
Project Coordinator's Report

Introduction

Cotton, the primary crop of economic importance was placed in high pedestal way back in the early 1921 with the Indian Central Cotton Committee sponsoring cotton research schemes on an ad-hoc basis since 1921 in India. The Indian Council of Agricultural Research (ICAR) launched the All India Coordinated Cotton Improvement Project (AICCIIP) in the year 1967 with its Headquarters at Coimbatore (Tamil Nadu) to give new thrust and direction in terms of multi-disciplinary and multi-centre approaches with the active involvement of State Agricultural Universities across cotton growing states. Currently, the AICCIIP Project is in operation with its headquarters at Coimbatore and spread over 21 participating centres involving 16 State Agricultural Universities. The Central Institute for Cotton Research (CICR, ICAR), Nagpur and its Regional Stations at Coimbatore and Sirsa provide basic research support and also take part in some of the strategic research and evaluation activities of the AICRP on Cotton. The Central Institute for Research on Cotton Technology (CIRCOT, ICAR), Mumbai and its Regional units are closely associated with AICCIIP in assessing the fibre quality parameters of cotton cultures under trial.

Major activities of the centres include development of varieties and hybrids best suited for different agro-climatic zones, development of viable and economical agro-techniques for realizing maximum yields from improved cultivars besides development of economic and effective pest and disease management practices under different agro-ecological conditions. In addition to the development of cotton production and protection technologies, AICCIIP is actively involved in Front-Line Demonstrations on improved technologies and also organising *Kisan Melas* for effective and speedy dissemination of newer technologies. From 2011-12 onwards Tribal Sub Plan - A programme targeting the cotton farmers from Schedule Tribes has been initiated and Rs 10.00 lakhs have been allocated during the year 2012-13. In addition, the cotton Breeder seed production is also monitored through AICCIIP.

During the past six to seven years the productivity is static and is hovering around 500 kg/ha. To match the increased demand for cotton in both the national and international markets, it is essential to give impetus for the enhancement of cotton productivity to 650-700 kg/ha by end of XII five year plan by identification of newer/improved genotypes and production technologies.

Indian Cotton Scenario

Weather condition during 2012-13 was far from normal which led to reduction in 5-6 lakh hectares of area in some cotton growing regions and production by 20-25 lakh bales. The area in Gujarat got significantly reduced from 29.62 to 24.00 lakh, while there was increase in area from 18.79 to 22.69 lakh ha in Andhra Pradesh during the period (CAB estimate as on 23-01-2013).



State wise cotton area (lakh ha) from 2003-04 to 2012-13

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Punjab	4.52	5.09	5.57	6.07	6.04	5.27	5.11	5.30	5.60	5.06
Haryana	5.26	6.21	5.83	5.30	4.83	4.56	5.07	4.92	6.41	6.14
Rajasthan	3.44	4.38	4.71	3.50	3.69	3.02	4.44	3.35	4.70	4.50
NORTH ZONE	13.22	15.68	16.11	14.87	14.56	12.85	14.62	13.57	16.71	15.70
Gujarat	16.47	19.06	19.06	23.90	24.22	23.54	26.25	26.33	29.62	24.00
Maharashtra	27.66	28.40	28.75	31.07	31.95	31.42	35.03	39.32	41.25	41.46
Madhya Pradesh	5.91	5.76	6.20	6.39	6.30	6.25	6.11	6.50	7.06	6.08
CENTRAL ZONE	50.04	53.22	54.01	61.36	62.47	61.21	67.39	72.15	77.93	71.54
Andhra Pradesh	8.37	11.78	10.33	9.72	11.33	13.99	14.75	17.84	18.79	22.69
Karnataka	3.13	5.21	4.13	3.78	4.03	4.08	4.55	5.45	5.54	4.85
Tamil Nadu	1.03	1.29	1.40	1.00	0.99	1.09	1.04	1.22	1.33	1.26
SOUTH ZONE	12.53	18.28	15.86	14.50	16.35	19.16	20.34	24.51	25.66	27.76
Orissa					0.50	0.58	0.54	0.74	1.02	1.19
Others	0.51	0.68	0.79	0.71	0.26	0.26	0.21	0.45	0.46	0.50
TOTAL	76.30	87.86	86.77	91.44	94.14	94.06	103.10	111.42	121.78	117.73

State wise cotton production (lakh bales) from 2003-04 to 2012-13

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Punjab	10.35	16.50	20.00	24.00	20.00	17.50	13.00	18.50	18.50	19.00
Haryana	11.50	16.50	12.00	15.00	15.00	14.00	15.25	17.00	26.00	24.00
Rajasthan	9.15	10.00	9.00	9.00	9.00	7.50	12.00	10.10	17.50	16.00
NORTH ZONE	31.00	43.00	41.00	48.00	44.00	39.00	40.25	45.60	62.00	59.00
Gujarat	50.00	73.00	89.00	103.00	110.00	90.00	98.00	106.20	120.00	85.00
Maharashtra	31.00	52.00	35.00	50.00	62.00	62.00	65.75	87.75	74.00	74.00
Madhya Pradesh	19.65	16.00	19.00	19.00	20.00	18.00	15.25	17.70	18.00	18.00
CENTRAL ZONE	100.65	141.00	143.00	172.00	192.00	170.00	179.00	211.65	212.00	177.00
Andhra Pradesh	27.40	33.00	33.00	36.00	46.00	53.00	54.50	59.50	56.00	72.00
Karnataka	4.20	8.00	6.00	6.00	8.00	9.00	12.25	11.10	14.00	12.00
Tamilnadu	3.75	5.00	5.00	5.00	4.00	5.00	5.00	7.20	6.50	5.00
SOUTH ZONE	35.35	46.00	44.00	47.00	58.00	67.00	71.75	77.80	76.50	89.00
Orissa						1.50	1.00	2.05	2.50	3.00
Others	1.00	1.00	1.00	1.00	1.00	0.50	1.00	2.00	2.00	2.00
TOTAL	168.00	231.00	229.00	268.00	295.00	278.00	293.00	339.10	355.00	330.00
Loose cotton	11.00	12.00	12.00	12.00	12.00	12.00	12.00	26.10	26.10	26.10
GRAND TOTAL	179.00	243.00	241.00	280.00	307.00	290.00	305.00	365.20	381.10	356.10



