

## All India Coordinated Cotton Improvement Project

### Project Coordinator's Report: 2005-06

Cotton, 'The White Gold' or the "King of Fibres", as it is often referred to, still holds its position high. Its use world over has been on the upswing. According to the statistics presented by the ICAC, world cotton consumption rose from 21.32 m. tonnes in 2003-04 to 23.66 m. tonnes in 2004-05. During the current year, it is expected to increase to 24.40 m. tonnes. World over, cotton is gradually assuming the status of a preferred fibre even for fashion fabrics.

However, world cotton production is now estimated to be around 25.2 m. tonnes, lower than that witnessed during the previous year. Despite the consumption rising by three per cent and exports reaching a new high due to China's large import requirement, there seems to be no respite from high prices, as indicated by the Cot. A index, for consumers and importers.

#### Cotton World Scenario (Figures in m tonnes)

	2004-05	2005-06	2006-07*
Opening stock	8.55	10.48	11.25
Production	26.30	25.15	25.43
Imports	7.22	8.85	8.73
<b>Total supply</b>	<b>42.07</b>	<b>44.48</b>	<b>45.41</b>
Consumption	23.84	24.38	25.12
Exports	7.75	8.85	8.73
<b>Total Demand</b>	<b>31.59</b>	<b>33.23</b>	<b>33.85</b>
Closing Balance	10.48	11.25	11.56
Cotton A-index	58.2	59.0	60.0

\* estimate; Cot A index: cent per pound (source ICAC )

#### The Indian Situation

The situation in India seems to be different. Production has been in excess of domestic consumption for the second season in a row. Cotton season (2004-05) came to a close on 31<sup>st</sup> September 2005 with a record production of 243.0 lakh bales and an all time closing balance of 72.00 lakh bales.

#### Cotton Balance Sheet ( Figures in lakh bales)

	2004-05	2005-06
<b>Supply</b>		
Opening Stock	21.0	72.00
Crop	243.0	242.50
Imports	12.0	6.00
<b>Total Supply</b>	<b>276.00</b>	<b>320.50</b>
<b>Demand</b>		
Mill Consumption	163.00	180.00
Small Scale Unit	17.00	18.00
Non-Mill	14.00	15.00
Exports	10.00	25.00
<b>Total Demand</b>	<b>204.00</b>	<b>238.00</b>
Closing Balance	72.00	82.00

(Source: CAB estimate)

With favourable weather, low pest profile and good technology, the production during the current year is also expected to be around 242.5 lakh bales.

### **Statewise cotton area (lakh ha) during the last five years**

State	00-01	01-02	02-03	03-04	04-05	05-06*
Punjab	5.50	6.00	4.25	4.52	5.09	5.80
Haryana	5.80	6.10	5.35	5.26	6.21	5.97
Rajasthan	4.82	3.47	3.35	3.44	4.38	4.54
Gujarat	15.78	16.87	14.98	16.47	19.06	20.77
Maharashtra	27.93	29.80	26.17	27.66	29.80	28.89
Madhya Pradesh	5.57	6.23	5.50	5.91	5.76	6.35
Andhra Pradesh	8.87	10.02	9.00	8.37	11.74	9.72
Karnataka	5.35	5.11	3.62	3.13	5.12	3.81
Tamil Nadu	1.33	1.60	1.15	1.03	1.42	1.52
Others	0.53	0.73	0.53	0.51	0.62	0.80
Total	81.48	85.93	73.90	76.30	89.2	88.17

