

# **TAMIL NADU AGRICULTURAL UNIVERSITY**

## **PROCEEDINGS**

### **39<sup>th</sup> Cotton and Allied Fibre Crops Scientists Meet 2021 (April 26 - 27, 2021)**

#### **Lead Centre**

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

#### **Directorate of Research**

Tamil Nadu Agricultural University  
Coimbatore 641 003

**2021**

## PROCEEDINGS

### **39<sup>th</sup> Cotton and Allied Fibre Crops Scientists Meet 2021 (April 26-27, 2021)**

The 39<sup>th</sup> Cotton Scientists Meet was held during April 26-27, 2021 at the Tamil Nadu Agricultural University, Coimbatore, through on-line connecting all scientists across the University College Campuses, Research Stations and KVKs besides main campus. **Dr. K.S. Subramanian**, Director of Research welcomed the gathering and set the stage to unfold for the cotton scientists meet. **Dr. N. Kumar**, Vice Chancellor narrated the importance of cotton in the country as well as in the State of Tamil Nadu. Coimbatore being the Manchester of South India it should regain its fame through production, productivity and utilization of cotton. The Vice Chancellor suggested that the ICAR has a policy of working only with Bt cotton, TNAU should also initiate such efforts to promote the productivity while minimizing the insecticide use in the State. Zero monopodia cotton released by TNAU is widely appreciated and the technology package should be in place for large scale adoption. Further, he suggested that efforts should be undertaken to assess the medicinal quality of textiles utilizing the services of SITRA, Coimbatore.

The Director of Research flagged off a few researchable issues such as hormonal and agronomic management to go for a single machine harvest in zero monopodia cotton (Co. 17), enlisting of CVRC (Central Variety Release Committee) released TNAU varieties in SVRC, inclusion of Bt cotton in the varietal development, collaborative cotton varietal development utilizing the MOU with Rasi Seeds, research on coloured cotton, inter-specific hybridization, exploring alternate use of fibres extracted from jute and mesta, complete mechanization of cotton and use of AI (artificial Intelligence) to detect pests in cotton. The Action Taken Reports on the 38<sup>th</sup> Cotton and Allied Fibres Scientists Meet was presented by Technical Directors. During the pre-review, the technical directors had reviewed the on-going university research projects (16), action plan projects (14), core projects (8), AICRPs (6) besides externally funded projects (7).

The outcome of the review process was presented by **Dr. S. Geetha**, Director (CPBG), **Dr. V. Geethalakshmi**, Director (Crop Management), **Dr. R. Santhi**, Director (DNRM) and **Dr. K. Prabakar**, Director (CPPS). The Director of Research summarized the activities of the Cotton meet and suggested potential areas of further research to way forward for increasing area under rainfed and drip irrigation system for maximizing production including adoption of High Density Planting System. **Dr. S. Panneerselvam**, Director (WTC) proposed vote of thanks with special mention of University focus for regaining importance of cotton cultivation in Tamil Nadu.

The proceedings of the 39<sup>th</sup> Cotton Scientists Meet are furnished below in the following headings:

**1. CROP IMPROVEMENT**

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

**2. CROP MANAGEMENT**

- A. Technologies Adoption/OFT
- B. Action plan (2021 – 2022)
- C. Research Projects and Remarks

**3. CROP PROTECTION**

- A. Technologies for adoption/OFT/information
- B. Action plan (2021 – 2022)
- C. Research Projects and Remarks

**4. GENERAL REMARKS**

**5. LIST OF PARTICIPANTS**

## I. CROP IMPROVEMENT

### A. Variety release proposal OFT/ART/MLT

#### 1. Cultures nominated for ART- I

S. No	Culture	Duration (days)	Seed cotton yield (kg/ha)	Yield increase Over SVPR 5 /SVPR 6	Special features
1	TSH 383 (N)	150	2364	19.7 per increase over SVPR 5 & 5.9 per cent increase over SVPR 6	<ul style="list-style-type: none"> <li>• Parentage : SVPR 3 x H96</li> <li>• Ginning outturn : 37.0 %</li> <li>• UHML : 28.6 mm</li> <li>• Fibre strength : 28.2 g/tex</li> <li>• Micronaire value : 4.3</li> </ul>
2	TSH 357 (II year of testing )	150	2232	13.6 per cent increase over SVPR 6	<ul style="list-style-type: none"> <li>• Ginning outturn:35.3</li> <li>• UHML : 29.79mm</li> <li>• Fibre strength : 28.3g/tex</li> <li>• Micronaire value :4.5</li> <li>• Moderately resistant to leafhopper</li> <li>• Boll weight : 4.8g</li> </ul>
Checks : CO14 and SVPR 6					

#### Distribution of ARTs

Trial	<i>Gossypium hirsutum</i>	
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

S. No	Culture	Duration (days)	Seed cotton yield (kg/ha)	Yield increase Over CO 17	Special features
1.	TCH 1897 (II year of testing)	125-135	2079	16.5 per cent	<ul style="list-style-type: none"> <li>• Fibre length (mm):28.8</li> <li>• Fibre strength (g/tex):27.3</li> <li>• Micronaire value: 3.42 µg/inch</li> </ul>
Checks :CO 17, CO15 and Suraj					

### Distribution of ARTs

Trial	<i>Gossypium hirsutum</i>	
Season	Winter Irrigated	Summer Irrigated
Districts	Coimbatore, Theni , Salem, Dharmapuri, Erode, Villupuram, Kallakurchi, Namakkal, Tiruppur, Trichy and Dindigul	Theni, Salem, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Madurai, Dindigul, Thanjavur, Trichy and Thiruvavarur

### 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 (N)	150	1417	45.5 per cent increase over SVPR 6 27.9 per cent increase over CO 14	<ul style="list-style-type: none"> <li>• UHML : 30.9 mm</li> <li>• Fibre strength : 29.3 g/tex</li> <li>• Micronaire value :4.25</li> </ul>
2.	TKH 1225 (N)	150	1969	25.5 per cent increase over KC 3	<ul style="list-style-type: none"> <li>• UHML : 29.8 mm</li> <li>• Fibre strength : 28.3 g/tex</li> <li>• Micronaire value :4.02</li> </ul>

Check: KC 3, SVPR 6

### Distribution of ARTs

Trial	<i>Gossypium hirsutum</i>
Season	Winter rainfed
Districts	Ariyalur, Perambalur, Kallakurichy, Salem, Namakkal, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Ramanathapuram, Madurai
Focus to be given for TVH cultures on Northern /Delta districts to meet new Station /Govt. requirements.	

### 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
<b>Rainfed</b>					
1.	TVH 002 (N)	Suraj x TCH 1819	<ul style="list-style-type: none"> <li>• 1138 kg/ha (17.6 per cent increase over CO 15) under rainfed</li> </ul>	120- 130 days	<ul style="list-style-type: none"> <li>• Fibre length (mm): 30.5 (Long staple category)</li> <li>• Fibre strength</li> </ul>

			condition • 1508 kg/ha (31.0& 32.0 per cent increase over CO 15& CO 17) under rice fallow condition		(g/tex): 28.2 • Micronaire value: 4.89 µg/inch
Checks : CO15 and Suraj					

### Distribution of ARTs

Trial	<i>Gossypium hirsutum</i>	
Season	Winter rainfed	Rice fallow /Summer Irrigated
Districts	Ariyalur, Perambalur, Kallakurichy, Salem, Namakkal, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Ramanathapuram, Madurai	Thanjavur, Tiruvarur, Nagapattinam, Mayiladuthurai
Focus to be given for TVH cultures on Northern / Delta districts to meet new Station/ Govt. requirements.		

### 5. Cultures identified for On Farm Trials during 2021-22

1. TVH 003 – Long staple fibre and moderately resistant to leaf hopper and suitable for rainfed/summer conditions
2. TKH 1197 – Long staple fibre and moderately resistant to leaf hopper and suitable for rainfed conditions

### 6. MLT on *G. hirsutum* (Variety)

Design	:RBD	No. of replications	:	Three
Plot size	: 6m x 4.5 m (27m <sup>2</sup> )	Seed Quantity	:	200 g/entry/location
Spacing	: 90 x 60cm	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 1999 (N)	KC 2 x MCU 5	1664	150	<ul style="list-style-type: none"> <li>• Ginning outturn :36.7</li> <li>• UHML(mm) :30.1</li> <li>• Fibre strength (g/tex):27.2</li> <li>• Micronaire value : 3.7 µg/inch</li> </ul>
2.	TSH 406 (N)	SVPR 4 x MCU 13	2482	150	<ul style="list-style-type: none"> <li>• Ginning outturn :33.1 %</li> <li>• UHML (mm) :26.0</li> <li>• Fibre strength (g/tex):26.8</li> <li>• Micronaire value:4.9</li> <li>• Boll weight : 3.8 g</li> </ul>
3.	TSH 419 (N)	Suraj x AKH 1066	2505	150	<ul style="list-style-type: none"> <li>• UHML (mm) :25.3</li> <li>• Fibre strength (g/tex):27.1</li> <li>• Micronaire value:4.4µg/inch</li> <li>• Boll weight : 4.1 g</li> </ul>
4.	TCH 1941 (R)	TCH 1002 x TCH 1025-8	2018	150	<ul style="list-style-type: none"> <li>• Ginning outturn :36.7</li> <li>• UHML (mm) :32.1</li> <li>• Fibre strength (g/tex):28.0</li> <li>• Micronaire value:4.4µg/inch</li> </ul>
5.	TSH 387 (R)	Selection from TSH 330	2580	150	<ul style="list-style-type: none"> <li>• Ginning outturn :36.6</li> <li>• UHML (mm):26.0</li> <li>• Fibre strength(g/tex: 29.9</li> <li>• Micronaire value:4.1µg/inch</li> <li>• Boll weight : 4.7 g</li> </ul>
6.	TVH 007 (R)	Suraj x AKH 1066	1813	150	<ul style="list-style-type: none"> <li>• UHML (mm) : 28.5</li> <li>• Fibre strength(g/tex: 27.2</li> <li>• Micronaire value:3.9µg/inch</li> <li>• Boll weight : 4.3 g</li> </ul>
7.	TKH 0762 (R)	HSC 1-133 x MCU 3	1094	135-140	<ul style="list-style-type: none"> <li>• Ginning outturn :36.4</li> <li>• UHML (mm) :27.3</li> <li>• Fibre strength(g/tex: 22.1</li> <li>• Micronaire value:4.4 µg/inch</li> </ul>