State wise cotton productivity (kg/ha) from 2003-04 to 2012-13

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Punjab	389.27	551.08	610.41	672.16	562.91	564.52	432.49	593.40	561.61	562.02
Haryana	371.67	451.69	349.91	481.13	527.95	521.93	511.34	587.40	690.03	689.62
Rajasthan	452.18	388.13	324.84	437.14	414.63	422.19	459.46	512.54	633.89	632.79
NORTH ZONE	398.64	466.20	432.65	548.76	513.74	515.95	468.02	571.26	631.50	630.83
Gujarat	516.09	651.10	793.81	732.64	772.09	649.96	634.67	685.68	688.72	688.51
Maharashtra	190.53	311.27	206.96	273.58	329.89	335.46	319.08	378.42	304.97	305.30
Madhya Pradesh	565.23	472.22	520.97	505.48	539.68	489.60	424.30	462.92	433.43	433.33
CENTRAL ZONE	341.94	450.39	450.10	476.53	522.49	472.15	451.55	498.00	462.47	461.71
Andhra Pradesh	556.51	476.23	543.08	629.63	690.20	644.03	628.14	538.32	506.65	506.96
Karnataka	228.12	261.04	246.97	269.84	337.47	375.00	457.69	346.24	429.60	430.35
Tamilnadu	618.93	658.91	607.14	850.00	686.87	779.82	817.31	1003.28	830.83	831.33
SOUTH ZONE	479.61	427.79	471.63	551.03	603.06	594.47	599.68	519.48	506.82	507.03
Orissa					0.00	439.66	314.81	470.95	417.33	417.57
India	398.82	470.18	472.17	520.56	554.39	524.13	502.91	513.10	495.77	496.39

Note: 2011-12 and 2012-13 are provisional; Source: Cotton Advisory Board as on 23:01:2013.

Since India is having a large domestic textile industry, the mill consumption of cotton in the country especially, textile mills and small scale spinning units had been continuously on the raise from the beginning of 1990s. There was leap in domestic cotton consumption in 2009-10 from 229 to 259 lakh bales and expected to consume about 276 lakh bales by the year 2012-13 and 6 % higher than the year 2011-12. Increased demand and large scale import of cotton in China, there was continuous export of raw cotton from India for the past 4-5 years and the import was around 10-12 lakh bales expected to touch 20 lakh bales.

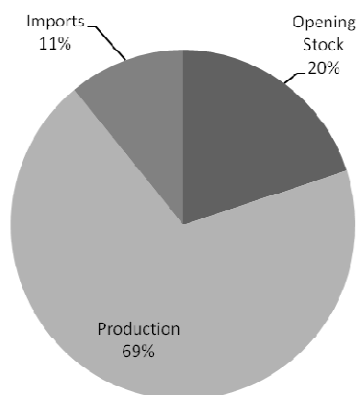
Cotton Balance Sheet

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12*	2012-13*
Supply							
• Opening Stock	52.00	47.50	35.50	71.50	40.5	45.77	40.00**
• Cotton Crop Production	280.00	307.00	290.00	295.00	339.00	355.00	330.00
• Imports	5.53	6.38	10.00	7.00	2.38	12.00	20.00
• Total Supply	337.53	360.88	335.50	373.50	381.88	412.77	390.00
Demand							
• Mill Consumption	194.89	195.67	190.00	219.00	221.77	223.09	234.00
• Consumption by SSI units	21.26	22.08	20.00	23.00	24.46	21.09	22.00
• Non-mill consumption	15.88	19.13	19.00	17.00	13.38	10.00	20.00
• Total Consumption	232.03	236.88	229.00	259.00	259.61	254.18	276.00
Export	58.00	88.50	35.00	83.00	76.50	129.59	80.00
Total disappearance	290.03	325.38	264.00	342.00	336.11	383.77	356.00
Carry forward	47.50	35.50	71.50	40.50	45.77	29.00	34.00

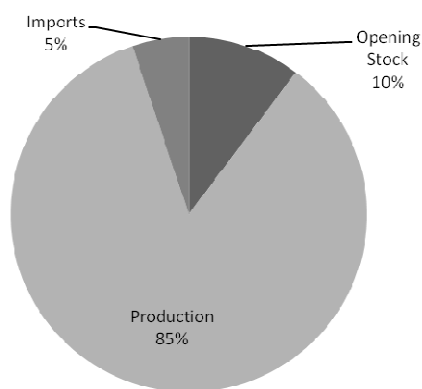
*= Provisional, Quantity in lakh bales of 170 kgs;

**Upward revision in opening stock to 40 lakh bales has been made considering adjustment in spill over stock over the years. Source : Cotton Advisory Board as on 23:01:2013.

