



11.3 CONSULTANCY, PATENTS, COMMERCIALISATION OF TECHNOLOGY

Two hybrids viz CSHH 198 and CISAA 2 developed by CICR RS, Sirsa were released and notified by Central Varietal Release Committee for commercial cultivation in the northern cotton zone.

Intra - *hirsutum* high fibre quality hybrid (CSHH 198 Shresth)

CICR, Regional Station, Sirsa has developed and released an intra-*hirsutum* hybrid CSHH 198 (Shresth) in 2004 for the entire North Zone. The hybrid possesses medium maturity of 162 days and fits well in cotton – wheat rotation of the zone. This superior medium staple hybrid has high fibre strength of 23.5 g / tex and can spin on 50s counts. Yield potential of CSHH 198 has been obtained 32 quintals per hectare.

The hybrid developed by the station is leaf curl resistant and tolerant to bollworms and jassids.

GMS based *desi* cotton hybrid CISAA 2

Another hybrid developed and released by this station in 2004 is a first ever GMS based *desi* hybrid CISAA 2 for the entire North Zone. This is an early maturing hybrid (160-170 days) suitable for cotton – wheat rotation of the zone. In the zonal performance this hybrid recorded up to 18.85% increase in yield over the ruling check hybrid (AAH-1). It is moderately resistant to Fusarium wilt and at par in fibre quality properties with AAH-1. Being a GMS based hybrid it has low seed production cost and therefore, potential of wide spread among farmers.

Breeder seed production of the following varieties has been taken up and would be commercially sold to the seed producers as per the government of India allotment.

No	Name of Variety/ Parent of Hybrid	2004-05	
		Indent (q)	Production (q)
1.	Savita T 7	0.22	0.09
	M 12	0.01	0.12
2.	LRA 5166	0.74	1.99
3.	Surabhi	1.02	2.50
4.	MCU 5VT	1.12	1.50
5.	Anjali	0.47	1.50
6.	Supriya	1.02	1.50
7.	Sumangala	0.15	0.50
8.	LRK 516	-	0.30



11.4 SIGNIFICANT DECISIONS OF SRC, IMC MEETINGS

11.4.1 Staff Research Council (SRC)

The annual meeting of Staff Research Council was held under chairmanship of Dr. P. Singh, Director (Acting) on 3-4 June, 2004 to discuss the results of the work carried out during 2003-04 and to finalize the research programme for the year 2004-05. All Scientists of CICR, Nagpur, Project Coordinator, AICCIP and Head, CICR, Regional Station, Coimbatore and Dr. S. L. Ahuja from CICR, Regional Station, Sirsa participated in the meeting. Results of each project carried out during 2003-04 were presented by the individual Scientist and discussed. Technical plan of work for next year for each project was also discussed and finalized. Six new projects from CICR, Nagpur and one from CICR, Regional Station, Sirsa were presented and approved after discussion.

Chairman in his introductory remarks emphasized need for analyzing impact of new technologies in increasing income of farmers and awareness and gain of knowledge to farmers about such techniques. He emphasized that the constraint analysis in the implementation of technology and achievement of targets should also be indicated.

11.4.2 Institute Management Committee (IMC)

The Institute Management Committee meeting was held on 10th December, 2004 during the year 2004-05 at CICR, Regional Station, Coimbatore under the Chairmanship of Dr. P. Singh, Director (Acting). The proceedings of 43rd Institute Management Committee meeting were approved by the ICAR.

Major recommendations:

- The approved budget of Plan and Non-Plan of the current financial year and expenditure upto November 2004 was seen by the committee members and they expressed their satisfaction.
- The members expressed satisfaction on the progress of works and recommended that such review may be taken up by IMC periodically.
- The committee expressed their satisfaction and agreed for continuation of farm development work.
- The members discussed the various research programmes at length expressed satisfaction on the progress.
- The activities of KVK were also presented before the committee. The members expressed their satisfaction on the work carried out by the KVK.