Checks	SVPR 6, CO14, KC 3, Non <i>Bt</i> private hybrid, zonal check (Phule Yamuna/BGDS 1063) and MCU 5
Locations	Winter irrigated: Dept.of Cotton, Coimbatore and CRS, Srivilliputhur 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 (27 m <sup>2</sup> )	Seed Quantity	: 300 g/entry/location
Spacing	: 90 x 30cm	Season	: Winter irrigated, Winter rainfed and Summer irrigated

### Features of the MLT cultures

S. No.	Culture	Parentage	Seed cotton yield (kg/ha)	Duration (Days)	Special features
1.	TCH 1907 (N)	KC 2 x TCH 1715	2176	125 days	<ul style="list-style-type: none"> <li>• Ginning outturn : 36.8</li> <li>• UHML(mm) : 26.5</li> <li>• Fibre strength (g/tex : 26.4</li> <li>• Micronaire value: 4.6 µg/inch</li> </ul>
2.	TCH 1895 (R)	KC 2 x TCH 1715	1926	1250 days	<ul style="list-style-type: none"> <li>• Ginning outturn : 36.8</li> <li>• UHML(mm) : 27.9</li> <li>• Fibre strength (g/tex : 28.4</li> <li>• Micronaire value:4.7 µg/inch</li> </ul>
Checks	CO 17, CO 15 and Suraj				
Locations	Winter irrigated : Dept. of Cotton, Coimbatore and CRS, Srivilliputhur Winter rainfed : ARS, Kovilpatti, CRS, Veppanthattai and RRS, Aruppukottai Summer irrigated : CRS, Srivilliputhur and TRRI, Aduthurai				

### MLT on *G. arboretum* (Variety)

Design	:RBD	No. of replications	: Seven
Plot size	: 6m x 5.4 m (33 m <sup>2</sup> )	Seed Quantity	: 250 g/entry/location
Spacing	: 90 x 30cm	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.	TKA 0612 (R)	ARBHA 35 x Jayadhar ( <i>G. herbaceum</i> )	926	135-140	<ul style="list-style-type: none"> <li>• Ginning outturn (%): 36.3</li> <li>• UHML (mm)</li> </ul>



					<ul style="list-style-type: none"> <li>• : 24.9</li> <li>• Fibre Strength (g/tex) : 21.6</li> <li>• Micronaire Value : 6.2</li> </ul>
Checks	K 12 and RG 8				
Locations	Winter rainfed : ARS, Kovilpatti, CRS, Veppanthattai and RRS, Aruppukottai				

<b>Important Dates in conduct of MLT &amp; ART</b>	
Date of receiving the seed material of the proposed entries at Coimbatore	15.06.2021
Date of dispatching the coded entries for ART/ MLT as per season's Requirement	30.06.2021
Date of receiving sowing report at CBE season wise	
Winter irrigated	15.09.2021
Winter rainfed	15.10.2021
Summer irrigated	20.03.2022
Visit of MLT/ monitoring teams	
Coimbatore	Nov. 2021 and May 2022
Srivilliputhur, Veppanthattai	Nov. 2021 and May 2022
Kovilpatti	Dec. 2021
Visit of ART monitoring team season wise	
Winter irrigated	November 2021
Summer irrigated	April 2022
Winter rainfed	December 2021
Date for receiving the trials results at CBE for compilation season wise	
Winter irrigated	31.03.2022
Winter rainfed	15.04.2022
Summer irrigated	31.06.2022

<b>Monitoring team to visit MLT</b>	
<b>Name of the scientist (s)</b>	<b>Station to be visited</b>
Dr. S. Hariramakrishnan, AP(PBG), ARS, KPT	Department of Cotton, Coimbatore
Dr. N. Premalatha, AP (PBG), Dept. of Cotton, Coimbatore	Cotton Research Station, Veppanthattai
Dr. M. Gnanasekaran, AP (PBG), RRS, Aruppukottai	ARS, Kovilpatti
Dr. N. Sakthivel AP (PBG), CRS, VPT	Cotton Research Station, Srivilliputhur
Dr.K.Thiagu, AP (PBG), CRS, SVPR	Regional Research Station, Aruppukottai

**B. Action Plan (2020 – 2025)**

<b>Theme No 1</b>	<b>Development of pre-breeding materials by introgression of wild species</b>		
<b>Theme Leader</b>	<b>Dr. L. Mahalingam</b> , Professor (PBG), Dept. of Cotton, Coimbatore		
<b>Name of the scientist and Centre</b>	<b>2021-22</b>	<b>2022-25</b>	<b>Deliverables</b>
<p><b>Dr.S.Rajeswari</b> Professor and Head (Cotton)</p> <p><b>Dr. N. Premalatha</b> Asst. Prof. (PBG) Department of Cotton</p> <p><b>Dr.N.Manikanda Boopathi,</b> Associate Professor (CPMB)</p> <p><b>Dr.Meenakshi Sundaram,</b> Assistant Professor, (CPMB)</p>	<ul style="list-style-type: none"> <li>Embryo rescue: Backcrosses or three way crosses may be made and used for embryo rescue in the following F1 crosses viz., MCU 5 x <i>Gossypium armourianum</i>, CO 14 x <i>Gossypium armourianum</i>, Suvin x <i>G. armourianum</i> and CO 18 x <i>G.armourianum</i></li> <li>Crossing of two diploids viz., <i>Gossypium arboreum</i> x <i>G. aridum</i>, <i>G. arboreum</i> x <i>G. gossypioides</i>, <i>Gossypium arboreum</i> x <i>G. armourianum</i> and <i>Gossypium arboreum</i> x <i>G. anomalum</i> may be effected.</li> <li>Polyploidization of F<sub>1</sub> triploid : Polyploidization should be done using colchicines in the available F1 (triploid) crosses</li> <li>Number of crosses should be increased in backcrosses</li> <li>Raising of hexaploid and selfing (Aug 2021 – Jan 2022)</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation of leaf hopper resistant population</li> <li>Development of leaf hopper resistant lines (Feb 2021– July 2022)</li> </ul>	<p>Development of cotton genotypes with wide genetic base</p> <p>Identification of cotton genotype with leaf hopper resistance</p>

<b>Theme No 2</b>	<b>Development of Zero monopodia and short sympodia cotton genotypes with jassid resistance and good fibre quality</b>		
<b>Theme Leader</b>	<b>Dr. S. Rajeswari</b> , Professor and Head, Dept. of Cotton, TNAU, Coimbatore		
<b>Name of the scientist and centre</b>	<b>2021-22</b>	<b>2022-25</b>	<b>Deliverables</b>

<p><b>Dr. N. Premalatha,</b> Asst. Professor (PBG), Dept. of Cotton</p> <p><b>Dr.K.Thiyagu,</b> Asst. Prof. (PBG), CRS, Srivilliputhur</p> <p><b>Dr.M.Gnanasekaran</b> Asst. Professor(PB&amp;G) RRS, Aruppukkottai</p>	<ul style="list-style-type: none"> <li>• Evaluation of DCF3 families at SVPR and CBE, (Feb – May 2021)</li> <li>• Generation advancement at SVPR and CBE (Jun -Sep 2021)</li> <li>• Generation advancement and screening for leaf hopper at CBE (Oct 2021- Jan 2022)</li> <li>• Attempting three way cross (KC3 x CO 17) x MCU 5]</li> </ul>	<ul style="list-style-type: none"> <li>• PYT at CBE, SVPR, VPT,KPT</li> <li>• Seed multiplication of promising lines at SVPR and CBE</li> </ul>	<p>Development of high yielding compact variety with leaf hopper resistance</p>
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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	2021-22	2022-24	Deliverables
<p><b>Dr. S. Harirama krishnan,</b> Asst. Prof. (PB&amp;G), ARS, Kovilpatti</p>	<p><b>Winter</b> Study of BC<sub>1</sub> F<sub>3</sub> and F<sub>4</sub> families in winter 2021. Identification of elite segregants of <i>G.arboreum</i> possessing bigger boll size (6 g) and yield</p>	<p><b>Summer</b>  <ul style="list-style-type: none"> <li>• Study of BC<sub>1</sub> F<sub>4</sub> and F<sub>5</sub> families in winter 2022</li> <li>• Identification of elite segregants of <i>G.arboreum</i> possessing higher boll weight (6g) and yield</li> </ul> <p><b>Winter</b> Evaluation of stabilized lines in station trials</p> <p><b>Summer/Winter</b>  <ul style="list-style-type: none"> <li>• MLT/OFT at SVPR, KPT, VPT &amp; APK</li> <li>• Proposal for variety release</li> </ul> </p> </p>	<p>Development of desi cotton variety with high boll weight and high yield</p>