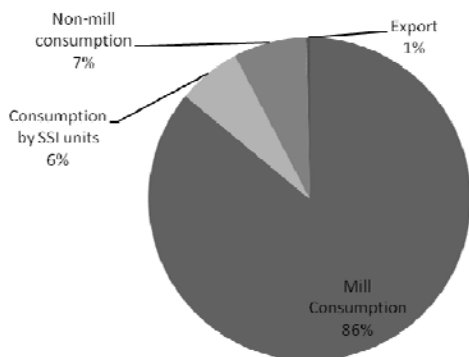




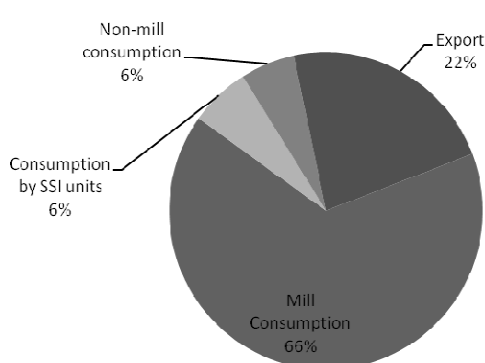
Cotton Supply 2000-01



Cotton Supply 2012-13



Cotton Demand 2000-01



Cotton Demand 2012-13

World Cotton Scenario

World cotton production is estimated at 118.95 million bales of 480 lb in 2012-13 (USDA, February, 2013) which is 4 % less than the previous year 2011-12 and cotton area to the tune of 4.62%. India continued to maintain the largest area under cotton and second largest producer of cotton next to china with 34 % of world area and 21% of world production. Significant drop in the production level in Brazil about 43% due to 40% reduction in area under cotton compared to previous year. Though there is reduction of 3.41% of area under cotton in United States, there is increase of 7.85% in cotton production compared to 2011-12. China is going to be the largest importer around 14 million bales of Cotton this year and share of 34% of the world total cotton imports. China also likely to emerge as a leader to stock large cotton reserve, and it is estimated to around 52% followed by India with 10% of the world cotton reserve. United States continues to be the largest exporter of raw cotton and expected to export around 12.5 million bales which are 31% of the world total exports, followed by Brazil, India and Australia (11% each). China, India and Pakistan continue to be the largest consumer of raw cotton this year also, around 65% of the total world raw cotton consumption by these countries. Among the major cotton growing countries, Australia tops the productivity level of 2055 kg/ha followed by Brazil and Turkey (1415 kg/ha).



World Cotton Supply and Distribution: 2012-13

Country	AREA	PRODUCTION	PRODUCTIVITY	IMPORT	EXPORT	TOTAL SUPPLY	USE	ENDING STOCK
India	11.700	25.500	475	1.500	4.500	34.744	21.500	8.744
China	5.275	34.000	1403	14.000	0.075	78.181	35.500	42.606
US	3.815	17.010	971	0.005	12.500	20.365	3.400	4.500
Pakistan	3.000	9.600	697	2.500	0.500	14.907	11.500	2.882
Brazil	1.000	6.500	1415	0.050	4.600	14.543	4.100	5.993
Uzbekistan	1.285	4.300	729	0	2.900	5.798	1.500	1.398
Australia	0.445	4.200	2055	0	4.500	7.768	0.040	3.403
Turkey	0.400	2.600	1415	3.800	0.185	7.641	6.100	1.356
Turkmenistan	0.600	1.500	544	0	0.850	2.449	0.700	0.899
Argentina	0.360	0.800	484	0.035	0.250	1.756	0.775	0.722
Burkina	0.525	1.050	435	0	0.950	1.286	0.004	0.332
Mali	0.500	1.000	435	0	0.900	1.292	0.025	0.367
Egypt	0.145	0.515	773	0.500	0.350	1.229	0.600	0.269
World	34.129	118.951	759	40.435	40.430	228.416	106.237	81.860

Note: Area in million ha; Productivity in kg/ha; cotton in million bales of 480lb

Source: United States Department of Agriculture, Foreign Agricultural Service, Circular Series, FOP 02 13, February 2013

Notification of Cotton Genotypes for Cultivation

During the year 2012-13, five cotton cultivars have been identified for commercial cultivation in the country for various agro-climatic zones. Out of the five, four cultivars are straight varieties and one is hybrid.

Name of the variety / hybrid	Species	Year of identification	Developed by	Area released for
H 1300	<i>G. hirsutum</i>	2012	CCSHAU, Hisar	North Zone
Nirmal 12 (NACH-12)	<i>G. arboreum</i> X <i>G. arboreum</i>	2012	Nirmal Seeds	Central Zone
Anand Desi Cotton 1	<i>G. herbaceum</i>	2012	AAU, Viramgam	Gujarat
Phule Anmol (RAC 024)	<i>G. arboreum</i>	2012	MPKV, Rahuri	Maharashtra
Phule Dhanwantary (Rh.arb. 02-1)	<i>G. arboreum</i>	2012	MPKV, Rahuri	Maharashtra

Breeder Seed Production

An effective maintenance of Nucleus and Breeder seed programme was undertaken by the concerned participating centres of AICCIP. The Breeder seed production in respect of National indent 2012-13 was taken up at different AICCIP centres and at CICR, Regional Station, Coimbatore. The production was over and above the indent in almost all the locations.