### **Statewise cotton production (lakh bales) during the last five years**

State	00-01	01-02	02-03	03-04	04-05	05-06*
Punjab	11.50	9.25	8.00	10.35	16.50	21.77
Haryana	11.50	5.50	8.50	11.50	15.50	14.00
Rajasthan	11.50	7.00	5.00	0.15	11.00	11.00
Gujarat	27.00	32.50	31.00	50.00	73.00	80.00
Maharashtra	24.00	34.25	26.00	31.00	52.00	46.00
Madhya Pradesh	17.50	20.00	17.00	19.65	16.00	15.00
Andhra Pradesh	26.09	26.75	21.50	27.40	32.50	30.00
Karnataka	9.00	7.00	6.50	4.20	8.00	7.00
Tamil Nadu	5.50	5.00	4.00	3.75	5.50	5.50
Others	1.50	0.75	1.00	1.00	1.00	1.00
Loose Supply	8.00	8.00	10.00	11.00	12.00	12.00
Total	167.00	153.00	158.00	179.00	243.00	242.50

### **Statewise cotton productivity (kg/ha) during the last five years**

State	00-01	01-02	02-03	03-04	04-05	05-06*
Punjab	355	255	320	389	551	638
Haryana	337	181	270	372	424	399
Rajasthan	406	318	253	452	427	412
Gujarat	290	342	351	516	651	655
Maharashtra	145	194	169	191	297	271
Madhya Pradesh	534	409	525	565	472	402
Andhra Pradesh	498	458	406	557	471	525
Karnataka	286	266	305	228	266	312
Tamil Nadu	703	584	591	619	658	615
MEAN	319	309	322	399	463	465

\*Estimate

With accumulation of large stocks at various levels, expectation of a high crop mostly kept the domestic prices down. In spite of a significant breakthrough in overall production, there seems to be a mismatch between the demand and supply in the case of extra long staple ( ELS) cotton. As against the demand of 8 lakh bales of ELS cotton, the supply does not seem to exceed 3 lakh bales. The price rise in the case of medium and long staple category was only 3 per cent in the current year as compared to the previous year; whereas, it was a steep 39 per cent increase in the case of ELS types viz., DCH 32 and Suvin, confirming the gap between the demand and supply.

India's exports of superfine yarn counts of 60s and above, account for more than 40 per cent of the total production. There is also a substantial use of ELS cotton for the manufacture of fabrics used for made ups and other textile articles. As imports of ELS cotton are becoming expensive because of reduction in export subsidy, poor crop of ELS cotton in exporting countries and high international prices, the local production needs to be boosted up and the quality upgraded to meet the present day requirements. The Contract farming system involving the stake holders like the State Government, the farmers, the Textile Industry and the Scientists, in operation in Tamil Nadu under TMC-MM II programme, seems to be paying good dividends. Other State Governments and Textile Industries can come forward to take up this challenge. Urgent research efforts are also called for to improve the yield and fibre quality of ELS cotton.

There is a steady decline in the share of Textiles to the total exports. The data from the office of the Textile Commissioner show that the share of textile exports to the total exports has come down from 27.2 per cent in 2000-01 to 16.5 per cent in 2004-05. This is more due to the other components of exports overtaking the textile exports rather than a drop in the textile exports.

Year	Textile Export Rs.million	Overall export Rs. Million	Share of Textile in Total (%)
2000-01	5,47,978	20,13,564	27.2
2001-02	5,13,373	20,90,180	24.6
2002-03	6,00,717	25,27,900	23.7
2003-04	6,20,173	29,15,819	21.3
2004-05	5,85,846	35,60,689	16.5
2005-06 (Apr. – Oct.)	3,61,128	22,90,840	15.8

Cotton scenario is apparently facing a sea change in India. Abundant production, huge carry over stocks and improvement in quality and reduced contamination, thanks to Technology Mission on Cotton, has attracted spinners to this natural fibre. This is evident from the rising cotton consumption by mills and the increase in cotton yarn production. While the production of cotton yarn during the first eight months of 2005-06 has shown a substantial increase to 1650 Million kg from 1482 M. kg in 2004-05, the total man made fibre production showed a decline from 615 M. kg to 557 M.kg for a similar period. The textile exports are likely to gain momentum in future because of opening up of world trade in Textiles and Clothing.

