TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

40th Cotton and Other Fibre Crops Scientists Meet 2022
30th Sugarcane Crop Scientists Meet 2022
(May 23, 2022)

Lead Centre
Department of Cotton
Centre for Plant Breeding and Genetics
Coimbatore – 641 041

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore 641 003

2022

PROCEEDINGS

40th Cotton and Other Fibre Crops Scientists Meet 2022
30th Sugarcane Crop Scientists Meet 2022

(23rd May, 2022)

The 40th Cotton and 30th Sugarcane Crop Scientists Meet were held on May 23, 2022. **Dr.V. Geethalakshmi**, Respected Vice Chancellor delivered the opening remarks in which madam laid emphasis on developing cotton varieties resistant to sucking pests, zero monopodia to ensure synchronized maturity for enabling mechanical harvesting, long staple length for ensuring high quality, integrated pest management and evolving colour cotton varieties. Popularization of *karunkanni* cotton to suit to the demand of surgical industries was emphasized. In the case of sugarcane, the Vice Chancellor emphasized the need for evolving sugarcane varieties with high sucrose content, development of new water soluble fertilizers and weed management technologies. The Vice Chancellor emphasized that both cotton and sugarcane are the traditional commercial crops of the state and hence there is a need for undertaking path-breaking research on several emerging challenges such as climate change impact and the attendant water scarcity, and the need for mechanization in both cotton and sugarcane.

Dr. M. Raveendran, Director of Research, TNAU, Coimbatore welcomed the gathering. New technologies and issues *viz*., micro-irrigation, drone technology for cotton, crop management technologies and the problems of pests and diseases were discussed. The Director of Research informed the scientists to take adequate initiatives to popularize the recently released cotton/ sugarcane varieties. The Director of Research emphasized the identification and utilization of resistant sources for insects management and newer molecules for effective control. He also suggested to speedup varietal development program in allied fibre crops *viz.,*Sunnhemp, Jute & Mesta.

Both the Vice Chancellor and the Director of Research were expressly concerned about the absence of any externally funded projects in cotton and sugarcane and emphasized the need for obtaining research grants.

In the case of cotton, a total of 12 ongoing University Research Projects, 14 Action Plan Projects and four AICRP projects were presented and reviewed critically by the Director of Research and the Vice Chancellor. In the case of sugarcane, six ongoing University Research Projects, 12 Action Plan Projects and one AICRP project were reviewed.

Dr. R. Ravikesavan, Director (CPBG), **Dr. M.K. Kalarani,** Director (Crop Management), **Dr. P. Balasubramaniam,** Director, (NRM) and **Dr. M. Shanthi,** Director (CPPS), presented the research highlights, action taken on previous Cotton and allied fibre Scientists Meet/Sugarcane Scientists Meet and Action Plan for the year 2022-2023 for their respective directorates and concluding remarks on actions points presented by the Director of Research.

Dr. S. Rajeswari, Professor and Head, Department of Cotton, proposed formal vote of thanks.

The proceedings of the 40th Crop Scientists' Meet on Cotton and Allied fibre crops 2022 are furnished under the following headings:

I. CROP IMPROVEMENT

A. Varieties release proposal OFT/ART/MLT
B. Action Plan (2020-2025)
C. Research Projects and remarks

II. CROP MANAGEMENT

A. Technologies for adoption/OFT
B. Action Plan Projects
C. Research Projects and remarks

III. CROP PROTECTION

A. Technologies for adoption OFT/Information
B. Action Plan Projects
C. Research Projects and remarks

IV. REMARKS

V. LISTS OF PARTICIPANTS

I. CROP IMPROVEMENT

A. Variety release proposal OFT/ART/MLT

1. Cultures nominated for ART-I

S. No.	Culture	Parentage	Seed cotton yield (kg/ha)	Yield increase over SVPR 6/ CO 14	Special features
1	TCH 1941	TCH 1002 x TCH 1025-8	1828	12.0 % increase over CO 14	• Ginning outturn (%):36.7 • UHML (mm) : 29.5 (Long staple) • Fibre Strength (g/tex): 28.0 • Micronaire value: 4.4 • Suited for winter tracts • Moderately tolerant to leaf hopper • Duration : 150 days
2	TSH 387	INDAM 1020 X MCU 5	2580	12.0 % increase over SVPR 5 and 13.5% over SVPR 6	• Ginning outturn (%):36.6 • UHML (mm) : 28.6 (Long staple) • Fibre Strength (g/tex): 25.9 • Micronaire value: 4.1 • Suited for summer irrigated tracts • Moderately tolerant to leaf hopper • Duration : 150 days Promoted to second year of testing under AICCIP Br. 04 (a) trial
Checks : CO14, SVPR 6 and KC 3					

Distribution of ARTs

Trial	*Gossypium hirsutum*	
Season	Winter Irrigated	Summer Irrigated
Districts	Coimbatore, Theni ,Salem, Dharmapuri, Erode, Villupuram, Kallakurichi, Namakkal, Tiruppur, Trichy and Dindigul	Theni, Salem, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Madurai, Dindigul, Thanjavur, Trichy and Thiruvarur

2. Cultures nominated for ART-II : Compact plant type

S. No	Culture	Parentage	Seed cotton yield	Yield 5ncrease over CO 17	Special features
1.	TCH 1985 (N) 125-130 days	KC 2 x TCH 1715	1926 kg/ha	12.0 % CO 17	Ginning outturn :36.8 UHML(mm):27.9 Fibre strength g/tex : 28.4 Micronaire value:4.7 µg/inch
Checks :CO 17 and Suraj					

Distribution of ARTs		
Trial	*Gossypium hirsutum*	
Season	**Winter Irrigated (Aug- Jan)**	**Summer Irrigated (Dec-May)**
	Coimbatore, Theni , Salem, Dharmapuri, Erode, Villupuram, Kallakurchi, Namakkal, Tiruppur, Trichy and Dindigul	Theni, Salem, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Madurai, Dindigul, Thanjavur, Trichy and Thiruvarur
Season	**Winter rainfed (Aug- Jan)**	**Rice fallow /Summer Irrigated (Dec- May)**
	Ariyalur, Perambalur, Kallakurichy, Salem, Namakkal, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Ramanathapuram, Madurai	Thanjavur, Tiruvarur, Nagapattinam, Mayiladuthurai

3. Cultures nominated for ART- III under Rainfed condition

S. No	Culture	Duration (Days)	Seed cotton yield (Kg/ha)	Yield increase over SVPR 6 /CO 14 /KC 3	Special features
1.	TVH 003 (R)	150	1417	45.5 per cent increase over SVPR 6 27.9 per cent increase over	• UHML : 30.9mm • Fibre strength: 29.3 g/tex • Micronaire value:4.25

				CO 14	
2.	TVH 007 (N) (Culture promoted to final / Agronomic trial under AICRP during 2022-23)	150	1785	55.6% increase over SVPR 6	• UHML (mm) : 28.5 • Fibre Strength (g/tex): 27.2 • Micronaire: 3.9 • Ginning (%): 37.0 • Tolerant to leaf hopper
3	TKH 1225 (N)	150	1969	25.5 per cent increase over KC 3	• UHML : 29.8mm • Fibre strength: 28.3 g/tex • Micronaire value:4.02
Check: KC 3, SVPR 6					

Distribution of ARTs

.Trial	*Gossypium hirsutum*
Season	Winter rainfed
Districts	Ariyalur, Perambalur, Kallakurichy, Salem, Namakkal, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Ramanathapuram, Madurai

4. Cultures nominated for ART- IV under Rainfed and Rice fallow/ Summer in Delta region

S.No.	Culture	Parentage	Seed cotton yield (kg/ha)	Duration (days)	Special features
	Rainfed				
1.	TVH 002 (N)	Suraj x TCH 1819	• 1138kg/ha (17.6 per cent increase over CO 15) under rainfed condition • 1508kg/ha (31.0& 32.0 per cent increase over CO 15& CO 17) under rice	120- 130 days	• Fibre length (mm): 30.5 (Long staple category) • Fibrestrength (g/tex): 28.2 • Micronaire value: 4.89 µg/inch

			fallow condition		
	Checks : CO 17 and Suraj				

Distribution of ARTs

Trial	*Gossypium hirsutum*	
Season	Winter rainfed	Rice fallow /Summer Irrigated
Districts	Ariyalur, Perambalur, Kallakurichy, Salem, Namakkal, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Ramanathapuram, Madurai	Thanjavur, Tiruvarur, Nagapttinam, Mayiladuthurai