Breeder Seed Production in respect of Cotton variety / hybrid during 2012-13

S. No.	Name of the Producing Centre/State	Name of variety	DAC Indent	Actual Allotment as per BSP-I target	Actual Production
1.	PAU, Faridkot	F-1378	1.95	1.95	0.99
2.	PAU, Faridkot	F-846	0.30	0.30	0.10
3.	PAU, Faridkot	F 1861	0.10	0.10	0.90
4.	PAU, Faridkot	FDK 124	0.30	0.30	1.04
5.	PAU, Ludhiana	LH2076	1.30	1.30	0.90
6.	PAU, Ludhiana	LH-1556	0.20	0.20	2.27
7.	PAU, Ludhiana	LUDHIANA DESI-327	0.10	0.10	0.82
8.	RAU, Sriganaganagar	RST-9	1.00	1.00	0.00
9.	RAU, Sriganaganagar	RG-8	12.60	12.60	9.00
10.	CCSHAU, Hisar	AAH-1 (Female)	0.24	0.24	0.40
11.	CCSHAU, Hisar	AAH-1 (Male)	0.09	0.09	0.40
12.	CCSHAU, Hisar	H 1098	0.70	0.70	1.00
13.	CCSHAU, Hisar	H 1236	0.50	0.50	0.75
14.	CCSHAU, Hisar	HD 123	5.25	5.25	7.00
15.	CCSHAU, Hisar	HD 432	0.10	0.10	1.00
16.	NAU, Surat	G.Cot.100	0.01	0.01	5.00
17.	NAU, Surat	G.Cot.10	0.01	0.01	0.10
18.	NAU, Surat	Surat Dwarf	0.01	0.01	5.00
19.	PDKV, Akola	PKHY-2 AK-32A	0.02	0.02	1.00
20.	PDKV, Akola	PKHY-2 DHY-286R	0.01	0.01	0.50
21.	PDKV, Akola	AKA-8	0.05	0.05	14.00
22.	PDKV, Akola	AKH-8828	0.05	0.05	0.50
23.	PDKV, Akola	AKA-8401	0.05	0.05	6.00
24.	PDKV, Akola	AKH-081	0.05	0.05	10.00
25.	PDKV, Akola	AKA-7 (AKA 8307)	7.05	7.05	11.00
26.	PDKV, Akola	AKA-5 (AKH-605)	6.05	6.05	14.00
27.	MAU, Nanded	NHH-44 (AC-738)(M)	0.15	0.15	1.00
28.	MAU, Nanded	NHH-44 (BN-1)(F)	0.10	0.10	0.50
29.	MAU, Nanded	NHH-44 AC-738R	0.10	0.10	0.00
30.	MAU, Nanded	NHH-44 BN1A	0.25	0.25	0.00
31.	MAU, Nanded	NH-615	0.05	0.05	3.00
32.	MAU, Nanded	NH-452	0.05	0.05	1.50
33.	MAU, Parbhani	PA-402	0.05	0.05	3.00
34.	MAU, Parbhani	PH-348 (Yamuna)	0.05	0.05	0.50
35.	MAU, Parbhani	PA-183	0.05	0.05	0.10
36.	CICR, Coimbatore	ANJALI (LRK-516)	0.05	0.05	0.10
37.	CICR, Coimbatore	LRA-5166	0.25	0.25	0.50
38.	CICR, Coimbatore	Surabhi	0.05	0.05	0.10
39.	TNAU, Coimbatore	MCU 5	0.40	0.40	1.00
40.	TNAU, Coimbatore	MCU-12 (TCH-1025)	0.10	0.10	0.10
41.	UAS, Dharwad	SAHANA (JK-276-8-2)	0.10	0.10	0.11
42.	UAS, Dharwad	ARVINDA (NDL-2708)	0.20	0.20	2.20
		Grand Total	40.09	40.09	107.38



Monitoring Committee report of AICCIP Trials

Three teams were constituted for monitoring of AICCIP, Bt Cotton Evaluation and FLD trials during the year 2012-13 cropping season. Suggestions/recommendations made by the team shall be discussed during the Annual Group Meeting for follow-up action. The brief report submitted by the committee has been presented.

North Zone – Punjab, Haryana & Rajasthan

The team comprised Dr. V. Kumar, Research Scientist (Cotton), NAU, Surat as Chairman and Dr. S. Thirumeni, Professor of Plant Breeding & Genetics, PAJNCOARI, KARAIKAL and Mr. I. M. Maisuria, Associate Research Scientist, Dept. of Entomology, NAU, Surat as members. The team visited CCSHAU - Bawal, Hisar and Sirsa, CICR (Sirsa), SKRAU- Sriganganagar, PAU-Bhatinda, Faridkot and Ludhiana from 3rd to 8th September 2012.

Crop Improvement:

As per the technical programme 10 AICCIP trials were conducted each in, Hisar, Sriganganagar and Faridkot centres; nine trials in Bathinda; four trials in CICR (Sirsa); two trials in Bawal and one trial in CCS (HAU) Sirsa centre. Breeding trials were not conducted in Ludhiana centre.

ICAR Bt Cotton Evaluation trial was conducted in four centres. Trial conducted as per the technical programme formulated during AICCIP annual group meet. The trial plots were weed free and field sanitation was good. The trial crops were in flowering to boll formation stage. However crop stand of the breeding trials, sown prior to the third week of May 12 were very good especially in Hisar, Bathinda and Faridkot centres. Poor germination was recorded in all centres for the entry 239 under Br-02 (a) trial and four centres for the entry 456 under Br 22(a) trial. Mixture was noticed in entry 2041 under the trial Br 25(a) (PHT) in three centres. Seven entries viz., entries 227 and 242 under Br-02a trial in three centres; entry 334 under Br-05 trial in two centres; entry 204 under Br 25 (a) PHT trial in four centres; entry 385 under Br-06 trial in two centres and Bt hybrids 502 and 508 (ICAR Bt trial) in three centres were observed to be promising.