### General Crop Condition, Pests and Diseases

Favourable weather conditions and manageable pest situation, in general, prevailed throughout the cotton growing states of the country. No epidemic situation due to pests or diseases was reported from any part of the country. In North Zone, dust storm, hot and dry season in the initial crop growth phase, especially in Rajasthan, caused some damage. *Earias spp* and *Helicoverpa armigera* population was very low and sporadic in appearance. Incidence of *Spodoptera* was reported from certain regions. In central zone, frequent dry spells and heavy rain caused certain damage to seedling growth, necessitating frequent gap filling. Jassids were more severe in Uttar Pradesh. Whitefly incidence was more in Saurashtra and North Gujarat. Bollworm incidence was moderate.

In South zone, Jassids appeared throughout the season. Occurrence of *Helicoverpa* was moderate. Pink boll worm appeared early in Andhra Pradesh and was

more prevalent on interspecific hybrid DCH 32 in Karnataka. *Spodoptera* was noticed in Andhra Pradesh in early September, but there after declined. Myrid bug incidence was seen in October in Karnataka leading to heavy dropping of squares. Heavy rains in Central and South zone leading to water logging and long periods of excess moisture led to wilting of plants or premature leaf senescence in several fields. The problem was more in Bt cotton due to heavy boll load. The reaction is characterized by insufficient Potassium in the plant tissues and called for urgent ameliorative measures like band application or foliar application of Potash.

Cotton leaf curl virus was moderate in North Zone. It was observed on all the *G.hirsutum* genotypes, including the recently released hybrids. Productivity, in general, was not affected. Symptoms of Tobacco streak virus disease transmitted through thrips were reported from Andhra Pradesh. However, the presence of virus could not be confirmed. All the same, it calls for caution and alertness in the coming season. Among other diseases, Grey mildew was significant in south zone. Alternaria and Bacterial blight were reported from certain centres and was controlled through timely intervention.

### Monitoring of Trials

Monitoring of AICCIP and Bt cotton trials is one of the important activities undertaken by the scientists of AICCIP. As in the previous years, four Monitoring Teams were constituted to monitor AICCIP trials in Breeding, Agronomy, Entomology and Pathology disciplines and the Bt cotton hybrid trials laid out at select centres. The composition of the Monitoring team was as follows:

Breeding	Agronomy	Entomology	Pathology
<b>North zone</b>			
Dr.S.S.Patil Dharwad	Dr.C.S.Praharaj Coimbatore	Sh.H.G.Dandale Akola	Dr. O.M. Bambawale New Delhi (Chairman)
<b>Central zone: Maharashtra</b>			
Dr.Palve Nagpur	Dr. K.Sankaranarayanan Coimbatore	Dr.T.Surulivelu Coimbatore (Chairman)	Dr.S.N.Chattannavar Dharwad
<b>Central zone : Gujarat &amp; Madhya Pradesh</b>			
Dr.N.Sivasamy Coimbatore	Dr.P.L.Nehra Sriganganagar (Chairman)	Dr.Durga Prasad Guntur	Dr.Jagdish Beniwal, Hisar
<b>South zone</b>			
Dr.S.Manickam Coimbatore	Dr.A.G.Patel Surat	Dr.B.B.Bhosle Nanded	Dr.P.Chidambaram Coimbatore (Chairman)

Breeding trials of the Private R & D centres were monitored by the respective State Agricultural University Scientists. Based on the recommendations of the monitoring team, wherever the trials have not been laid out properly or vitiated, they have been deleted. Some of the lacuna pointed out by the monitoring teams like lack of border rows, non-adoption of the protocol regarding number of rows/replications, use of additional entries, non-randomization of entries, lack of control over experiments at certain centres etc., will be taken up during the workshop meeting for discussion and future trials will be accordingly streamlined.