11.5 WORKSHOPS/SEMINARS/ SUMMER INSTITUTES/ FARMER'S DAY ORGANIZED

11.5.1 Group discussion on Mechanization of Cotton Production

Group discussion Mechanization of cotton production was organized at CICR, Nagpur on 16 August 2004 under the TMC-Mini Mission-I programme.

Dr. Nawab Ali in his presidential address emphasized the need for low cost implements in a country like India where majority of farmers are marginal and small land holders. He cited the example of some developing countries where mechanized farming is practiced on a co-operative basis to facilitate the poor farmers to use costly implements. Dr. P. Singh, Chaired the session and presented in brief the genesis of the seminar. He mentioned that for mechanization in farming to succeed, the machines need to be of high quality and affordable.

The participants from CIAE, Bhopal, CIRCOT, Mumbai and Nagpur, CICR, Nagpur and Dr. PDKV, Akola were attended the group discussion.

Major recommendations are:

- Appropriate cotton varieties need to be developed for synchronous maturity to facilitate use of mechanical picker.
- Good designs of cleaning devices need to be developed to go with the mechanical picking.
- Testing of important design of the cotton picker undertaken at the different locations (PAU, Ludhiana, Dr. PDKV, Akola and CICR, Nagpur) under NATP should be carried out with the objective of identifying the design parameters and criteria suitable for mechanical cotton picker for Indian conditions.
- Animal drawn and tractor mounted planters, self propelled and tractor mounted weeders and air carrier sprays developed under AICRP on FIM scheme hold promise for adoption for cotton cultivation. These equipments should be taken up for their feasibility testing on cotton crop at different locations.
- Cotton stalk puller need to be redesigned, refined and commercialized.
- Cotton shredder should be developed.
- Suitable designs of tillage equipment should be developed/adopted for primary tillage in black cotton soil under dry land conditions.

11.5.2 Group discussion on Cotton Seed Oil Improvement:

Group discussion on Cottonseed Oil Improvement was organized at CICR, Nagpur on 15th Oct., 2004. Dr. PV Patil, Ex Director of Laxminarayan Institute of Technology was the chief guest. Dr. Phundan Singh, Director (Acting) CICR, Nagpur chaired the inaugural session. Dr. Patil in his address emphasized the importance of cotton byproducts in the industry. Dr. Phundan Singh in his address mentioned the importance of lint and seed in cotton industry. He also emphasized the need to improve the crushing and processing techniques, which presently limit the cottonseed oil production to 20% as against the potential of 45%. In the seminar a film prepared by NDDDB, Anand, Gujarat on success story of a village named Narphede in Kaira District of Gujarat about cotton seed by product utilization was also screened.

The Group discussion was attended by the scientists from different institutes viz. CIRCOT,



NDRI, IARI. Cottonseed Crusher's organization and CICR, Nagpur.

Major Recommendations are:

- Improving the oil percentage of cottonseed by using high oil content germplasm lines i.e. 27% oil content.
- Improving oleic acid content of cottonseed oil and improving the fatty acid profile.
- Development of glandless cultivars with Bt gene to be prioritized.
- Increasing the kernal content compared to the hull.
- Contractual farming should be encouraged for making farmers grow specific materials especially high yielding and high oil content lines.
- Marketing of cottonseed oil should be emphasized
- Seed oil content as measured by NMR should be recorded in two different laboratories.
- There is a need to identify gene governing oil quantity and quality through molecular approach.
- Wastage of oil during hydrogenation should be minimized.
- Losses to be minimized by improving the technology of cottonseed oil extraction.
- Studies on anatomy of seed gossypol glands and precise localization of oil granules in the cottonseed.
- Emphasis should be made to improve the scientific processing of cottonseed oil resulting in a better oil recovery.

11.5.3 Group discussion on Cotton Leaf Curl Virus Disease

One day Group discussion on Cotton Leaf Curl Virus Disease: Present Status and Future Strategies for Management" was organized at CICR, Regional Station, Sirsa. The Group discussion was chaired by Dr. Phundan Singh, Director (Acting), CICR, Nagpur

and Dr. Anupam Verma, National Professor, IARI, New Delhi was the Chief Guest. Fifteen lectures in two sessions (I – Molecular and Genetic Aspects of CLCuV and II - Management of CLCuV) were presented by the experts.

