

11.1 List of Publications

Papers Published in Research Journals

- Acharya L., Mukherjee A. K. and Panda P.C. (2011). Separation of the genera in the subtribe *cassiinae* (Leguminosae: Caesalpinioideae) using molecular markers. *Acta Botanica Brasilica*, 25(1):223-233. (NAAS Rating 6.8)
- Amudha J., Balasubramani G., and Mohan Punit., (2012). Identification of DNA markers for resistance to grey mildew disease in cotton. *Journal of Cotton Research and Development*, 26 (1): 8-13. (NAAS Rating 4.3)
- Amudha J., Balasubramani G., Malathi VG., Monga D. and Kranthi K. R. (2011). Cotton leaf curl virus resistance transgenics with antisense coat protein gene (*AV1*). *Current Science*, 101 (4): 1-8. (NAAS Rating 7.3)
- Blaise D. (2011). Tillage and green manure effects on Bt transgenic cotton (*Gossypium hirsutum* L.) hybrid grown on rainfed Vertisols of central India. *Soil and Tillage Research*, 114: 86-96. (NAAS Rating: 7.7)
- Blaise D. and Kranthi K.R. (2011). *cry1Ac* expression in transgenic Bt cotton hybrids is influenced by soil moisture and depth. *Current Science*, 101: 783-786. (NAAS rating 7.3)
- Dhamayanthi K. P. M. and Manickam S. (2011). Genetic variability studies in *Gossypium barbadense* L. genotypes for seed cotton yield and its yield components. *Indian Journal of Agricultural Sciences*, 81: 560-562. (NAAS rating 6.6)
- Ohara Jothi B., Surulivelu T., Sonai Rajan T. and Valarmathi R. (2011). First Record on the Establishment of the Parasitoid *Acerophagus papayae* Noyes & Schauff on *Paracoccus marginatus* Williams and Granara de Willink in cotton. *Karnataka Journal of Agricultural Sciences*, 24(4): 536-537. (NAAS rating 3.3)
- Ohara Jothi, B., Nagarajan, T. and Karthikeyan, A (2011). Cotton stem weevil and its management. *Madras Agricultural Journal*, 98: 10-11. (NAAS rating 4.0)
- Druzhinina I., Seidl-Seiboth V., Herrera-Estrella A., Horwitz BA., Kenerley, C.M., Monte E., Mukherjee P.K., Zeilinger S., Grigoriev IV, and Kubicek CPo (2011). *Trichoderma*: The genomics of opportunistic success. *Nature Reviews Microbiology*, 9: 749-759. (NAAS rating 10.0)
- Kumar Rishi, Monga D., Nitharwal M., Jat S. L. and Kishor Chand. (2011). Validation of eco-friendly IPM packages in Bt-cotton at farmer's participatory field. *Journal of Cotton Research and Development*, 25 (2): 243-247. (NAAS Rating 4.3)
- Kumar Rishi, Swami Dinesh, Kumhar Kishor Chand and Bhawaria R.S. (2011). New formulation of acephate and other insecticides against sucking pests in cotton. *Indian Journal of Plant Protection*, 39(3): 236-238. (NAAS Rating 4.3)
- Kurian Raphael and Velmourougane K. (2011). Chemical and microbiological changes during vermicomposting of coffee pulp using exotic (*Eudrilus eugeniae*) and native earthworm (*Perionyx ceylanensis*) species. *Biodegradation*, 22:497-507. (NAAS Rating 7.7)
- Meena N.K., Nagrare VS. and Medhi R.P. (2011). Thrips, *Dichromothrips nakahari* Mound (Thysanoptera: Thripidae) infesting the Orchids in India-A new report. *Indian Journal of Horticulture*, 68(4):587-588. (NAAS rating 6.7)
- Mukherjee P.K. (2011). Genomics of biological control- whole genome sequencing of two mycoparasitic *Trichoderma* spp. *Current Science*, 101:268. (NAAS rating 7.3)
- Mukherjee P.K., Buensanteai N., Moran-Diez M., Druzhinina I.S. and Kenerley C.M. (2012). Functional analysis of NRPSs in *Trichoderma virens* reveals a PKS/NRPS hybrid enzyme involved in induced systemic resistance response in maize. *Microbiology*, UK 158: 155-165. (NAAS rating 7.8)
- Mukherjee P.K., Horwitz BA and Kenerley C.M. (2012). Secondary metabolism in *Trichoderma*- a genomic perspective. *Microbiology*, UK 158: 35-45. (NAAS rating 7.8)
- Nalayini P., Paul raj S. and Sankaranarayanan K. (2011). Growth and yield performance of cotton (*Gossypium hirsutum*) expressing the *Bacillus thuringiensis* var. *Kurstaki* as influenced by polyethylene mulching and planting techniques. *The Indian Journal of Agricultural Sciences*, 81 (1) : 55-59. (NAAS rating 6.6)
- Nalayini P., Paul raj S. and Sankaranarayanan K. (2011). Evaluation of drip and polymulching for improving water use efficiency and productivity of cotton maize cropping system. *Cotton Research Journal*, 2(1): 39-44. (NAAS rating 2.6)
- Palve S.M., Venilla S. and Kate N. (2011). Genetic analysis of agronomic traits and bollworm resistance in upland cotton. *Cotton Research Journal*, 2: 15-20. (NAAS rating 2.6)
- Prabhakar M., Prasad YG., Thirupathi M., Sreedevi G., Dharajothi B., Venkateswarlu B. (2011). Use of ground based hyperspectral remote sensing for detection of stress in cotton caused by leafhopper (Hemiptera: Cicadellidae). *Computers and Electronics in Agriculture*, 79:189-198. (NAAS rating 7.5)
- Praharaj C.S., Sankaranarayanan K., Kumar Narendra, Singh K.K. and Tripathi AK. (2011). Low input technologies for increasing crop productivity and sustainability: A review. *Current Advances in Agricultural Sciences*, 3 (1): 1-12. (NAAS rating 3.9)
- Raghavendra K.P., Phanindra M. LV, Kumar Kiran B, Dhandapani G. and PAnanda Kumar. (2011). Identification of differentially expressed genes during bud stage of cotton boll development using suppression subtractive hybridization and cDNA macroarray. *Journal of Plant Biochemistry and Biotechnology*, 20(1): 12-19. (NAAS Rating 6.9)
- Rajendran K., Palchamy A., Sankaranarayanan K., Prabakaran K. and Bharathi K. (2011). Enhancing the productivity of summer irrigated cotton through plant growth regulator and foliar nutrition. *The Madras Agricultural Journal*, 98(7-8):248-250. (NAAS rating 4.0)
- Raju A. R., Majumdar G., Thakre Soniya K., Reddy A. R., Tayde A. S., Vijaya Kumari P. R., Chauhan S. N., Mahalle P. S. and Katore J. R. (2011). Rain water harvesting as strategic tool for drought mitigation in cotton. *Journal of Cotton Research and Development*, 25 (2),186-196. (NAAS Rating 4.3)