<b>Theme No. 4</b>	<b>Development of colour cotton varieties</b>		
<b>Theme Leaders</b>	<b>Dr. S.Rajeswari</b> , Prof. and Head (Cotton) <b>Dr. N.Premalatha</b> , Asst. Professor (PBG), Dept. of Cotton		
<b>Name of the scientist and centre</b>	<b>2021-22</b>	<b>2022-25</b>	<b>Deliverables</b>
Department of Cotton, Coimbatore	Raising of F <sub>4</sub> Families and selection of desirable segregants Raising of F <sub>5</sub> Families & selection of desirable plants with coloured lint and good fibre quality	<ul style="list-style-type: none"> <li>Evaluation of coloured cotton genotypes for yield and fibre quality</li> <li>Continuation of yield trials and evaluation of culture under MLT</li> </ul>	Conducting ART, OFT and submission of release proposal

#### New action Plan (2021-2025)

<b>Theme No. 1</b>	<b>Development of H x B hybrids / GMS based hybrids to break the yield barriers</b>		
<b>Theme Leaders</b>	<b>Dr. S. Rajeswari</b> , Prof. and Head (Cotton) <b>Dr. N. Premalatha</b> , Asst. Professor (PBG), Dept. of Cotton		
<b>Name of the scientist and centre</b>	<b>2021-22</b>	<b>2022-25</b>	<b>Deliverables</b>
Department of Cotton, Coimbatore	In H x B cross, the genetic base of the male parent ( <i>G. barbadense</i> ) may be widened. Best lines may be selected from cotton AICRP centres of Maharashtra, Ludhiana and Dharwad along with Suvin may be used. GMS lines may be obtained from the CICR, Nagpur. Developing GMS based hybrids	<ul style="list-style-type: none"> <li>Evaluation of F<sub>1</sub> (both GMS based hybrids and H X B hybrids) and conducting yield trials</li> </ul>	Development of H x B hybrids / GMS based hybrids

#### 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	5	1	6	3
2.	Srivilliputtur	3	1	4	1
3.	Veppanthattai	2	1	3	1
4.	Kovilpatti	3	-	3	1
	<b>Total</b>	<b>13</b>	<b>3</b>	<b>14</b>	<b>6</b>
	Sunnhemp				
5.	Coimbatore	1	-	1	1
6.	Aduthurai	1	1	2	1
	<b>Total</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>

Remarks on the ongoing research subprojects				
No.	Project No. & Project title	Project Leader	Duration	Remarks
1.	CPBG/ CBE/ PBG/ COT/ 2016/002 : Development of high yielding jassids resistant cotton varieties by introgression of genes from wild species	Dr. L.Mahalingam	June 2016 to May 2021	Completion report may be submitted. New project may be proposed. Only the F1s are developed. However, the available F1s may be shared among the breeders as per the action plan formulated
2.	CPBG/ CBE/ PBG/ COT/ 2016/003 : Maintenance and production of nucleus and breeder seeds of cotton varieties of Department of Cotton, Coimbatore	Dr. L.Mahalingam	June 2016 to May 2021	Completion report may be submitted. New project may be proposed.
3.	CPBG/CBE/PBG/COT/ 2014/005 : Breeding for high yielding long and extra long staple <i>G.hirsutum</i> and <i>G.barbadense</i> cotton varieties suitable for high speed spinning	Dr. S.Rajeswari and Dr.N.Premalatha	June 2017 to May 2022	<ul style="list-style-type: none"> <li>• Research involving <i>G.barbadense</i> should be intensified.</li> <li>• Development of <i>hirsutum</i> and <i>barbadense</i> combinants may be given priority</li> <li>• Genetic base should be widened in crossing programme</li> <li>• High boll weight possessing genotypes may be used intensively in crossing programme</li> <li>• In all the yield trials private non <i>Bt</i> hybrid and a national check with ELS should be included. The project may be continued.</li> </ul>
4.	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.Gnanasekaran & Dr.K.Senguttuvan	May 2019 to April 2022	<ul style="list-style-type: none"> <li>• Three way cross (KC 3 x CO 17) MCU 5/or any other well adapted ELS variety may be attempted to introgress fibre quality traits.</li> <li>• All the segregating progenies should be evaluated under unprotected condition.</li> <li>• The project may be continued.</li> </ul>

5.	CPBG/CBE/PBG/COT/2020/001: Developing colour cotton variety with superior fibre quality traits	Dr.N.Premalatha	August 2020 to July 2023	<ul style="list-style-type: none"> <li>Stability of the colour should be tested by soaking in soap water (crude method).</li> <li>Rapid generation advancement should be followed.</li> </ul>
6.	CPBG/SVP/PBG/COT/2016/001 : Evolution of short duration and high yielding cotton ( <i>Gossypiumhirsutum</i> L.) genotypes suitable for rice fallow and rainfed conditions of southern districts of Tamil Nadu	Dr. K. Thiyagu		<ul style="list-style-type: none"> <li>Include private Bt BG II / Non Bt hybrid as one of the check in all the station trial raised during summer irrigated condition.</li> <li>Identify culture suitable for tolerance to Jassid along with other sucking pest viz., whiteflies and mealy bug etc.,</li> <li>The developed stabilized entries should be evaluated under rice fallow conditions of Aduthurai or Ambasamudram or Killikulam</li> <li>As an interim correction, Aruppukottai may be added to evaluate the entries for rainfed conditions.</li> </ul>
7.	CPBG/SVP/PBG/COT/2016/002: Evolving high yielding medium staple upland cotton varieties ( <i>Gossypiumhirsutum</i> L.) resistant to jassids for summer irrigated tracts of Tamil Nadu.	Dr. M. Gnanasekaran	August 2016 to July 2021	<ul style="list-style-type: none"> <li>Completion report may be submitted and propose new project to include Jassid tolerance along with white flies and mealy bug.</li> <li>Include private Bt BG II / Non Bt hybrid as one of the check varieties in all the station trial raised during summer irrigated condition.</li> <li>Possibilities of evaluating the entries at Vaigai Dam may be explored</li> </ul>
8.	CPBG/SVP/PBG/COT/2018/001: Nucleus and breeder seeds production of cotton varieties released from Cotton Research station, Srivilliputtur.	Dr. K. Thiyagu	April 2016 to March 2021	<ul style="list-style-type: none"> <li>Utmost care should be taken to produce 100% genetically pure NS and BS. The project may be continued.</li> </ul>

9.	CPBG/KPT/PBG/COT/2021/001: Evolution of high yielding, Medium Staple <i>G.hirsutum</i> Cotton genotypes with resistance to leaf hopper ( <i>Jassids</i> ), suitable for winter rainfed tracts of Tamil Nadu.	Dr. S. Hari Ramakrishnan	October 2020 to September 2025	This project may be continued. The compact cultures identified in this project may be evaluated as separate MLT in rainfed condition (Kovilpatti, Aruppukottai and Veppanthattai)
10.	CPBG/KPT/PBG/COT/202021/002 : Genetic Enhancement of boll weight in desi Cotton ( <i>G.arboreum</i> )	Dr. S. Hari Ramakrishnan	Sept.2015 to Aug. 2020	Good progress is seen. This project may be continued.
11.	CPBG/KPT/PBG/COT/2018/001 : Nucleus and breeder seed production of cotton varieties of Tamil Nadu	Dr. S. Hari Ramakrishnan	Oct. 2015 to Sep 2020	This project may be continued
12.	CPBG/CBE/PBG/COT/2018/CP001: Development of Jassid tolerant compact genotype in Cotton ( <i>G. hirsutum</i> L.) suitable for rainfed conditions of North western zones of Tamil Nadu.	Dr. K. Sakthivel & Co-Project Leader: Dr. L. Mahalingam	Oct.2018 to Sept.2020	Completion report should be submitted. The cultures identified should be studied in the new sub project.
13.	CPBG/VPT/PBG/COT/2020/001: Development of early maturing long staple cotton varieties with leaf hopper resistance suitable for North Western zone of Tamil Nadu	Dr. K. Sakthivel Dr. N. Premalatha Dr. P. Anandhi	Dec.2015 to Dec.2019	In addition to leaf hopper, screening for other sucking pests should be included. Commercial Bt hybrids/ non Bt hybrids should be used as checks
15.	AICRP/ PBG/ CBE/ COT/023:ICAR- All India Coordinated Research Project on Cotton	Dr.S.Rajeswari	2017-18 to 2020-21	The project may be continued