5. Cultures identified for On Farm Trials during 2022-23

1. TCH 1828 – Long staple fibre and moderately resistant to leaf hopper and suitable for winter irrigated conditions
2. TSH 357 - Long staple fibre and moderately resistant to leaf hopper and suitable for Summer irrigated tracts

5. MLT on *G. hirsutum* (Variety)

Design :RBD		No. of replications	:	Three
Plotsize : 6m x 4.5 m($27m^2$)		Seed Quantity	:	200 g/entry/location
Spacing : 90 x60cm		Season	:	Winter irrigated and Winter rainfed

Features of the MLT cultures

S. No.	Culture	Parentage	Seed cotton yield (kg/ha)	Duration (Days)	Special features
1.	TCH 2001 (N)	KC 2 x MCU 5	1892 11.0 % (CO 14) 15.1 % (Zonal check)	150	• Ginning outturn :36.8 • UHML(mm):30.7 • Fibre strength(g/tex):27.4 • Micronaire value : 3.9 µg/inch

2.	TSH 489 (N)	SVPR 4 x SCS 1001	2546 13.4 % (SVPR 5) 24.2 (SVPR 3)	150	• Ginning outturn :34.9 • UHML(mm):27.1 • Fibre strength(g/tex):28.5 • Micronaire value : 4.3 µg/inch • Boll weight : 4.3 g
3.	TVH 1901 (N)	MCU4 x TVCH Seln.1	1705 31.2 % (SVPR 6)	120-130	• Ginning outturn :32.0 • UHML(mm):29.0 • Fibre strength(g/tex):29.5 • Micronaire value : 4.3 µg/inch
4.	TVH 2010 (N)	C10-3 x COD5	1565	125-135	• Ginning outturn :32.5 • UHML(mm):27.0 • Fibre strength(g/tex):27.3 • Micronaire value : 4.5 µg/inch • Semi-compact, short plant type
5.	TCH 1999 (R)	KC 2 x MCU 5	1664	150	• Ginning outturn :36.7 • UHML(mm):30.1 • Fibre strength(g/tex):27.2 • Micronaire value : 3.7 µg/inch
6.	TSH 406 (R)	SVPR 4x MCU 13	2482	150	• Ginning outturn :33.1% • UHML (mm) :26.0 • Fibre strength(g/tex:26.8 • Micronairevalue:4.9 • Boll weight : 3.8g

Checks	SVPR 6, CO14, KC 3, Non *Bt* private hybrid and zonal check (Phule Yamuna/BGDS 1063)
Locations	Winter irrigated: Dept.of Cotton, Coimbatore CRS, Srivilliputhur and AC &RI, Killikulam Winter rainfed : ARS, Kovilpatti, CRS, Veppanthattai and RRS, Aruppukottai Summer irrigated : CRS, Srivilliputtur and TRRI, Aduthurai

MLT on *G. hirsutum* (Compact)

Design :RBD		No. of replications	:	Three
Plotsize : 6m x 4.5 m (27m^2)		Seed Quantity	:	300 g/entry/location
Spacing : 90 x 30cm		Season	:	Winterirrigated, Winter rainfed and Summerirrigated

Features of the MLT cultures

S. No.	Culture	Parentage	Seed cotton yield (kg/ha)	Duration (Days)	Special features
1.	TCH 1913	TCH 1715 x CO 17	1968	125 days	• Ginning outturn :36.5 • UHML(mm) :28.6 • Fibre strength (g/tex : 27.8 • Micronaire value: 4.4 µg/inch
2.	TCH 1907 (II Year of testing)	KC 2 x TCH 1715	2176	125 days	• Ginning outturn :36.8 • UHML(mm) :26.5 • Fibre strength (g/tex : 26.4 • Micronaire value: 4.6 µg/inch
Checks		CO 17, CO 15 and Suraj			
Locations		Winter irrigated : Dept. of Cotton, Coimbatore CRS, Srivilliputhur and AC & RI, Killikulam Winter rainfed : ARS, Kovilpatti, CRS, Veppanthattai and RRS,Aruppukottai Summer irrigated : CRS, Srivilliputhur and TRRI, Aduthurai			

Important Dates in conduct of MLT & ART	
Date of receiving the seed material of the proposed entries at Coimbatore	15.06.2022
Date of dispatching the coded entries for ART/ MLT as per season's Requirement	30.06.2022
Date of receiving sowing report at CBE season wise Winter irrigated Winter rainfed Summer irrigated	 15.09.2022 15.10.2022 20.03.2023

Visit of MLT/ monitoring teams Coimbatore Srivilliputhur, Veppanthattai Kovilpatti	 Nov. 2022 and May 2023 Nov. 2023 and May 2023 Dec.2022
Visit of ART monitoring team season wise Winter irrigated Summer irrigated Winter rainfed	 November 2022 April 2023 December 2022
Date for receiving the trials results at CBE for compilation season wise Winter irrigated Winter rainfed Summer irrigated	 31.03.2023 15.04.2023 31.06.2023

Monitoring team to visit MLT	
Name of the scientist (s)	**Station to be visited**
Dr. N. Sakthivel AP (PBG), CRS, VPT	Cotton Research Station, Srivilliputhur
Dr. N. Premalatha, AP (PBG), Dept. of Cotton, Coimbatore	Cotton Research Station, Veppanthattai
Dr.G.Anand, AP (PBG), CRS, SVPR	ARS, Kovilpatti
Dr. S. Hariramakrishnan, AP(PBG), ARS, KPT	Department of Cotton, Coimbatore

B. Action Plan (2020 – 2025)

Theme No 1	**Development of pre-breeding materials by introgression of wild species**		
Theme Leader	Dr. M.Kumar, Professor (PBG), Department of Cotton		
Name of the scientist and Centre	**2022-23**	**2023-24**	**Deliverables**
Dr.S.Rajeswari Professor and Head (Cotton) **Dr. N. Premalatha** Asst. Prof. (PBG) Department of Cotton	• Hybridisation to be intensified in triploid sterile hybrid for getting fertile hexaploid by doubling	• Crossing between resultant hexaploid with tetraploid to get segregants of diploid, tetraploid and hexaploid with desirable	Development of cotton genotypes with wide genetic base Identification of cotton genotype with leaf hopper resistance

		traits • Evaluation of segregants	

Theme No 2	**Development of Zero monopodia and short sympodia cotton genotypes with jassid resistance and good fibre quality**		
Theme Leader	**Dr. S. Rajeswari,** Professor and Head, Dept. of Cotton, TNAU, Coimbatore		
Name of the scientist and centre	**2022-23**	**2023-24**	**Deliverables**
Dr. N. Premalatha, Asst. Professor (PBG), Dept. of Cotton	• Generation advancement and screening for leaf hopper at CBE • PYT at CBE, SVPR, VPT,KPT	• Seed multiplication of promising lines at SVPR andCBE	Development of high yielding compact variety with leaf hopper resistance

Theme No. 3	**Rapid Generation Advancement for improving boll weight in Desi cotton**		
Theme Leader	**Dr. S. Hariramakrishnan,** Asst. Prof. (PB&G), ARS, Kovilpatti		
Name of the scientist and centre	**2022-23**	**2023-24**	**Deliverables**
Dr. S. Harirama krishnan, Asst. Prof. (PB&G), ARS, Kovilpatti	· Study of BC_1 F_4 and F_5families in winter 2022 · Identification of elite segregants of *G.arboreum* possessing higher boll weight(6g) and yield of stabilized lines in stationtrials	· MLT/OFT at SVPR, KPT, VPT &APK · Proposal for variety release	Development of desi cotton variety with high boll weight and high yield

Theme No. 4	**Development of colour cotton varieties**		
Theme Leaders	**Dr. S.Rajeswari,** Prof. and Head (Cotton) **Dr. N.Premalatha,** Asst. Professor (PBG), Dept. of Cotton		
Name of the scientist and centre	**2022-23**	**2023-24**	**Deliverables**

Department of Cotton, Coimbatore	• Evaluation of colouredcotton genotypes for yield and fibre quality • Continuation of yield trials and evaluation of culture under MLT	Conducting ART, OFT	Submission of release proposal