11.5.4 Group discussion on Genetic Improvement of Fibre Quality Traits in Cotton

Group discussion on "Genetic Improvement of Fibre Quality Traits in Cotton" was organized at CICR, Nagpur on 15 February, 2005. Dr. S. Sreenivasan, Director, CIRCOT, Mumbai was the Chief Gust.

Dr. Sreenivasan, in his inaugural address, quantified cotton production as per staple length, gaps in the quality cotton production, requirement of textile industries and future requirement of the quality cotton in view of the changing world scenario. Dr. Phundan Singh, in his address, mentioned the importance of fibre quality parameters and stressed on need to attain quality standards in cotton production.

In all, thirteen presentations covering different aspects of fibre quality improvement were made. A compilation of full length research papers contributed by eminent cotton scientists was released at the hands of Dr. Sreenivasan.

The major recommendations are

- Unutilized germplasm and wild genetic resources should be utilized to create gene pool governing fibre quality traits.
- Use of un adopted germplasm to improve the existing cultivars for fibre quality traits.
- The fibre quality standards may be upgraded in accordance with the newly fixed norms such as fibre length and strength ratio should be equivalent to one and the micronaire value should range between 3.5 to 4.5.
- Transgenics with improved fibre quality need to be developed.



- Molecular marker techniques need to be employed for mapping fibre trait QTLs. Marker Assisted Selection should be followed to bring faster improvement and facilitate conventional breeding.

11.5.5 Annual Review Workshop of TMC MM I

The Annual Review Workshop of all the PIs of TMC-MM I projects was held on June 25, 2004 at CICR, Nagpur under the Chairmanship of Dr. CD Mayee, Agriculture Commissioner, Govt. of India and Mission Director, TMC – Mini Mission I and II. Dr. Phundan Singh, Director, (Acting), CICR and Member Secretary (Acting), ICAR Standing Committee for TMC-MM I and Dr. TP Rajendran, Project Coordinator, AICCIP and Head, CICR, Regional Station, Coimbatore were the prominent dignitaries present.

Director & Member Secretary, in his introductory remarks, emphasized some major issues related to cotton research. The primary challenge is to achieve a breakthrough in cotton yield. The production figure for the year 2003-04 of 167.5 lakh bales, which indicates a significant increase of 28.5 lakh bales over the year 2002-03 in spite of a reduction in cotton area, indicating rise in productivity. He appreciated that it is quite encouraging that through Mission Mode approach, pesticide consumption in cotton has been drastically reduced from 50% to 35%. Mechanization in cotton cultivation has also been boosted up through proper modification of different implements.

The respective PI's very briefly presented the results of 2003-04 across all the cooperating centers and focussed on the outcome which can be implemented immediately.

The major findings and some implementable technologies are

- Two *G. arboreum* strains viz, CINA-316 from Nagpur and PA 402 from Parbhani have been

proposed for 'Fast Track Release' and PA 402 has already been released by MAU, Parbhani during 2003-04 with the name 'Vinayak'. These two strains have better 2.5% span length (above 25 mm) and fibre strength (>20 g/tex).

- Culture CCH4 after multilocation testing at 5 centres in Central Zone and at 6 centers in South Zone, has been identified as superior to local and zonal checks and has been entered in AICCIP Agronomy trial for South Zone.
- DLSA-17, first introgressed derivative from *G. arboreum* X *G. hirsutum* has been released for cultivation in Karnataka.
- The culture CHNO12 with oil percent 21.77 and 1600 kg/ha seed cotton yield has been sponsored for AICCIP multilocation trial Br 02 (a) in 2004-05 season and another culture CHNO 3 with 26.68% seed oil and seed cotton yield on 1395 kg/ha has been entered in Br 02 (b) trial.
- A self propelled power weeder has been developed for small holding situation which results in a cost and time saving of 78% and 94% respectively over conventional manual weeding. Power tiller operated boom sprayer has been developed to enhance efficiency of spraying, wider coverage and safety of operators.
- There was almost 50% reduction in insecticide sprays in IPM block as compared to farmers practice (FP). There was a two to four fold increase in the population of coccinellid and *Crysoperla* adults.
- A rapid and simple PCR Protocol has been developed for detection of bacterial blight of cotton caused by the pathogen *Xanthomonas axonopodis* pv. *malvacearum*.
- A new twig imprint method has been developed for detection of CLCuV infection in cotton.
- Fermented culture methodology was found suitable for mass production of *Trichoderma*.



