



11.2 LIST OF ON-GOING PROJECTS

11.2.1 Institute Projects

Name of the Project	Name of the Project Leader and Associate(s)
Nagpur	
Crop Improvement	
1. Collection, conservation, evaluation, documentation and utilization of cotton genetic resources of cultivated species of <i>Gossypium</i> (<i>G. hirsutum</i> & <i>G. arboreum</i>)	PI-VV Singh Asso. - Punit Mohan
2. Genetical and anatomical studies on drought tolerance in cotton <i>G.hirsutum</i> .	PI-SB Singh Asso. - NK Perumal
3. Conservation of wild species of <i>Gossypium</i> and introgressive hybridization for the improvement of cultivated species of cotton.	PI-Vinita Gotmare Asso.- MK Meshram, S Vennila, KB Hebbar, G. Balasubramani
4. Breeding for high yielding and long staple genotypes of <i>arboreum</i> cotton with high fibre strength.	PI-Punit Mohan Asso. - P Singh
5. Studies of genetic enhancement of upland cotton (<i>G. hirsutum</i>).	PI-TR Loknathan Asso. - P Singh, Vinita Gotmare, S Vennila, MK Meshram
6. Studies on genetic base of upland cotton varieties in India.	PI-TR Loknathan
7. Improvement of upland cotton for GOT and fibre properties through population improvement approaches.	Asso. - V Santhy, P Singh PI-VN Waghmare Asso. - P Singh, Vinita Gotmare
8. Improvement of seed yield and quality in <i>G. arboreum</i> culture with low input management under different soil depths.	PI-RK Deshmukh Asso. - V Santhy, Punit Mohan, P Singh
9. Assessment of seed vigour traits in cotton.	PI-V Santhy Asso. - RK Deshmukh, KB Hebbar, PR Vijayakumari
10. Genetical studies on cotton seed with particular reference to germination and dormancy.	PI-PR Vijayakumari Asso. - P Singh, V Santhy
Biotechnology	
11. Evaluation of cotton germplasm through molecular techniques.	PI-AB Dongre Asso. - J Amudha, SB Nandeshwar, VV Singh
12. Development of tissue culture protocol for use in breeding and genetic transformation.	PI-SB Nandeshwar Asso. - AB Dongre
13. Molecular mapping of leaf curl virus resistance gene in cotton genome.	PI-J Amudha Asso. - D Monga, G Balasubramani



Crop Production

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| 14. Studies on the efficacy of micro-nutrients application and moisture management in improving yield and fibre quality of rainfed cotton. | PI -AR Raju
Asso. - JV Singh,
MRK Rao |
| 15. Improving the efficiency of cotton+pigeon pea strip cropping in vertisols. | PI -AR Raju |
| 16. Studies on long term effect of nutrient management practices on the productivity, nutrient balance and sustainability of cotton based cropping systems. | PI -JV Singh
Asso. - D Blaise |
| 17. Tillage and crop residue effects on soil, nutrient and cotton crop behaviour. | PI -D Blaise |
| 18. Studies on water use efficiency of harvested rainwater, through drip irrigation in cotton. | PI -KS Bhasker
Asso. - JV Singh, AR Raju |
| 19. Evaluation of suitable moisture management practices for rainfed cotton in shallow soil. | PI -KS Bhasker |

Crop Protection

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| 20. Identification and characterisation of elite germplasm lines against key pests of cotton. | PI -S Kranthi
Asso. - VV Singh |
| 21. Biochemical basis of induction of defense related proteins in cotton against the Gram pod borer <i>Helicoverpa armigera</i> . | PI -S Kranthi
Asso. - SB Nandeshwar |
| 22. Interaction effects of cultivars, agrotechniques, insect pests and entomophages in cotton ecosystem. | PI -S Vennila |
| 23. Studies on multiple disease resistance in upland cotton. | PI -Sheo Raj - NK Taneja, VV Singh |
| 24. Studies on seed transmitted pathogenic infections and other seed microflora of cotton. | PI -PM Mukewar |
| 25. Studies on evolution of races of <i>Xanthomonas axonopodis</i> pv. <i>malvacearum</i> (<i>Xam</i>) and utilization of HVS in identification of resistant sources. | PI -MK Meshram
Asso. - Sheo Raj |
| 26. Evaluation of cotton germplasm against <i>Alternaria</i> and <i>Myrothecium</i> leaf spot diseases. | PI -NK Taneja |
| 27. Efficacy of antagonist fungal microflora from rhizosphere of cotton, its growth and development including disease control. | PI -RC Ukey |
| 28. Studies on plant parasitic nematodes associated with cotton. | PI -N G-Narkhedkar |
| 29. Molecular basis of pathogenicity and race specificity of <i>Xanthomonas axonopodis</i> pv. <i>malvacearu</i> (<i>Xam</i>) and characterization of its antagonists. | PI -PK Chakrabarty
Asso. - MK Meshram,
Sheo Raj |