16.	AICRP/PBG/SVR/CO T/024:AICRP on Cotton improvement at CRS, Srivilliputtur	Dr. K. Thiyagu	2017-18 to 2020-21	The project may be continued
17.	AICRP- VC/PBG/VPT/COT/001: Evaluation of Bt cotton BG-IIhybrids and varieties( <i>G.hirsutum</i> ) under rainfed condition	Dr. K. Sakthivel	2017-18 to 2020-21	The project may be continued
18.	AICRP- VC/PBG/VPT/COT/002: Evaluation and utilization of cotton genotypes ( <i>G.hirsutum</i> ) of AICRP entries under rainfed condition (V9 C31 00)	Dr. K. Sakthivel	2017-18 to 2020-21	The project may be continued
20.	CPBG/ CBE/ PBG/ GMC/2020/001 Evolution of high biomass sunnhemp ( <i>Crotalaria juncea</i> ) varieties for use as green manure.	Dr.N.Meenakshiganesan,	January 2020 to December 2022	The PLS made from the local collection should be compared with the source population Seed increase of identified PLS should be taken up
22.	All India Network Project on Jute and Allied fibers	Dr. R.Puspha	2017-18 to 2019-20	The project may be continued



## ALLIED FIBRE CROPS

### Entries for Variety release proposal OFT/ART/MLT

#### On Farm Trial -Sunnhemp

##### 1. ADSH 17001 Culture with high biomass

- Duration : 120 days
- Biomass incorporation : 45-55 days
- % increase of biomass yield Over SH4(NC) & CO1 (LC))-MLT : 38.9% and 29.6 %
- % increase of biomass yield Over SH4(NC)-OFT(2019,2020) : 27.55% and 31.55 %
- Overall mean over check SH 4(NC) : 50.0%

**Salient Features** : High Biomass with fast decomposition rate.

Based on the special MLT on Sunnhemp for biomass yield the culture ADSH 17001 which recorded more than 38.9% and 29.6 % yield over the check varieties SH4 (NC) and CO1 (LC) respectively. This culture will be given for OFT for biomass yield along with the check variety. Simultaneously the culture should be evaluated for C:N ratio , nutrient uptake and the residual effect on succeeding rice.

#### MLT on Green Manures

Ecosystem	Crop	New 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 green Manures- Sunnhemp

Entries	:	5+2	Ecosystem	:	Garden Land
Design	:	RBD	Replications	:	3
Plot size	:	6.0 x 3.0 m <sup>2</sup>	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/Square meter
2. Biomass yield/Square meter(kg)
3. Plot yield (kg/ha)
4. Days to 50% flowering / Days to harvest
5. Pest/disease incidences
6. Other observation

### MLT on green Manures- Daincha

Entries		3+1	Ecosystem		Wet Land
Design		RBD	Replications		3
Plot size		6.0 x 3.0 m <sup>2</sup>	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 45<sup>th</sup> day and the biomass yield should be recorded.

Traits to be observed:

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

## New Action Plan 2021-22

<b>New Action Plan</b>	<b>Roselle calyx as food additive and in value addition</b>	
Theme No.1		
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	
<b>Name of the scientist and centre</b>	<b>Work plan for the year 2021-22</b>	<b>Deliverables</b>
Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai	<ul style="list-style-type: none"> <li>• The Calyx of the identified Roselle genotypes viz., Early red, Late red &amp; Purple will be multiplied and supply to CSC&amp;RI, Madurai.</li> <li>• The antioxidant property by using DPPH method will be evaluated in the identified genotypes along with suitable checks.</li> </ul>	Best genotype for calyx will be identified
Dr.G. Hemalatha Professor and Head, Department of Food Science and Nutrition, Community Science College and Research Institute, TNAU, Madurai	<ul style="list-style-type: none"> <li>• Pilot study for utilization of roselle as natural food colorant, additive and use in bakery, confectionery, instant foods, beverages and product development</li> </ul>	

## Evaluation possibilities of Mestha as Fibre Crop in Tamil Nadu

<b>New Action Plan</b>	<b>Roselle calyx as food additive and in value addition</b>	
Theme No.2		
Theme Leaders	Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai	
<b>Name of the scientist and centre</b>	<b>Work plan for the year 2021-22</b>	<b>Deliverables</b>
Dr.R.Pushpa, Assistant Professor(PBG), TRRI, Aduthurai	<ul style="list-style-type: none"> <li>• Five Frontline demonstrations of latest varieties in New Delta Zone of Tamil Nadu. <b>Rain fed ecosystem</b> : Roselle (<i>H.subderiffa</i>) Varieties : AMV-5, AMV-7 &amp; AMV10</li> </ul>	Suitability of Mesta to Tamil Nadu – Cauvery Delta Zone will be assessed

## II. CROP MANAGEMENT

### A. Directorate of Crop management

#### A. Technologies for Adoption/OFT

##### For Adoption

#### A 1: Nutrient management for cotton under High Density Planting System (HDPS)

Recommended dose of fertilizers (100:50:50 kg NPK/ ha) may be adopted for cotton (CO 17) under High Density Planting System. Alternatively STCR based nutrient management could also be followed

#### A 2: Labor saving techniques in cotton cultivation.

Combined practice of land shaping by machine, pre emergence (pendimethalin @ 1.0 kg a.i./ha) and early post emergence (Pyriithiobac sodium @ 63.5 g a.i./ha) herbicides application through boom sprayer along with drip fertigation may be adopted for the highest seed cotton yield with high BCR and Labour saving of 70 man days/ha (conventional cultivation needs 160 man days/ha)

#### On Farm Testing (OFT)

S.No	Project details	Centres and Scientists in-charge	Period
<b>OFT1. Split application of nitrogen on yield and quality of cotton</b>			
<b>Objectives:</b>			
<ul style="list-style-type: none"> <li>➤ To study the effect of split application of nitrogen on growth and yield of cotton</li> <li>➤ To study the economic feasibility of split application of nitrogen</li> </ul>			
Treatments T <sub>1</sub> – Absolute control (No N) T <sub>2</sub> – Control (3 splits – Basal, 25 and 45 DAS) T <sub>3</sub> .Six splits (Basal, 25, 45, 65, 85 and 105 DAS) Entire P dose to be applied as basal Variety CO 17			
<b>Dr.K.Thirukumaran</b> Asst. Prof.(Agronomy), Dept. of Cotton, TNAU, Coimbatore		2021–2022	
<b>Dr.R.Veeraputhiran</b> Associate Prof. (Agron), CRS, Srivilliputhur, (Lead Centre)			
<b>Dr S Somasundaram</b> Assoc Prof and Head (I/c), CRS, Veppanthattai			

S.No	Project details	Centres and Scientists in-charge	Period
<b>OFT 2. Cotton canopy management and defoliation for Mechanized harvest.</b>			
<b>Objectives:</b>			
<ul style="list-style-type: none"> <li>➤ To study the effect of Mepiquat chloride + Sodium Chlorate in cotton canopy management and defoliation for mechanized harvest.</li> <li>➤ To study the economic feasibility of canopy management.</li> </ul>			

Treatments T <sub>1</sub> -Control & T <sub>2</sub> - Mepiquat chloride (0.015 %) + Sodium chlorate (0.9 %), Variety CO 17	
Centres: 1.TNAU-Coimbatore, (Dept. of Crop Physiology),(Lead Centre) 2.CRS-Srivilliputhur, 3.CRS-Veppanthatai)	2021-2022

## B. Action Plan Projects

### Action plans for 2021 – 2022

No	Title	Centers and Scientists	Period	Remarks
<b>Effect of Bio stimulant on growth and development of cotton</b>				
<b>Objective:</b> To assess the effect of bio stimulant on growth characters and yield				
	<b>Dr. K.Thirukumaran</b> , Asst. Prof.(Agronomy) Dept. of Cotton, TNAU, Coimbatore (Lead Centre)		2021-2022	Proposal is approved in AICRP AGM,2021
	<b>Dr.R.Veeraputhiran</b> , Associate Prof. (Agron), CRS, Srivilliputhur			

### Treatments: 10

#### Main plot

- G1.Bt hybrid of the region  
G2.Hirsutum straight variety of the region

#### Bio stimulant

- B1.Bio stimulant@4mg/litre at 30, 45 and 60 DAS ( 20 mg+5 litres of water +0.5 ml of DMSO)  
B2. Bio stimulant@ 4mg/litreat 45, 60 & 75 DAS ( 20 mg+5 litres of water +0.5 ml of DMSO)  
B3. DMSO@**100 µL/litre**spray at 30, 45, 60 & 75 DAS (0.5 ml of DMSO+ 5 litre of water)  
B4.Recommended application of TNAU cotton Plus  
B5.Control (water spray- 30, 45, 60 & 75 DAS)

#### Design: FRBD); (Replications:3) plot size: 50 m<sup>2</sup>

Season: *Rabi*.