## Transfer of Technology

The All India Coordinated Cotton Improvement Project acts as the Nodal Agency for conducting Front Line Demonstrations (FLD) in the Farmer's fields. The Ministry of Agriculture, Government of India through Mini Mission II of Technology Mission on cotton, sanctioned Rs.60 lakh for organizing FLDs. The major objectives of these demonstrations were dissemination of the usefulness of latest and improved varieties/hybrids, crop production and protection technologies to the farmers and create an effective linkage among Scientists, extension personnel and farmers. The demonstrations enabled Scientists to obtain direct feed back from cotton farmers and extension personnel and reorient their future programmes to meet the farmer's needs.

During the year 2005-06, three programmes were undertaken under FLD. They are FLD on production technologies, FLD on Implement demonstration and FLD on Integrated Pest Management. Under Front line Demonstrations on Production Technology, 1150 Demonstrations of 0.4 ha each was taken up in all the three zones. There were 280 demonstrations in North zone, 635 in central zone and 235 in south zone. The major crop production Technologies demonstrated by various centres are listed below.

### CROP IMPROVEMENT

Centres	New Hybrids / Varieties Demonstrated
PAU, Ludhiana	F-1861, LH-1556, F-1378, LD- 694, LD-327 and Moti
CCSHAU, Hisar	HD 324, H 1226 , H 1117, H 1098 , HHH 287, AAH-1
RAU , Sriganaganagar	RS 2013, RS 810
MPUAT, Banswara	H6, H8
NAU, Gujarat	G.Cot.Hy-10 (New), G.Cot.MDH-11, G.Cot.23, G Cot 21, MECH-12, RCH-2 (Bt)
JNKVV, Khandwa	JK-4
PDKV, Akola	AKA-8, AKH-8828
MAU, Nanded	NH-545, PH-348, PA-255, PA-402
CICR, Nagpur	Surabhi
ANGRAU, Guntur	RCH2Bt, Bunny Bt, Aravindhya, Narasimha, Veena
UAS, Dharwad	DHH-543, DHB-290, RCH-2Bt, DLSa-17
CICR, Coimbatore	RCH2 Bt, Surabhi, Sumangala

### CROP PRODUCTION

Centres	Technologies Demonstrated
PAU, Ludhiana	Optimal sowing time, Plant population, Proper weed control and nutrient management
MPUAT, Banswara	Intercropping with maize/soybean
JAU, Junagadh	Application of DAP, Intercrop with ground nut, alternate furrow irrigation
OUAT, Bhawanipatna	Soil test based fertiliser application, intercropping with arhar/blackgram, weed management, post harvest technologies.
MAU, Nanded	Plant population, INM, Rainwater management, intercropping of greengram, strip cropping of redgram, spraying of 2% DAP, 2% MgSO <sub>4</sub> .
CRIDA, Hyderabad	Tipping between 90-95 DAS, ITK in managing red hairy caterpillar in cotton.
ANGRAU, Guntur	INM
CICR, Coimbatore	Intercropping with vegetables, application of neem cake, foliar application of DAP & Potash, seed, soil & foliar application of bio-inoculants.

In the FLD on implements, sixteen demonstrations of 40 ha each were taken up with a split up of five in North, seven in Central and four in South zones. The funds allotted were utilized for the procurement of implements that reduce human drudgery.

These implements will increase efficiency and reduce the cost of cultivation. The working of the implements were demonstrated in the farmers' fields.

In the FLD on IPM, twenty demonstrations of 50 ha each was taken up at the rate of six in North Zone, ten in Central and four in South Zone. In the IPM demonstration blocks, various location specific modules developed by the State Agricultural Universities were demonstrated.

### Maintenance of Nucleus and Breeder Seeds

Under Mini Mission II of Technology Mission on Cotton, Rs.30 lakh was sanctioned for fourteen centres to take up Nucleus and Breeder Seed Production.

The Breeder seed production in respect of National Indents was taken up at various centres. As against an indent of 1.6 q of parental lines of hybrids and 191.1 q of varieties, 57.6 q of parental lines and 392.2 q of Breeder seeds of varieties were produced. Due to dust storm, high temperature and dry season, there was severe damage to cotton crop at Sriganganagar. Hence seed production targets in respect of varieties Bikaneri Nerma, RST 9, RS 875 and RS 2013 could not be met. Otherwise, there were not major mismatches between indent and production.