Crop Production: Agronomy, Physiology and Biochemistry

In CCS, HAU, Sirsa centre, all agronomic experiments were laid out as specified in the technical programme. The crop health, sanitation and growth were good to very good. However, physiology/biochemistry experiments were not taken as the scientist positions are vacant.

In PAU, Bhatinda, Faridkot and Ludhiana centres, agronomic experiments laid out at Bhatinda and Faridkot were in excellent condition. The team was informed that Ludhiana Cotton Research programme has been shifted to Bhatinda. During the discussion at Faridkot the team impressed upon Hon. Vice Chancellor, Dr. Dhillon to get a formal approval from the ICAR. In SKRAU, Sriganganagr, all trials were in good shape.



Crop Protection: Entomology

CICR, Sirsa: All Entomological experiments were conducted as per AICCIP protocol. Field sanitation was satisfactory. Concerned scientists recorded observations on sucking pests and bollworms as per the format and maintained in the observation register along with the prevailing meteorological data. In population dynamics study, nine weekly observations recorded on BG I, BG II, hybrid and north zone susceptible check. Leaf hopper and Thrips crossed ETL once or twice and negligible incidence of grey weevil and mealy bug was observed. In comparing recommended dose with label claim doses, two sprays carried out and recommended doses fetched better results. CLCuV affected plant was also found in entomological experiment but overall the experiments are in good condition and accepted.

CCSHAU, Hisar: Experiments viz., Proj. 1 (a), 2 and 3(b) conducted as per protocol. Concerned scientist recorded incidence data on sucking pests and bollworms timely as per the format. Field sanitation was good and sufficient plant populations maintained in the plots. Moderate infestation of leaf hopper was observed. All the experiments are in good condition and accepted.

SKRAU, Sriganaganagar: Experiments viz., 1 (a), 2 (a) and 3 (a) conducted satisfactorily. In screening experiment, infestation of Whitefly and Thrips crossed ETL. In Proj. Ento 3 (a) on evaluation of insecticides, three sprays (27.07.12, 10.08.12 & 25.08.12) were alone and data on pre and post counts recorded as per the format. In 2 (a), Thrips and Whitefly population was moderate to high and CLCuV was also observed in entire field. Proj. Ento 3 (b) experiments on Revalidation of existing recommendation of insecticides against pests in cotton ecosystem was not conducted as per the protocol / technical program and rejected by the monitoring team.

PAU, Bhatinda and Fardikot: As per technical program, all experiments conducted properly. Data on sucking pests and bollworms recorded up to date in the format and maintained in the register along with meteorological data. Field sanitation was good and plant stand uniform and maintained properly. At Ludhiana in screening trial, infestation of sucking pests, *Earias* and *Spodoptera* were found. Amongst sucking pests, Whitefly and Leaf hopper were major.

Crop Protection: Pathology

Experiments were conducted properly and as per the protocol at all four centres of the North Zone. All concerned scientists in different centres recorded data on disease occurrence as per the standard protocol. Cotton Leaf Curl Viral disease, Bacterial Leaf blight and Fungal foliar leaf spots were found in different parts of North Zone in low to moderate level. CLCuV affected plants were also found in different experiments, especially in control plots. Overall the experiments were in good condition and accepted.

Looking to the experiments across the North Zone, the crop condition appeared little late but satisfactory and incidence of CLCuV was sporadic.

Central Zone- Madhya Pradesh, Maharashtra, Rajasthan, Odhisa and Gujarat.

The team comprised Dr. S.S.Siwach, Sr. Cotton Breeder as Chairman and Dr. Sreenivasan, Agronomist as member. The team visited centres viz., Indore, Khandwa, Jalgaon, Pachora, rauri, Jalna, Parbhani, Nanded, Akola, Nagpur, Bhawanipatna, Banswara,



Surat, Bharuch, Anand and Junagadh from 22-10-2012 to 7-11-2012 in two phases and effectively monitored the trials. The following points have been reported.

Indore: The Trials were satisfactory and as per protocol.

Khandwa: Over all the trials the trials were satisfactory except very poor germination in the following entries Br 02(a)-213; Br 05(b):- 351 & 357; Br 22(a/b):- 456, 476, 468, 479, Br 04(b):- 2185 & 2186; Br 24(b): 2226

Jalgaon:-The trials were satisfactory but higher percentage of off type plants were observed in the entries 463, 467 478 & 479 in Br 22 (a/b); 2228 in Br 24(b) trials

Pachora:- The trials were satisfactory but higher percentage of off type plants were observed in the entry 2238 in Br 25(b) trial.

Rahuri: Over all the trials the trials were satisfactory except some entries where the germination was very poor. Also observed the following points: Br02(a)-213, 239, 244 seed not received; Br06(a)- 389 was not sown; Br 12(a) Off type plants in 422; Br 14(a):- 2144 off type plants; Br05(a) 303-poor germination.

MAHYCO Jalna: The trials were affected by drought and growth was very poor in the following entries : Br05(b):- 351, 354.362 & 366; Br05(b):- 2203, 2206(very poor plant type), 2207& 2212.

Parbhani: Over all the trials the trials were satisfactory except some entries where the germination was very poor. They are Br 22(a/b):- 468, 479,466 (Off type Plants); Br 24(b): 2226; Br 25(a/b):- 508 & 510 ; Br 25(a/b):- 2235 & 2238.