**Bio stimulants will be supplied by CICR, Coimbatore.**

### C. Research Projects and remarks

Crop	DCM			TOTAL
	CENTRE	URP/Core	AICRP	
Cotton	Coimbatore	2	1	3
	Srivilliputtur	2	1	3
	Veppanthattai	1	-	1
	Kovilpatti	4	-	4

### Remarks on the ongoing Action plan/Core projects/ URPs/AICRP/EFP

Sl.No	Project No. and Title	Scientists in-charge	Duration	Remarks
<b>University Research Projects</b>				
1.	AICCIP/ DCM/CBE/AGR/COT/2020/002 Mechanical weed management in cotton under high density planting system	1.Dr. K. Thirukumaran, Assistant Professor (Agronomy) Department of Agronomy, TNAU, Coimbatore 2.Dr. R. Veeraputhiran, Associate Professor (Agronomy) and Head (i/c) Cotton Research Station, Srivilliputtur 3.Dr. S. Subbulakshmi, Assistant Professor (Agronomy), ARS, Kovilpatti	2021 -2022	To be Continued
2.	AICCIP/ DCM/CBE/AGR/COT/2020/001 Multi-tier cropping system to enhance resource utilization, profitability and sustainability	1.Dr. K. Thirukumaran, Assistant Professor (Agronomy) Department of Agronomy, TNAU, Coimbatore  2.Dr. R. Veeraputhiran, Associate Professor (Agronomy) and Head (i/c) Cotton Research Station, Srivilliputtur  3.Dr. S. Subbulakshmi, Assistant Professor (Agronomy), ARS, Kovilpatti	2021 -2022	To be Continued
3.	DCM/KPT/AGR/COT/2020/001 Integrated drought management technology for rainfed cotton	Dr. S. Subbulakshmi, Assistant Professor (Agronomy),ARS, Kovilpatti	2019 - 2021	May be closed and completion report to be submitted

4.	AICRP/DCM/ KPT/AGR/003 Influence of weather factors on aphids and leaf hopper incidence in cotton	Dr. S. Subbulakshmi, Assistant Professor (Agronomy),ARS, Kovilpatti	2020 -2021	To be Continued
5.	Developing technology capsule under HDPS for improving productivity and suiting mechanization in rainfed cotton was presented at RPAC as per No. DCM/Research /RPAC(1-2021)/proceedings/2021dt. 11.03.2021 and No. DCM/Research/RPAC(1-200)/meeting/2021 dt. 7.02.2021 (CRS, Veppanthattai)	CRS, Veppanthattai	2021 -2022	New project
<b>AICRPs</b>				
1.	AICRP/ PBG/SVR/COT/024/ AICRP on Cotton	Dr.R.Veeraputhiran Associate Professor (Agronomy), CRS, Srivilliputhur	2021 -2022	To be Continued
2.	AICRP/ PBG/SVR/COT/023/ AICRP on Cotton	Dr. K. Thirukumaran, Assistant Professor (Agronomy) Department of Agronomy, TNAU, Coimbatore	2021 -2022	To be Continued

## B. Directorate of Natural Resource Management

### A. Technologies for Information

- The 38 years old Permanent Manurial Experiment (PME) on cotton under rainfed deep black soils showed that application of 100 % RDF (40:20:40 N: P<sub>2</sub>O<sub>5</sub>:K<sub>2</sub>O kg ha<sup>-1</sup>) + 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup> performed well under rainfed condition when compared with 50 % Inorganic N + 50 % organic N (FYM) + 50 % P + 50 % K. Application of 100 % RDF + 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup> resulted in built-up of soil available nitrogen (80 to 235 kg ha<sup>-1</sup>), available phosphorus (10 to 17.1 kg ha<sup>-1</sup>), available potassium (586 to 660 kg ha<sup>-1</sup>) and organic carbon (1.8 to 3.5 g kg<sup>-1</sup>) over the initial status (1982). In rainfed cotton (KC3), the response to nitrogen, phosphorus and potassium was higher with integrated nutrient management package of 50 % inorganic N + 50 % organic N (FYM) + 50 % P + 50 % K.
- Fertigation of NPK (All 19: TNAU-WSF) and liquid multi-micronutrient @ 2% for cotton (*var.Co.14*) recorded 13.0 per cent increase in kapas yield over fertigation of NPK (19:19:19) alone with higher BCR (1.70).
- Nutrients are taken up by the cotton crop throughout the growing period and the demand for nutrients is dictated by the developing crop biomass and boll load. The nutrients uptake by cotton crop is in the order of nitrogen > potassium > phosphorus. The rate of

nutrient uptake increases from flowering to boll bursting stages. However, maximum nutrient uptake is at boll formation and boll bursting stages.

## B. Action plan for 2021 – 2023

### Evaluation of Multi Nutrient Briquette and TNAU-WSF for Yield Maximization and Quality Improvement in Cotton

**Rationale:** To meet out the nutrient requirement and to increase fertilizer use efficiency in black soil.

#### Objectives

1. To study the response of cotton to Multi Nutrient Briquette and TNAU-WSF and their effect on nutrient uptake and fertilizer use efficiency.
2. To assess the effect of Multi Nutrient Briquette and TNAU-WSF on Kapas yield and cotton seed quality.

#### Treatments

- T<sub>1</sub> : Absolute control  
 T<sub>2</sub> : \*RDF (Soil Application)  
 T<sub>3</sub> :RDF - TNAU-WSF(Drip Fertigation)  
 T<sub>4</sub> : RDF- All 19(DF) - Commercial grade  
 T<sub>5</sub> : RDF – Multi nutrient briquette (SA)  
 T<sub>6</sub> :50% Multi nutrient briquette (SA ) +50 % TNAU WSF (DF)  
 T<sub>7</sub> : 50% Multi nutrient briquette (SA ) + 50 % All 19(DF)  
 \*RDF based on STCR + FYM@12.5 t ha<sup>-1</sup> + existing micronutrient recommendation.  
 Design : RBD Replications: 3 Period : 2021 -2023

#### Observations

- Growth and yield attributes, Kapas yield, Nutrient uptake and Fertilizer use efficiency
- Protein and oil content in seed and BCR

#### Lead Centre and Scientists In-charge

- Dept. of SS&AC, Coimbatore : Dr.M.R.Backiyavathy, Professor (SS&AC)
- Dept. of Farm Machinery :Dr.P. Dhananchezhiyan, Asst. Professor (Farm Machinery)

#### Coordinating Centres & Scientist In-charge

- TCRS, Yethapur : Dr.R.Nageswari, Assistant Professor (Agronomy)
- KVK, Sandhiyur : Dr.M.Malarkodi, Assistant Professor (SS&AC)

## C. Research Projects and Remarks

Centre	URP	AICRP	Student Thesis	Total
Ramanathapuram	1	-	-	<b>1</b>
Kovilpatti	-	2	-	<b>2</b>
Coimbatore	-	-	1	<b>1</b>
<b>Total</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>



**Remarks on the ongoing URP/AICRP projects**

<b>S. No.</b>	<b>Project Title</b>	<b>Duration</b>	<b>Scientists Involved</b>	<b>Remarks</b>
<b>University Research Projects</b>				
1.	New : Assessing the suitability of monostem cotton and optimizing the nutrient requirement in the rainfed system of coastal soils of Ramanathapuram district	Jan, 2021 –Mar, 2023	Dr. J.Prabhakaran Asst.Professor (SS&AC) Coastal Saline Research Centre, Ramanathapuram Dr. T. Ragavan Professor & Head CSRC, Ramanathapuram	To be continued as per the programme
<b>All India Coordinated Research Projects</b>				
1	AICRP/DCM/ KPT/AGR/004: Permanent manurial experiments on cotton under rainfed deep black soils	2011 (Long term)	PI: Dr.K. Sanjeev Kumar, Assistant Professor (SS&AC) ARS, Kovilpatti Co-PI: Dr.K.Bsakar, Professor (SS&AC) and Head cum Chief Scientist (AICRPDA) ARS, Kovilpatti	The data generated from the project for the past 38 years may be brought as a compendium and steps may be taken to release the compendium during the Golden Jubilee Celebrations. To be continued as per the programme
2	AICRP/DCM/ KPT/AGR/004: Satellite experiment on effect of integrated nutrient management in cotton	Sep 2018 -Mar, 2021	PI: Dr.K. Sanjeev Kumar Assistant Professor (SS&AC) ARS, Kovilpatti Co-PI: Dr.K.Bsakar, Professor (SS&AC) and Head cum Chief Scientist (AICRPDA) ARS, Kovilpatti	To be continued as per the programme

### III. CROP PROTECTION

#### A. Technologies for adoption/OFT/information

##### FOR ADOPTION

- Cow urine based extract of Ginger, Garlic and Green chilli (3G) @ 5% is recorded lowest population of sucking pests viz., aphids, leaf hoppers, thrips and whiteflies with highest kapas yield of 2051 kg/ha and BC ratio of 1:66.

##### FOR ON FARM TESTING

<b>OFT 1:</b>	<b>Management of sucking pests of cotton under high density planting system</b>
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##### Treatments:

1.	Seed treatment with imidacloprid 70%WS@ 7g/kg of seed + spraying of diafenthiuron 50% WP @ 600 g/ha or thiamethoxam 25% WG @ 100g/ha at 45 DAS and dinotefuran 20 % SG@ 150 g/ha or flonicamid 50% WG @ 150 g/ha at 60 DAS
2.	Seed treatment with <i>Beauveria bassiana</i> @ 10 g/kg of seed + soil application of neem cake @ 250 kg/ha + yellow sticky trap @ 100 nos./ha + release of green lacewing @ 1 lakh eggs/ha at 30 DAS + need based spray of azadirachtin 1% EC @ 1000 ml/ha on crossing ETL (repeated application)
3.	Seed treatment with <i>Beauveria bassiana</i> @ 10 g/kg of seed + soil application of neem cake @ 250 kg/ha + yellow sticky trap @ 100 nos./ha + release of green lacewing @ 1 lakh eggs/ha at 30 DAS + need based spray of azadirachtin 1% EC @ 1000 ml/ha – on crossing ETL + need based spraying of diafenthiuron 50% WP @ 600 g/ha or thiamethoxam 25% WG @ 100g/ha – on crossing ETL followed by dinotefuran 20 % SG@ 150 g/ha or flonicamid 50% WG @ 150 g/ha – on crossing ETL
4.	Farmer 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)
5.	Control (untreated)
	Design : RBD
	Replication : 4
	Season : Winter Cotton (Sowing by Mid August to Mid September)

##### Centres to be involved:

<b>TNAU, CBE [MS]*</b>	:	<b>Dr. K. Senguttuvan Asst. Professor (Entomology)</b>
ARS, BSR	:	Dr.K.Ganesan, Asst. Professor (Entomology)
ADAC&RI, TRY	:	Dr.Sheeba Joyce Roseleen, Asst. Professor (Entomology)
KVK, APK	:	Dr. J. Ramkumar, Asst. Professor (Entomology)

**Observations:**

- To be taken from 15 days after sowing till the end of crop duration at weekly intervals on the existing pests and natural enemies as indicated below.
1. Population of sucking pests (aphids, leafhopper, thrips, whitefly, mealybugs) as per standard protocol
  2. Damage percentage (aphids, leafhopper, thrips, whitefly, mealybugs) and grade as per standard protocol
  3. Any other pests including mite species (if noticed)
  4. Natural enemies population as per standard protocol
  5. Seed cotton yield
  6. BC Ratio

Note:

Pre-treatments counts (PTC) are mandatory for chemical spray impositions and per cent reduction over control should be calculated using PTC.