### Breeder seed Indent and Production *(Figures in Quintals)*

S. No	Name of the Producing Centre	Name of Variety	2005-06			
			DAC Indent	Production		
1	PAU, Ludhiana	<b>LHH 144</b>				
		Female	0.02	1.00		
		Male	0.01	1.00		
		LH 900	10.27	8.00		
		LH 1556	10.72	11.00		
		LD 327	3.10	6.00		
		LD 694	1.30	3.80		
		F 505	11.05	12.00		
		F 846	15.22	12.50		
		F 1054	7.10	7.40		
		F 1378	8.62	15.00		
		F 1861	6.60	7.50		
		2	CCSHAU, Hisar	<b>AAH-I</b>		
				Female	0.19	5.00
Male	0.07			5.00		
<b>HHH 223</b>						
Female	0.05			6.00		
Male	0.01			2.00		
<b>HHH 287</b>						
Female	0.02			6.00		
Male	0.01			2.00		
HS6	8.12			24.00		
H 777	3.14			11.00		
H 1098	8.55			27.00		
H 1117	4.25			90.00		
H 1226	0.06			40.00		
H 974	1.60	-				
HD 123	10.30	50.00				

<b>3</b>	<b>RAU, Sriganagar</b>	BN	8.30	4.31
		Ganganagar Ageti	2.50	0.95
		RST 9	15.50	11.20
		RS 810	5.60	5.65
		RS 875	5.05	1.75
		RS 2013	12.90	7.66
		RG 8	13.65	17.55
		RG 18	3.80	1.20
		<b>4</b>	<b>IARI, New Delhi</b>	Pusa 8-6
<b>5</b>	<b>CSUAAT, Kanpur</b>	Vikas	0.30	1.00
<b>6</b>	<b>JNKVV, Khandwa</b>	<b>JKHY-1</b>		
		K-2 (MB)	0.04	0.60
		Reba B 50	0.02	0.60
		<b>JKHY 3</b>		
		Female	0.02	1.00
		Male	0.01	0.50
		Khandwa 2	0.20	2.00
	JK 4	0.50	0.80	
<b>7</b>	<b>NAU, Surat</b>	<b>H 6</b>		
		G. Cot 100	0.02	2.60
		G. Cot 10	0.01	3.20
		<b>H 8</b>		
		G. Cot 10	0.04	4.00
		SURAT DWA	0.02	6.10
		<b>H 10</b>		
		BC 68-2	0.02	4.25
		LRA 5166	0.05	3.60
		<b>8</b>	<b>PDKV Akola</b>	<b>PKV HY 2</b>
		AK 32(F)	0.15	0.50
		DHY 286-I (M)	0.12	1.45
		Rajat	2.36	1.00
<b>9</b>	<b>MAU, Nanded</b>	<b>NHH 44</b>		
		BN-I	0.17	0.25
		AC 738	0.09	0.10
		<b>PHH 316</b>		
		PH 93 (F)	0.04	0.30
		MPH 325 (M)	0.02	0.10
		Turab (PA 255)	0.12	0.50
		NH 545	1.10	1.00
<b>10</b>	<b>MPKV, Rahuri</b>	<b>PHULE 388</b>		
		RHC 006 (F)	0.02	0.02
		RHCB 001(M)	0.01	0.01
<b>11</b>	<b>UAS, Dharwad</b>	<b>Varalaxmi</b>		
		Laxmi (F)	0.02	0.02
		SB 289E (M)	0.02	0.02
		<b>DCH 32</b>		
		DS 28 (F)	0.13	0.13
		SB 425YF (M)	0.15	0.15
		<b>DHH 11</b>		
		CPD 423 (F)	0.05	0.05
CPD 420 (M)	0.04	0.04		