Nanded: The sowing was delayed due to late monsoon. Over all the trials were satisfactory except some entries where the germination was very poor. They are Br 2(b):- 261, 268 & 281; Br 4(b): 2185& 2186;

Akola: The growth was not proper due to less rainfall. In the following entries the germination was very poor: Br 22(a/b):- 456, 463 & 479; Br 25(a/b):- 508 & 510; Br 02(b):- 261, 262, 268, 269, 275,276 & 281; Br 3(b): 2172& 2177; Br 04(b): 2181, 2185 & 2186; Br 05(b):- 351,360 & 367; Br 05(b):- 2202, 2204, 2206 & 2212 (HxB); Br 06(b): 408, 410, & 411 and the trial Br 02(b) was be rejected

Ankur Seeds Nagpur: Over all the trials were satisfactory except some entries where the variation in plant type/flower colour was observed in Br05 (a) 301, 302, 308,312, 316, 318, 319, 322, 325, 328 & 330

CICR Nagpur: Over all the trials were satisfactory. Also observed mixture in the entry 456, 464, 479 and 504 under Br 22(a/b) trial.

OUAT Bhawanipatna: Over all the trials were satisfactory except the following entries where the germination was very poor. Br 02(a):- 239; Br 3(a) Mixture in 2103 & 2106; Br 4(a): Mixture in 2116; Br05(a):- 303 & 313; Br 6(a): No border row was there; Mixture in 381, 386, 390, 392,395,396 & 398; Poor germination in 385.



MPUAT Banswara: Over all the trials were satisfactory except the following entries where the germination was very poor. Br 02(a):- 213, 239; Br 3(a) Mixture in 2103 & 2106; Br 05 (a):- 303, 304, 313 & 320; Mixture/off types: - 315,325,332,334; Br 4(a): Mixture in 2116; Br 6(a): Mixture in 381, 386, 388, & 395; Poor germination in 385, 387 Very late 391. In Br 15(a): Over all there was poor growth as well poor germination in 431, 432,433,434,435 and also mixture in some of the entries. The trial was rejected. Br 05 (a):- 2126 & 2129; Mixture/off types: - 2128, 2130. Br 15(a): Except two hybrids 2159 & 2160 all other hybrids were late in maturity. There was poor germination in 2160, 2161 & 2163. All the rainfed trials were rejected due to very poor population and growth.

NAU Surat: Over all the trials were satisfactory except the following entries where the germination as very poor. Br 02(a): 213, 227 & 239; Br 3(a) mixture in 2103 & 2104; Br 4(a): mixture in 2111 & 2114; Br 05(a): mixture/off types: 327; Br 05(a): mixture/off types:- 2122; Br 14: mixture in 2142. In Br 13 all the entries are susceptible to sucking pests; Br 32: poor germination in 529,530 & 533 and mixture in 534.

Bharuch:- Over all the trials were satisfactory except the following entries where the germination was very poor. Also observed the following points in different trials; Bt trial: - Mealy bug in 1023, high incidence of sucking pest in 1025, 1030,1031 & 1032; Br 02(b):- 274; high sucking pest in 257, 261, off type in 263,264 & 273; Br 3(b):- 172 poor germination; mixture in 174; Br 4(b): poor germination in 2185 and mixture in 2182,2188 & 2189; Br 05(b):- 353 & 361; 365,367 & 368 highly susceptible to sucking pests; Br 05(b):- 2204, Off type -2209 (*Barbadense*) and 2206 & 2207 highly susceptible to sucking pests ; Br 25(b):- 502,505,508 & 510, Off type -510; Br 32(b):- 535,536, Off type -521, 524 & 530 (*arboreum* mixture)

Anand: Both the trial at Anand were not maintained properly, there was no border row. Plant population was not satisfactory. Hence the trials was rejected

Junagarh: Over all the trials were satisfactory except the following entries where the germination was very poor. Br 02(a): 213, 227 & 239; Br 04(a) 2114 & 2115; Br 24(b): 2226; Br 25(b): mixture/off types : 2232

South Zone: Karnataka, Tamil Nadu and Andhra Pradesh

The team comprising of Dr. Pankaj Rathore, Plant Breeder, Punjab Agricultural University, Regional Station, Faridkot as Chairman and Dr K. Sankaranarayana, Principal Scientist (Agronomy), CICR and Dr. K. B. Pawar, Pathologist, MPKV Pune as members. The team visited Coimbatore, Srivilliputtur, Lam, Nandyal, Siruguppa, Raichur and Dharwad from 29-10-2012 to 5-11-2012.

Tamil Nadu Agricultural University, Coimbatore

All the allotted AICCIP trials of different disciplines were conducted as per the protocol. The crop growth was average due to insufficient rainfall at early stage even though sufficient water was provided by protective irrigation. In breeding trials, Br.03a and Br.06a (IET) were poor due to late sowing and want of irrigation. The trials were in general good and acceptable to draw conclusion.



Tamil Nadu Agricultural University, Cotton Research Station, Srivilliputtur

The AICCIP trials allotted to the centre were conducted as per the protocol. The plant populations and sanitation was excellent. At the time of monitoring, the crop growth in all the trials was excellent. The trials were excellent and acceptable to draw conclusions.

ANGRAU Regional Agricultural Research Station, Lam Farm, Guntur

All the AICCIP trials allotted to the centre were conducted as per the protocol. All the recommended package of practices was followed to raise the crop. The trials were labeled properly and the plant populations, sanitation and crop growth at the time of monitoring was excellent in all the trials of different disciplines. The data recording was done periodically in different crop growth stages. All the trials were excellent and acceptable to draw conclusions.

ANGRAU Regional Agricultural Research Station, Nandyal

The plant population, plant stand and overall condition of the trials were good due to good management of the trials allotted to Nandyal Centre. The crop is exceptionally early, i.e., at boll bursting stage which may be due to water logging conditions during August and moisture stress during flowering and boll formation stages. The trials were excellent and acceptable.