For stem weevil & bollworms the PoP as per CPG to be followed.

**OFT 2: IPDM capsule for cotton****Treatments:**

T1 - IPDM capsule:

1. Seed treatment (Imidacloprid 600 FS @ 10 g/1kg) & *Bacillus subtilis* (Bbv @ 10g/kg)
2. Installation of yellow sticky trap @ 40/ac at 20 days after sowing & pheromone traps @ 12/ha at 40 DAS
3. Need based application of:
  - Profenophos 50% EC (5 ml/lit.) at 25 DAS (Stem weevil) directed towards collar region of stem
  - 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: Chlorpyriphos 20% EC 2 lit./ha)
  - Trifloxystrobin + tebuconazole @ 0.6 g/lit. (ALB)
  - Field release of *T. chilonis* & *T. bactrae* @ 1.5 lakh/ ha at weekly intervals from 45 DAS @ 3 times

T2– 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

T3 - Untreated check

Design: Exploded Block

Season: Winter cotton– irrigated / rainfed

Variety: CO17

**Centres to be involved:**

AC & RI, Coimbatore	:	Dr.K.Senguttuvan Asst. Professor (Entomology) (TL) Dr.P.Latha, Asst. Professor (Pl. Pathology) (TL)
ARS, Bhavanisagar	:	Dr. K. Ganesan, Asst. Professor (Entomology) Dr. Sangeetha Panickar, Professor (Pl. Pathology)

ADAC&RI, TRY	:	Dr. Sheeba Joyce Roseleen, Asst. Professor (Ento.) Dr. T. Saravanan, Asst. Professor (Pl. Pathology)
AC & RI, Vazhavachanur	:	Dr. S. Douressamy, Professor (Entomology) Dr. M. Deivamani, Assistant Professor (Pl. 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, black arm)
- Natural enemies population
- Yield
- BC Ratio

### OFT-3: Management of cotton diseases

#### Treatments

- T<sub>1</sub> - Seed treatment with *Bacillus amyloliquefaciens* (VB7) (KJ603234) @10g/kg + foliar spray 0.5% on 30 and 45 days after sowing
- T<sub>2</sub> - Seed treatment with *Bacillus subtilis* (Bbv57) (MW282917) @10g/kg + foliar spray 0.5% on 30 and 45 days after sowing
- T<sub>3</sub> - Farmers' Practice
- T<sub>4</sub> - Untreated control

**Variety :RCH 659 No. of replications: 5**

**Co-ordinating Scientist: Dr. P. Latha, Assistant Professor (Plant Pathology), TNAU, Coimbatore Centres to be involved:**

CRS, Srivilliputtur	:	Dr. P. Mareeswari, Assistant Professor (Plant Pathology), RRS, Aruppukkottai (to be conducted at Srivilliputtur)
AC&RI, Killikulam	:	Dr. M. Paramasivan, Asst. Prof. (Pathology)
ADAC&RI, Trichy	:	Dr. V. K. Sathya, Assistant Professor (Pl. Pathology) (to be conducted at Veppanthattai)
T CRS, Yethapur	:	Dr. N. Indra, Assistant Professor (Pl. Pathology) (to be conducted in Salem)

### Observations to be recorded:

- Per cent disease incidence and Per cent disease index for all diseases
- Seed Cotton Yield
- CB ratio

## FOR INFORMATION

- Survey and monitoring of cotton pests in Tamil Nadu indicated that, cotton leafhopper the persistent one during entire cropping season with a peak occurrence during the 43rd and 44th standard week. Aphids were found to occur during the major part of the cropping season. Thrips and whitefly were observed to be active between 37th and 47th standard weeks. The natural enemies population viz., coccinellids, and spiders were found positively correlated with sucking pests particularly aphid population.
- Fifteen genotypes cotton were identified as moderately resistant to the leafhopper viz., TCH 357, TCH 1809, TCH 1828, TCH 1895, TCH 1897, TCH 1941, TSH 383, TVH 002, TVH 003, TKH 0762, TKH 1225, SVPR 6, CO 15, KC3 and Suraj.
- IPM module for the management of sucking pests of cotton in multilocation studies revealed that Dinotefuran 20% SG at 150 ml/ha, Diafenthiuron 50 WP (600 g/ha) and Spiromesifen 240 SC were the effective molecules in managing the sucking pests of cotton.
- Totally twenty endophytes were collected from the cotton leaves and they were identified as species of *Pseudomonas*, *Bacillus* and *Actinomyces*. Among them, five isolates were found to be very efficient against *Xanthomonas campestris* pv. *Malvacearum* *in vitro*.
- Seed treatment with *Bacillus amyloliquefaciens* @ 10g/kg and foliar spray @ 0.5% at 30 and 45 days after sowing recorded the lowest severities of *Alternaria* leaf blight, bacterial blight, grey mildew and necrosis virus disease incidence with highest seed cotton yield.
- A significant and negative correlation was obtained between maximum temperature and the incidences of ALB, TSV and grey mildew. While, minimum temperature and evening RH were positively correlated with ALB and grey mildew.
- Copper oxy chloride 50 WP @ 2.25g /litre was found to reduce the incidence of sooty mould in cotton.
- An isolate of *Ampelomyces* was isolated and it was found to be efficient against grey mildew.

## B. Action plan (2021-2022)

### a. Agricultural Entomology

#### Theme areas

1. Changing pests scenario in relation to weather parameters
2. Identification of resistant sources and mechanism of resistance
3. Management modules for emerging pests of cotton

Action Plan No. 1	: Monitoring of Pests of cotton		
Theme Leader	: Dr. S. Jeyarajan Nelson, Professor (Entomology), Dept. of Agrl. Entomology, TNAU, Coimbatore		
Activity	Name of the Scientist(s) and Centre	Observations to be recorded	Deliverables
<ol style="list-style-type: none"> <li>1. Keeping vigilance on emerging pests either through introduction or shift in pest status.</li> <li>2. Assessment of insect pest and natural enemies population <i>in situ</i>, light and pheromone trap.</li> <li>3. Impact of light trap on non-target arthropods.</li> <li>4. Fixed plot (Locations: CBE, BSR, SVPR) and roving survey in the identified Districts during specific crop season (One on campus fixed plot and roving plot study).</li> </ol>	<p><u>TNAU, CBE</u> K. Senguttuvan, Asst. Professor (Entomology) <u>ADAC&amp;RI, TRY</u> Dr. P. Yasodha, Asst. Professor (Entomology) <u>AC&amp;RI, ECK</u> Dr. A. Kalyanasundaram, Assoc. Professor (Entomology) <u>ARS, BSR</u> Dr. K. Ganesan, Asst. Professor (Entomology) <u>CRS, SVPR</u> Incharge Scientist <u>KVK, NDM</u> Dr. V. Radhakrishnan, Asst. Professor (Entomology) <u>KVK, SDR</u> Dr. Suganya Kanna, Asst. Professor (Entomology) <u>KVK, RMD</u> Dr. K. Elanchezhyan, Asst. Professor (Entomology) <u>KVK, APK</u> Dr. J. Ramkumar, Asst. Professor (Entomology)</p>	<ul style="list-style-type: none"> <li>• Incidence of pests, natural enemies and diseases</li> <li>• Incidence of newer pests</li> <li>• Fixed Plot survey: Observations at weekly interval commencing from ten days after sowing Roving survey: Observations at fortnightly interval commencing from establishment stage</li> <li>• Correlation and regression analysis of pest and diseases incidence and damage percentage with weather parameters</li> </ul>	<p>Forecasting and forewarning of pest and disease incidence for making management decisions</p>

<b>Action Plan No. 2</b>	<b>Screening of cotton cultures &amp; Exploring mechanisms against insect pests</b>		
<b>Theme Leader</b>	<b>: Dr. M. Murugan, Professor (Entomology), Dept. of Agril. Entomology, TNAU, Coimbatore</b>		
<b>Activity</b>	<b>Name of the Scientist and Centre</b>	<b>Observations to be recorded</b>	<b>Deliverables</b>
Screening pre-release cultures from breeders both under natural and artificial condition as per the standard screening methods for key insect pests and diseases of cotton. Identification of resistant sources and study of physical and biochemical characters conferring resistance	TNAU, CBE Dr. K. Senguttuvan, Asst. Professor (Entomology)	<ul style="list-style-type: none"> <li>• Observations on the incidence / expression of key insect pests (Leafhopper, bollworms, stem weevil) - both under field and artificial screening</li> <li>• Measurement of trichome density and assessing phenol, protein, amino acids, tannin and reducing sugar levels in germplasm expressing resistance against insect pests and diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of resistant donors, elucidation of mechanisms of resistance and correlation of biophysical, biochemical characters for resistance</li> </ul>