Plant Physiology and Biochemistry

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| 30. Physiological evaluation of cotton germplasm under rainfed conditions. | PI -MRK Rao
Asso. - NK Perumal |
| 31. Physiological and biochemical studies on abiotic stress with particular reference to heat and drought in cotton. | PI -NK Perumal
Asso. - M Chakrabarty |
| 32. Physiological and biochemical basis of salinity tolerance in cotton. | PI -KB Hebbar |
| 33. Physiological and Biochemical basis of waterlogging tolerance in cotton. | PI -KB Hebbar |
| 34. Source-sink alteration with reference to flower induction as a tool to improve physiological efficiency and productivity in cotton. | PI -KB Hebbar |
| 35. Assessment of gossypol content in working collection of cotton germplasm. | |

Extension & Economics

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| 36. A study on structure of agriculture and social dynamics of cotton production | PI -HL Gajbhiye |
| 37. A study on technology adoption behaviour of cotton growers : Structural perspective. | PI -HL Gajbhiye |
| 38. Impact of cotton front-line demonstrations on technological advancement of cotton growers. | PI -SM Wasnik
Asso. - HL Gajbhiye |
| 39. Estimation of total factor productivity in cotton. | PI -P Ramasundaram
Asso. - M SabeshHL Gajbhiye |
| 40. Study on accessibility to mass media and information technology of potential users in cotton based production system. | PI -SM Wasnik
Asso. - PR Deoghare |

Regional Station, Coimbatore

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| 41. Development of early high yielding intra <i>hirsutum</i> hybrids | PI -KN Gururajan- S Manickam |
| 42. Breeding <i>G.hirsutum</i> cotton varieties with new plant types – development of medium staple varieties. | PI -KN Gururajan
Asso. - S Manickam |
| 43. Development of extra long staple high spinning hybrids of interspecific origin with wider adaptability. | PI -KPM Dhamayanthi
Asso. - S Manickam |
| 44. Development of high yielding and high spinning extra long staple cotton | PI -S Manickam-
Asso. - KN Gururajan |
| 45. Maintenance and evaluation of cotton germplasm | PI -S Manickam |
| 46. Inter-specific and inter-racial hybridization and gene transfer in <i>Gossypium</i> | PI -KPM Dhamayanthi
Asso. - S Manickam |



47. Development, maintenance and utilization of cytoplasmic and genetic male sterility for hybrid cotton seed production and fertility restoration in cotton
PI - S Manickam
48. Studies on viability, vigour and longevity of cotton seeds.
PI - K Rathinavel
Asso. - K Natarajan, P Chidambaram
49. Studies on the long term effect of continuous application of nutrients in fixed cotton based crop rotation on the productivity, nutrient balance and sustainability of the cropping system
PI - CS Praharaj
Asso. - TP Rajendran,
K Sankarnarayanan,
A Kannan
50. Influence and secondary and micronutrients on qualitative and quantitative parameters of cotton
PI - K Sankarnarayanan
51. Polymulch for water, weed and nutrient management in cotton based cropping system.
PI - P Nalayini
Asso.-T P Rajendran, K Sankarnarayanan
52. Studies on changes in the soil physico-chemical properties and crop productivity under various soil cover/ incorporation of *ex-situ* plant wastes on a freshly/under reclaimed sodic soil.
PI - CS Praharaj
53. Studies on population dynamics of cotton pests and their enemies in the cotton ecosystem
PI - K Natarajan
Asso. - B Dhara Jothi
54. Studies on the host plant relationship and development of resistant /tolerant varieties to insect pests of cotton
PI - K Natarajan
Asso. - T Surulivelu, S Manickam
55. Studies on the role and effect of insecticides in cotton ecosystem
PI - T Surulivelu
Asso. - K Natarajan
56. Studies on bioecology and management of cotton stem weevil *Pempherulus affinis* Faust
PI - B Dhara Jothi
Asso. - T Surulivelu
57. Bio-ecological studies in pink bollworm
PI - B Dhara Jothi
Asso. - K Natarajan
58. Studies on the epidemiology and management of fungal foliar diseases of cotton.
PI - P Chidambaram
Asso. - A Kannan
KN Gururajan, N Gopalakrishnan
59. Studies on soil borne diseases of cotton.
PI - A Kannan
Asso.-KN Gururajan, N Gopalakrishnan
60. Studies on bacterial blight of cotton.
PI - A Kannan
Asso.-P Chidambaram, K N Gururajan
61. Physiology of fibre growth and development.
PI - AH Prakash
Asso.-SESA Khader, N Gopalakrishnan,
VN Waghmare
62. Identification and utilization of adaptive responses to abiotic stress in cultivated species of cotton.
PI - SESA Khader
Asso. - N Gopalakrishnan, KN Gururajan





