Gyan Diwas	Farwainkalan	27.03.2001	120
8.	Kapas Gyan Diwas	Umedpura	28.03.2001	50

RAU, Sriganganagar

Season and crop production

Rains occurred during sowing time hampered the germination of cotton. The intermittent rains and cloudy weather persist during vegetative growth of cotton favoured the multiplication of pests in general and Jassids and Boll worms in particular. Forty-four FLDs were conducted during Kharif season of 2001 on different farmers' fields of Sriganganagar and Hanumangarh districts. Varieties RS 810, RS 875, RS 2013 and RST 9 were implemented in the demonstration fields with improved package of practices against B.Nerma, F 846 with local package of practices. The improved package of practices on an average recorded 38.4% higher yield than the yield obtained by local package of practices. The newly developed CLCV resistant varieties RS 810 and RS 2013 have shown better performance than others in cotton FLD programme.

Extension Activities

S.No.	Particulars	Place	Date
1.	Cotton day	12 Z	11.08.2001
2.	Field day	12 Z, Sriganganagar	21.09.2001

MPUAT, Banswara

During the year 2001-02, out of 15 FLDs allotted to the centre 11 FLDs were conducted on varietal performance on hybrid H-8 over H-6. In IPM demonstrated plots the highest and lowest seed cotton yield obtain were 2180 Kg/ha and 1020 Kg/ha respectively. An average 4.11% increase in yield was observed in IPM demonstration plots as against control plot. The demonstrations for yield potential of cotton Hybrid H-8 has recorded 2400 Kg seed cotton /ha as against 2200 Kg/ha by H-6.

Extension Activities:

A field day on 10th October 2001 was conducted in the village LALPURA. Total of 200 farmers participated in the field day. Farmers Training programme were conducted at ARS,

Banswara.

CENTRAL ZONE

A total of 375 demonstrations were conducted at different centres of Central Zone with 100 demonstrations allotted to GAU, Surat, 50 each to JNKVV, Khandwa, PDKV, Akola, MAU, Nanded, MPKV, Rahuri and CICR, Nagpur and 25 demonstrations to OUAT, Bhawanipatna.

GAU, Surat

During 2001-02, a total of 99 demonstrations were conducted by Gujarat Agricultural University, Surat in four cotton-growing zones of Gujarat. Twenty percent yield increase was observed in G.Cot.Hy-10.

Centre-wise implementation of FLDs in Gujarat during 2001-02

Centre	No. of FLD allotted					Successful
	Variety	Varietal	Agronomical	IPM	Total	
GAU, Bharuch	G.Cot 23	20	-	-	20	20
	G.Cot.10	-	03	02	05	05
GAU, Surat	G.Cot Hy.10	-	02	-	02	02
	G.Cot.Hy.8	-	03	-	03	03
GAU, Hansot	G.Cot Hy.10	-	-	03	03	03
GAU, Devgadhabaria	G.Cot. 23	03	-	-	03	03
GAU, Khedorahma	G.Cot Hy.10	-	03	-	03	03
	G.Cot. 23	-	01	-	01	01
GAU, Viramgam	G.Cot 21	10	-	-	10	08
GAU, Arnej	G.Cot. 21	10	-	-	10	08
GAU, Dhandhuka	G.Cot. 21	05	-	-	05	05
GAU, Junagadh	G.Cot. 18	07	-	-	07	06
GAU, Amreli	G.Cot.Hy.10	-	05	-	05	04
	G.Cot.Hy.19	05	-	-	05	03
KVK (ICAR), Mundra	G.Cot.Hy.10	02	-	-	02	01
Gramya Shilpi, Bhuj	G.Cot. 21	10	-	-	10	08
	G.Cot.HY.10	05	-	-	05	03
	Total	77	17	05	99	86

Details of Field days / Khedut Shibir etc.during 2001-02

S.No.	Place	Date	Variety/Hybrid	No. of farmers attended
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1.	At : Kajawas, Ta: Khedbrahma, Dist. Sabarkantha	07.12.2002	G.Cot. Hy.10	About 350
2.	At : Mota, Hadmatia, Ta: Visavadar Dist. Junagadh	08.01.2002	G.Cot.18	About 100
3.	At: Rampur (Sardar Nagar), Dist. Kutch	23.01.2002	G.Cot.21	About 150
4.	At: Keshu Ta: Amod, Dist. Bharuch	29.01.2002	G.Cot.23	About 200
5.	At : Ranipara, Ta: Devgadbaria, Dist. Panchamahlal	20.11.2001	G.Cot. 23	31
6	At: Chandranagar, Ta:Ghoghameba, Dist. Panchamahlal	06.12.2001	G.Cot.23	28
7	At : Arnej, Ta: Dholka, Dist. Ahmedabad	17.09.2001	G.Cot.21	18
8	At : Jinger, Ta: Dhandhuka, Dist. Ahmedabad	18.01.2002	G.Cot.21	28
9	At : Anandpura, Ta : Dholka, Dist. Ahmedabad	12.02.2001	G.Cot. 21	22