New action Plan (2022-2026)			
Action plan 1	**Development of short duration ELS cotton varieties**		
Theme Leaders	Dr. S. Rajeswari, Prof. and Head (Cotton) Dr. N. Premalatha, Asst. Professor (PBG), Dept. of Cotton Dr. K. Sakthivel, Asst. Professor (PBG), CRS, Veppanthattai		
Name of the scientist and centres	**2022-23**	**2023-26**	**Deliverables**
Department of Cotton, Coimbatore Cotton Research Station, Veppanthattai	• Crossing (ELS Cotton varieties – MCU 5, CO 14) with short duration varieties – SVPR 3, MCU 7, TVH 002) & • Development of F_1s	• Raising of F_2 and selection of desirable segregants • Raising of F_3 – F_5 Families & selection of desirable segregants with ELS cotton • Conducting yield trials and evaluation of cultures under MLT • Conducting ART and OFT	Submission of release proposal

Centre for Plant Molecular Biology and Biotechnology

Action Plan (2021-2024)

Theme No. 1	**Molecular breeding for yield and fibre quality**	
Theme Leader	**Dr. N.Manikanda Boopathi, DPB, CPMB&B**	
Name of the scientist and centre	2021-24	Deliverables

Dr. S.Rajeswari Professor and Head & Dr. N. Premalatha, Asst. Professor (PBG), Dept. of Cotton	Marker Assisted selection for Boll weight	Cotton varieties with improved fiber quality and yield

Theme No. 2	**Exploring new *Bt* strains against boll worms (PBW)**	
Theme Leader	**Dr. V. Balasubramani , Professor, DPB**	
Name of the scientist and centre	2021-24	Deliverables
Dr. E.Kokiladevi, Professor & Head. Department of Plant Biotechnology	Indigenous *Bt* collections will be screened against pink boll worm	Newer and Novel *Bt* sources against cotton PBW

C. Research Projects and remarks

Research Projects on Cotton and Allied fibre crops

S.No.	Name of the centre	University Research Projects & Core projects	AICRP Projects	Total	Number of scientists
1.	Coimbatore	4	1	5	3
2.	Srivilliputtur	2	1	3	1
3.	Veppanthattai	2	1	3	1
4.	Kovilpatti	4	-	4	1
	Total	**12**	**3**	**15**	**6**
	Jute, Sunnhemp & Daincha				
5.	Coimbatore	1	-	1	1
6.	Aduthurai	-	1	1	1
7.	ADAC&RI,Trichy	1	-	1	1
	Total	**2**	**1**	**3**	**3**

Remarks on the ongoing research subprojects

No.	Project No. & Project title	Project Leader	Duration	Remarks
1.	CPBG/CBE/PBG/COT/2021/001 : Maintenance and production of nucleus and breeder seeds of cotton varieties of Department of Cotton, Coimbatore	Dr. L.Mahalingam & Dr.N.Premalatha	May 2021 to April 2024	The project may be continued.
2.	CPBG/CBE/PBG/COT/ 2014/005 : Breeding for high yielding long and extra long staple *G.hirsutum* and *G.barbadense* cotton varieties suitable for high speed spinning	Dr. S.Rajeswari and Dr.N.Premalatha	June 2017 to May 2022	Completion report may be submitted. New project may be proposed.
3.	CPBG/CBE/PBG/COT/2019/001 : Evolution of high yielding compact cotton variety with extra long staple fibre length and leaf hopper resistance	Dr.N.Premalatha, Dr. M.Gnasekaran & Dr.K.Senguttuvan	May 2019 to April 2022	Extension proposal for two years may be submitted.
4.	CPBG/CBE/PBG/COT/2020/001: Developing colour cotton variety with superior fibre quality traits	Dr.N.Premalatha	August 2020 to July 2023	The project may be continued.
5.	CPBG/SVR/PBG/COT/2021/001: Evolution of high yielding cotton varieties suited to southern districts of Tamil Nadu	Dr. G. Anand	October 2021 to September 2024	The project may be continued. Identified cultures may be screened for pests and diseases
6.	CPBG/SVP/PBG/COT/2018/001: Nucleus and breeder seeds production of cotton varieties released from Cotton Research station, Srivilliputtur	Dr. G. Anand	April 2018 to March 2023	The project may be continued.
7.	CPBG/KPT/PBG/COT/2021/001: Evolution of high yielding, Medium Staple *G.hirsutum* Cottonresistance to leaf hopper (*Jassids)* suitable for winter rainfed tracts of Tamil Nadu	Dr. S. Hari Ramakrishnan	October 2020 to September 2025	The project may be continued. Advance cultures may be evaluated for leaf hopper

8.	CPBG/KPT/PBG/COT/2020/002 : Genetic Enhancement of boll weight in desi Cotton(*G.arboreum*)	Dr. S. Hari Ramakrishnan	October. 2019 to September 2022	The project may be continued.
9.	CPBG/KPT/PBG/COT/2022/001: Evolution of high yielding *G.arboreum* cotton varieties suitable for winter rainfed condition in Tamil Nadu	Dr. S. Hari Ramakrishnan	October. 2020 to September 2025	The project may be continued.
10.	CPBG/KPT/PBG/COT/2018/001 : Nucleus and breeder seed production of cotton varieties of TamilNadu	Dr. S. Hari Ramakrishnan	October 2021 – September 2024	The project may be continued.
11.	CPBG/VPT/PBG/COT/2020/001 : Development of early maturing cotton varieties with leaf hopper resistance suitable for North Western zone of Tamil Nadu	Dr. K. Sakthivel, Co-Project Leader(s) Dr. N. Premalatha &Dr. P. Ananthi)	January, 2020 to December, 2023	The project may be continued. Fibre quality and pest and disease resistance may be evaluated
12.	CPBG/VPT/PBG/COT/2021/001 : Development of high yielding, long staple cotton varieties suitable for rainfed conditions of Tamil Nadu	Dr. K. Sakthivel, Co-Project Leader : Dr. N. Premalatha	Aug, 2021 to July, 2024	The project may be continued.
13.	AICRP/ PBG/ CBE/ COT/023:ICAR-All India Coordinated Research Project on Cotton	Dr.S.Rajeswari	2017-18 to 2021-22	The project may be continued
14.	AICRP/PBG/SVR/COT/024 : AICRP on Cotton improvement at CRS, Srivilliputtur	Dr. G. Anand	2017-18 to 2021-22	The project may be continued
15.	AICRP- VC /PBG/VPT/ COT/002 : Evaluation and utilization of cotton genotypes (*G.hirsutum*) of AICRP entries under rainfed condition (V9 C31 00)	Dr. K. Sakthivel	2017-18 to 2021-22	The project may be continued

16.	AICRP- VC /PBG/VPT/COT/001 : Evaluation of Bt cotton BG-II hybrids and varieties (*G hirsutum*) under rainfed condition	Dr. K. Sakthivel	2017-18 to 2021-22	The project may be continued
17.	CPBG/ CBE/ PBG/ GMC/2020/001 Evolution of high biomass sunnhemp (*Crotalaria juncea*) varieties for use as green manure.	Dr.N.Meenakshiganesan,	January 2020 to December 2022	The project may be continued
18.	All India Network Project on Jute and Allied fibers	Dr. R.Puspha	2017-18 to 2019-20	The project may be continued
19.	CPBG / TRY / PBG / GMC / 2020 / 001 : Evolution of high yielding daincha (*Sesbania aculeata*) genotypes	Dr. P. Anantharaju	June 2020 to May2023	The project may be continued

ALLIED FIBRE CROPS
Entries for Variety release proposal OFT/ART/MLT

1. Cultures identified for release during 2022-23

ADSH17001 – Sunnhemp culture identified for high biomass

- Parentage : SH4, CO1, SUIN 53, JRJ610 (Intercross)
- Duration : 120 days
- Average yield : 30.4 t/ha - 43.3 % over CO 1(LC) and 36.6 % over SH 4 (NC)
- Special features : High Biomass, With fast decomposition rate
- No. of locations tested : 80
- **ART for biomass yield will be conducted during 2022**