63. Studies on the response of elevated carbon –di-oxide on physiology and productivity.
PI - SESA Khader
Asso. - N Gopalakrishnan
64. Studies on biochemical mechanisms of resistance to bollworm of cotton.
PI - N Gopalakrishnan
Asso. - T Surulivelu
65. Studies on development biochemistry of cotton pest/disease interaction.
PI - N Gopalakrishnan
Asso. - T Surulivelu, K Natarajan,
P Chidambaram
66. Present status, constraints and future strategies of cotton seed production in Tamil Nadu.
PI - Isabella Agarwal
67. Impact assessment of IPM/IRM technology adaption by cotton farmers.
PI - Isabella Agarwal
68. Farm level economic benefits of Bt cotton in Tamil Nadu.
PI - Isabella Agarwal
69. Expert system on cotton pest/insect.
PI - M Sabesh, S Vennila, B Dhara Jothi
- Regional Station, Sirsa**
70. Evaluation of parents in *Gossypium hirsutum* for heterotic potential and useful heterosis for replacement of existing cultivars under north Indian conditions.
PI - OP Tuteja
71. Development of varieties and hybrids (MS based) of medium staple length in *Gossypium arboreum L.*
PI - SK Verma
Asso. - OP Tuteja, SL Ahuja
RA Meena, P Jeyakumar, D Monga
72. Development of male sterility based hybrids of *G.hirsutum* for north India.
PI - OP Tuteja
Asso. - D Monga, P Jeyakumar
73. Development of *G.hirsutum* cultivars with high fibre strength suitable for high speed spinning.
PI - SL Ahuja
Asso. - OP Tuteja, SK Verma, D Monga
P Jeyakumar, VV Singh, KN Gururajan
74. Genetic enhancement in diploid cotton
PI - SL Ahuja
Asso.- SK Verma, Punit Mohan,
Vinita Gotmare, TR Loknathan
P Jeyakumar, D Monga
75. Collection, conservation, evaluation and maintenance of genetic resources.
PI - RA Meena
76. Studies on seed technological aspects of hybrids and varietal seed production in north zone.
PI - RA Meena
Asso. - OP Tuteja, D Monga
77. Evaluation and refinement of IPM module for irrigated cotton in north zone.
PI - P Jeyakumar
Asso. - D Monga, SK Banerjee
78. Studies on cotton leaf curl virus disease and development of resistant varieties and hybrids for its management.
PI - D Monga
Asso. - OP Tuteja, RA Meena
SK Verma, P Jeyakumar



Externally Funded Projects

79. **CFC/ICAC** : Sustainable control of the cotton bollworm *Helicoverpa armigera* in small scale production systems. PI - KR Kranthi
Asso. - S Kranthi

DBT Projects

80. Genetic improvement of strains of entomopathogenic nematodes for tolerance to environment and enhanced efficacy against *Helicoverpa armigera*, cotton bollworm. PI - N G-Narkhedkar
81. Studies on toxicity of Bt (Cry) toxins to cotton pests, assessment of impact of Bt transgenic cotton plant on the ecosystem and development of resistance to Bt toxins in cotton bollworm *Helicoverpa armigera*. PI - KR Kranthi
Asso. - S Kranthi

AP Cess Fund

82. Identification and quantification of constraints, risks and policy impacts in cotton cultivation. P Ramasundaram
Asso. - HL Gajbhiye

Aventis Funded

83. Studies on resistance breaking properties of Triazophos in combination with deltamethrin on pyrethroid resistant *Helicoverpa armigera*. PI - KR Kranthi

Indofil funded

84. Biochemical and ecological factors influencing the toxicity of Novaluron on the cotton bollworm *Helicoverpa armigera*. PI - KR Kranthi

Mahyco Funded

85. Monitoring for shifts in baseline susceptibility (development of tolerance/resistance) in the cotton bollworms toxin in various cotton growing regions of the country. PI - S Kranthi
Asso. - KR Kranthi



11.2.2 National Agricultural Technology Project (NATP)

I. Mission Mode

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| 1. | CP-MM 1 : Development of hybrid crop-cotton - | PI: P Singh
Co PI : SB Singh,
Asso.: Vinita Gotmare, S Vennila,
NK Taneja, MK Meshram, S Manickam |
| 2. | MM3: Sustainable management of plant biodiversity-cotton. | CCPI: VV Singh |
| 3. | MM4: Development of Bt. Transgenic for insect resistance-Cotton. | PI: AB Dongre
CoPI : SB Nandeshwar
G Balasubramani, KR Kranthi |