JNKVV, Khandwa

During the year 2001-02, the Centre in Madhya Pradesh carried out 50 FLDs. For timely and balanced nutrient application, 28 demonstrations were laid out with the recommendation of 150:60:40 kg NPK/ha. The application of Nitrogen in six splits, Phosphorus and Potash in two splits were demonstrated. Placement of fertilizer was done by column method. To adjudge the performance of improved hirsutum hybrid H 8 under limited irrigations, 22 FLDs were laid out at Singot village. The improved hirsutum hybrid H.8 performed better with improved production technologies over farmers' practice and recorded 25% more seed cotton yield over control plots.

Extension activity

A Kisan Diwas was organized at Siltiya village of Pandhana block on 14.03.2002.

PDKV, Akola

During 2001-02, 50 Front Line Demonstrations were conducted on popularization of released/pre-released cotton hybrids in six cotton growing districts of Vidarbha region under rainfed condition.

A total of 18 demonstrations were conducted on newly released *G.hirsutum* hybrid PKV Hy.4 with improved crop production technology. This resulted in 29 per cent overall increased seed cotton yield over farmers' practices with **NHH 44**, **Ankur** and other hybrids, respectively. The new hybrid helped in enhancing the yield potential by 29 per cent as against farmers' practices.

Thirty two demonstrations were laid out on comparative yield performance of pre-released cotton hybrid PKV Hy.5 with other hybrids. The new hybrid showed an overall 13.4 per cent higher seed cotton yield than **NHH 44**, **Ankur**, **Mahabeej 2** and other hybrids respectively.

Extension Activities

One Krishi Mela was organized at Akola during 18 - 20th October, 2001.

MAU, Nanded

During 2001-02, 50 FLDs were conducted throughout Marathwada region. A total of 30 demonstrations were conducted on improved agronomic management practices using popular cotton hybrid, NHH 44. Among them, 5 FLDs on intercropping of Black gram in rainfed cotton was conducted. Results indicated that additional monetary returns could be obtained ranging from Rs.1 080/- to Rs.2400/- per ha without any yield loss in cotton. Five FLDs on recommended plant population were conducted. Results confirmed that the increased seed cotton yield of 27% was obtained due to optimum plant population of 27,777 pt./ha (60 x 60 cm) over farmers' practice of 90 x 90 cm (12,345 pt/ha).

Five demonstrations were laid out to demonstrate soil moisture conservation technique of opening ridges and furrows at each hoeing and earthing up, supplemented with tying of ridges at an interval of 6-8 meters across the slope at the time of last hoeing. It resulted in obtaining 34.53% high yield over normal hoeing practice. Five FLDs were conducted on spraying of 2% DAP at 75 and 90 DAS, which, resulted on 11 % yield increase.

Five FLDs were conducted to demonstrate the benefit of fertilizer application at the time of sowing. The results clearly indicated the usefulness of applying basal dose of fertilizers at the time of sowing through ring method with an average yield increase of 34.98% over late application of basal dose. Five FLDs conducted on spraying of MgSO₄ @ 0.2% at 45 and 75 DAS resulted in meager increase of seed cotton yield of 0.33% over control.

Twenty FLDs conducted on new cotton variety PA-183 revealed 18.38% increased seed cotton yield over the hybrid NHH 44.

Extension Activities

A Krishi Mela was organized at village Kolambi Tq, Naigaon District, Nanded on 9.3.2002. About 500 farmers were benefited during interaction in the meeting.

MPKV, Rahuri

During 2001-02, MPKV, Rahuri centre conducted a total of 50 FLDs in Ahmed Nagar and Dhule Districts. Four demonstrations on intercropping of summer Groundnut in cotton were conducted in Ahmed Nagar. The farmers obtained 13 q/ha of seed cotton and 12 q/ha of Groundnut dry pod yield with an additional income of Rs. 30,000/-.

