

# **TAMIL NADU AGRICULTURAL UNIVERSITY**

## **PROCEEDINGS**

**38<sup>th</sup> Cotton & Other fibre Crops Scientists' Meet 2020  
(May 27, 2020)**

### **Lead Centre**

Department of Cotton  
Centre for Plant Breeding and Genetics  
Coimbatore

### **Directorate of Research**

Tamil Nadu Agricultural University  
Coimbatore

# **PROCEEDINGS**

## **38<sup>th</sup> Cotton & Other fibre Crops Scientists' Meet 2020 (27.05.2020)**

The 38<sup>th</sup> Cotton & Other Fibre Crops Scientists Meet was conducted on 27.5.2020 in Anna Auditorium involving 40 scientists off-line and more than 170 scientists on-line covering all college campuses, research stations and KVKs. **Dr. N. Kumar**, Vice Chancellor, TNAU, offered the opening remarks. The Cotton area and production declined drastically due to the erratic monsoon, heavy infestation of pests and diseases besides replacement of cotton by maize.

**Dr. K.S. Subramanian**, Director of Research flagged off issues such as popularization of zero monopodia cotton, intra-specific hybridization hopper resistance, coloured cotton, drip fertigation in cotton using TNAU water soluble fertilizers, and artificial intelligence to detect the incidence and early warning for whitefly.

**Dr. S. Geetha**, Director (CPBG), **Dr. V. Geethalakshmi**, Director (Crop Management and **Dr. K. Prabakar**, Director (CPPS), presented the research highlights, action taken on previous Millets and Forages Scientists Meet and Action Plan for the year 2020-2021 of their respective directorates and departments involved.

The proceedings of the 38<sup>th</sup> Crop Scientists' Meet on cotton 2020 are furnished under the following headings:

### **I. CROPIMPROVEMENT**

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

### **II. CROP MANAGEMENTT**

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

### **III. CROP PROTECTION**

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

### **IV. REMARKS OF THE VICE CHANCELLOR**

### **V. REMARKS OF THE DIRECTOR OF RESEARCH**

### **VI. PARTICIPANTS**

## I. CROP IMPROVEMENT

<b>A. Action Plan Projects</b>
<b>Action Plan 2020-2022</b>

<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>2020-21</b>	<b>2021-22</b>	<b>Deliverables</b>
<b>Dr. N. Premalatha</b> Asst. Prof. (PBG)  Department of Cotton, TNAU, Coimbatore	<ul style="list-style-type: none"> <li>• Raising of F<sub>1</sub>, hybridity confirmation and polyploidation by colchicine treatment (Feb 2020 – July 2020).</li> <li>• Raising of hexaploids an selfing (Aug 2020 – Jan2021)</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of tetraploid using flow cytometer and repeated backcross with CO14</li> <li>• Evaluation of leaf hopper resistant population</li> <li>• Development of leaf hopper resistant lines (Feb 2021– July 2022)</li> </ul>	<ul style="list-style-type: none"> <li>•Development of cotton genotypes with wide genetic base</li> <li>•Identification of cotton genotype with good fibre quality and jassid resistance</li> </ul>