UAS Raichur, Agricultural Research Station, Siruguppa

All the allotted AICCIP trials of breeding and agronomy were conducted as per protocol and the plant stand and crop growth was good in all the trials. Proper plant population was maintained in all the trials. The overall growth of the crop is excellent and all the trials were acceptable to draw conclusions.

University of Agricultural Sciences, Raichur

All the allotted AICCIP trials of different disciplines were conducted as per protocol, except in Br.02a, Br.05a(PHT), Br.22b and Br.32b no border row was sown. All the trials were labeled properly and the condition of all the trials was excellent and acceptable to draw conclusions.

University of Agricultural Sciences, Dharwad

All the trials allotted of different disciplines to the centre were conducted as per protocol. The plant population, sanitation, data recording at different stages and labeling of the trials was excellent. All the trials were in excellent condition and acceptable to draw conclusions.

Registration of Cotton varieties under PPV & FRA

List of extant/new cotton varieties for which registration certificate received during 2012-13 under PPV&FRA, 2001

Institution	Name of variety	Species	Var / hyb	Remarks
CICR,Sirsa	Hy. CISA 2	<i>G. arboreum</i>	axa	Certificate received by CICR Coimbatore
	CISA 310	<i>G. arboreum</i>	New	Certificate received by CICR Coimbatore
NAU Surat	G.Cot.18	<i>G. hirsutum</i>	variety	Certificate received by NAU Surat
	G.Cot.19	<i>G. arboreum</i>	variety	Certificate received by NAU Surat
	G.Cot.23	<i>G. hirsutum</i>	variety	Certificate received by NAU Surat
	G.Cot.21	<i>G. herbaceum</i>	variety	Certificate received by NAU Surat
	G.Cot.Hy.12	<i>G. hirsutum</i>	HxH	Certificate received by NAU Surat
	G.Cot.MDH.11	<i>G. arboreum</i>	axa	Certificate received by NAU Surat



Front Line Demonstrations in Cotton 2012-13

In India, various Transfer of Technology (TOT) programs in cotton have been implemented underlining the importance of problem solving, creating effective scientists and farmers linkage and transferring the latest cotton production technologies. 'Front Line Demonstration (FLD)' is one of the TOT programs which created remarkable impact on cotton production and facilitated excellent Scientist- Farmer linkage for the effective transfer of latest cotton production and protection technologies. Since 1996-97, the All India Coordinated Cotton Improvement Project (AICCIP) has been conducting cotton FLDs through its participating centers besides CICR, Nagpur and its regional stations. Funding for FLDs was initially drawn from Intensive Cotton Development Programme (ICDP) and it was later changed to Technology Mission on Cotton (TMC) under Mini Mission II. 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.

During the year 2012-13, FLDs on cotton production technology (807) and FLDs on cotton Integrated Pest Management (IPM) (11 units) amounting to Rs 30.00 lakhs was conducted by 13 AICCIP centres. The main emphasis was given to the demonstrations for enhancing the production of cotton in low productivity areas / problematic areas, where total improved package was demonstrated. Further in accordance with the decision of Government of India (GOI) regarding implementation of Special Component Plan (SCP) for Scheduled Caste and Tribal Sub Plan (TSP) for Scheduled Tribes and Gender Budgeting, the beneficiaries were selected for the year's front line demonstration programme.

Details on the technologies demonstrated by the centres during the year 2012-13

PAU, Faridkot	:	<p>Production Technology (100): Improved varieties / hybrids viz., Ankur 650, Bioseed 6488, Bioseed 6588, FDK 124, JK 1947, Kribhco Raja, LD 327, LH 2076, MRC 6301, MRC 6304, MRC 7017, MRC 7031, Raghav Bt, RCH 650, RCH 653, SP 7007 and Ankur 3028 with full package of practices, balanced nutrition, balanced nutrition and weed control, optimal plant population, time of sowing, time of sowing and balanced nutrition and weed control.</p> <p>IPM (one unit): Destruction of alternate host plants viz., Kangi buti, Peeli buti and Parthernium, avoidance of growing Bhendi and arhar, mechanical destruction of egg masses and young larvae, use of pheromone traps for monitoring of pest population and need based sprays.</p> <p>Farm Implements: Sealer, Cultivator, Seed drill and Aero blast sprayer</p> <p>Extension Activities: Kissan Mela (5)(54,500 farmers participated), Radio / TV talks (10), Popular articles (8), Training lectures / camps (15) and Field visits (23)</p>
HAU, Hisar	:	<p>Production Technology (100) : Yield maximization of Bt cotton hybrids with 10 demonstrations on drip irrigation.</p> <p>IPM (One unit): Deep ploughing, balanced use of fertilizer, regular monitoring of pests, spray at ETL level, proper dose of bio-pesticide, pesticide and water.</p> <p>Farm Implements: Deep ploughing with mould board plough, tractor drawn Rotavator and power weeder for intercultural operations and spraying with tractor mounted sprayers.</p> <p>Extension Activities: Cotton Mela (4)</p>