- Raju A.R., Majumdar G. and Reddy A. R. (2011). Validation of farm pond size for irrigation during drought. Indian Journal of Agronomy, 56(4): 356-364. (NAAS Rating 5.0)
- Reddy A. R., Yelekar Sachita M. and Agarwal Isabella. (2011). Total Factor Productivity and input utilization in cotton production in Maharashtra. Journal of Cotton Research and Development, 25 (2), 291-295 (NAAS Rating 4.3)
- Reddy A. R., Yelekar Sachita M., Petkar Rajendra B. and Anuradha N. (2011). Analysis of Human Labour Utilization in Cotton Production in Gujarat. Agricultural Economics Research Review, Vol. 24: 551. (NAAS Rating 4.7)
- Sankaranarayanan K., Praharaaj C.S., Nalayini P. and Gopalakrishnan N. (2011). Grain legume as a doable remunerative intercrop In rainfed cotton. Journal of food legumes, 24(1):18-22. (NAAS Rating 4.3)
- Sankaranarayanan K., Praharaaj C.S., Nalayini P. and Gopalakrishnan N. (2011). Growth, yield and quality of Bt cotton hybrid under varied planting patterns, NPK levels and season variations. Indian journal of Agricultural Sciences, 81(9):871-874. (NAAS Rating 7.3)
- Sankaranarayanan K., Praharaaj C. S., Nalayini P. and Gopalakrishnan N. (2012). Performance of intercrops in Bt cotton hybrid and assessment of its refugia system. Journal of Cotton Research and Development, 26:52-57. (NAAS Rating 4.3)
- Sankaranarayanan K., Praharaaj C.S., Nalayini P. and Gopalakrishnan N. (2011). Evaluation of Bt and non-Bt cotton hybrids under varied planting time. Indian Journal of Agronomy, 56 (1):68-73. (NAAS Rating 5.0)
- Singh Jagvir, Bhaskar K.S. and Bharambe P.R. (2011). Available soil moisture and yield of rainfed hybrid cotton (*G.hirsutum*) as influenced by rainwater conservation practices. Indian Journal of Agronomy, 56(2): 154-158 (NAAS Rating 5.0)
- Singh Jagvir, Babar Shiipa and Venugopalan MV (2012). Multi-location trial on high density planting in *desi* cotton (*G. arboreum*) with fertilizer management for improvement of cotton productivity of rainfed regions. Green Farming, Vol.3(2): 137-141. (NAAS Rating 2.9)
- Tayade A S., Raju A. R. and Meshram M. K. (2011). Farmers participatory evaluation of transgenic Bt cotton in Nagpur district of Maharashtra through institute village linkage programme. Journal of Soils and Crops, 21(1): 60-64. (NAAS Rating 3.1)
- Tayade A.S., Raju A R. and Dhoble MV (2011) Studies on correlation and path coefficient analysis in Bt and Non Bt cotton hybrids (*Gossypium hirsutum* L.). Journal of Cotton Research and Development, 25(2): 147-151. (NAAS Rating 4.3)
- Tayade A.S., Raju A R. and Dhoble M. V. (2011). Effects of nutrient and pest management modules on fibre qualities of Bt and non Bt cotton (*Gossypium hirsutum* L.) hybrids. Journal of Soils and Crops, 21(1):60-64 (NAAS Rating 3.1)
- Tuteja O. P., and Verma S. K. (2011). Effect of alien cytoplasmic and nuclear genes on seed cotton yield and fibre quality traits in cotton (*Gossypium hirsutum*). Indian Journal of Agricultural Sciences, 81(4):296-304. (NAAS Rating 6.6)
- Tuteja O. P., Banga Manju (2011). Effect of cytoplasm on heterosis for agronomic traits in upland cotton (*Gossypium hirsutum*). Indian Journal of Agricultural Sciences, 81 (11): 1001-1007. (NAAS Rating 6.6)
- Tuteja O. P., Verma S. K. and Banga Manju. (2011). Heterosis for seed cotton yield and other traits in GMS based hybrids. Journal Cotton Research and Development, 25:14-18. (NAAS Rating 4.3)
- Tuteja O.P, Banga Manju and Nirania K.S. (2011). Heterosis studies on GMS based hybrids in *Gossypium hirsutum* cotton. Journal of Cotton Research and Development, 25 (2): 162-164. (NAAS Rating 4.3)
- Uma B., Raju A. R., Majumdar G., Meshram M.K., Mahalle P. S., Laxman S. and T. Pradeep. (2011). Integrated nutrient management for *desi* cotton (*G. arboreum*) in Gaurani cotton tract. Journal of Cotton research and Development, 25(2):202-206. (NAAS Rating 4.3)
- Usha Rani, Sand Sankaranarayanan K. (2011). Post Evaluation of Farmers Field Schools on Cotton in Tamil Nadu. Journal of Extension Education, 23(1): 4592-4596. (NAAS Rating 2.7)
- Velmourougane K., Bhat Rajeev, Gopinandhan T. N., Panneerselvam P. (2011). Management of *Aspergillus ochraceus* and Ochratoxin-A contamination in coffee during on-farm processing. Biological Control, 57: 215-221. (NAAS Rating 7.7)
- Velmourougane K., Bhat Rajeev, Gopinandhan T. N., Panneerselvam P. (2011). Impact of delay in processing on mold development, Ochratoxin-A and cup quality in arabica and robusta coffee. World Journal of Microbiology and Biotechnology, 27: 1809-1816. (NAAS Rating 7.5)
- Velmourougane K. and Bhat Rajeev. (2012). Changes in the physico-chemical and biological quality attributes of soil following amendment with untreated coffee processing wastewater. European Journal of Soil Biology, 50: 39-43. (NAAS Rating 7.6)
- Venugopalan MV, Blaise D., Yadav M.S. and Deshmukh Rachna. (2011). Fertiliser Response and Nutrient Management Strategies for Cotton. Indian Journal of Fertilizers, 7(4): 82-94. (NAAS Rating 3.8)
- Waghmare VN., Sutar SR., Thakre PB., Deshmukh P.K., Badole AM. and Salame RV (2011). Diversity analysis in core accessions of upland cotton (*Gossypium hirsutum* L.). Cotton Research Journal, Vol. 2(2):37-46. (NAAS Rating 2.6)
- Waghmare VN., Sutar SR., Thakre P.B., Salame RV, Badole AM., Sapkal D.R. and Patil B.R., (2011). Comparative assessment of microsatellite and RAPD markers and their efficiency in DNA fingerprinting of upland cotton (*G. hirsutum* L.). Indian Journal of Agricultural Sciences, 82(12): 1116-11123. (NAAS Rating 6.6)
- Yeotkar, S., Malode S.N., Waghmare VN. and Thakre P. (2011). Genetic relationship and diversity analysis of *Clitoria ternatea* variants and *Clitoria biflora* using random amplified polymorphic DNA (RAPD) markers. African Journal of Biotechnology, 10(79): 18065-18070. (NAAS Rating 7.0)
- Zhang Z., Rang J., Waghmare V.N., Chee P.w., May O.L., Wright R. J., Gannaway JR. and Paterson AH. (2011). QTL alleles for improved fibre quality and yield from a wild Hawaiian cotton (*Gossypium tomentosum* L.). Theoretical and Applied Genetic, 123: 1075-1088. (NAAS Rating 7.9)

11.2 List of On-going Projects

Sl. No	Name of Project	Principal investigator (PI) Project Leader (PL) Project Associate (PA) CCPII Dr	Duration
	INSTITUTE		
	Crop Improvement		
1.	Collection, conservation, evaluation, documentation and maintenance of germ plasm of cultivated species of <i>Gossypium</i> .	Punit Mohan (PL) S Manickam (PA) VS Nagrare (PA) RA Meena (PA) V Santhy (PA) PR Vijayakumari (PA) Vinita Gotmare (PA) M Chakrabarti (PA) KPM Damayanthi (PA) K Rathinavel (PA) KP Raghvendra (PA)	2006-2013
2.	Improvement of tetraploid and diploid cottons for fibre properties through population improvement approaches.	VN Waghmare (PL) Vinita Gotmare (PA)	2000-2015
3.	OTL mapping for fibre quality traits in diploid cotton.	VN Waghmare (PL)	2011-2014
4.	Conservation, characterization and utilization of wild species, races of cultivated species and synthetic polyploids of <i>Gossypium</i> .	Vinita Gotmare (PL) G Balasubramani (PA)	2008-2013
5.	Breeding of upland cotton for improved fibre quality and resistance to biotic stress (bollworms and jassid).	SM Palve (PL) Vinita Gotmare (PA)	2005-2012
6.	Development of heterotic pool for superior medium staple in tetraploid cotton (<i>G. hirsutum</i>).	SM Palve (PL)	2006-2013
7.	Development of drought tolerant genotype with good fibre quality.	SB Singh (PL) AH Prakash (PA)	2008-2017
8.	Development of improved male sterile lines through induced mutation.	SB Singh (PL) OP Tuteja (PA)	2008-2012
9.	Development of mapping population for different economically important traits.	PK Chakrabarti (PL) VN Waghmare (PA) SM Palve (PA) SB Singh (PA) Vinita Gotmare (PA) TR Loknathan (PA) PR Vijayakumari (PA) Punit Mohan (PA) S Manickam (PA)	2008-2012
10.	Development of drought resistant transgenic cotton and identification of new genes for high water use efficiency.	J Amudha (PI) AH Prakash (PA) G Balasubramani (PA)	2008-2013
11.	Development of transgenic cotton resistant against major diseases of cotton.	PK Chakrabarty (PL) SB Nandeshwar (PA)	2009-2012
12.	Studies on genetic enhancement of <i>hirsutum</i> cotton.	TR Loknathan (PL)	2002-2012
13.	Identification of compact type and leaf hopper resistant genotype for HOPS.	TR Loknathan (PL)	2011-2014
14.	Development of transgenic diploid cotton for insect resistance.	SB Nandeshwar (PI) SB Singh (PA) PK Chakrabarty (PA) VS Nagrare (PA)	2008-2012