Theme No 2	Development of Zero monopodia and short sympodia cotton Genotypes		
Theme Leader	Dr. S. Rajeswari, Professor and Head, Dept. of Cotton, TNAU, , Coimbatore		
Name of the scientist and centre	2020-21	2021-22	Deliverables
<p><b>Dr. S. Sivakumar,</b> Prof. (PB&amp;G) &amp; Head CRS,Veppanthattai</p> <p><b>Dr. M. Gunasekaran,</b> Professor (PB&amp;G), ARS Aruppukottai</p> <p><b>Dr. N. Premalatha,</b> Asst. Professor (PBG) Dept. of Cotton</p> <p><b>Dr. M. Gnanasekaran</b> Asst. Professor(PB&amp;G) CRS, Srivilliputhur</p> <p><b>Dr.S.Hariramakrishnan</b> Asst. Prof.(PB&amp;G), ARS, Kovilpatti</p>	<ul style="list-style-type: none"> <li>• Raising of DCF<sub>1</sub> population and selfing at SVPR (Feb - May 2020)</li> <li>• Evaluation of DCF<sub>2</sub> at CBE (May- Sep 2020)</li> <li>• Evaluation of DCF<sub>3</sub> families at SVPR, CBE, VPT, KPT and APK (Oct- Jan 2020-21)</li> </ul>	<ul style="list-style-type: none"> <li>• Generation advancement at SVPR (Feb - May 2021)</li> <li>• Generation advancement and screening for leaf hopper at CBE (May – Sep 2021)</li> <li>• PYT at CBE, SVPR, VPT, KPT (Oct -Jan 2021-22)</li> <li>• Seed multiplication of promising lines at SVPR (Feb - May 2022)</li> </ul>	Evolution of high yielding compact variety with jassid 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	2020-21	2021-22	Deliverables
<p><b>Dr. S. Sivakumar,</b> Professor (PBG) &amp; Head, CRS, Veppanthattai</p> <p><b>Dr.M.Gunasekaran</b> Professor (PBG) ARS, Aruppukottai</p> <p><b>Dr.K.Thiyagu,</b> Asst. Prof. (PBG), CRS, Srivilliputhur</p>	<ul style="list-style-type: none"> <li>• Evaluation of F<sub>2</sub> at SVPR (Feb 2020 - May 2020)</li> <li>• Evaluation of F<sub>3</sub> at KPT (May– Sep'2020)</li> <li>• Evaluation of F<sub>4</sub> at KPT, VPT &amp;APK (Oct 2020 - Jan 2021)</li> <li>• Seed multiplication of stabilized lines at SVPR(Feb -May 2021)</li> </ul>	<ul style="list-style-type: none"> <li>• PYT at KPT (May – Sep 2021)</li> <li>• MLT/OFT at KPT, VPT &amp;APK (Oct- Jan 2021-22)</li> <li>• Proposal for variety release (Feb-May 2022)</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation of F<sub>2</sub> at SVPR (Feb 2020 - May 2020)</li> <li>• Evaluation of F<sub>3</sub> at KPT (May–Sep'2020)</li> <li>• Evaluation of F<sub>4</sub> at KPT, VPT &amp;APK (Oct 2020 - Jan 2021)</li> <li>• Seed multiplication of stabilized lines at SVPR (Feb-May 2021)</li> </ul>

<b>Theme No. 4</b>	<b><i>Bt</i> conversion of existing TNAU 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		
Name of the scientist and centre	2020-21	2021-22	Deliverables
<b>Dr.S.Sivakumar</b> , Professor (PBG) & Head, CRS, Veppanthattai  <b>Dr.M.Gunasekaran</b> Professor (PBG) ARS, Aruppukottai  <b>Dr.K.Thiyagu</b> , Asst.Prof. (PBG), CRS,Srivilliputhur  <b>Dr.S.Hariramakrishnan</b> Asst.Prof.(PB&G), ARS, Kovilpatti	<ul style="list-style-type: none"> <li>• Developing BC<sub>2</sub>F<sub>1</sub> at SVPR (Feb – May 2020)</li> <li>• Developing BC<sub>3</sub>F<sub>1</sub> at KPT &amp; CBE (May - Sep 2020)</li> <li>• Developing BC<sub>3</sub>F<sub>2</sub> at CBE, SVPR, KPT, VPT (Oct -Jan 2020-21)</li> </ul>	<ul style="list-style-type: none"> <li>• Developing BC<sub>3</sub>F<sub>3</sub> at SVPR, CBE, KPT, VPT &amp; selection of homozygous lines and gene expression studies at CPMB &amp; B (Feb -May 2021)</li> <li>• Seed multiplication at CBE, SVPR, KPT (respective crosses) (May -Sep 2021)</li> <li>• Seed multiplication, Bioassay study (Dept. of ENT CBE), yield evaluation &amp; artificial screening at CBE, SVPR, KPT (respective crosses) (Oct -Jan 2021-22)</li> <li>• Proposed to AICCIP trials / MLT and large scale demonstration (OFT) and submitted to Central Varietal Release Committee (Feb -May 2022)</li> </ul>	Development of <i>Bt</i> conversion of TNAU varieties