II. Irrigated Agro-Ecosystem

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| 4. | PSR 36: Adoption and refinement of cotton picker and cleaning system. | CCPI: AR Raju |
| 5. | IVLP TAR 18: Technology assessment and refinement (TAR) of irrigated Agro Ecosystem for Coimbatore Region TN | CCPI : Isabella Agarwal |

III. Rainfed Cotton Production System (RCPS)

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| 6. | RCPS-2: Optimising nutrient supply in relation to moisture availability for enhanced productivity and stability of rainfed cotton based production system | PI: JV Singh
CoPI: D Blaise |
| 7. | RCPS-5: Rainwater conservation, harvesting and recycling/ recharging techniques for enhanced productivity of cotton based cropping system. | CCPI : KS Bhasker
Asso.: AR Raju, MK Meshram,
G Majumdar, SM Wasnik |
| 8. | RCPS-7: Promotion of productive high quality <i>G. arboreum</i> cotton to meet the needs of marginal cultivators of rainfed ecosystem vis-à-vis textile industry. | CCPI: VN Waghmare |
| 9. | RCPS-8: Characterisation and identification of productive and high quality cotton species/genotypes including <i>G. herbaceum</i> for different rainfed agro-ecological situations adopting suitable approaches through farmers participatory programmes. | CCPI: Vinita Gotmare |
| 10. | RCPS-10: Development of Bt. transgenic diploid cotton against bollworm. | CCPI: SB Nandeshwar, AB Dongre |
| 11. | IVLP-TAR 15: Technology assessment and refinement of rainfed cotton based production system in Nagpur district through institute village linkage programme under rainfed Agro Eco-system. | HL Gajbhiye, MK Meshram,
P Ramasundaram,
Gulbir Singh, SS Patil,
UV Galkate |

IV. Agro Ecosystem (Coastal)

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| 12. | PSR 16: Exploitation of <i>G. herbaceum</i> cotton for improving agricultural output and economy of the coastal agro ecosystem. | N Gopalakrishnan |
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11.2.3 Technology Mission on Cotton (TMC)

Project No.	Title	CICR (N)	CICR (C)	CICR (S)
MM 1.1	Development of diploid cotton cultivars with high fibre quality	Punit Mohan CCPI	-	SK Verma CCPI
MM 1.2	Development of tetraploid cotton cultivars with high fibre quality and resistance to drought & biotic stresses	VN Waghmare CCPI	KN Gururajan PI	SL Ahuja CCPI
MM 1.3	Genetic diversity through introgression of useful genes in cultivated species of cotton	V Gotmare SB Nandeshwar G Balasubramani CCPIs	S Manickam CCPI	OP Tuteja CCPI
MM 1.4	Improvement of cotton seed oil	T R Loknathan PI M Chakrabarty Co-PI	N Gopala- krishanan, KPM Damayanthi CCPIs	OP Tuteja CCPI
MM 1.5	Maintenance breeding, seed production and marker based purity evaluation	TR Loknathan V Shanthi AB Dongre CCPIs	K Rathinavel CCPI	RA Meena CCPI
MM 2.1	Integrated nutrient management for high quality fibre and yield	Blaise PI	-	-
MM 2.2	Integrated water management system for quality fibre production	KS Bhaskar CCPI	K Shankarna rayan CCPI	-
MM 2.3	Bioinoculants for sustainable & cost effective production of high quality fibre	-	P Nalayini	-
MM 2.4	Refining regional-level prediction of yield	MRK Rao PI KB Hebber Co-PI	AH Prakash CCPI	-
MM 2.5	Ergonomically efficient implements for cotton production	AR Raju PI	-	-
MM 3.1	Integrated pest management (IPM) at village level for cost effective, quality production	S Vennila CCPI	T Surulivelu A Kannan CCPIs	P Jeyakumar D Monga CCPIs
MM 3.2	Development of diagnostic tools for differentiation and detection of biotypes/races of insect pests and pathogens of cotton	PK Chakrabarty PI S Kranthi MK Meshram Co-PIs	P Chidambaram B Dhara jyothi CCPIs	D Monga CCPI



MM 3.3	Commercialisation of bioagent mass-production technologies in intensive cotton districts .	N Gokte Narkhedkar CCPI	-	-
MM 5.1	Evaluation of cotton production technologies for yield, fibre quality and economic viability	HL Gajbhiye PI P Ramasunderam Co-PI	Isabella Agrawal CCPI	SK Verma CCPI
MM 5.2	Information, cotton website and documentation	AR Raju CCPI	M SabeshPI	-
MM 5.3	TMC-MMI Coordination and Monitoring cell	M. Chakrabarty	-	-

(N) - nagpur (C) - Coimbatore (S) - Sirsa