15.	Exploration, collection and conservation of perennials and land races of desi cotton from different regions of India.	M Saravanan (PL)	2011-2014
16.	Screening and Evaluation of PEG stress tolerance during seed germination in cotton (<i>G. hirsutum</i> and <i>G. arboreum</i>)	V Santhy (PL)	2011-2012
17.	Development of long staple <i>G. hirsutum</i> with improved fibre strength.	S. Manickam (PL) V. N. Waghmare (PA) S. L. Ahuja (PA)	2008-2014
18.	Development of extra-long staple high spinning hybrids with wider adaptability.	K.P.M.Damayanti (PL) S. Manickam (PA)	2006-2012
19.	Development of heterotic pools in <i>G. arboreum</i> and <i>G. hirsutum</i> .	S. K. Verma (PL) A. P. Tuteja (PA) S.L. Ahuja (PA)	2008-2012
20.	Development of markers for breeding programme.	S. K. Verma (PL) S. L. Ahuja (PA)	2008-2012
21.	Development of varieties and hybrids resistant to CLCuV.	A.P. Tuteja (PL) D. Monga (PA) Rishi Kumar (PA)	2008-2013
22.	Technology to enhance the better crop establishment and yield in cotton.	R. A. Meena (PL) D. Monga (PA)	2007-2012
Crop Protection			
23.	Development of farmer friendly diagnostic kits for transgenic event purity	K R Kranthi (PI)	2007-2012
24.	Molecular characterization of transgene integration events, new gene constructs and discovery of new genes	P K Mukherjee (PL)	2011 - 12
25.	Identification and characterization of viral diseases of cotton in India.	AK Mukherjee (PL) A Sampathkumar (PA)	2010-2012
26.	Development of nanoparticles based biocontrol formulation for the management of major cotton pests and diseases.	A Sampathkumar (PL) V Chinna babu Naik (PA) K Velmourougane (PA)	2011-2014
27.	Bt resistance in pink bollworm <i>Pectinophora gossypiella</i> (Saunders) - monitoring mechanism and management.	V. Chinna Babu Naik (PI) S Kranthi (Co-PI)	2010-2012
28.	Identification of sources of resistance and phylloplane microflora against <i>Rhizoctonia</i> root rot in tetraploid and <i>Fusarium</i> wilt in diploid cotton and their utilization for management.	R C Ukey (PL) V N Waghmare (PA)	2006-2012
29.	Standardization of bioassays techniques for resistance monitoring in <i>Pectinophora gossypiella</i> Saunders to transgenic cotton and development of management strategies.	B Dhara Jothi (PI)	2007-2012
30.	Establishment of <i>Beauveria bassiana</i> as an symbiotic insecticide against major insect pests and diseases of cotton.	M Amutha (PI) M Gunasekaran (PA)	2010-2012
31.	Isolation of novel insecticidal proteins from bacterial symbionts of native entomopathogenic nematodes.	J Gulsar Banu (PI) B. Dharajothi (PA) Nandhini G. Narkhedkar (PA)	2009-2012
32.	Management of foliar diseases of through SAR including chemicals and <i>Pseudomonas fluorescens</i> .	M Gunasekaran (PI)	2010-2012
33.	Use of innovative methods for management of cotton leaf curls virus disease.	D. Monga (PL) Rishi Kumar (PA)	2011-2013
Crop production			
34.	Development of high density planting systems (HDPS) for maximizing productivity of rainfed cotton.	MV Venugopalan (PL) Jagvir Singh (PA) Punit Mohan (PA)	2010-2014

		Vinita Gotmare (PA) SM Palve (PA) AH Prakash (PA) S Kranthi (PA) V Chinna Babu Naik (PA) AK Mukherjee (PA) G Majumdar (PA) AR Reddy (PA) SL Ahuja (PA) D Monga (PA) Rishi Kumar (PA) RB Singandhupe (PA)	
35.	Herbicide resistance weeds and their management strategies.	AR Raju (PL) Sankarnarayanan (PA)	2011-2014
36.	Management of waterlogged soils through cotton based cropping system.	RB Singandhupe (PL)	2011-2012
37.	Screening of cotton varieties with production technologies for organic cultivation under rainfed conditions.	Jagvir Singh (PL), K Velmourougane (PL) VS Nagrare (PA)	2011-2012
38.	Developing efficient carrier based microbial delivery system for cotton nutrition and soil health.	K Velmourougane (PL) Jagvir Singh (PA) AR Raju (PA)	2008-2012
39.	Amelioration of leaf reddening and parawilt in cotton.	AH Prakash (PI) Jagvir Singh (PA) VS Nagrare(PA) M Chakrabarty (PA)	2010-2014
40.	Screening of water logging tolerance of <i>Gossypium hirsutum</i> Germplasm lines.	J Annie Sheeba (PL), RB Singandhupe (PA)	2011-2014
41.	Effect of strigolactones on morphology and physiology of cotton (Ad hoc).	J Annie Sheeba (PL)	2011-2012
42.	Analysing and forecasting of cotton prices.	Anuradha Narala (PL)	2011-2013
43.	Assessment of cotton based intercropping system and its popularization through farmer to farmer participatory learning approach.	SM Wasnik (PL) S Usha Rani (PA) AR Raju (PA)	2008-2012
44.	Technological need assessment for sustainability and stability of cotton production.	SM Wasnik (PL) Anuradha Narala (PA)	2011-13
45.	Performance of white leghemoglobin layers under feeding of Bt and Non-Bt cotton seed.	SN Rokde (PL)	2010-2012
46.	Herbigation with herbicide/ herbicide mixture/ herbicide rotation for efficient and environmentally safe weed control and its effects on succeeding pulses.	P.Nalayini (PL) K.Sankaranarayanan (PA) K,velmourougane (PA)	2008-2012
47.	Studies on the mechanism of cuticular absorption of nutrients and hormones in Bt cotton.	S.E.SAKhader (PL)	2008-2012
48.	Economic impact of trade liberalization in cotton economy of India	Isabella Agarwal (PL)	2010-2012
49.	Gender and labour issues in cotton sectors of India	S. Usha Rani (PL), M. Sabesh (PA) S.M. Wasnik (PA)	2010-2012
50.	Evaluation of VAM and P solubilising bacteria and for enhancing P acquisition and mitigating water stress in Bt cotton cultivation.	D. Kanjana	2011-2012
NAIP			
51.	Research into development of decision support systems for	VS Nagrare (CCPI)	2008-2012