MLT on Green Manures

Ecosystem	Crop	Entries	Check	Nominating Centres	MLT Centers
Wet Land	Daincha	3	1	Trichy	Yethapur, Trichy, Madurai, Paiyur (4)
Garden Land	Sunnhemp	5	2	Aduthurai, Coimbatore	Aduthurai, Sirugamani, Ambasamudram, Thanjavur, Coimbatore (5)

MLT on Daincha

Entries	:		3+1	Ecosystem		Wet Land
Design	:		RBD	Replications		3
Plot size	:		6.0 x 3.0 m^2	Seed Quantity		
Spacing	:		3 Rows 25 cm apart and 4-6 cm between plants	Season		May-June

S.No	Entries	Nominating Centre
1	Sivagangai local	ADAC&RI, Trichy
2	Villupuram local	
3	Vellore local	
Check	Pant Daincha-1	
Location	Yethapur, Trichy, Madurai, Paiyur(4)	

Data to be collected

The plants should be harvested at 45th day and the biomass yield should be recorded. Traits to be observed:

1. Population/Squaremeter
2. Biomass yield/Squaremeter(kg)
3. Plot yield(kg/ha)
4. Days to 50% flowering / Days toharvest
5. No. of nodules /plant

MLT on Sunnhemp

Entries	:	5+2	Ecosystem	:	Garden Land
Design	:	RBD	Replications	:	3
Plot size	:	6.0 x 3.0 m^2	Seed Quantity	:	
Spacing	:	3 Rows 25 cm apart and 4-6 cm between plants	Season	:	May-June

S.No	Entries	Nominating Centres
1	ADSH 17011	TRRI, Aduthurai
2	ADSH 17036	TRRI, Aduthurai
3	ADSH 18013	TRRI, Aduthurai
4	ADSH 18014	TRRI, Aduthurai
5	CCJ2	CPBG, Coimbatore
Check	CO 1, Local Variety	
Location	Aduthurai, Sirugamani, Ambasamudram, Thanjavur, Coimbatore (5)	

Data to be collected

The plants should be harvested at peak flowering stage and the biomass yield should be recorded.
Traits to be observed:

1. Population/Squaremeter
2. Biomass yield/Squaremeter(kg)
3. Plot yield(kg/ha)
4. Days to 50% flowering / Days toharvest
5. Pest/diseaseincidences
6. Otherobservation

Action Plan 2022-23

Action Plan1	**Roselle calyx as food additive and in value addition**	
Theme Leaders	Dr.G. Hemalatha, Professor and Head, Department of Food Science and Nutrition, CSC&RI, Madurai Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai	
Name of the scientist and centre	**Work plan for the year 2021-22**	**Deliverables**
Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai	• The Calyx of the identified Roselle genotypes viz., Early red, Late red & Purple will be multiplied and supply to CSC&RI, Madurai. • The antioxidant property by using DPPH method will be evaluated in the identifiedgenotypesalongwith suitable checks.	Best genotype for calyx will be identified
Dr. K. Jothilakshmi , Assistant Professor Department of Human development and family studies, Community Science College and Research Institute, TNAU, Madurai	• Pilot study for utilization of roselle as natural food colorant, additive and use in bakery, confectionery, instant foods, beverages and product development	

Evaluation possibilities of Mestha as Fibre Crop in Tamil Nadu		
Action Plan 2		
Theme Leaders	**Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai**	
Name of the scientist and centre	**Work plan for the year 2021-22**	**Deliverables**
Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai	• Five Frontline demonstrations of latest varieties in New Delta Zone of Tamil Nadu. **Rain fed ecosystem** : Roselle *(H.subderiffa*) Varieties : AMV-5, AMV-7 &AMV10	Suitability of Mesta to Tamil Nadu – Cauvery Delta Zone will be assessed

II. CROP MANAGEMENT

A. Technologies for Adoption/OFT/Information

A1. For Adoption

1. **Split Application of Nitrogen on Yield of Cotton**
   - Application of recommended dose of N (100 kg/ha) in six splits at basal, 25, 45, 65, 85 and 105 days after sowing is recommended for irrigated cotton under high density planting system along with existing recommended application of P (50 kg/ha) as basal and K (50 kg/ha) in three splits.
   - Application of recommended dose of N (100 kg/ha) in three splits at basal, 25 and 45 days after sowing is recommended for rainfed cotton under high density planting system along with existing recommended application of P (50 kg/ha) as basal and K (50 kg/ha) in three splits.
2. **Cotton Canopy Management and Defoliation for Mechanized Harvest**

   Application of Mepiquat Chloride (0.015%) at square formation stage and Sodium Chlorate (0.9%) at 60% boll bursting stage makes the cotton variety CO 17 suitable for mechanical harvesting.

A 2. On Farm Testing (OFT)

OFT 1.Mechanical weed management in cotton under high density planting system
Objective: ➢ To study the effect of mechanised weeding on growth and yield of cotton in comparison with chemical weeding
Treatments T1: Control (No weeding) T2 : Pre emergence herbicide application and POE application on 20-25 DAS + manual weeding on 40-45 DAS T3 : Pre emergence herbicide application + POE application on 20-25 DAS + Weeding by power weeder/power tiller on 40 an 60DAS Pre Emergence herbicide – Penimethalin at 1.0 kg/ ai/ ha Post Emergence herbicide – Pyrithiobacsodium at 62.5 g/ ai/ ha Variety : CO 17

Centres and Scientists in-charge	1	**Dr. R. Veeraputhiran** Assoc. Prof. (Agronomy) CRS, Srivilliputhur **(Lead Centre)**	Year 2022–2023
	2	**Dr. K. Thirukumaran** Assoc. Prof. (Agronomy) Dept. of Cotton, TNAU, Coimbatore	
	3	**Dr. S. Subbulakshmi** Asst. Prof. (Agronomy) ARS, Kovilpatti	

OFT 2. Cotton inter-cropping system to enhance resource utilization, profitability and sustainability			
Objective: ➢ To identify better inter cropping system for enhanced resource utilization, profitability and sustainability			
Treatments T1: Sole Bt cotton T2: Paired row planting of Bt cotton with two rows of Cluster bean intercrop T3: Recommended intercropping (Blackgram / Greengram / Cowpea)			
Centres and Scientists in-charge	1	**Dr. R. Veeraputhiran** Assoc. Prof. (Agronomy) CRS, Srivilliputhur **(Lead Centre)**	Year 2022–2023
	2	**Dr. K. Thirukumaran** Assoc. Prof. (Agronomy) Dept. of Cotton, TNAU, Coimbatore	
	3	**Dr. S. Subbulakshmi** Asst. Prof. (Agronomy) ARS, Kovilpatti	

B. Action Plan Projects for 2022 - 2023

No	Title	Centres and Scientists	Period	Remarks
Effect of Nano urea on growth and yield of HDPS Cotton				
Objective: • To study the effect of application of nano urea on growth and yield of HDPS cotton				
1		**Dr. K. Thirukumaran** Associate. Prof. (Agronomy) Dept. of Cotton TNAU, Coimbatore **(Lead Centre)** **Dr.K. M. Sellamuthu** Associate. Prof. (SS &AC) Department of SS & AC TNAU, Coimbatore	2022-2023	New action plan project
2		**Dr. R. Veeraputhiran** Associate Prof. (Agronomy) and Head (i/c) CRS, Srivilliputhur		
3		**Dr. S. Somasundaram** Associate Prof. (Agronomy) and Head (i/c),CRS, Veppanthattai		

Treatments: 7

Treatments **RDF: 100:50: 50 kg NPK/ha**

T1: Control (Without N)

T2: 100 % RN through Granular Urea (GU)

T3: 50% RN through Granular Urea (GU) as basal +25% RN through Nano Urea (NU) at 25 DAS + 25% RN through Nano Urea (NU) at 45 DAS

T4: 50% RN through Granular Urea (GU) as basal +25% RN through Nano Urea (NU) at 25 DAS 25% RN through Nano Urea (NU) at 65 DAS

T5: 50% RN through Granular Urea (GU) as basal +25% RN through Nano Urea (NU) at 25 DAS + 15% RN through Nano Urea (NU) at 45 DAS + 10% RN through Nano Urea (NU) at 65 DAS