12	TNAU, Coimbatore	MCU 7	0.20	0.20
		MCU 12	1.12	1.12
13	ANGRAU, Guntur	Narasimha	0.31	0.31
		Aravinda	0.06	0.06
14	CICR, Coimbatore	LRA 5166	3.81	3.81
		LRK 516(Anjali)	1.96	1.96
		Surabhi	0.99	1.00
		Supriya	0.80	1.00
		Sumangala	0.15	0.50
	<b>Hybrid Total</b>		<b>1.57</b>	<b>57.59</b>
	<b>Variety Total</b>		<b>191.07</b>	<b>392.23</b>
	<b>Grand Total</b>		<b>192.64</b>	<b>449.82</b>

### Notification of Cotton Genotypes for cultivation

During the year, one hybrid and two varieties developed by the State Agricultural Universities were approved for notification and cultivation in the respective states. They are as follows:

Name of the variety	Nature	Developed by	Released for	Year
40 <sup>th</sup> Meeting of the Central Sub committee on crop standards and release of varieties of Agricultural crops				
MCU 13	<i>G.hirsutum</i>	TNAU Coimbatore	Tamil Nadu	2005
41 <sup>st</sup> Meeting of the Central Sub committee on crop standards and release of varieties of Agricultural crops				
HHH 287	Intra hirsutum Gms based hybrid	CCSHAU, Hisar	Haryana	2005
HD 324	<i>G.arboreum</i>	CCSHAU, Hisar	Haryana	2005

The Varietals Identification Committee, which met during the AICCIP Group Meeting at RAU, Sriganaganagar during April, 2005 recommended the following hybrids for submission to Central Sub committee on Crop standards and release of varieties of Agricultural crops for Release and Notification. They are as follows:

Hybrid	Developed by	Nature	Zone of Adaptation
NAV KAR 5	Navkar Hybrid Seed Company, Ahmedabad	Intra hirsutum hybrid	North Zone
Ajeet 90-2	Ajeet Seeds Private Limited, Aurangabad	Intra hirsutum hybrid	Central Zone
NACH 6	Nirmal Seeds (P) Limited, Jalgaon	GMS based intra arboreum hybrid	Central and South Zone.

Proposals have been submitted by the concerned Companies to.

### De-notification of Varieties

Based on the proposals received from Karnataka and Haryana, the following varieties and Hybrids have been denotified.

Meeting	Varieties De-notified
40 <sup>th</sup> Meeting of the Central Sub committee on Crop standards and release of varieties of Agricultural crops	JK Hy1, Raichur 5, Laxmi, Hampi, Sowbhagya, Arunabha, GS 23 and Sharada
41 <sup>st</sup> Meeting of the Central Sub committee on Crop standards and release of varieties of Agricultural crops	DS 5, DS 1, HHH 81, H 974, H 65c and HS 45.



## Evaluation of Bt Cotton Hybrids

After the approval for commercial cultivation of Bt cottons three years ago, Bt cotton cultivation has made tremendous strides. According to reports, India occupies seventh position among a group of 21 nations that grow genetically modified cotton over an area exceeding 50,000 hectares. India is reported to have shown the fastest growth. At the global level, it is reported that Bt cotton covered an area of 9.7 million hectares in seven countries during 2005-06, constituting 28 per cent of the total world cotton area.

Bt cotton area in India rose from 0.03 m ha in 2002-03 to 1.62 m. ha in 2005-06 accounting for 18 per cent of the total cotton area in the country. The total production of Bt cotton is expected to be around 60 lakh bales and accounts for 25 per cent of the production. With 20 hybrids to choose from, around 1 million farmers are reported to have grown Bt cotton during the current year.

During the current year, under the All India Coordinated Cotton Improvement Project, Bt cotton hybrids were evaluated in all the three zones. The number of intra hirsutum hybrids evaluated were 14 ( 2 in I year and 12 in II year trials) in North Zone, 37 (11+26) in Central Zone and 36 (10+26) in South Zone. One interspecific Bt hybrid was also evaluated. The results have been compiled and submitted to the Council.



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