	management of insect pests of major rice and cotton based cropping systems.	G Majumdar (CoPI) Rishi Kumar (CoPI) B Dharajothi (CoPI) M Sabesh (CoPI) M Amutha (CoPI)	
52.	A Value Chain for Cotton Fibre, Seed and Stalks: an innovation for higher economic return to farmers allied stakeholders.	Sankaranarayanan (CCPI) Jagvir Singh (CoPI) D Monga (CoPI) Rishi Kumar (CoCCPI)	2009-2012
53.	Georeferenced soil information system (Geosis) for land use planning and monitoring soil and land quality for agriculture.	MV Venugopalan (CCPI) K Velmourougane (CoCCPI)	2009-2013
DBTIDST			
54.	Enhancing sustainability of transgenic crops through gene stacking. Funded by the DBT under 'Indo-Australian -International Science Linkages' programme.	KR Kranthi (CCPI)	2008-2012
55.	Cloning and characterization of potent toxin gene from heat tolerant isolate of <i>Heterorhabdus indica</i> , an Entomopathogenic nematode. (DBT)	NG Narkhedkar (PI) PK Charkrabarty (PA)	2009-2012
56.	Identification of Molecular markers and tagging genes for Bacterial blight resistance. (DBT)	PK Chakrabarty (PI) Punit Mohan (PA) VN Waghmare (PA) BM Khadi (PA)	2008-2012
57.	"Gene stacking in Bt Cotton". (DBT)	G Balasubramani (PI) SB Nandeshwar (PA) SB Singh (PA)	2008-2012
58.	Isolation and identification of seed specific promoter and gossypol synthesis genes for silencing through RNA interference. (DBT)	KP Raghavendra (PI) J Amudha (PA)	2010-2013
59.	Design and development of cotton picking head. (DST)	G Majumdar (PI) AR Raju (PA)	2010-2013
60.	DBT: Fine mapping of fibre quality and economic traits using RILs in diploid cotton.	VN Waghmare (PI) TR Loknathan	2010-2012
GEAC			
61.	Event based approval mechanism (GEAC)	S Kranthi (PI)	2009-Continuous
CSIR : NMITLI			
62.	Novel approaches for production of hybrid seeds with characteristics of improved insect resistance and higher yield.	KR Kranthi (CCPI)	2008-2012
ICAR Network Project			
63.	Impact, adaptation and vulnerability of Indian agriculture to climate change. Sub project- changes in soil carbon reserves as influenced by different ecosystems and land uses in India.	MV Venugopalan (CCPI)	2009-2012
64.	Transgenics in Crops (NPTC): Development of bollworm resistance transgenic cotton.	G Balasubramani (PI) SB Singh (CoPI) J Amudha (CoPI) SB Nandeshwar (CoPI) KR Kranthi (CoPI) PK Chakrabarty (CoPI)	2006-2012
65.	Mega Seed Project - Seed production in Agriculture crops.	PK Chakrabarty (Nodal Officer)	2007-2012

		PR Vijayakumari (PI) V Santhy (PA) K Rathinavel (CCPI) RA Meena (CCPI)	
66.	National Seed Project (crops).	K.Rathinavel (PI) P.R.Vijayakumari (PA) R. A. Meena (PA)	1999-2012
PRIVATE SEED COMPANIES			
67.	Monitoring changes in baseline susceptibility to Cry toxins in the cotton bollworm, <i>H. armigera</i>	S Kranthi (PI) KR Kranthi (CoPI) CB Naik (CoPI)	2002- 2012
DUS			
68.	Testing & Documentation of Extant Varieties, hybrids and their Parents for Distinctness, Uniformity & Stability (PVP & FR ACT, 2001).	K Rathinavel (PI) V Santhy (CCPI) PR Vijayakumari (CCPI) RK Deshmukh (CCPI)	2003-2012
Govt . of Maharashtra			
69.	Crop pest surveillance and advisory project (CROPSAP) 2011-12 in Maharashtra.	VS Nagrare (PI)	2010-2012

Technology Mission on Cotton (TMC): Mini Mission-I : 2007-2012

Project code	Project Title	Name of PI/CCPI Dr.
MM 1.1	Development and promotion of medium and long linted diploid cottons (G.arboreum and G.herbaseum)	S. K. Verma (on leave) - PI 1. R. Loknathan - CCPI Punit Mohan - CCPI S. L. Ahuja - CCPI
MM 1.2	Development of extra long staple G.barbadense cotton with improved fibre qualities to meet the requirements of textile industry	K, P. M. Dhamayanti - CCPI
MM 1.3	Identification of G. hirsutum genotypes suitable for machine picking and development of agronomic package	V. Gotmare - CCPI
MM 1.4	Development and promotion of Bt transgenic cotton for bollworm resistance	S. Manickam - CCPI Suman Bala Singh - CCPI S. B. Nandeshwar - CCPI S. M. Palve - CCPI O. P. Tuteja - CCPI
MM 1.5	Molecular characterization of cotton germplasm using DNA markers	V, N. Waghmare - PI P. R. Vijaya Kumari - CCPI V. Santhy - CCPI K. Rathinavel - CCPI R, A, Meena - CCPI
MM 1.6	Exploitation of apomixis and TGMS system in hybrid cotton seed production	S. M. Palve - PI V. Gotmare - CCPI V. Santhy - CCPI
MM 2.1	Development of production technologies for Bt cotton and improvement of water and nutrient use efficiency with precision farming techniques	J. V, Singh - PI M. V. Venugoplan - CCPI K. Sankaranarayanan - CCPI
MM 2.2	Identification of innovative Bt cotton based cropping systems.	P. Nalayini - PI K. K. Bandopadhyay - CCPI A. R, Raju - CCPI R, A, Meena - CCPI
MM 2.3	Mechanization of cotton production	G. Majumdar - PI A, R, Raju - CCPI
MM 2.4	Physiological manipulation of Bt plant morphoframe for enhanced productivity under varied agro-climatic conditions	A. H. Prakash - PI Annie Sheeba - CCPI

Project code	Project Title	Name of PI/CCPI Dr.
MM 3.1	Emerging and key pests: - their characterization, taxonomy, genetic diversity and control	Sandhya Kranthi - PI K. R. Kranthi - CCPI V. S. Nagrare - CCPI A. K. Mukherjee - CCPI V. Chinna Babu Naik - CCPI T. Surulivelu - CCPI (Mrs) B. Dharajyoti - CCPI Dilip Monga - CCPI Rishi Kumar - CCPI
MM 3.2	Development and validation of IPM firm strategies for Bt Cotton under different ecosystems.	(Mrs) J. Gulsar Banu- CCPI Sandhya Kranthi - CCPI V. S. Nagrare - CCPI V. Chinna Babu Naik - CCPI Rishi Kumar - CCPI
MM 3.3	Development, validation, utilization and / or commercialization of bio-pesticides and bio inoculants	T. Surulivelu - CCPI J. Gulsar Banu - CCPI N. Narkhedkar - PI Dilip Monga - CCPI
MM 3.4	Development of farmer friendly diagnostic kits for transgenic event seed.	K. R. Kranthi - PI
MM 4.1	Quality evaluation of cotton fibres	M. Chakrabarty - CCPI
MM 5.1	Total factor productivity of cotton in India	Isabella Agarwal - PI A. R. Reddy - CCPI S. M. Wasnik - CCPI
MM 5.3	Indian cotton portal	M. Sabesh - PI G. Majumdar - CCPI
MM 5.4	TMC MMI Co-ordination and Monitoring Cell	A. R. Reddy - PI M. V. Venugopalan - CCPI V. Santhy - CCPI

Technology Mission on Cotton: Mini Mission II 2007-2012

Project Title	Name of PI/CCPI Dr.
Dissemination of IRM strategies in India.	K. R. Kranthi (PI) B. Dharajyoti - CCPI D. Monga - CCPI Rishi Kumar - CCPI