T6: 50% RN through Granular Urea (GU) as basal +25% RN through nano at 25 DAS + 15% RN through Nano Urea (NU) at 45 DAS + 10% RN Nano Urea (NU) (NU) at 65 DAS
T7: 50% RN through Granular Urea (GU) as basal +15% RN through Nano Urea (NU) at 25 DAS + 15% RN through Nano Urea (NU) at 45 DAS + 10% RN through Nano Urea (NU) at 65 DAS+ 10% RN through Nano Urea (NU) Nano Urea (NU) at 95 DAS

Design: **RBD** **Replications**: Three **Plot size**: 40 m^2
Season: Winter irrigated
Note: P nutrient as basal application and K nutrient in splits as per the recommendations.
Observations

- Growth &Yield parameters, Economics, Nutrient uptake and Soil nutrient analysis
- Nitrogen use efficiency, Nutrient Budgeting and Partial budgeting

General Remarks

Study on complete mechanisation in cotton and evaluation of combined harvester (Action**:** Department of Farm Machinery and Power Engineering, AEC&RI, TNAU, Coimbatore and CRS, Veppanthattai)

C. Research Projects and remarks

Crop	DCM			TOTAL
	CENTRE	URP	AICRP	
Cotton	Coimbatore	2	1	4
	Srivilliputtur		1	
	Kovilpatti		-	
	Veppanthattai	1	-	1
		Total		5

Remarks on the ongoing Action plan/Core projects/ URPs/AICRP/ Externally funded projects

Sl. No	Project No. and Title	Scientists in-charge	Duration	Remarks
University Research Projects				
1.	Effect of Bio stimulant on growth and development of cotton	**Dr. K. Thirukumaran**Associate Prof. (Agronomy) Department of Cotton, TNAU, Coimbatore **Dr. R. Veeraputhiran** Associate Prof. (Agronomy) and Head (i/c) Cotton Research Station, Srivilliputtur	2022 - 2023	To be Continued
2.	DCM/TRRI/VPT/AGR/2021/ 001 Developing technology capsule under HDPS for improving productivity and suiting mechanization in rainfed cotton	**Dr. S. Somasundaram** Associate Prof. (Agronomy) and Head (i/c) CRS, Veppanthattai	2022 - 2023	To be Continue d
3.	AICCIP/ DCM/CBE/AGR/COT/2020/0 02 Mechanical weed management in cotton under high density planting system	**Dr. K. Thirukumaran** Associate Prof. (Agronomy) Department of Cotton, TNAU, Coimbatore **Dr. R. Veeraputhiran** Associate Prof. (Agronomy) and Head (i/c) Cotton Research Station, Srivilliputtur **Dr. S. Subbulakshmi** Assistant Prof. (Agronomy) ARS, Kovilpatti	2022 - 2023	Recommend ed for OFT

4.	AICCIP/ DCM/CBE/AGR/COT/2020/001.Multi-tier cropping system to enhance resource utilization, profitability and sustainability	**Dr. K. Thirukumaran** Associate Prof. (Agronomy) Department of Cotton, TNAU, Coimbatore **Dr. R. Veeraputhiran** Associate Prof. (Agronomy) and Head (i/c) Cotton Research Station, Srivilliputtur **Dr. S. Subbulakshmi** Assistant Prof. (Agronomy) ARS, Kovilpatti	2022 - 2023	Recommended for OFT
AICRPs				
1.	AICRP/ PBG/SVR/COT/024/ AICRP on Cotton	**Dr. R. Veeraputhiran** Associate Prof. (Agronomy) CRS, Srivilliputhur	2022 - 2023	To be Continued
2.	AICRP/ PBG/SVR/COT/023/ AICRP on Cotton	**Dr. K. Thirukumaran** Associate Prof. (Agronomy) Department of Cotton TNAU, Coimbatore	2022 - 2023	To be Continued

II.DIRECTORATE OFNATURAL RESOURCE MANAGEMENT

The Director (DNRM), TNAU, Coimbatore reviewed the progress of the ongoing research projects, action plan projects, OFT on Cotton that are being undertaken by Scientists for the year 2021-22 of Directorate of Natural Resource Management, TNAU, Coimbatore on 05.05.2022 FN. About 4 projects comprising 1 action plan, 1 URP, 2 AICRPs on cotton were reviewed. Seven scientists attended the review and presented the salient findings of the project on online mode. The following findings are forwarded for information.

a). For Information

1. Permanent Manurial Experiments (PME) on Cotton under Rainfed deep Black soils (*Vertisols*)

The results of 39 years old PME being conducted at ARS, Kovilpatti indicates that application of 100 % RDF (40:20:40 N:P_2O_5:K_2O kg ha^{-1}) + 25 kg $ZnSO_4$ ha^{-1} registered 18% higher seed cotton yield when compared with 50 % Inorganic N + 50 % organic N (FYM) + 50 % P + 50 % K under rainfed condition. In vertisols under dryland situation, positive nutrient balance of nitrogen and phosphorus was observed with 100 % RDF + 25 kg $ZnSO_4$ ha^{-1} over the years, whereas the potassium balance was negative. The Soil Organic Carbon was improved from 1.8 to 3.5 g ha^{-1} {over the initial status during 1982}.

2. Integrated Nutrient Management (INM) for Rainfed Cotton

Under rainfed vertisols condition, application of 100 % RDF (40:20:40 N: P_2O_5: K_2O kg ha^{-1}) + 25 kg $ZnSO_4$ ha^{-1} registered 10% higher seed cotton yield (971 kg/ha), BCR (1.54) and RWUE (2.64 kg/ha-mm) when compared with 100 % RDF (40:20:40 NPK kg ha^{-1}). Application of 100 % RDF + 25 kg $ZnSO_4$ ha^{-1} resulted in higher soil available nutrients *viz.,* available nitrogen (154 kg/ha), phosphorus (16.1 kg/ha) and potassium (520 kg/ha) over rest of the treatments.

3. Nutrient requirement for monostem compact cotton (var. Co-17) under rain fed system of Coastal soils of Ramanathapuram district

Application of NPK @ 49: 20:20 kg ha^{-1} with Zinc Lysinate @ 2.5 kgha^{-1} for STCR Yield target of 1.5 t ha^{-1}, has recorded the highest seed cotton yield (1467 kg ha^{-1}) and BCR (3.19)at CSRC, Ramnad and at ARS, Paramakudi, application of NPK @ 41: 15: 15 kg ha^{-1} for STCR Yield target 1.5 t ha^{-1} along with Zinc Lysinate @ 2.5 kg ha^{-1} has recorded the highest seed cotton yield (1389 kg ha^{-1}) and BCR (3.02).

b. Research Projects

PROJECTS	SS&AC
Action Plan	1
University Research Projects	1
AICRP	2
Total	**4**

c). Project wise remarks:

Soil Science & Agricultural Chemistry

Sl. No.	Title of the project	Period	Scientists involved	Remarks
	Action plan project			
1.	Evaluation of Multi Nutrient Briquette and TNAU-WSF for Yield Maximization and Quality Improvement in Cotton	2021-2023	Dr. M.R.Backiyavathy, Dr.P Dhananchezhiyan, Dr.R.Nageswari Dr.M.Malarkodi	• The Project may be continued.
B.	**University Research Projects**			
2.	NRM/ RMD/ SSAC/ COT/ 2021/001. Assessing the suitability of monostem ompact cotton and Optimising nutrient requirement in the rain fed system of Coastal soils of Ramanathapuram district	2021-2023	Dr. J.Prabhaharan Dr. T. Ragavan	• Confirmative trial may be taken up in the ensuing season.
3.	AICRP / DCM/ KPT/AGR/ 004: Permanent Manurial experiments on cotton	From 2011 onwards	Dr. V. Sanjeev Kumar Dr. K. Baskar	• The project may be continued and PME guidelines may be followed

	under rainfed deep black soils.			for the experimental data generation.
4.	AICRP / DCM/ KPT/ AGR/ 004: Satellite experiment on effect of integrated nutrient management in cotton	2018 onwards	Dr. V. Sanjeev Kumar Dr. K. Baskar	• The project may be continued

III. CROP PROTECTION

A. FOR ADOPTION

1. **Entomology** : Prophylactic management of sucking insect pests using seed treatment with *Beauveria bassiana* @ 10 g/kg of seed + Soil application of neem cake @ 250 kg/ha + Yellow sticky trap @ 12 nos./ha + Release of green lacewing @ 1 lakh eggs/ha at 30 DAS + Need based spray of Azadirachtin 0.03% EC 2500ml/ha. Need based spraying of diafenthiuron 50% WP @ 600 g/ha or thiamethoxam 25% WG @ 100g/ha followed by dinotefuran 20 % SG@ 150 g/ha or flonicamid 50% WG @ 150 g/ha on crossing ETL. This is effective for sucking pest management in the High Density Planting System.
2. **Pathology** : Seed treatment with *Bacillus subtilis* (Bbv57) @ 10 g/kg + foliar spray 0.5 % on 30 and 45 days after sowing is recommended for the effective management of major diseases of cotton viz., root rot, wilt, greymildew, *Alternaria* blight, *Cercospora* spot and bacterial blight.