- Commercial trial on preparation of hard board from cotton stalks showed that the process is technically feasible and good quality hard boards conforming to BIS specification can be prepared from cotton stalks.
- Planting of cotton on flat beds and opening of ridges and furrows at 1st intercultural operation has increased the productivity to the tune of 18% over farmers practice of sowing of cotton in flat beds without opening of ridges and furrows.

The Chairman Dr. CD Mayee appreciated the research efforts being attempted under TMC-MM I programme and emphasized that the results of practical importance should now be tried on a larger scale in collaboration with Mini-Mission-II for benefiting the cotton farmers.

11.5.6 5th meeting of ICAR Standing Committee for TMC MM I

The 5th meeting of ICAR Standing Committee for TMC-MM I was held on September 30, 2004 in Directorate of Maize Research, IARI campus, New Delhi, under the Chairmanship of Dr. Mangala Rai, Secretary, DARE and DG, ICAR. Distinguished members of the Standing Committee – Dr. G. Kalloo, DDG (CS), Dr. KC Jain, ADG (CC), Dr. SK Tandon, ADG (Engg.), representatives of Plant Protection Advisor, Govt. of India graced the meeting and from CICR, Nagpur, Dr. P Singh, Director and Member Secretary, ICAR Standing Committee for TMC-MM I, Dr. Sheo Raj, Head, Crop Protection Division, Dr. MRK Rao, Head Crop Production Division and M. Chakrabarty, Scientist In-charge TMC-MM I Cell participated in the meeting.

Dr. P Singh welcomed the members and briefly presented an overview of the progress under TMC-MM I programme with an emphasis on Genetic Improvement, Seed Technology and Technology Intervention aspects. Dr. MRK Rao and Dr. Sheo Raj made an elaborate presentation on Natural

Resource Management, Mechanisation and Biotic Stress Management. Chairman desired that a review meeting of all the PIs should be organized and the PIs will apprise him of the progress made in the projects since inception.

Accordingly the review meeting was held on November 02, 2004 in NATP Conference Hall, KAB-II, Pusa, New Delhi. All the Principal Investigators were present in the meeting. The meeting was graced by Dr. Mangala Rai, DG, ICAR, Dr. Kalloo, DDG (CS), Dr. KC Jain, ADG (CC), Dr. SK Tandon, ADG (Engg.), Dr. Gurbachan Singh, ADG (Agronomy), Dr. S P Tiwari, ADG (Seeds), Dr. Amerika Singh, Director, NCIPM, New Delhi and Dr. TP Rajendran, PC and Head, CICR, Regional Station, Coimbatore.

Dr. P Singh, Director (Acting), CICR & Member Secretary, ICAR Standing Committee welcomed the delegates. The individual PIs presented the progress made against the targets assigned. Discussions were held and suggestions were made in some cases to achieve the targets in a more effective way. The significant findings were appreciated, but it was reiterated by DG, DDG (CS) and experts that the work done must be presented in monitorable and targeted output mode so that achievements will be easily understandable by all.

11.5.7 Rashtriya Kisan Mela

A one day Rashtriya Kisan Mela 2004 was jointly organized by four Nagpur based ICAR Institutes viz. CICR, NBSS & LUP, NRCC and Ginning & Training Centre, CIRCOT at NBSS & LUP on 20.12.2004. The Mela was inaugurated by Dr. CD Mayee, Chairman, Agricultural Scientists Recruitment Board, New Delhi. Dr. Mayee exhorted the farmers and Agricultural Research Institutes to gear up to face challenges posed by opening up of agriculture to international trade. He also released an extension bulletin. Dr. Phundan Singh, Director (Acting) informed that CICR has developed kits for



detecting substandard and contaminated seeds. In his presidential address, Dr. AK Sinha, Director, Remote Sensing Centre mentioned that information available through satellites be employed for Integrated Crop Management.