<b>New action Plan (2020-2023)</b>			
<b>Theme No. 1</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>2020-21</b>	<b>2021-22</b>	<b>Deliverables</b>
Department of Cotton, Coimbatore	<ul style="list-style-type: none"> <li>• Raising of F<sub>3</sub> families of two cross combinations (CO 14 x Louisiana Brown &amp; MCU 5 x Parbani American) (Aug 2020 -Nov 2021)</li> <li>• Raising of F<sub>4</sub> Families and selection of desirable segregants</li> <li>• (Dec 2020 -March 2021)</li> </ul>	<ul style="list-style-type: none"> <li>• Raising of F<sub>5</sub> Families &amp; selection of desirable plants with coloured lint and good fibre quality (April 2021 -July 2021)</li> <li>• Evaluation of coloured cotton genotypes for yield and fibre quality (Aug 2020 -Nov 2021)</li> <li>• Continuation of yield trials and evaluation of culture under MLT</li> <li>• (Dec 2020 -March 2021)</li> </ul>	<ul style="list-style-type: none"> <li>• Conducting ART, OFT and submission of release proposal (April 2021 -July 2021)</li> </ul>

**B. Entries for Variety release proposal OFT/ART/MLT****B 1. Cultures nominated for ART- I**

<b>S. No</b>	<b>Culture</b>	<b>Durati on (days)</b>	<b>Seed cotton yield (kg/ha)</b>	<b>Yield increase Over CO 14 /SVPR 6</b>	<b>Special features</b>
1	TSH 357 (N)	150	2232	13.6 per cent increase over SVPR 6	<ul style="list-style-type: none"> <li>• Ginning outturn :35.3</li> <li>• UHML : 29.79 mm</li> <li>• Fibrestrength : 28.3 g/tex</li> <li>• Micronaire value :4.5</li> <li>• Moderately resistant to leaf hopper</li> <li>• Boll weight : 4.8 g</li> </ul>
2	TCH 1828 (Second year of testing)	150	1825	17.0 per cent increase over CO 14	<ul style="list-style-type: none"> <li>• Ginning outturn :35.2 %</li> <li>• Boll weight : 4.3g</li> <li>• UHML : 31.6mm</li> <li>• Fibrestrength :30.7 g/tex</li> <li>• Micronairevalue :4.6 µg/inch</li> </ul>
Checks : CO14 and SVPR 6					

**Distribution of ARTs**

Trial	<i>Gossypiumhirsutum</i>	
Season	Winter Irrigated	Summer Irrigated
Districts	Coimbatore, Theni ,Salem, Dharmapuri, Erode, Villupuram, Kallakurichi, Namakkal, Tiruppur, Trichy andDindigul	Theni, Salem, Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Madurai, Dindigul, Thanjavur, Trichy and Thiruvarur



<b>B 2. Cultures nominated for ART- II</b>					
<b>S. No</b>	<b>Culture</b>	<b>Duration (days)</b>	<b>Seed cotton yield (kg/ha)</b>	<b>Yield increase Over CO 14 /SVPR 4</b>	<b>Special features</b>
1.	TCH 1897 (N)	125-135	2079		<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>Gossypim 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 Thiruvarur

### B 3. Cultures nominated for ART- III

S.No	Culture	Duration (Days)	Seed cotton yield (Kg/ha)	Yield increase over (%)		Special features
				SVPR 4	KC 3	
1.	TKH 1197 (Second year of testing)	140	1081	16.7	10.6	<ul style="list-style-type: none"> <li>• Ginning outturn :36.8</li> <li>• Fibre length: 39.9mm</li> <li>• Fibre strength: 30.2g/tex</li> <li>• Micronaire value : <math>\mu\text{g}/\text{inch}</math></li> <li>• Highly resistant to leaf hopper and tolerant to Drought</li> </ul>
2.	TKH 1185 (Second year of testing)	140	1033	17.9	14.9	<ul style="list-style-type: none"> <li>• Ginning outturn :36.6</li> <li>• Fibre length: 32.5mm</li> <li>• Fibre strength: 28.8g/tex</li> <li>• Micronaire value :3.6 <math>\mu\text{g}/\text{inch}</math></li> </ul>
Check: KC 3						