11.3: Consultancy, Patents, Commercialization of Technology

Patent published in Patent office

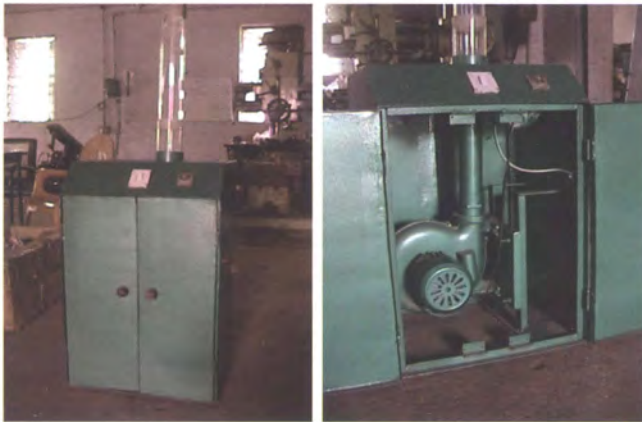
S. No.	Title	Provisional Application No. allotted by Patent Office	Date of Publication	Name of Inventor
1	Enhancing <i>cry1Ac</i> expression in Bt cotton using jasmine perfume	111/MUM/2009 Dt, 19/01/2009	04/11/2012	Dr. Sandhya Kranthi
2	Propagation of diploid cotton <i>Gossypium arboreum</i> by multiple shoot induction	1557/MUM/2009 Dt, 2/07/2009	19/12/2012	Dr. S.B. Nandeshwar
3	PCR detection Kit for <i>Xanthomonas oxonopodis</i> pv. <i>Malvecearum</i>	1558/MUM/2009 Dt, 21/07/2009	14/01/2012	Dr. P.K. Charabarty
4	Solar Powered Knapsack Sprayer with tilting arrangement	1559/MUM/2009 Dt, 2/07/2009	20/10/2012	Er. Gautam Majumdar
5	Bullock drawn vertical rotor cotton planter for vertisols	1560/MUM/2009 Dt, 2/07/2009	20/10/2012	Er. Gautam Majumdar
6	Cotton Seed Blower	1561/MUM/2009 Dt, 2/07/2009	20/10/2012	Er. Gautam Majumdar

Revenue Generation

The Bt Referral lab sold Bt Quant, Bt Express, Gus Detect kits and tested judicial samples earning a revenue of Rs. 2,65,796 in 2011-2012.

Technology Commercialized

CICR, Nagpur in collaboration with M/s. Precision Tooling Engineers, Nagpur has developed Cotton Seed Blower (Patent No. 1561/MUM/2009) to clean healthy seeds from impurities, broken and unviable seeds which will translate into better crop stand and population. The machine could be used by the farmer individually or on a custom hire basis. The machine was commercially launched on 12th Nov. 2011.



11.4: Significant Decisions of RAC, IRC, IMC and Other Important Meetings

Research Advisory Committee Meeting

The Research advisory Committee (RAC) Meeting for the year 2011 was held under the Chairmanship of Dr. S.K. Patil, Ex. Director IARI & Ex-VC, UAS Dharwad on 10th May, 2011. The RAC members who participated in the meeting included Shri Suresh Warpudkar, Ex-Minister Agriculture, Maharashtra, Shri Sharad Tasare, Ex-MLA, Dr. V. Kumar, Head, Cotton Research Station, Surat, Dr. Jadhav, Ex-Director Extension, MAU Parbhani and Dr. MV Venugopalan, Principal Scientist, Agronomy, CICR as Member Secretary.

Dr. P.R. Barambe, Head, Division of Crop Production, Dr. R.K. Deshmukh, I/C Head, Crop Improvement Division, CICR, Nagpur, Shri M.K. Meshram, I/C, Head, Crop Protection Division, Dr. D. Monga, Head, CICR Regional Station, Sirsa, and Dr. Surulivelu, Head I/C, CICR Regional Station, Coimbatore were special invitees. Dr. Nandini Gokte Narkhedkar, Principal Scientist, Crop Protection Division and Dr. VN. Waghmare, Senior Scientist, Crop Improvement were the rapporteurs.

In his opening remarks Dr. SA Patil appreciated pivotal role played by NAS system in development of farmer oriented technologies. He further mentioned significant role played by cotton in country's economy. He suggested that adaptive research trials are must for determining suitability of Bt hybrids and agronomists of SAU may be involved in these trials. Introduction of new genes in breeding is important and needs to be strengthened. Cotton pickers for small farmers also need

to be developed. Dr. K.R. Kranthi, Director, presented the action taken report, which was discussed and approved by the chairman and members of the RAC. Dr. K.R., Kranthi presented an overview of cotton in the country and world alongwith problems that plague Indian cotton. He advocated growing cotton in high density planting system (HOPS) to achieve breakthrough in productivity. He mentioned that straight growing dwarf plants with a single stalk would meet the criterion of HOPS. He added that new gene discovery, construct making, transgenic development, implements for mechanization in cotton have been taken up as flagship programmes by CICR, Nagpur. Shri Suresh Warpudkar stressed need for research on validating quality of hybrids developed by private companies. Shri Sharad Tasare suggested that attention be given to management of weeds in cotton system. Shri Jadhav desired that research on reducing cost of cultivation be taken up and system productivity needs to be enhanced.

In his concluding remarks Chairman emphasized on interaction with International organizations for fibre quality improvement and suggested that research on seed technology be taken up in depth. The meeting concluded with vote of thanks presented by Dr. Venugopalan, Member Secretary, RAC.

The Research Advisory Committee (RAC) Meeting for the year 2012 was held on 23rd Feb. 2012 under the Chairmanship of Dr. S.K. Patil, Ex. Director IARI & Ex-VC, UAS Dharwad. The RAC members who participated in the meeting included Dr. V. Kumar, Head, Cotton Research Station, Surat, Dr S. Srinivasan, Ex-Director, CIRCOT, Mumbai, Dr N. Gopalakrishnan, ADG (CC), ICAR New Delhi and Dr. MV Venugopalan, Principal Scientist, Agronomy, CICR as Member Secretary.

At the outset, Dr. K.R. Kranthi, Director, CICR welcomed the Chairman and members of the RAC. In his opening remarks Dr. S.A. Patil appreciated the contribution of CICR, Nagpur for development of Bt Diagnostic kits and its commercialization. He expressed his concern about the slow progress of cotton improvement work. He desired that field breeding should be strengthened. To renew the importance of public sector research, he insisted for public-private partnership in strategic areas with more visibility and transparency. International collaborations are required especially in biotechnology.



Dr. Patil felt that with the enormous number of private Bt cotton hybrids available in the market, it has become a challenging task to assess their suitability and yield benefits at different locations. Proper research methodology should be evolved to identify appropriate hybrids suitable for specific regions. He suggested simplicity in breeding, for instance selection of traits by 4-5 rounds at each intermated cycle of selection, for which comprehensive field work is required in compartmental and convergent mode to compete with the private sector.

Dr M. V. Venugopalan, Member Secretary, presented the action taken report, which was discussed and approved by the Chairman and members of the RAC.

Institute Research Council (IRC) Meeting

Annual Institute Research Council meetings were held at CICR, RS Sirsa on April, 2011 and CICR, Nagpur on May 21 and June 6-8, 2011 under the Chairmanship of Dr. K.R. Kranthi, Director, CICR, Nagpur. The results of research projects at CICR, Nagpur and CICR RS Sirsa were presented by individual Project leaders and discussed in IRC. Technical programme for 2011-12 was also finalized for each project. IRC Meeting for CICR RS Coimbatore was organized on August 29, 2011 and October 18, 2011 through video conferencing in two sessions. The meeting was chaired by the Director Dr. K.R. Kranthi, Dr. A.H. Prakash, PC and scientists at Nagpur and Coimbatore participated in the deliberations. The first session was conducted at Sugarcane Breeding Institute, Coimbatore and NBSS&LUP, Nagpur and the second session was organized at CICR, Nagpur and CICR, RS, Coimbatore without any interruption. Scientists of CICR, RS Coimbatore presented their research findings for the year 2010-11.