One demonstration on intercropping of cotton (NHH 44) in Sugarcane ratoon crop (Co-740) was conducted in Ahmed Nagar. The farmers harvested about 5q of seed cotton and 65 MT of Sugarcane from ratoon crop. Two demonstrations on yield potential of *G.hirsutum* hybrids viz., NHH 44, Phule 492 and RHB 388 (h x b) were conducted. All recommended agronomic and plant protection practices were followed to raise normal crop stand. The seed cotton yield of 19.40 q/ha was obtained from Phule 492, whereas 18.40 q/ha and 17.10 q/ha were obtained from the hybrids RHB 388 and NHH 44 respectively.

Seven demonstrations on yield maximization of Hybrid NHH 44 were conducted. Farmers harvested 4 q/ha of more seed cotton when compared to farmers' practice.

Six demonstrations on Integrated Weed Management (IWM) in cotton were conducted. The recommendation of Basalin @ 1.5 kg a.i/ha as pre emergence spray to control the weeds was suggested. The farmers got about 3 q/ha more seed cotton yield as compared to the farmers' practices.

Six demonstrations on Organic farming with combined use of various sources of nutrients such as inorganic, organic (FYM, Compost, Green manure crop, etc.) and Bio-fertilizers were conducted. Daincha was sown simultaneously with cotton on opposite side of ridge and was cut and buried after 45 days. The cotton crop was fertilized with recommended dose of NPK. Available FYM/compost was also applied to the cotton crop. The results of demonstrations showed no difference in seed cotton yield due to organic farming as compared to farmers' practice.

Three demonstrations on growing of cotton after harvest of sugarcane without preparatory tillage were conducted. The seed cotton yield obtained was about 19 q/ha.

Two demonstrations on relay cropping of cotton were conducted in Ahmed Nagar District. Before harvest of onion crop, the cotton seed is dibbled in the onion crop field as per recommendation. The results of demonstration showed that satisfactory yield was obtained from both the crops.

Six demonstrations were conducted on IPM in cotton. The Pheromone traps were used. Two spraying of Heliokil and Endosulfan alternately, growing of maize crop at border as a trap crop for sucking pests, etc., were adopted. Results of demonstration showed that an additional yield of 9 % was obtained by following IPM modules.

Under rainfed conditions, two demonstrations on IWM, two demonstrations on intercropping in cotton, two demonstrations on varietal performance of hybrids, three demonstrations on IPM and four demonstrations on INM were conducted. From all the demonstrations, the farmers obtained more seed cotton yield as compared to their own practices.

OUAT, Bhawanipatna

During the year 2001-02, the centre has conducted 25 demonstrations on improved cotton varieties / hybrids with IPM. Adoption of IPM technology resulted in better yield than the previous year in which drastic use of chemical pesticides affected the crop and resulted in lower yield. On an average 40% increase in yield was realized during the year due to IPM demonstrations.

CICR, Nagpur

During 2001-02, Central Institute for Cotton Research, Nagpur conducted a total of 50 demonstrations. The technologies demonstrated were use of short duration variety Anjali, use of biofertiliser, Azotobacter, spot application of DAP and Potash @ 7.5 cm. depth & soil cover, use of Vermicompost and IPM strategies. On an average, 5 - 6 q/ha. seed cotton yield with Rs.1 000-3000 more net return was obtained by following C.I.C.R recommendation as against farmers' practice.

Extension Activities

One *Krishi Mela* was organized at Central Institute for Cotton Research, Nagpur on 2nd December 2001 along with *Rashtriya Kapas Mela*. More than 100 farmers from nearby villages participated.

SOUTH ZONE

Hundred demonstrations each were allotted to ANGRAU, Guntur, UAS, Dharwad and 40 demonstrations to TNAU, Coimbatore.

ANGRAU, Guntur

A total of 100 FLDs were conducted during 2001-02 in Andhra Pradesh. Fifty five FLDs with LAHH 4 hybrid resulted in obtaining an average yield of 23.6 q/ha with a saving of Rs.2,625/- in the investment cost. Seven demonstrations with Narasimha were conducted with IPM technology. The FLD farmers sprayed 13 times on an average against 22 sprayings by non-FLD farmers, incurring Rs. 6,835/- on plant protection against Rs. 14,100/- per ha. by non-FLD farmers. Eight demonstrations with Aravinda resulted in an average yield of 9.96 q/ha as against 7.6 q/ha by control plot.