### Distribution of ARTs

Trial	<i>Gossypium hirsutum</i>
Season	Winter rainfed
Districts	Tuticorin, Virudhunagar, Tirunelveli, Tenkasi, Ramanathapuram, Madurai and Perambalur

#### B 4. Cultures identified for On Farm Trials (2020-21) during 2020-21

1. TKH 1197 – Resistant to leaf hopper and suitable for rainfed condition
2. TCH 1828 – Long staple fibre length category & moderately resistant to leaf hopper (promising in AICRP trials also)

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

Design :RBD	No. of replications	:	Three
Plotsize : 6m x 4.5 m (27 m <sup>2</sup> )	Seed Quantity	:	200 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.	TCH 1941 (N)	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:4.4 µg/inch</li> </ul>
2.	TSH 387 (N)	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:4.1 µg/inch</li> <li>• Boll weight : 4.7 g</li> </ul>
3.	TVH 007 (N)	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:3.9 µg/inch</li> <li>• Boll weight : 4.3 g</li> </ul>

4.	TKH 0762 (N)	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>
5.	TSH 383 (R)	SVPR 3 x H 96	2501	150	<ul style="list-style-type: none"> <li>• Ginning outturn :35.6</li> <li>• UHML(mm) :27.4</li> <li>• Fibre strength (g/tex) : 28.4</li> <li>• Micronaire value:4.6 µg/inch</li> </ul>
6.	TVH 003 (R)	Suraj x CPD 1452	1640	150	<ul style="list-style-type: none"> <li>• Fibre length :34.3mm</li> <li>• Fibre strength:26.4 g/tex</li> <li>• Micronaire value :3.5 µg/inch</li> </ul>
7.	TKH 1225 (R)	BS 49 x SVPR 4	1221	135-140	<ul style="list-style-type: none"> <li>• UHML(mm) :30.0</li> <li>• Fibre strength (g/tex): 21.6</li> </ul>
Checks		SVPR 6, CO14, KC 3, Non <i>Bt</i> private hybrid and zonal check(Phule Yamuna/BGDS 1063)			
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			

### **B 6. 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 1895 (N)	KC 2 x TCH 1715	1926	130-140	<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>
2.	TVH 002 (R)	Suraj x TCH 1819	1925	130-140	<ul style="list-style-type: none"> <li>• Fibre length (mm) :20.4</li> <li>• Fibre strength (g/tex):24.0</li> <li>• Micronaire value:4.3 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			

### B 7. MLT on *G. arboretum* (Variety)

Design :RBD	No. of replications	: Seven
Plotsize : 6m x 5.4 m (33 m <sup>2</sup> )	Seed Quantity	: 250 g/entry/location
Spacing : 90 x 30cm	Season	: Winter irrigated and Winterrainfed

### Features of the MLT cultures

No.	Culture	Parentage	Seed cotton yield (kg/ha)	Duration (Days)	Special features
1.	TKA 0612 (N)	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) : 24.9</li> <li>• Fibre Strength (g/tex) : 21.6</li> <li>• Micronaire Value : 6.2</li> </ul>

2.	TKA 0365 (R)	CINA 329 x Gshr 820/91	886	135 -140	<ul style="list-style-type: none"> <li>Ginning outturn (%) : 34.9</li> <li>2.5% Span length : 29.2mm</li> <li>Bundle Strength :23.4(g/t)</li> <li>Fibre fineness : 5.6</li> </ul>
Checks		K 12			
Locations		Winterrainfed : ARS, Kovilpatti, CRS, Veppanthattai and RRS, Aruppukottai			

### Important Dates in conduct of MLT & ART

Date of receiving the seed material of the proposed entries at Coimbatore	15.06.2020
Date of dispatching the coded entries for ART/ MLT as per season's Requirement	30.06.2020
Date of receiving sowing report at CBE season wise	Winter irrigated 15.09.2020 Winter rainfed 15.10.2020 Summer irrigated 20.03.2021
Visit of MLT/ monitoring teams	Coimbatore Nov. 2020 and May 2021 Srivilliputhur Nov. 2020 and May 2021 Veppanthattai Dec.2020 Kovilpatti Dec.2020
Visit of ART monitoring team season wise	Winter irrigated November 2020 Summer irrigated April 2021 Winter rainfed December 2020
Date for receiving the trials results at CBE for compilation season wise	Winter irrigated 31.03.2021 Winter rainfed 15.04.2021 Summer irrigated 31.06.2021