B. FOR ON FARM TESTING

Integrated Pest and Disease Management (IPDM) capsule for cotton

Treatments:

T_1 - IPDM capsule:

1. Seed treatment with Imidacloprid 600 FS @ 10 g/kg and *Bacillus subtilis* (Bbv) @ 10g/kg

2. Installation of yellow sticky traps @ 12/ha at 20 days after sowing & pheromone traps @ 12/ha at 40 DAS
3. Need based application of:
   - Drenching collar region with chlorpyriphos 50 EC @ 1200 ml/ha on 30 and 45 days after sowing + Earthing up (Stem weevil).
   - Azadirachtin 0.03% EC – 2.5 lit. / ha at 30 DAS (Sucking pests)
   - If ETL is crossed at vegetative stage (sucking pests: Flonicamid 50% WG 150g/ha, Bollworms: Chlorantraniliprole 18.5% SC @150 ml/ha)
   - Trifloxystrobin + tebuconazole @ 0.6 g/lit. + need based application of Copper Oxychloride @ 2 kg/ ha
   - Field release of *T. chilonis* and *T. bactrae* @ 1.5 lakh/ ha at weekly intervals from 45 DAS for 3 times

T_2 – Farmer's practice:

- Fipronil 5% SC@ 2000ml/ha on 25 DAS + Imidacloprid 30.5 SC@ 75g/ha on 40 DAS + Thiamethoxam 25 % WG @ 100g/ha on 55 DAS and Profenophos 50% EC 2 lit./ha on 75 DAS

T_3 - Untreated check

Design: Exploded Block

Season: Winter cotton– irrigated / rainfed

Variety: CO17

AC & RI, Coimbatore	:	Dr. K. Senguttuvan, Asst. Professor (Entomology) (TL) Dr.E.Rajeswari, Associat professor(Plant Pathology)
ARS, Bhavanisagar	:	Dr. K. Ganesan, Asst. Professor (Entomology) Dr. S. Sundravadana Asst. Professor (Pl. Pathology)
KVK, Sandhiyur, Salem TCRS, Yethapur, Salem	:	Dr. M. Ravi, Asst. Professor (Entomology) Dr.V.Ravichandran, Assistant Professor (Pl. Pathology)
CRS, Srivilliputhur		AICRP Entomologist, Srivilliputhur Dr.R.Vimala, Professor(Plant Pathology)

Observations to be recorded:

- Sucking pests population – as per standard protocol (leaf hopper, thrips, whitefly, aphids and mealy bugs), per cent crop damage, bollworms incidence and damage
- Diseases – as per standard protocol (Per cent incidence of wilt and root rot; Per cent disease index of *Alternaria* leaf blight, grey mildew, bacterial blight and boll rot

- Natural enemies population
- Yield
- BC Ratio

C. FOR INFORMATION

AGRICULTURAL ENTOMOLOGY

- The IPDM capsule including seed treatment with imidacloprid 600 FS @ 10 g/ kg and *Bacillus subtilis* (10 g/kg) followed by installation of yellow sticky trap @ 12/ha at 20 days after sowing, installation of pheromone traps @ 12/ha at 40 DAS, Need based application of chlorpyriphos 50% EC (1200ml/ha) at 25 DAS (Stem weevil) towards the collar region of the stem, Nimbecidine 0.03% EC (2.5 lit./ha) at 30 DAS for sucking pests, release of *T. chilonis*&*T. bactrae* @ 1.5 lakh/ ha at weekly intervals from 45 DAS @ 3 times, need based application of flonicamid 50% WG 150g/ha for sucking pests at the vegetative stage and chlorpyriphos 20% EC 1250ml/ha for bollworms at square formation stage, application of trifloxystrobin + tebuconazole @ 0.6 g/lit for ALB recorded significantly less *Alternaria* leaf spot, grey mildew, and black arm infection and both chewing and sucking insect pests with highest kapas yield of 2198.90kg/ha and a BCR of 2.34.
- Sixteen entries viz., TSH 383, TSH 357, TCH 1897, TCH 1999, TSH 406, TCH 1941, TSH 387, TVH 007, TKH 0762, SVPR 6, CO 14, MCU 5, TCH 1907, TCH 1895, CO 15 and Suraj were recorded as moderately resistant to leafhopper with an Injury Grade Index of 1.7 to 2.0 in advanced screening experiment. The entry, KC3 was recorded as resistant to leafhopper and was on par with the resistant standard check NDLH 1938.
- Biochemical analysus of resistant variety KC3 recorded the highest amount of phenol (1.98 µg/g), amino acid (132 µg/g) and tannin (169 µg/g). The moderately resistant entries showed a total phenol content ranging between 1.22 and 1.98 µg/g. The susceptible culture DCH 32 recorded the lowest amounts of total phenol (1.22 µg/g), amino acids (132 µg/g) and tannin (169 µg/g).
- The relationship between trichome density and leafhopper was found to be negative correlated.
- Basal application of FYM @ 12.5 t/ha, *Bacillus subtilis* (Bbv)@ 10g/kg of seed, two foliar sprays of FORS liquid 10 ml/l, crude neem oil 10ml/l recorded 67.23 per cent reduction in cotton mealy bug population. Flonicamid 50 WG @ 2.0g/l was the best among all the treatments which recorded 5.2 and 6.0 mealybug crawlers and adults per 5 cm apical shoot, respectively as against 30.9 nos. in untreated control.

- *Paraleyrodes bondari* Peracchi and *Aleurodicus rugioperculatus* have been reported for the first time in the cotton growing ecosystem of Tamil Nadu and confirmed with morphological and molecular analysis.

Plant Pathology

- Roving survey was carried out in cotton growing districts of Tamil Nadu revealed that the collar rot (5.3%) and boll rot incidence were more (5.3%) in Dindugal , Alternaria leaf blight (15.7PDI), bacterial Blight(17.3 PDI) and grey mildew (16.3 PDI) incidences were high in Salem. Root rot incidence was observed to be more (12.5%) in Trichy.
- The results of the correlation analysis showed that the maximum temperature was negatively correlated with Alternaria leaf blight; Tobacco streak virus and grey mildew and RH were positively correlated with Alternaria leaf blight & grey mildew. .Rainfall was negatively correlated with Tobacco streak virus, grey mildew and positively correlated with bacterial blight.
- The AYT entry TCH 2009 was found to be resistant to both root rot and *Alternaria* blight diseases.
- Foliar spraying of liquid formulation of *Ampelomyces quisqualis* (2 × 106 spores ml^{-1}) @ 20 ml / litre of water at 60, 75 & 90 DAS was effective against grey mildew under field condition.
- Endophytic Bacillus isolate EB 15 was found to be effective in inhibiting the growth of *Xanthomonas axonopodis* pv. *malvacearum* and enhancing the growth attributes of cotton and reducing the bacterial blight incidence in the glass house and field conditions. *Bacillus* isolate EB 15 was found to have lipopeptide biosynthetic genes *viz.*, fengycin, iturin and surfactin.

D. Action plan (2022-2023)

A. Agricultural Entomology

Theme areas

1. Changing pest scenario in relation to weather parameters
2. Identification of resistant sources for major pest of cotton
3. Management modules for major pest of cotton

Action Plan 1. Monitoring of Pest in cotton

Activity

- Keeping vigilance on emerging pests either through introduction or shift in pest status.
- Assessment of insect pest and natural enemies population *in situ*, light and pheromone trap.
- Impact of light trap on non-target arthropods.
- Fixed and roving survey in the identified District during specific crop season (One on campus fixed plot and roving plot study).