<b>Action Plan No. 3</b>	<b>Semiochemical based management of cotton stem weevil, <i>Pempherulusaffinis</i></b>		
<b>Theme Leader</b>	<b>Dr. K. Senguttuvan, Asst. Professor (Entomology), Dept. of Agril. Entomology, TNAU, Coimbatore</b>		
<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>Observations to be recorded</b>	<b>Deliverables/ expected out come</b>
Optimization of field use of the Semiochemical (Eicosane) for monitoring and management	TNAU, CBE Dr. K. Senguttuvan, Asst. Professor (Entomology) Dr. K. Premalatha, Asst. Professor (Entomology) ADAC&RI, TRY Dr. P. Yasodha, Asst. Professor (Entomology) CRS, SVPR Scientist incharge	No. of adults collected in the trap and standardization of trap (2021-22)	Semiochemical based trap for stem weevil

Action Plan No. 4	IPM package for cotton mealybug in farmers field		
Theme Leader	Dr. M. Suganthy, Assoc. Professor (Entomology), Dept. of Agrl. Entomology, AC&RI, Killikulam		
Treatment	Name of the Scientist and Centre	Observations to be recorded	Deliverables
<p>T1 - Basal application of FYM @12.5 t/ha + <i>Bacillus subtilis</i> @10 g/kg of seeds as seed treatment +Foliar spray of Fish Oil Rosin Soap (FORS) 25g/l at the time of pest infestation (approximately 60-70 DAS) +Spraying of Flonicamid 50 WG 2.0 g/l at the time of peak incidence ( approximately 100-130 DAS)</p> <p>T2– Foliar spraying of Fish Oil Rosin Soap 25g/l or Neem oil 2% or NSKE 5 % at the time of pest infestation (approximately 60-70 DAS) +Spraying of Profenophos @ 2.0 l/ha at the time of peak incidence (approximately 100-130 DAS)</p> <p>T3 - Farmer’s practice Design: Exploded Block Season: Winter /Summer irrigated cotton Variety: Ruling variety in the locality</p>	<p>AC&amp;RI, CBE Dr. K. Senguttuvan, Asst. Professor (Entomology) (Salem/Kallakurichi) Dr. M. Suganthy, Assoc. Professor (Entomology) (Coimbatore) Dr. V. Baskaran, Asst. Professor (Entomology) (Erode ) AC&amp;RI, ECK Dr.A. Kalyanasundaram, Assoc. Professor (Entomology) AC&amp;RI, KDM Dr. R. Nalini, Professor (Entomology) CRS, SVPR Incharge Scientist</p>	<p>Population of crawlers and adult mealybugs per plant (5 cm apical shoot) in 10 randomly selected plants on 0,3,7 and 14 days after each spraying</p> <p>Per cent infested cotton plants due to mealybugs (on leaves, shoots and bolls) by observing 25 randomly selected plants on 0,7 and 14 after each spraying</p> <p>Mean per cent reduction of mealybug population and infestation over control</p> <p>Population of Natural enemies viz., chrysopids, coccinellids, spiders etc per 10 plants</p> <ul style="list-style-type: none"> <li>• Kapas yield (Kg/ha)</li> <li>• Cost Benefit Ratio</li> </ul>	<p>Integrated approach for mealybug menace management in cotton ecosystem</p>

## b. Plant Pathology

### Theme areas

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



<b>Action Plan No. 1</b>	<b>Monitoring of diseases in cotton</b>		
<b>Theme Leader</b>	<b>Dr. P.Latha</b> , Assistant Professor (Plant Pathology), Department of Cotton, TNAU, Coimbatore		
<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>Observations to be made</b>	<b>Deliverables/ expected outcome</b>
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 rowing survey in the operational area) Development of forewarning model for major diseases using available data (TNAU, CBE centre)	<b>TNAU, Coimbatore</b> Dr. P. Latha, Asst. Prof. (Pathology), Dept. of Cotton <b>Cotton Research Station, Srivilliputtur</b> Dr. P. Mareeswari, Assistant Professor (Pl. Pathology) from RRS, Aruppukkottai will look after <b>ACRC, TNAU, Coimbatore</b> Dr. Kokilavani, Asst. Professor	Correlation and regression analysis of diseases incidence and damage percentage with weather parameters  To develop forewarning modules for important diseases	Forecasting and forewarning of disease incidence for making management decisions

<b>Action Plan No. 2</b>	<b>Screening of cotton cultures and Exploring mechanisms against diseases</b>		
<b>Theme Leader</b>	<b>Dr. P.Latha</b> , Assistant Professor (Plant Pathology), Department of Cotton, TNAU, Coimbatore		
<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>Observations to be recorded</b>	<b>Deliverables/ expected outcome</b>
Screening pre-release cultures from breeders both under natural and artificial condition as per the standard screening methods for major diseases of cotton. Identification of resistant sources and studying physical and biochemical mechanisms conferring resistance	<b>TNAU, Coimbatore</b> Dr. P. Latha, Asst. Prof. (Pathology) Dept. of Cotton,	Observations on the incidence / expression of diseases ( <i>Alternaria</i> leaf blight, Bacterial leaf blight and root rot) - both under field and artificial screening Measurement of phenol, protein and reducing sugar levels in germplasm Studying the mechanism of resistance at molecular level by studying the up /down regulation of genes	Identification of resistant donors, elucidation of mechanisms of resistance and correlation of biophysical, biochemical characters for resistance

<b>Action Plan No. 3</b>	<b>Biological management of grey mildew in cotton</b>		
<b>Theme Leader</b>	<b>Dr. P.Latha, Assistant Professor (Plant Pathology), Department of Cotton</b>		
<b>Action Plan</b>	<b>Name of the scientist(s) and centre</b>	<b>Activity</b>	<b>Deliverables/ expected out come</b>
Biological management of grey mildew in cotton	Dr. P. Latha, Asst. Prof. (Pathology) Department of Cotton, Coimbatore	<ul style="list-style-type: none"> <li>Isolation of <i>Ampelomyces quisqualis</i> parasitising greymildew pathogen</li> <li>Testing the efficacy of <i>Ampelomyces quisqualis</i> isolates with <i>Bacillus subtilis</i> against grey mildew <i>in-vitro</i> and <i>in-vivo</i> conditions along with chemical check</li> </ul>	Effective of newer bio-control agent for the disease management

<b>Action Plan No. 4</b>	<b>Management of bacterial blight of cotton</b>		
<b>Theme Leader</b>	<b>Dr. M. Theradimani, Professor and Head, AC&amp;RI, Madurai and Dr. P.Latha, Assistant Professor (Plant Pathology), Department of Cotton</b>		
<b>Action Plan</b>	<b>Name of the scientist(s) and centre</b>	<b>Activity</b>	<b>Deliverables/ expected out come</b>
Management of bacterial blight of cotton	Dr. M. Theradimani, Professor and Head, AC&RI, Madurai  Dr. P. Latha Asst. Prof. (Pathology) Department of Cotton, Coimbatore	Collection and isolation the native antagonists including Rhizobacteria and endophytes from cotton plants Efficacy of native Rhizobacteria and endophytes against bacterial blight pathogen under <i>in vitro</i> and pot culture conditions Mechanism of action of native Rhizobacteria and endophytes against bacterial blight under pot culture condition To study the effect of endophytes against bacterial blight pathogen of cotton under field conditions	Efficient Management strategy will be recommended

### C. REMARKS FOR THE ONGOING RESEARCH PROJECTS

Type of project	AEN	PAT	Total
University research projects	2	1	3
AICRP Project	1	1	2
ERP	-	-	-
<b>Total</b>	<b>3</b>	<b>2</b>	<b>5</b>

#### a. Agricultural Entomology

S. No.	Project Number and Title	Period	Remarks
<b>University Research Projects</b>			
<b>1</b>	<b>AICRP/CPPS/CBE/ENT/COT/2019/001</b> "Screening, morphological, biochemical and plant volatile cues analysis for leafhopper resistance / susceptibility in cotton genotypes" <b>Dr. K. Senguttuvan</b> , Asst. Prof. (Ento.)	September 2019 to March 2021	Completion report may be sent by the May, 2021. The results may be published in peer reviewed journals and a copy may be sent to the Director, CPPS for record.
<b>2</b>	<b>CPPS/MDU/ENT/COT/2016/001</b> "Development of ecofriendly management strategies for the mealybug in rainfed cotton" <b>Dr. G. Srinivasan</b> , Associate Professor (Ento.)	April 2016 to March 2021	Project should get permission for extend the period for complete the work.
<b>AICRP</b>			
<b>7.</b>	<b>AICRP/ PBG/ CBE/ COT/ 023</b> All India Coordinated Research Project on Cotton <b>Dr. K. Senguttuvan</b> , Asst. Prof. (Ento.)	Continue Programme	Project may be continued
<b>8.</b>	<b>AICRP/ PBG/ SVR/ COT/ 024</b> All India Coordinated Research Project on Cotton Asst. Prof. (Ento.) - <b>Post Vacant</b>	Continue Programme	Project may be continued

#### b. Plant Pathology

S. No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
<b>University Research Project</b>				
<b>1.</b>	<b>CPPS/CBE/PAT/COT/2019 /001</b> Exploitation of endophytic bacteria for	Dr. P. Latha, Assistant Professor (Pathology)	From July 2019 to June	The isolated endophytes have to be characterized and identified at species

	the management of bacterial blight of cotton		2022	level with molecular tool. Come out with a technology to manage the disease. The project may be continued.
<b>AICRP</b>				
<b>1.</b>	<b>AICRP/ PBG/ CBE/ COT/ 023</b> All India Coordinated Research Project on Cotton	Dr. P. Latha, Assistant Professor (Pathology)	2021 - 2022	The project may be continued as per the technical programme of AICRP.