<b>Monitoring team to visit MLT</b>	
<b>Name of the scientist (s)</b>	<b>Station to be visited</b>
Dr. M. Gnanasekaran, AP (PBG), CRS, SVPR 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. Gunasekaran, Professor (PBG), RRS, Arupukkottai	Agricultural Research Station, Kovilpatti
Dr. L. Mahalingam , Professor (PBG), Dept. of Cotton, Coimbatore  Dr. N. Sakthivel AP (PBG), CRS, VPT	Cotton Research Station, Srivilliputhur
Dr. S. Sivakumar, P&H, CRS, VPT Dr.K.Thiagu, AP (PBG), CRS, SVPR	Regional Research Station, Arupukkottai

### **C. Research Projects and remarks**

#### **Research Projects on Cotton**

<b>S.No.</b>	<b>Name of the centre</b>	<b>University Research Projects &amp; Core projects</b>	<b>AICRP Projects</b>	<b>Externally funded projects</b>	<b>Total</b>	<b>Number of scientists</b>
<b>Cotton</b>						
1.	Coimbatore	5	1	1	7	3
2.	Srivilliputtur	3	1	-	4	2
3.	Veppanthattai	2	-	-	2	2
4.	Kovilpatti	3	-	-	3	2
	<b>Total</b>	<b>13</b>	<b>2</b>	<b>1</b>	<b>16</b>	<b>9</b>
<b>Sunn hemp</b>						
5.	Coimbatore	1	-	-	1	1
6.	Aduthurai	1	1 (Jute & allied fibres)	-	2	1
	<b>Total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>

<b>Remarks on the ongoing research subprojects</b>				
<b>No.</b>	<b>Project No. &amp; Project title</b>	<b>Project Leader</b>	<b>Duration</b>	<b>Remarks</b>
1.	<b>CPBG/CBE/PBG/COT/2016/001:</b> Maintenance and evaluation of germplasm stocks of <i>G. barbadense</i> and <i>G. hirsutum</i>	Dr. N. Premalatha	June 2015 to May 2020	Intensive selection for high boll weight coupled with high fibre length possessing genotypes is required and the same should be used in breeding programme
2.	<b>CPBG/ CBE/ PBG/ COT/2016/002:</b> Development of high yielding jassid resistant cotton varieties by introgression of genes from wild species	Dr. L.Mahalingam	June 2016 to May 2021	Back cross or three way cross of interspecific crosses should be attempted
3.	<b>CPBG/ CBE/ PBG/ COT/2016/003:</b> Maintenance and production of nucleus and breeder seeds of cotton varieties of Department of Cotton, Coimbatore.	Dr. L.Mahalingam	June 2016 to May 2021	Atmost care should be taken to produce 100% genetically pure NS and BS. The project may be continued
4.	<b>CPBG/CBE/PBG/COT/2019/001:</b> 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	Rapid Generation advancement should be followed. The project may be continued.



5.	<b>CPBG/CBE/PBG/COT /2017/001:</b>  Breeding for long and extra long staple cotton genotypes with high ginning out turn.	Dr. S.Rajeswari and Dr.N.Premalatha	June 2017 to May 2022	In all the yield trials private non <i>Bt</i> hybrid and a national check with ELS should be used. The project may be continued
6.	<b>CPBG/SVP/PBG/COT /2016/001:</b>  Evolution of short duration and high yielding cotton ( <i>Gossypium hirsutum</i> L.) genotypes suitable for rice fallow and rainfed conditions of southern districts of Tamil Nadu	Dr. K. Thiyagu	August 2016 to July 2021	The number of cross combinations should be restricted and should aim for larger population size in segregating generations. Efforts should be taken to identify replacement for SVPR3 for rice fallow conditions
7.	<b>CPBG/SVP/PBG/COT /2016/002:</b>  Evolving high yielding medium staple upland cotton varieties ( <i>Gossypium hirsutum</i> L.) resistant to jassids for summer irrigated tracts of Tamil Nadu	Dr.M.Gnanasekaran	April 2016 to March 2021	KC2 should be widely used in hybridisation programme. Rapid generation advancement of generations is required to hasten the breeding process
8.	<b>CPBG/SVP/PBG/COT /2015/004:</b>  Maintenance of mass pedigree lines and production of nucleus and breeder seeds of SVPR 2, SVPR 3 and SVPR 4 cotton varieties	Dr. K. Thiyagu	June 2015 to May 2020	The project may be continued
9.	<b>CPBG/KPT/PBG/COT /2015/006:</b>  Evolution of medium staple <i>G.hirsutum</i> cotton cultivar with resistance to leaf hopper (Jassids)	Dr. A. Ramalingam	Sept.2015 to Aug. 2020	Good progress is seen. May be continued