Extension Activities

S.No.	Particulars	Place	Date	Farmers
1.	Training Programme on identification of sucking pests and their natural enemies	Chinamakkena	12.09.2001	-
2.	Training Programme on use of Pheromone traps	Chinamakkena	28.10.2001	-
3.	Training Programme on pink bollworm damage in cotton and means to overcome the damage	Chinamakkena	23.02.2002	-
4.	<i>Krishi Mela</i>	Thimmapuram	05.01.2002	350
5.	Training Programme on IPM in cotton	Balapamuru	09.09.2001, 29.09.2001 & 22.02.2002	
6.	<i>Kisan Mela</i>	Vizapur	22.02.2002	
7.	<i>Kisan Mela</i>	Wadaqaon	27.02.2002	

UAS, Dharwad

A total of 100 Front Line Demonstrations were conducted with newer hybrids/ varieties viz., DHH-11, DHB-290, DHB-105, DHH-543 and Sahana. The increase in the seed cotton yield ranged from 5.8 to 10.36 per cent in these demonstrations. Inter cropping of green gram, groundnut in cotton proved to be much profitable compared to sole cropping. Increase in seed cotton yield to an extent of 6.78 per cent was achieved with foliar application of NAA during the reproductive phase of cropping season. The adoption of IPM technology resulted in 43.08 per

cent yield increase over farmers' practice in addition to the reduction of cost of plant protection of about Rs. 660/-.

A total of 10 FLDs with LAHH 4 hybrid were organized by Agricultural Research Station, Adilabad. The trials resulted in obtaining an average yield of 13.89 q/ha as against 12.42 q/ha by control. Ten demonstrations with Narasimha NA 1678 and NA 1588 integrating with IPM technology and seed village programmes had been organized by Agricultural Research Station, Madhira. As a result, the IPM farmers obtained an average yield of 17.25 q/ha by spending Rs.21, 484/- on cultivation as against 20.5 q/ha obtained by non FLD farmers with higher investment of Rs.27, 539/-.

Extension activities

The importance of IPM at present situations of high cost of plant protection and resistance problem was convinced to a gathering of 40 farmers participated in field day celebration in the field of Siddaramayyaswamy at Harlignur on 4th February 2002. Similarly the exact requirement of fertilizer for extended period of cotton growth in TBP was made known to cotton cultivators around Hirehal who witnessed successful demonstration in the field of Veeraraghaval organised on 7th February, 2002 attended by 35 farmers.

TNAU, Coimbatore

During the year 2001-02, the centre has conducted 15 demonstrations to popularize the newly released varieties / hybrids MCU 12 and TCHB 213. The newly released cotton variety MCU-12 has given the highest yield of 1289 Kg seed cotton yield/ha as against 1043 Kg/ha by local variety. The cotton hybrid TCHB-213 has yielded 1400 Kg seed cotton yield/ha over the hybrid (1154 Kg/ha), which was 26% increase in yield over the local hybrid. The ARS Kovilpatti conducted 5 demonstrations on cotton varieties KC-2 and K-11. All the production technologies viz, summer plough, sowing in line, application of recommended dose of fertilizers, timely weeding, IPM were super imposed on the varietal demonstration.

Extension Activities

One *Krishi Mela* was conducted at Kumaragiri village on 30.3.2001, about 75 farmers were actively participated on that function.

SUCCESS STORIES

MUPUT, Banswara

1. An experiment of Integrated Pest Management (IPM) in cotton was first time conducted in village Bhaidapada. Cotton cultivator was reluctant about reducing the number of sprays. They were having much faith on chemical insecticide and higher number of sprays. They were rather annoyed that the crop might be failed due to decrease in number of sprays. Surprisingly during last year the incidence of bollworms was much higher. The IPM farmers were relaxed to see the infestation in their cotton fields was low in comparison to nearby fields. Thus the FLD farmers and other villagers understand the importance of IPM and ready to adopt in next year.

Acharya N. G. Ranga Agricultural University, Guntur.

1. Sri Madala Rama Rao S/o Ramalingaiah, Matorpet village of Madhira mandal has lot of enthusiasm for implementing new innovations. He has cultivated NA 1678 under FLD programme integrating with IPM. He has developed keen interest in adoption of IPM technology including intercropping in cotton with black gram. He has implemented IPM technologies like seed treatment with gaucho, stem application with monocrotophos, use of pheromone traps, Tricho cards and chrysopa, bird perches, raising of castor and marigold as trap crops, topping and by use of neem products and met with instant success.
2. Intercropping in cotton with black gram gave an income of Rs. 5,500/- per ha under IPM technology and which reduces the number of need based sprays to two only. The average cost of the cultivation per hectare of the farmer is Rs. 27,770/- under Non IPM and Rs. 21,907/- under IPM technologies; with the total returns from sale of produce was Rs. 42,750/- under Non IPM and Rs. 48,400/- under IPM, thus netted an income of Rs. 14,980/- under Non IPM and Rs. 26,493/- under IPM per hectare. The cost benefit ratio is 1:2.21.