RAU, Sriganganagar	:	Production technology (50): Bt cotton hybrids MRC-6025, MRC-7017, JKCH 1947 and RCH-134 and Integrated Nutrients Management. IPM (one unit): Cleanup campaign, improved genotypes MRC 7017, BIOSEED-6488, BIOSEED-6588, Bunny and RCH-134, synchronized sowing, spacing 108 x 60 cm, Hoeing and weeding (two times), fertilizer application of 80 N, 40 P and 0 K, growing a mixture of the seeds (Bajra + cowpea + maize + sorghum) in and around cotton crop to conserve the natural enemies, bird perches, Pheromone traps (funnel type) and yellow sticky traps and spraying of neem based insecticides (Nimbecidin) and other chemical pesticides based on ETL.
MPUAT, Banswara	:	Production technology (50): Integrated Crop Management practice on Bt cotton hybrids Ranjeet, NCS 138, Leocoot and Emerald under irrigated conditions and DCH 32 with blackgram, soybean, pigeonpea and maize intercropping in rainfed conditions. IPM (one unit): Seed treatment with imidacloprid @ 7.5g / Kg seed or thiomethoxam @ 5g / Kg seed used, use of trap crops as border row around the cotton field, installation of Pheromone traps 6 per ha for bollworms, installation of bird perch and spraying of HaNPV.
CICR, Sirsa	:	Production Technology (75): Demonstration of G. arboreum varieties CISA-310, CISA-614, GMS based G. arboreum hybrid CICR-2 and Seed Production of hybrid CICR-2 Farm Implements : Power Weeder and Rotary tiller
NAU, Surat	:	Production Technology (50) : Improved Varieties Vs Farmers Varieties
MPKV, Rahuri	:	Production Technology (50) : Yield Maximization of selected cotton hybrids, INM, IWM and hybrid performance IPM (one unit) : IPM module developed by the centre
Dr PDKV, Akola	:	Production Technology (82) : a) Improved Varieties Vs Farmers Varieties; Canopy Management by Spraying of 2% Urea at Flowering and 2 % DAP; Inter cropping of Cotton with Green gram and Moisture Conservation Technology furrow opening at 30 - 40 DAS IPM (one unit) : IPM module developed by the centre
CICR, Nagpur	:	Production Technology (50) : Demonstration of HDPS in 8 taluks IPM (one unit) : IPM module developed by the centre
ANGRAU, Guntur	:	Production Technology (50) : Performance of BG II hybrids with improved technologies viz., 150 Kg Nitrogen per hectare, pre – emergence application of pendimethalin 36 EC @ 3.3 l/ha and foliar application of 2% urea and 2% DAP at flowering and boll development stages against farmers practices IPM (one unit) : Seed treatment with Imidacloprid @ 5g/kg seed, stem application of monocrotophos (1:4) at 30, 45 DAS and Imidacloprid (1:20) at 60 days after sowing, raising of trap crops like castor, marigold and sorghum as border crop erecting of bird perches and use of pheromone traps for Spodoptera.
UAS, Dharwad	:	Production Technology (50) : Intercropping in cotton, Weed management in cotton, Integrated Nutrients Management and Demonstration of DHH-263, DHB-915 IPM (one unit): Gaucho treated Bt seeds (RCH-2 Bt and Kanaka), Okra as a trap crop in 20:1 for shoot weevil and bollworms, Use of neem based insecticide to manage early season sucking pests, Use of selective insecticides viz., Pride 20 SP and Acephate 95 % SC etc for sucking pest management,



		Detopping of shoot tip at 80 days after the sowing and Spraying of Profenophos / λ -cyhalothrin for PBW control (Need based).
UAS, Raichur	:	Production Technology (50) : IPM (one Unit):
CICR, Coimbatore	:	Production Technology (50): Integrated Crop management practices for Suraj, Poly mulching technology for weed management, State seed bed technique, High Density Planting System, Multi tier cropping and CICR Nutrients Consortia IPM (one unit): Sowing of imidacloprid treated seeds to manage early stage sucking pests, ecofeast crops like cowpea, green gram, etc., to conserve and encourage natural enemies, growing castor, maize, black gram and cowpea as trap crop, border crop, inter crop and bund crop respectively, soil test based fertilizer application, efficient management of weeds, cultural practices like earthing up, inter cultivation , summer ploughing, bio pesticides and neem based pesticides, pheromone traps and need based chemical sprays Farm Implements : Power weeder Extension Activities: Awareness camp (1), field meetings (6), field visits (16)

Tribal Sub-Plan

Under Tribal Sub Plan Programme a sum of Rs. 10 lakhs (Dharwad Rs. 2 lakhs; Siriguppa Rs. 1 lakh; Raichur Rs. 2 lakhs; Guntur Rs. 5 lakhs) was spent to conduct exclusive training programme and dissemination of cotton production technologies to the tribal people for improvement of the economic status of the tribal people through cotton cultivation.

Bt testing

During 2012-13, as per the directives of ICAR, evaluation of Bt cotton hybrids belonging to the Private sector was undertaken in all the three cotton growing zones. In north zone states, seven test hybrids were evaluated along with Bioseed 6488 (BG-II) as the check hybrid under irrigated conditions at Faridkot, Hisar, Sirsa and at Sriganaganagar. In central zone states, both irrigated and rainfed trials were formulated to evaluate the Bt cotton hybrids. Under irrigated conditions, 15 test hybrids were evaluated along with RCH 2 BG II as the check hybrid at Khandwa, Surat and Rahuri, whereas, under rainfed situation, 12 test hybrids were evaluated along with Bunny BG II as the check hybrid at Akola, Nagpur, Bharuch and Indore.

In South zone states, both intra hirsutum hybrids and interspecific (hirsutum x barbadense) hybrids were evaluated. Twelve intra hirsutum hybrids were evaluated in irrigated condition at Lam, Coimbatore and Raichur along with RCH 2 BG II as the check hybrid, whereas, 11 hybrids were evaluated under rainfed situation at Nandyal, Aruppukottai and Dharwad along with Bunny BG II as the check hybrid. Five interspecific hybrids were evaluated along with RCHB 708 BG II at Lam, Coimbatore and Dharwad.