Dr. KS Gajbhiye, Director, NBSS & LUP and Dr. Shyam Singh, Director, NRCC also spoke on this occasion. The Mela was attended by large number of farmers.

11.5.8 IRM Mela

An IRM mela was organized by CICR, Regional Station, Sirsa at Fatehpuria village on October 18, 2004. Dr. DS Barar, Regional Director of PAU Research Station, Bhatinda was the chief guest. He congratulated the scientists and farmers of the village for achieving successful cotton production by adopting IRM strategies.

11.5.9 FLD Mela

FLD Mela on cotton stalk utilization was conducted by CICR, Regional Station, Sirsa at Jodhpuria village on November 4, 2004. Dr. Phundan

Singh, Director (Acting), CICR, Nagpur was the Chief Guest. This mela was also attended by Dr. S Sreenivasan, Director, CIRCOT, Dr. TP Rajendran, PC and Head, CICR, Regional Station, Coimbatore, Dr. D Monga, Head I/c, CICR, Regional Station, Sirsa, Dr. Banwarilal, Joint Director Agriculture (Cotton) Haryana as well as scientists from CICR and CIRCOT. In this programme farmers were apprised about various products that can be developed from cotton stalk and its use for different purposes.

11.5.10 Kisan Mela under Cotton FLD programme

Kisan Mela was organized on 22 January 2005 at Tumgaon FLD village in Warora Tahsil of Chandrapur dist. Dr. P. Singh, Director (Acting), CICR presided over function. Other scientists Dr. MRK Rao, Dr. NK Perumal, Sh. MK Meshram, Dr. SM Wasnik of CICR and S Sakhare of State Agril. Dept. participated in this programme. More than 300 villagers comprising of farmers, rural youths, and farmwomen attended this mela.





**Dr. CD Mayee,
Commissioner of Agriculture,
Govt. of India, addressing
the participants**



**Dr. M. R. K. Rao
addressing
the Trainees**



**Dr. P. Singh,
Director (Acting), CICR
addressing
the Farmers**





11.6 PARTICIPATION OF SCIENTISTS IN SEMINARS / SYMPOSIA / WORKSHOPS

Sr. No.	Seminars/ Conferences/ Symposia/ Workshops	Place and Date	Participants
1.	Annual Group Meeting of AICCIP, 2004	MPKV, Rahuri 5-7 April, 2004	Sheo Raj, V.V. Singh, A. Kannan, P Chidambaram, T Surulivelu, KNGururajan, N Gopalakrishnan, D.Monga, S.L.Ahuja, O.P.Tuteja, S.K.Verma, P. Jeyakumar
2.	15 th International Plant Protection Congress	Beijing, China, May 11-16, 2004,	Nandini Gokte-Narkhedkar
3.	Seminar on Networking and Internet Security	Coimbatore 4 August, 2004	M. Sabesh A.R.Raju,
4.	Group discussion cum workshop on "Mechanization of cotton"	Nagpur 6 Aug., 2004	S. N. Rokade, G. Majumdar, Nandini-G-Narkhedkar P Ramasundaram
5.	National Symposium on Changing World Order - Cotton Research Development and Policy in Context	Hyderabad 10-12 August, 2004	P. Singh, V.V. Singh, V.N. Waghmare, Vinita Gotmare, R.K. Deshmukh, V. Santhy, Punit Mohan, S.B. Singh, P.R. Vijayakumari, M.R.K. Rao, K.S.Bhaskar, Jagvir Singh, Blaise, Sheo Raj, M. K. Meshram, K. R. Kranthi, S.Kranthi, S.Vennila, N.Narkhedkar, D.Monga, S.L.Ahuja, R.A.Meena, O.P.Tuteja, P.Jeyakumar, A. Kannan, A. H. Prakash, K. Sanakaranarayanan, P. Nalayini, S. M. Wasnik.
6.	Inter-Regional Network on Cotton in Asia and North Africa (INCANA) meeting	Tashkent, Uzbekistan 6-8 Sept, 2004	Punit Mohan D Blaise M K Meshram
7.	Annual Workshop for KVK (Zone - V)	Jalna September 26-29, 2004	PR Deoghare, Smt. S N Chauhan
8.	International Cotton Genome Initiative Workshop - 2004	Hyderabad 10-13 October, 2004.	P. Singh, V. V. Singh, V. N. Waghmare, Vinita Gotmare, J.Amudha, G. Balasubramani, S. B. Nandeshwar, Sheo Raj, P. M. Mukewar, N. Gopalakrishnan, A. H. Prakash, S. Manickam,