### Recommendations of Director CPPS

- a. The scientists are instructed to monitor the insect pests and diseases of cotton in their districts regularly. If any outbreak of existing pests, disease and nematodes or occurrence of new insect pests, diseases and nematodes of cotton crop is noticed report to the Director (CPPS) immediately.
- b. The Scientists identified for pest and disease surveillance in the state are requested to upload the data in the Google Forms for consolidation by the Head of the Departments. The Heads of the Department are instructed to submit the monthly pest and disease surveillance report to the Director CPPS on or before 2<sup>nd</sup> of every month without fail.
- c. The monthly progress made under the OFT and Action Plans should be submitted to the respective Head of the Departments by the Monitoring Scientist/Theme Leader o/b 25<sup>th</sup> of every month and a consolidated report of the progress made should be made by the respective Head of the Departments to Director CPPS along with the Monthly Reports.
- d. The TNAU entries alone can be taken account for the resistance screening and wherever possible artificial screening may be done. Entries found to be resistant to pests and diseases have to be handed over to Breeders. The action taken should be intimated to the Director CPPS and concerned Heads of the Departments at CPPS, TNAU, Coimbatore.
- e. The microbial culture collections have to be deposited with the University Repository available at the Plant Pathology Department by all the Scientists working on microbial organisms.
- f. The natural enemies of pests other than coccinellids and spiders have to be recorded. Wherever required, the entomophages, especially the parasitoids have to be documented. Eggs, larval/nymphal, pupal and adult stages of insect pests have to be observed under laboratory conditions for the emergence of parasitoids and documented.
- g. Entomopathogens when observed in field studies have to be recorded and identified. The cultures have to be sent to the Professor and Head, Dept. of Agrl. Entomology, TNAU, Coimbatore for further studies. The Professor and Head, Dept. of Agrl. Entomology, TNAU, Coimbatore is instructed to work out modalities for further studies.
- h. The Monitoring Scientists and Theme Leaders are instructed to monitor the allotted programmes and report the action taken.

## Remarks of the Vice Chancellor

### 4. GENERAL REMARKS

- Grafting maybe done in cotton by using tree cotton species *Cochlospermum gossypium*).
- Seed production of CO 17 may be intensified and more steps to popularize CO17 should be taken up.
- Varieties released under CVRC should periodically be enlisted.
- Cotton canopy management with Mepiquat chloride (0.015%) + Sodium chlorate (0.9% application for synchronized maturity and mechanized harvest demonstration should be laid out. (**Action:** Dept. of Crop Physiology, TNAU, Coimbatore)
- Inclusion of magnesium in multi micronutrient formulations to overcome cotton crop deficiencies. (**Action:** Dept. of SS&AC, TNAU, Coimbatore).
- Study on complete mechanization in cotton by Department of Farm Machinery and Power. (**Action:** Dean, AEC&RI, Coimbatore)

### 5. LIST OF PARTICIPANTS

#### List of offline participants

Dr. N. Kumar, Vice Chancellor, TNAU, Coimbatore

#### University officers

1. Dr. K.S. Subramanian, Director of Research
2. Dr. S. Geetha, Director (CPBG)
3. Dr. K. Prabakar, Director (CPPS),
4. Dr. S. Mohankumar, Director(CPMB&B)
5. Dr. V. Geethalakshmi, Director (CM)
6. Dr. R. Santhi, Director (DNRM)
7. Dr. S. Panneerselvam, Director (WTC)
8. Dr. B. Shridhar, Dean (AEC&RI),CBE

#### HODs

9. Dr. S. Rajeswari, Professor and Head, Dept. of cotton
10. Dr. N. Sathiah, Professor and Head, Department of Agrl. Entomology
11. Dr. G. Karthikeyan, Professor and Head, Department of Plant Pathology
12. Dr. A. Shanthy, Professor and Head, Department of Nematology
13. Dr. M. Raveendran, Professor and Head, Dept. of Biotechnology
14. Dr. C. R.Chinnamuthu, Professor and Head, Dept. of Agronomy
15. Dr. P. Malarvizhi, Professor and Head, Dept. of SS&AC

#### Professors/Assoc.Professors/Assistant Professors

12. Dr. M. Kumar, Professor (PBG)
13. Dr. L. Mahalingam, Professor (PBG)
14. Dr. S. Sivakumar, Professor (PBG)
15. Dr. V. Paraniidharan, Professor (Plant Pathology)
16. Dr. S. V. Krishnamoorthy, Professor (Entomology), Dept. of Entomology

17. Dr. G. Umapathy, Professor (Entomology), Dept. of Entomology
18. Dr. S. Jeyarani, Professor (Entomology) & RC, Dept. of Entomology
19. Dr. K. Bhuvaneshwari, Professor (Entomology), Dept. of Entomology
20. Dr. M. Murugan, Professor (Entomology), Dept. of Entomology
21. Dr. E. Sumathi, Associate Professor (Entomology), Dept. of Entomology
22. Dr. M. Suganthi, Assoc. Professor (Entomology), Dept. of Sus. Org. Agri
23. Dr. N. Premalatha, Asst. Professor (PBG)
24. Dr. K. Senguttuvan, Asst. Professor (Entomology)
25. Dr. P. Latha, Asst. Professor (Pl. Pathology)
26. Dr. K. Thirukumaran, Asst. Professor (Agronomy)
27. Dr. B. Vinothkumar, Asst. Professor (Entomology), Dept. of Entomology
28. Dr. L. Karthiba, Assistant Professor (Plant Pathology), TNAU, Coimbatore

**University Officers, HOD's, Professors, Assoc. Professors and Assistant Professors attended the review through virtual mode**

1. Dr. S. Palpandi, Dean, AC&RI, Madurai
2. Dr. I. Eraivan Arutkani Ayyanathan, Dean, AC&RI, Killikulam
3. Dr. N. Muthukrishnan, Dean incharge, AC&RI, Vazhavachanur
4. Dr. A. Velayutham, Dean incharge, AC&RI, Eachankottai
5. Dr. M. Shanthi, Professor and Head, Dept. of Entomology, AC &RI, Madurai
6. Dr. M. R. Srinivasan, Prof. and Head, Dept. of Agrl. Entomology, AC&RI, Killikulam
7. Dr. C. Gailce Leo Justin, Prof. and Head, Dept. of Crop Protection, ADAC&RI, Trichy
8. Dr. W. Baby Rani, Professor (Entomology), IOA, Kumulur
9. Dr. R. Veeraputhiran, Asso. Prof. (Agro.) CRS, Srivilliputhur
10. Dr. V. R. Saminathan, Assoc. Professor (Entomology), HC&RI(W), Trichy
11. Dr. R. P. Soundararajan, Assoc. Professor (Entomology), HC&RI(W), Trichy
12. Dr. M. Chandrasekaran, Assoc. Professor (Entomology), HC&RI(W), Trichy
13. Dr. G. Srinivasan, Assoc. Professor (Entomology), AC &RI, Madurai
14. Dr. S. Subbulakshmi, Asst. Prof. (Agro.), ARS, Kovilpatti
15. Dr. M. Gnanasekaran, Asst. Professor (PBG), RRS, Aruppukkottai
16. Dr. K. Thiagu, Asst. Professor (PBG), CRS, Srivilliputhur
17. Dr. K. Sakthivel, Asst. Professor (PBG), CRS, Veppanthattai
18. Dr. S. Hariramakrishnan, Asst. Professor (PBG), RRS, Kovilpatti
19. Dr. D. Pushpa, Asst. Professor (PBG), TRRI, Aduthurai
20. Dr. P. T. Sharavanan, Assistant Professor (Plant Pathology), ADAC&RI, Trichy
21. Dr. Sheeba Joyce Roseleen, Asst. Professor (Entomology), ADAC&RI, Trichy
22. Dr. Abdul Razak, Professor (Entomology), AC&RI, Killikulam
23. Dr. M. Ravi, Asst. Professor (Entomology), AC&RI, Killikulam
24. Dr. A. Kalyanasundharam, Assoc. Professor (Entomology), AC&RI, Eachankottai
25. Dr. S. Jayaprabavathi, Asst. Prof. (Entomology), RRS, Vridhachalam
26. Dr. V.G. Mathirajan, Asst. Professor (Entomology), CRS, Veppankulam
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28. Dr. B. Usharani, Asst. Professor (Entomology), KVK, Madurai
29. Dr. K. Elanchezhyan, Asst. Professor (Entomology), KVK, Ramanathapuram
30. Dr. V. Radhakrishnan, Asst. Professor (Entomology), KVK, Needamangalam