Observation to be recorded

- Incidence of pests, natural enemies
- Incidence of newer pests
- Fixed Plot survey: Observations at weekly interval commencing from ten days after sowing
- Roving survey: Observations at fortnightly interval commencing from establishment stage
- Correlation and regression analysis of pest incidence and damage percentage with weather parameters

Deliverable

- Forecasting and forewarning of pest incidence for making management decisions

Theme Leader:

Dr. K. Senguttuvan, TNAU, CBE

Centres:

Fixed Plot Survey

1. Dr. K. Senguttuvan, TNAU, Coimbatore (TL)
2. Entomologist, CRS, SVPR
3. Dr. K. Ganesan, ARS, BSR

Roving Survey

1. Dr. K. Senguttuvan, TNAU, Coimbatore (TL)
2. Dr. B. Usharani, KVK, MDU
3. Dr. M. Ravi, KVK, Sandhiyur, Salem
4. Dr. K. Ganesan, ARS, BSR
5. Entomologist, CRS, SVPR

Correlation with weather parameters

Dr. S. Kokilavani, ACRC, Coimbatore

Action Plan 2. Screening of cotton cultures against major pests

Activity

- ✓ Screening pre-release cultures from breeders both under natural and artificial condition as per the standard screening methods for key insect pests of cotton.

Observations to be recorded

- ✓ Observations on the incidence / expression of key insect pests and diseases (Leafhopper, bollworms, stem weevil) - both under field and artificial screening

Deliverable

- ✓ Identification of resistant donors for major pests of cotton

Theme Leader:

1. Dr. K. Senguttuvan, TNAU, CBE, Asst. Professor (Ento.), TNAU, CBE

Centres:

1. Dr. K. Senguttuvan, TNAU, CBE (TL)
2. Entomologist, CRS, SVPR

Action Plan 3. Semiochemical based monitoring of cotton stem weevil, *Pempherulus affinis* (Faust)

Activity

- ✓ Standardization of Eicosane for field level monitoring.

Observations to be recorded

- ✓ No. of adults collected in the delta trap and standardization

Deliverable

- ✓ Monitoring tool for stem weevil will be evolved.

Theme Leader:

Dr. K. Senguttuvan, Assistant Professor (Entomology), TNAU, CBE

Centre:

1. Dr. G. Ravi, Professor (Ento), AC&RI, Killikulam
2. Dr. K. Senguttuvan, TNAU, CBE [TL]
3. Dr. K. Ganesan, ARS, BSR
4. Entomologist, CRS, SVPR

Action Plan 4: Development of weather driven model for decision support system for the management of Cotton pest (New)

Activity

- ✓ Development of weather driven model
- ✓ Validation of the model

Observations to be recorded

- ✓ Validation of the model for the occurrence and forewarning message of the pest
- ✓ Adoption in the farmers level

Deliverable

- ✓ Forewarning model development for effective pest management

Theme Leader:

Dr. K. Senguttuvan, Assistant Professor (Entomology), TNAU, CBE

Centre:

1. Dr. K. Senguttuvan, TNAU, CBE [TL]
2. Dr. K. Ganesan, ARS, BSR
3. Entomologist, CRS, SVPR
4. Dr. S. Kokilavani, AP (Agricultural Meteorology), ACRC, TNAU, Coimbatore
5. Dr. Patil Santosh Ganapati, , AP (Agril. Statistics), PS& IT, TNAU, Coimbatore

b.Plant Pathology

Theme areas

1. Changing diseases scenario in relation to weather parameters
2. Identification of resistant sources for major diseases of cotton
3. Management modules for major diseases of cotton

Action Plan No. 1: Monitoring of diseases in cotton

Activity

- ✓ Survey and monitoring for the incidence of diseases throughout the cropping period in major cotton growing areas of Tamil Nadu (One fixed plot survey in campus/station and fortnightly roving survey in the operational area)
- ✓ Development of forewarning model for major diseases using available data (TNAU, CBE centre)

Observations to be made

- ✓ Correlation and regression analysis of diseases incidence and damage percentage with weather parameters
- ✓ To develop forewarning modules for important diseases

Deliverable

- ✓ Forecasting and forewarning of disease incidence for making management decisions

Theme Leader:

Dr.E.Rajeswari Associate Professor (Plant Pathology), TNAU, CBE

Centres:

Fixed Plot Survey

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)
2. **Dr.R.Vimala,** CRS, SVPR
3. **Dr.M.Rajesh,** ADAC&RI, Trichy

Roving Survey

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)
2. **Dr.R.Vimala,** CRS, SVPR
3. **Dr.M. Rajesh**, ADAC&RI, Trichy

Correlation with weather parameters

Dr. S. Kokilavani, ACRC, Coimbatore

Action Plan 2. Screening of cotton cultures against major diseases

Activity

- ✓ Screening pre-release cultures from breeders both under natural and artificial condition as per the standard screening methods for diseases of cotton.

Observations to be recorded

- ✓ Observations on the incidence / expression of diseases (*Alternaria* leaf blight, bacterial leaf blight and root rot) - both under field and artificial screening

Deliverable

- ✓ Identification of resistant donors for major diseases of cotton

Theme Leader:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)

Centres:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)
2. **Dr.R.Vimala,** CRS, SVPR

Action Plan 3: Biological management of grey mildew in cotton

Activity

- ✓ Evaluating the efficacy of *Ampelomyces quisqualis* isolates with *Bacillus subtilis* against grey mildew under glass house and field conditions along with chemical check

Observations to be recorded

- ✓ Grey mildew incidence and Yield data

Deliverable

- ✓ Effective newer bio-control agent for the management of grey mildew in cotton

Pot Culture & Field Experiment

Theme Leader:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)

Centres:

4. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)
5. **Dr.R.Vimala,** CRS, SVPR
6. **Dr.M.Rajesh,** ADAC&RI, Trichy

Action Plan 4: Development of weather driven model for decision support system for the management of Cotton diseases

Activity

- ✓ Development of weather driven model
- ✓ Validation of the model

Observations to be recorded

- ✓ Validation of the model for the occurrence and forewarning message of the diseases
- ✓ Adoption in the farmers level

Deliverable

- ✓ Forewarning model development for effective disease management

Theme Leader:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)

Centres:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)
2. **Dr.R.Vimala,** CRS, SVPR
6. **Dr. S. Kokilavani**, AP (Agricultural Meteorology), ACRC, TNAU, Coimbatore
7. **Dr. Patil Santosh Ganapati**, , AP (Agril. Statistics), PS& IT, TNAU, Coimbatore

Action Plan 5: Management of bacterial blight of cotton

Activity

- ✓ Evaluating the efficacy of bacterial endophyte and *Streptomyces* sp against bacterial blight of cotton under pot culture and field conditions

Observations to be recorded

- ✓ Bacterial blight incidence and Yield data

Deliverable

- ✓ Efficient management strategy for bacterial blight

Pot Culture & Field Experiment

Theme Leader:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)

Centres:

1. **Dr.E.Rajeswari**, TNAU, Coimbatore (TL)
2. **Dr.R.Vimala,** CRS, SVPR

E. REMARKS FOR THE ONGOING RESEARCH PROJECTS

Type of project	AEN	PAT	Total
University Research Projects	2	1	3
AICRP Project	2	1	3
Total	4	2	6

LIST OF ONGOING RESEARCH PROJECTS

S. No.	Project Number and Title	Period	Remarks
URP			
1	**New URP** "Species Diversity, Pestiferous Nature, Bionomics and Management of Mirid Bug complex in Cotton" **Dr. K. Senguttuvan**, Asst. Prof. (Ento.)	January 2022 – December 2024	URP Approved CPPS/CBE/COT/COT/2022/001
2	**CPPS/MDU/ENT/COT/2016/001** "Development of ecofriendly management strategies for the mealybug in rainfed cotton" **Dr.G.Srinivasan,** Associate Professor (Ento.)	April 2016 to March 2021.	Completion report may be sent by the June, 2022. The results may be published in peer reviewed journals
AICRP			
3	**AICRP/ PBG/ CBE/ COT/ 023** All India Coordinated Research Project on Cotton **Dr. K. Senguttuvan,** Asst. Prof. (Ento.)	April 2022 – March 2023	Project may be continued
4.	**AICRP/ PBG/ SVR/ COT/ 024** All India Coordinated Research Project on Cotton AP (Ento.), Srivilliputhur	April 2022 – March 2023	Project may be continued

b. Plant Pathology

S. No.	Project Number and Title	Period	Remarks
URP			
1	**CPPS/CBE/PAT/COT/2019/001** Exploitation of endophytic bacteria for the management of bacterial blight of cotton **Dr.E.Rajeswari** Associate Professor (Plant Pathology) Department of Cotton, TNAU, Coimbatore	July 2019 - June 2022	• The project may be continued till Dec 2022 as per the technical programme • Extension proposal will be submitted • Immediately to complete the field trial