Under the aegis of IRC scientific talks were delivered by Dr. P.K. Mukerjee, Principal Scientist, Plant Pathology, on 'Fungal Genetics to Cotton Improvement Novel Strategies For Management of Cotton Pests and Diseases' on July 23, 2011 and Dr. Vinita Gotmare, Senior Scientist on 'Genome Resource Conservation' on Sept. 17, 2011.



Institute Management Committee (IMC) Meeting

The 49th Meeting of Institute Management Committee of CICR, Nagpur was held on 10 May 2011 at CICR, Nagpur under the Chairmanship of Dr. K. R. Kranthi, Director, CICR, Nagpur.

The following Committee Members were present during the meeting:

Dr. V.M. Mayande, Vice Chancellor Dr. PDKV, Akola,
Shri Sharad Tasare, Ex. Deputy Maharashtra Assembly,
Amravati - Non-Official member

Sh. SA Warpudkar, Ex-Minister Parbhani- Non-Official member

Dr. D. Monga, Head, CICR-RS, Sirsa - Member

Dr. G. Balasubramani, Senior Scientist, CICR, Nagpur - Member

Shri. O.P. Nagar, Senior F&AO, NBSS&LUP, Nagpur - Member

Shri. NVR.N. Murty, F&AO, CICR, Nagpur - Spl. Invitee

Shri. Sachin Agnihotri, I/c Sr. Administrative Officer, CICR, Nagpur - Member Secretary

The Committee members noted the progress on Financial Management / Progress of works/ Farm Development / KVK activities and Research Achievements of the Institute and expressed their Satisfaction.

The meeting ended with thanks to Chair and the Members by the Member Secretary.

Results -Framework Document (RFD) Committee

A RFD Committee has been re-constituted as per the guidelines of the ICAR with the following officials of this institute.

S.No	Category	Name & Designation
1	RFD Nodal Officer	Dr. M. V. Venugopalan, Principal Scientist (Agronomy)
2	One Scientist	Dr. K. P. Raghavendra, Scientist (Biotechnology)
3	One Technical Officer	Dr. M. S. Yadav, Technical Officer (7-8)
4	One Administrative Staff	Mr. Ghanshyam D. Sakhare Lower Division Clerk & Typist

Stakeholder meeting on Surgical and Absorbent cotton

The Central Institute for Cotton Research (CICR), Nagpur is working its way towards partnering with surgical cotton manufacturers and farmers and absorbent cotton manufacturers by promoting organic *Des*; cotton as the raw material.

A stakeholder meeting on Surgical and Absorbent cotton was held under the Chairmanship of Director CICR, at CICR, Nagpur on 29-11-2012 in which around 12 manufacturers of medical/surgical/absorbent cotton participated. Chairman in his opening remarks expressed concern about the gradual decline in the area of *des*; cotton and the erosion of biological diversity. Dr. Punit Mohan, PS made brief presentation on the genetic resources of *des*; cotton with special reference to their use of surgical purpose. The stakeholders expressed the difficulties faced in procuring coarse quality *Des*; cotton needed for manufacturing surgical grade cotton. The current

annual national and international demand for surgical and absorbent cotton as well as projections for future was discussed. It was agreed that demand surgical and absorbent cotton is growing at the rate of 10 per cent per annum across the world. In India itself, the demand is of up to 20 lakh bales per year. Besides Indian market it has export potential too. Japan, USA and EU countries import absorbent cotton from India with specific standards.

The absorbent cotton of pharmaceutical grade, which is used for surgical purposes, has to satisfy certain specifications with

respect to micronaire, absorbency, water-soluble matter, pH, staple length, ash content etc. These fibre qualities were enumerated. Technical feasibility and cost effectiveness of making surgical cotton in a more eco-friendly way was also explored. The potential of *G. arboreum* race *cemuum* (comilla) cotton for surgical cotton manufacture was explained. The idea of adopting a 'cluster of villages' approach to cultivate *desi* cotton of fibre quality suited for surgical and absorbent use in Vidarbha and Madhya Pradesh, the heart land of *G. arboreum* cotton under a buy back agreement was worked out.

11.5: Participation of Scientists in Seminars/ Symposia/ Workshops

Sr. No.	Seminars/Conferences /Symposia/ Workshops/Training	Place and Date	Participants
1.	State Level Seminar on Women in Agricultural Development: Challenges and Opportunities	TNAU, Coimbatore 19-04-2011	Dr. S. Usha Rani
2.	Contemporary Approaches to Crop Improvement	GKVK Campus, Bangalore 22-04-2011 to 23-04-2011	Dr. S. M. Palve
3.	Farmers Workshop on Agriculture	Nagpur 14-05-2011 to 15-05-2011	Dr. S.M. Wasnik
4.	National Workshop on Strengthening NBPGR-NAGS Partnership for Efficient Management and use of Plant Genetic Resources	NBPGR, New Delhi 29-07-2011 to 30-07-2011	Dr. Vinita Gotmare
5.	APS International Plant Protection Congress, Joint Meeting, Root - Knot resistance in cotton by RNAi mediated silencing of parasitism genes of <i>Meloidogyne incognita</i>	Honolulu, Hawaii, USA 6.8.2011 to 10.8.2011	Dr. (Mrs) Nandini Gokte-Narkhedkar
6.	National Consultation on Gender Perspective in Agriculture	NASC, New Delhi 08-08-2011 to 09-08-2011	Dr. Mukta Chakrabarty
7.	National Workshop on Information and Communication Technology in Agriculture (ICT-A)	TNAU, Coimbatore 9-08-2011 to 10-08-2011	Dr. B. Dharajothi Dr. S. Usha Rani
8.	Workshop on Understanding Biosafety Clearing House (BCH) - as an effective tool for global information on LMOs/GMOs	NASC, New Delhi 12-09-2011	Dr. Mukta Chakrabarty
9.	International conference on microbial biotechnology for sustainable development,	Punjab University, Chandigarh 03-11-2011 to 06-11-2011	Dr. P.K. Mukherjee
10.	World Cotton Research Conference - 5	Mumbai 7-11-2011 to 11-11-2011	Dr. K.R. Kranthi and other scientists *
11.	Innovations in Farming System Research and Extension for Inclusive Development	Madras Veterinary College, Chennai 24-11-2011 to 25-11-2011	Dr. S. Usha Rani
12.	International Conference of Biopesticides (ICOB-6)	Maejo University, Ching Mai, Thailand 11-12-2011 to 16-12-2011	Dr. J. Gulsar Banu
13.	National Extension Education Congress on Emerging Models of Technology Application for Agri-Rural Development	ICAR Research Complex for Goa, Goa, 17-12-2011 to 19-12-2011	Dr. S. Usha Rani
14.	State level Seminar-"Breaking yield barriers in major field crops".	Dr. PDKV, Akola 06-01-2012 to 07-01-2012	Dr. M.V. Venugopalan
15.	Microbes in health and agriculture	JNU, New Delhi 12-03-2012 to 13-03-2012	Dr. P.K. Mukherjee

* Dr. S. Kranthi, Dr. A.H. Prakash, Dr. B. Ohara jothi, Dr.K.P.M. Dhamayanthi, Dr. P. Nalayini, Dr. K. Sankaranarayanan, Dr. J. Gulsar Banu, Mr. M. Sabesh, Dr. S. Usha Rani, Dr. Blaise Desouza, Dr. M. V. Venugopalan, Dr. Jagvir Singh, Dr. Mukta Chakrabarty, Dr. A. R. Reddy, Dr. S. M. Wasnik, Dr. A.R., Raju, Er. G. Majumdar, Dr. Punit Mohan, Dr. G. Balasubramani, Dr. V.N. Waghmare, Dr. S.B. Nandeshwar, Dr. S.M. Palve, Dr. T.R. Loknathan, Dr. Vinita Gotmare, Dr. J.Amudha, Dr. P.R. Vijayakumari, Dr. V. Santhy, Dr. V. Chinna Babu Naik