9.	Group discussion on Genetic Improvement of Seed Cotton Oil	Nagpur 15 Oct, 2004	P. Singh, V. V. Singh, V. N. Waghmare, Vinita Gotmare, R. K. Deshmukh, S. M. Palve, Punit Mohan, S. B. Singh, N. Gopalakrishnan, O. P. Tuteja
10.	International Conference on Bioconvergence 2004	Patiala 18-20 November, 2004	S.L.Ahuja
11.	International Symposium on Strategies for Sustainable Cotton Production - a Global Vision	UAS Dharwad 23-25 November, 2004	P. Singh, V. V. Singh, R. K. Deshmukh, S. M. Palve, T. R. Loknathan, V. Santhy, Sheo Raj, M. K. Meshram, K. R. Kranthi, S. Kranthi, N. Gopalakrishnan, K. P. M. Dhamayanthi, S. Manickam, B. Dhara Jothi, S. E. S. A. Khader, P. Chidambaram, K. N. Gururajan, T. Surulivelu, C. S. Praharaj, K. Sankaranarayanan, P. Nalayini, D. Monga, S. L.Ahuja, M. R. K. Rao, K. S. Bhaskar, D. Blaise, KB Hebbbar.
12.	Group discussion on Cotton Leaf Curl Virus Disease- Present Status and Future Strategies for its Management	Sirsa 15 December 2004	P. Singh, V.N.Waghmare, J.Amudha, D.Monga, S.L.Ahuja, R.A.Meena, O.P.Tuteja, S.K.Verma, P.Jeyakumar.
13.	Workshop on Biosafety issues related to transgenic crops with focus on Bt cotton	Nagpur 23 January, 2005	Punit Mohan, S.B. Singh
14.	International Conference on Soil, Water and Environmental Quality - Issues and Strategies	New Delhi 28 January-1 Feb. 2005	K.S.Bhaskar
15.	DBT Task Force meeting on 'Biopesticides and Crop Management'.	New Delhi 2 February, 2005	Nandini Gokte-Narkhedkar
16.	International Symposium on Plant Introduction - Achievements and Opportunities in South Asia	New Delhi 15-17 February, 2005	Punit Mohan



17.	Group discussion on Genetic Improvement of Fibre Quality Traits	Nagpur 15 th February, 2005	P. Singh, V.N.Waghmare, S.B.Singh, T.R.Loknathan, S.M.Palve, R.K.Deshmukh, PR Vijayakumari, V. Santhy, Vinita Gotmare, S.B.Nandeshwar, S.B.Singh.
18.	International Conference on "Modern Trends in Plant Sciences with Special Reference to the Role of Biodiversity in Conservation"	Amravati. 17-20 February, 2005	K.S.Bhaskar Jagvir Singh, S. B. Nandeshwar.
19.	National Symposium on <i>Helicoverpa</i> Management – A National Challenge	Kanpur 27-28 February, 2005.	K.S.Bhaskar
20.	Workshop on Breeding for WUE, root traits and other related traits to mitigate drought	Bangalore 25-26, March 2005.	V.N.Waghmare