AICRP			
1.	**AICRP/ PBG/ CBE/ COT/ 023** All India Coordinated Research Project on Cotton **Dr.E.Rajeswari** Associate Professor (Plant Pathology) Department of Cotton, TNAU, Coimbatore	April 2022 – March 2023	Project may be continued

IV. REMARKS

a. General recommendations

- Share of TNAU cotton varieties may be studied and status paper may be presented (Action: CARDS)
- Genetic analysis on boll weight, fibre quality traits, zero monopodia, sucking pest tolerance in cotton may be studied (Action: CPMB&B and CPBG).
- Genetic wealth of Sunnhemp may be strengthened (Action: TRRI)
- Mechanization in cotton cultivation may be demonstrated (Action: AEC&RI).
- During survey on major pest and diseases, documentation should be done with quality photographs including geo coordinates (Action: CPPS)
- All scientists should submit proposal for external funding through multidisciplinary approaches.

b. Crop Improvement

- Breeding for development of long staple cotton varieties may be initiated (Action: All Cotton Research Stations)
- Development of indigenous *Bt* cotton varieties may be intensified (Action: CPBG & CPMB&B)
- Seed production of cotton varieties CO 17 & CO 18 (*Gossypium barbadense* L.) may be strengthened (Action: Dept. of Cotton, CRS, VPT, CRS, SVPR & ARS, KPT)
- Breeding for development of colour cotton may be intensified and molecular mechanism of colour cotton may be studied (Action: CPBG & CPMB&B).
- TFL seed production of *Bt* cotton varieties released by CICR, Nagpur namely CICR *Bt* 23 and CICR *Bt* 25 may be taken up for evaluation and popularization (Action: All Cotton Research Stations)
- Cultivation of *desi* cotton varieties may be encouraged (Action: ARS, KPT)
- Breeding cotton varieties resistance to sucking pests may be initiated (Action: Dept. of Cotton & CRS, SVPR)
- Varietal developmental programmes in Sunnhemp, Jute and Mesta may be initiated (Action: TRRI)

c. Crop Management

- High density planting method in cotton may be standardized (Action: Dept. of Agronomy, TNAU, Coimbatore).
- Drip fertigation studies with TNAU WSF may be initiated (Action: DNRM).
- Evaluation of the two *Bt* cotton varieties released by CICR, Nagpur *viz*., ICAR-CICR *Bt* 23 and ICAR-CICR *Bt* 25 may be taken up with appropriate checks of both *Bt* and non *Bt* varieties in all the cotton research centres of TNAU under both irrigated and rainfed conditions to assess their yield performance and *cry* protein levels (Action: Dept. of Cotton, CRS, Veppanthattai, ARS, Kovilpatti, CRS, Srivilliputhur and Dept. of PMB&B, TNAU, Coimbatore).
- Drone application in cotton cultivation may be promoted (Action: Dept. of Agronomy & Dept. of Crop Physiology, TNAU, Coimbatore).
- Research work on conservation agriculture in cotton may be initiated (Action: CRS, Veppanthattai & CRS, Srivilliputhur).
- Attempts may be made to expand the area of *desi* cotton in fallow / waste lands (Action: ARS, Kovilpatti, RRS, Aruppukottai & CRS, Veppanthattai).

d. Crop Protection

- Identification and utilization of resistant sources for new pests and diseases (Action: Dept. of Cotton, CRS, VPT & CRS, SVPR)
- Identification of newer molecules for effective control of pink bollworm/ stem weevil (Action: CPPS)
- Research work on management of cotton grey mildew with *Ampelomyces quisqualis* need to be intensified (Action: Dept. of Cotton, CRS, VPT & CRS, SVPR).

V. List of Participants

1. Dr. V. Geethalakshmi, Vice Chancellor, TNAU, Coimbatore

University officers

2. Dr. M. Raveendran, Director of Research
3. Dr. R. Ravikesavan, Director (CPBG)
4. Dr. M.K. Kalarani, Director (DCM),
5. Dr. P. Balasubramaniam, Director, NRM
6. Dr. N. Senthil, Director (CPMB&B)
7. Dr. S. Pazhanivelan., Director (WTC)
8. Dr. A. Raviraj, Dean (AEC&RI), CBE

HODs

9. Dr. S. Rajeswari, Professor and Head, Dept. of Cotton

Professors/Assoc.Professors/Assistant Professors

1. Dr. M. Kumar, Professor (PBG)
2. Dr. N. Premalatha, Asst.Professor (PBG)
3. Dr. K. Senguttuvan, Asst.Professor (Entomology)
4. Dr. K. Thirukumaran, Asst.Professor (Agronomy)
5. Dr. K. Sakthivel, Asst. Professor (PBG), CRS, Veppanthattai
6. Dr. S. Hariramakrishnan, Asst. Professor (PBG), RRS, Kovilpatti
7. Dr. G. Anand,Asst. Professor (PBG), Srivilliputhur
8. Dr. G. Karthikeyan, Professor and Head (Plant Pathology)
9. Dr. N. Chandra Sekaran, Professor (SS&AC)
10. Dr. V. Ravichandran, Associate Professor (CRP)
11. Dr. A. Senthil, Professor and Head (CRP)
12. Dr. R. Balasubramanian, Professor, DR Office
13. Dr. K.N. Ganesan, Professor and Head, Forage Crops
14. Dr. P. Subramanian, Professor and Head, REE
15. Dr. R. Anitha, Assistant Professor (CRP), SRS, Cuddalore
16. Dr. M. Sakila, Assistant Professor (PBG), SRS, Sirugamani
17. Dr. S. Sheela Joyce Roseleen, Assistant Professor, SRS, Sirugamani
18. Dr. E. Kokiladevi, Professor and Head, (DPB)
19. Dr. R. Gnanam, Professor and Head (BPMB&B)
20. Dr. D. Uma, Professor and Head, Biochemistry
21. Dr. N. Manikanda Boopathi, Professor (Biotechnology)
22. Dr. K. Suresh, Assistant Professor (Ento), CRS, Srivilliputhur
23. Dr. S. Sivakumar, Professor and Head, Millets
24. Dr. S. Paneer Selvam, Professor and Head (Agronomy)
25. Dr. V. Manomani, Professor (SST)
26. Dr. G. Jothi, Associate Professor (Nematology)
27. Dr. R. Sudhagar, Associate Professor (PBG), SRS, Melalathur
28. Dr. M. Balakrishnan, Professor and Head, FPE
29. Dr. K. Nagarajan, Professor and Head, SWC
30. Dr. M. Asokhan, Professor and Head, DEE
31. Dr. Z. John Kennedy, Professor and Head, CPHT
32. Dr. R. Karthikeyan, Assistant Professor (Agronomy), DCM
33. Dr. P. Kalaiselvi, Assistant Professor (ENS), COE
34. Dr. D. Jegadeeswari, Associate Professor (SS&AC)
35. Dr. M. Maheswari, Professor and Head, ENS
36. Dr. P. Santhy, Professor and Head, SS&AC
37. Dr. E. Rajeswari, Associate Professor (Pl.Pathology)
38. Dr. S. Thangeswari, Assistant Professor (Pl.Pathology)
39. Dr. K. Premalatha, Assistant Professor (Agrl.Entomology)

40. Dr. S. Ramakrishnan, Assistant Professor (PBG), ARS, Kovilpatti
41. Dr. S. Dourisamy, Professor (Agrl.Ento.) AC&RI, Vazhavachanur
42. Dr. C. Babu, Professor and Head, SRS, Cuddalore
43. Dr. T. Saraswathi, Professor (Horti)
44. Dr. U. Sivakumar, Professor (Agrl.Micro.)