11.6: Distinguished Visitors

Name & Designation	Organisation	Date
Nagpur		
Dr. SA Patil, Ex- Director, IARI & Chairman, RAC	Chairman, Farmers Commission of Karnataka, Bengaluru	11.05.2011 & 23.02.2012
Dr. Norberto Mahalambe, Director	Institute of Cotton, Mozambique	06..07.2011
Mrs. Olga Mulima, Cabinet Member	Ministr Agriculture, Govt., of Mozambique	06..07.2011
Shri Atanu Purkayastha, Joint Secretary (TMC)	Department of Agriculture & Cooperation, New Delhi	21.09.2011
Dr. S. Ayyappan, Secretary, DARE and Director General,	Indian Council of Agricultural Research, New Delhi	11.12.2011
Dr. M. M. Pandey, DOG (Engineering)	Indian Council of Agricultural Research, New Delhi	11.12.2011
Dr. C. S. Prasad, Vice-Chancellor	MAFSU, Nagpur	11.12.2011
Mr. Kirk Benton, Global Director	Fertilizer and Agro-chemicals, Archer Daniels Midland, USA	15.12.2011
Coimbatore		
Dr. N. Gopalakrishnan, ADG (CC)	Indian Council of Agricultural Research, New Delhi	19.07.2011
Dr. S. Ayyappan, Secretary, DARE and Director General,	Indian Council of Agricultural Research, New Delhi	31.07.2011
Dr. P.L. Gautam, Chairman	PPV&FRA, New Delhi	20.09.2011
Sirsa		
Dr. S. R. Singh, Ex Vice Chancellor	RAU, Bikaner	11.08.2011
Dr. H. S .Lohan, Ex Additional Director Agriculture	Govt., of Haryana, Haryana	11.08.2011



11.7: Personnel

Name of the Scientists/Officers, Designation & E-mail

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11.8: Other Information

Visits Abroad

Dr. P.K. Chakrabarty, Head, Crop Improvement Division, CICR, Nagpur was on Sabbatical Leave under the programme on Plant Molecular and Cellular Biology Programme at University of Florida from 15.03.2011 to 14.03.2012.

Dr. O.P. Tuteja, Pr. Scientist, CICR, Regional Station, Sirsa visited C-4 Countries (Burkina, Faso, Benin, Chad & Mali) to study the viability of "Creating Sustainable Textile & Apparel Value Chain in Cotton-4 Countries" from 1 - 19 May, 2011.

Foreign delegation visits to CICR

Dr. Norberto Mahalambe, Director of Institute of Cotton and Mrs. Olga Mulima, Cabinet Member, Ministry of Agriculture, Government of Mozambique visited CICR Nagpur on July 6, 2011 as members of a high level delegation. The delegation visited CICR, Nagpur to get acquainted with strides made by India in Cotton particularly transgenic cotton and to discuss ways to access transgenic varieties/ germ plasm for improvement of cotton in Mozambique. Dr. Mahalambe during his interaction with CICR scientists discussed prospect of long term partnership as desired by Mozambique with India. During this visit, Dr. Mahalambe and Mrs. Olga Mulima visited experimental fields and laboratories.

Visit of WCRC-5 delegates to Nagpur

A post conference tour was arranged during Nov 12-13, 2011 for 38 foreign delegates who participated in WCRC5, Mumbai. The tour was aimed at showcasing to the delegates the cotton cultivation practices as well as post harvest scenario (ginning, pressing, spinning and weaving to finished goods). The programme was oriented in the way that the delegates could experience the all round advancement of cotton industry, cotton cultivation and seed production in Nagpur through visit to Morarjee Textiles Ltd., Butibori, Nagpur, Bhagirath Ginning and Pressing Mills, Kalmeshwar, Nagpur, CIRCOT Ginning Training Centre, Amravati Road, Nagpur, Bajaj Steel Double Roller Gin Manufacturing, Hingna Unit, Precision Tooling Engineers, Hingna Road and Ankur Seed Production Farm.

Visit to CICR was a prominent part of the tour on 12th Nov, 2012. Dr. K.R., Kranthi, Director, CICR welcomed the delegates and explained briefly the activities of the Institute. The delegates were taken around the experimental fields,



demonstration plots and wild species garden. Discussions were held with the concerned scientists relating to their experiments. Farmers of local adopted villages and involved in Front Line Demonstrations were called for an interactive meeting with the delegates. CICR KVK Programme coordinator and other officers helped the farmers during the interaction. The visit was coordinated by Dr. G. Balasubramani and Mrs. Mukta Chakrabarty.

Biotechnology Laboratory

Ultra modern facilities was created to carry out biotechnological research in the CICR and it was inaugurated at the hands of Dr. S. Ayyappan, Director General, ICAR & Secretary, DARE on 11.12.2011.



Library

Additions

In the period from 2011-12, the Library purchased 2 new books and subscribed to 3 foreign journals and 19 Indian journals.

Documentation Services

- Library has developed computerized bibliographic database on Cotton to provide comprehensive and updated information on cotton. About 4182 bibliographic references along with abstracts have been stored in it. Based on this bibliographic database the Library publishes a current awareness bulletin namely "COTTON RESEARCH ABSTRACTS". The Bulletin is circulated to all the scientists of the Institute and to all AICCIIP Centers in India. In the reported period, four issues of COTTON RESEARCH ABSTRACTS (V26, (No. 1-4), January - December 2011) were published and circulated.
- The Library is actively participating in the E-Journal Consortium by responding regularly through E-mails and thus also receiving updates. More than 2000 on-line journals on agriculture and crop science are made available over the network through this consortium.
- Four User Terminals installed in the Library have facilitated the library users to access the databases uploaded in the Library Server. Users can also access the Internet on these terminals. Similarly the entire catalog of the library has been downloaded on these terminals for ease of use.
- The WebOPAC version of the Library software SLIM21 was updated and by using this Library Application Software, the

entire catalogue of holdings of the Library (books and bound volumes) is available on all terminals within the Institute.

Institute Bio Safety Committee Activities

The Institute Bio Safety Committee (IBSC) conducted 3 meetings (02-04-11, 11-04-11 and 27-02-12) during the year under the Chairmanship of Director with Dr. Ashok P. Giri, Senior Scientist from NCL, Pune as DBT Nominee. Dr. Giri along with the Committee members, visited the Molecular Biology and Tissue Culture Laboratories, the Poly House and Green House facilities and also checked the related bio safety measures and observed that all facilities are as per the norms of DBT guidelines.

The first two meetings were convened mainly to finalise the trials (Contained and Confined Field) on transgenic cotton development (for bollworm resistance with *cry1Ac* and *cry1F* genes, leaf curl virus resistance with *acp* x *scp* gene and drought resistance with DREB gene) to be conducted during 2011-12 season and to apply for permission to RCGM and the third meeting was held for evaluation of the results of the trials of 2011-12 and to recommend trials for 2012-13 for applying to RCGM. Proposed trials for 2012-13 also include transgenic development containing chitinase gene for disease resistance, *CP* and *AC2* genes for leaf curl virus resistance, *cry1Aa3*, *cry1Ac* and *cry1F* genes for bollworm resistance and *acp*, *scp* and *arep* genes for leaf curl virus resistance. IBSC has also communicated to State Govt., of Maharashtra and Haryana for obtaining NOC for conducting the Confined Field Trials. The No Objection certificate from Govt of Haryana has already been received to conduct trials at CICR Regional Station, Sirsa.

CICR Foundation Day

CICR celebrated its Foundation Day on 1st April, 2011. Dr. C.D. Mayee, Ex- Chairman, ASRB, New Delhi delivered a talk on "Potential benefits of agriculture biotechnology". Students from biotechnology department of different colleges of Nagpur and retired scientists of CICR participated along with the CICR staff.



Progressive Use of Hindi

Nagpur

Hindi Week

Hindi awareness week was celebrated at CICR Nagpur from 08.9.2011 to 14.9.2011 with great enthusiasm. Various competitions were conducted to encourage the staff members to showcase their potential in the Hindi language. On the spot poem composing on a given subject, namely "Corruption" was one of such events apart from translation of English words to Hindi and a Quiz in Hindi. The events were well represented by the staff belonging to different categories. Dr. v.J. Shivankar, Director, NRCC, Nagpur graced the occasion as the Chief Guest commended the level and spirit of participation in various events. Apart from the winners of various competitions, prizes were given away to staff who had made use of Hindi language as a medium of official work as well as to those who had a maximum number of scientific and technical articles in Hindi. The entire programme was organized under the leadership of Dr. K.R., Kranthi, Director CICR and was ably coordinated by Mrs. Mukta Chakrabarty, Dr. G. Balasubramani, Mr. S. Agnihotri, Dr. R.R., Gupta and Shri., P.P Gokulpure.



Coimbatore

Official Language Implementation Activities

The Official Language Implementation is being effectively carried out at CICR, Regional Station, Coimbatore. The station received First Prize in Hindi Implementation Activities for the year 2010-11 instituted by the Town Official Language Implementation Committee, (TOILC) Coimbatore.



11.9: Weather

Nagpur

Month	Temperature (DC)		Relative Humidity (%)		Rainfall (mm)	No. of Rainy Days
	Max.	Min.	Max.	Min.		
June, 2011	30.1	24.5	84.5	69.2	148.0	13
July, 2011	32.4	25.0	89.2	68.7	120.0	13
August, 2011	30.2	24.2	92.4	78.0	322.0	18
September, 2011	31.8	23.8	88.9	66.2	149.0	12
October, 2011	33.0	18.9	74.2	33.6	-	-
November, 2011	31.7	15.8	70.9	28.6	-	-
December, 2011	29.3	12.9	66.2	29.4	-	-
January, 2012	27.5	14.3	80.0	48.1	-	-
February, 2012	32.8	15.6	58.2	24.3	9.0	1
Total					748	57

Coimbatore

Month	Temperature (DC)		Relative Humidity (%)		Rainfall (mm)	No. of Rainy Days (>2.5 mm)
	Max.	Min.	Max.	Min.		
April, 2011	33.4	22.9	89	49	168.8	7
May, 2011	34.2	23.0	92	52	24.8	3
June, 2011	30.7	23.0	84	57	93.0	7
July, 2011	30.7	23.2	83	57	32.3	4
August, 2011	31.3	22.9	87	57	7.1	1
September, 2011	31.9	22.2	88	59	67.9	4
October, 2011	31.6	22.6	91	59	305.3	14
November, 2011	28.7	20.8	90	61	243.1	10
December, 2011	29.3	19.1	89	52	11.6	1
January, 2012	29.7	18.4	89	46	1.0	-
February, 2012	32.3	19.2	83	35	0.0	-
March, 2012	34.9	22.5	84	36	1.2	-
Total					956.1	51

Sirsa

Month	Temperature (DC)		Relative Humidity (%)		Rainfall (mm)	No. of Rainy Days (>2.5 mm)
	Max.	Min.	Max.	Min.		
April, 2011	35.5	18.9	58.0	22.9	7.3	5
May, 2011	41.9	26.5	47.7	22.8	27.3	5
June, 2011	40.7	28.2	63.2	37.4	32.8	5
July, 2011	36.9	28.0	75.6	51.9	14.8	7
August, 2011	33.7	26.5	86.9	70.7	289.8	17
September, 2011	33.0	24.9	86.8	65.2	122.2	8
October, 2011	33.1	17.9	75.5	35.3	0.0	-
November, 2011	29.0	12.9	78.2	35.6	0.0	-
December, 2011	23.4	5.8	80.1	37.4	0.0	-
Total					494.2	47

11.10: Cotton Scenario

Cotton provides nature's best fibre in the form of lint for an array of textile products. It also yields oil for human consumption, feed for livestock, biomass for particle board, corrugated box, paper etc. and base chemicals for a plethora of industrial products. Currently, 51 per cent of the domestic fibre consumption of our country for textile production is constituted by cotton whereas 41 per cent is constituted by man-made fibre. The global scenario is, however, slightly different. At the global level, the proportion of synthetic fibre consumption to cotton consumption is 60:40.

For five consecutive years after 2005, India has harvested a record average of 300 lakh bales, leaving behind the best ever

historical record of 165 lakh bales before the introduction of Bt cotton. A 35% increase in area under cotton (from 78 lakh hectares in 2002 to 121.91 lakh ha in 2011), increase in hybrid cotton area from 40% in 2001 to 92% in 2011, favourable weather conditions and extremely low bollworm infestation, good market price for the cotton have contributed to the rise in production. During the 11th Plan period the area under Bt cotton increased from 63.31 lakh ha in 2007-08 to over 100 lakh ha during 2011-12. Long staple cotton which constituted 20% in 2000, increased to 74% of the total cotton produced in 2010 because of the Bt cotton hybrids, most of which are of the long staple category.

Details of state-wise cotton area, production and productivity are given in Table 2.

Table 2: State-Wise Cotton Area, Production and Productivity

Zone/State	2010-2011 *			2011-2012 *		
	Area (Lakh ha)	Production (Lakh bales)	Productivity (kg/ha)	Area (Lakh ha)	Production (Lakh bales)	Productivity (kg/ha)
Punjab	5.30	18.50	593	5.60	19.50	592
Haryana	4.92	17.00	587	6.05	20.00	562
Rajasthan	3.35	10.10	513	5.30	17.10	548
North Zone	13.57	45.60	571	16.95	56.60	568
Gujarat	26.33	106.20	686	30.23	120.00	675
Maharashtra	39.32	87.75	379	40.95	73.75	306
Madhya Pradesh	6.50	17.70	463	7.06	17.70	426
Central Zone	72.15	211.65	499	78.24	211.45	459
Andhra Pradesh	17.84	59.50	567	18.54	54.50	500
Karnataka	5.45	11.10	346	5.49	13.25	410
Tamil Nadu	1.22	7.20	1003	1.21	7.20	1012
South Zone	24.51	77.80	540	25.24	74.95	505
Orissa	0.74	2.05	471	1.02	2.05	342
Others	0.45	2.00	756	0.46	2.00	739
Grand Total	111.42	339.10	517	121.91	347.05	484

1 bale= 170 kg.

Source: Office of the Textile Commissioner, Mumbai. * - As estimated by CAB in its meeting held on 18.04.2012

Impressions of Visitors

It is a pleasant experience visiting CICR.. Congratulations and best wishes in all endeavours.

Dr. S. Ayyappan
Secretary, DARE & DG
ICAR, New Delhi

Very impressed with the work of Research Centre. Please carry on as activities here will decide the fate of farmers engaged with cotton cultivation in the country. My Best Wishes to All.

Shri .Atanu Purkayastha
Joint Secretary, DAC
GOI, Krishi Bhawan, New Delhi

The work underway is really forward looking and very important. It is our feeling and believe that the technology for the future will flower from Nagpur, from CICR.. Congratulations and hoping on fruitful cooperation.

Dr. Norberto Mahalambe
Director, Institute of Cotton
Mozambique

Wonderful facilities, dedicated staff, the institute is really doing very well.. Compliments to Director and his team. The addition of KVK will provide a platform to reach the unreachable, the farmers in remote areas. Keep it up.

Dr. C. S. Prasad
Vice-Chancellor, MAFSU
Nagpur

Excellent facilities, labs and research. Compliments to the Director, Scientists & Staff.

Dr. M. M. Pandey
DDG (Engg.)
ICAR, New Delhi