10.	<b>CPBG/KPT/PBG/COT /2015/007:</b>  Evolving of high yielding <i>G.arboreum</i> cotton varieties suitable for rainfed condition in southern districts of Tamil Nadu	Dr. S. Hari Ramakrishnan	Oct. 2015 To Sept. 2020	May be continued
11.	<b>CPBG/KPT/PBG/COT /2018/001:</b>  Nucleus and breeder seed production of cotton varieties of Tamil Nadu	Dr. S. Hari Ramakrishnan	Oct.2018 to Sept.2021	The project may be continued
12.	<b>CPBG/VPT/PBG/COT /2016/002:</b>  Development of high yielding long staple cotton varieties and hybrids for winter rainfed tracts in Tamil Nadu	Dr. S.Sivakumar	Dec.2015 to Dec.2019	Research programme may be intensified and the variety should be released at the earliest since the station established long back. The project may be continued.
13.	<b>CPBG/VPT/PBG/COT/2020/New:</b>  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. Yashodha	October 2019 to September 2022	New project proposed.
14.	<b>Core Project:</b> Identification and evaluation of high yielding compact genotypes in cotton fitting to high density plantingsystem	Dr. N.Premalatha	June 2018 to May 2020	The project may be continued and to be completed on 30.09.2020

15.	<b>AICRP/ PBG/ CBE/ COT/023:</b> ICAR- All India Coordinated Research Project on Cotton	Dr.S.Rajeswari	2017-18 to 2019-20	The project may be continued
16.	<b>AICRP/PBG/SVR/COT/024:</b> AICRP on Cotton improvement at CRS, Srivilliputtur	Dr. K. Thiyagu	2017-18 to 2019-20	The project may be continued
17.	<b>AICRP- VC /PBG/VPT/COT/001:</b> Evaluation of Bt cotton BG-IIhybridsand varieties( <i>G.hirsutum</i> ) under rainfed condition	Dr. S.Sivakumar	2017-18 to 2019-20	The project may be continued
18.	<b>AICRP- VC /PBG/VPT/COT/002:</b> Evaluation and utilization of cotton genotypes ( <i>G.hirsutum</i> ) of AICRP entries under rainfed condition (V9 C31 00)	Dr. S.Sivakumar	2017-18 to 2019-20	The project may be continued
19.	<b>DBT/CPBG/CBE/COT /2017/004:</b> DBT Network project – Development of consensus genetic linkage map for <i>Gossypium</i> L. spp. with SNP markers and QTL analysis for fibre traits.	Dr. N.Premalatha	21.02.2017 – 20.02.2020	The project may be continued

20.	<b>CPBG/ CBE/ PBG/ GMC/2020/001</b> Evolution of high biomass sunnhemp ( <i>Crotalaria juncea</i> ) varieties for use as green manure.	Dr.N.Meenakshi ganesan,	January 2020 to December 2022	The project may be continued
21.	<b>CPBG/ADT/PBG/GM C/2017/001:</b> Evolving sunnhemp variety with high biomass suitable to Cauvery Delta Zone of TamilNadu	Dr. R.Puspha	Sept.2017 to Aug. 2020	Screening of AICRP entries for high biomass and fibre quality for releasing new variety to fit in Cauvery delta Zone. The project may be continued
22.	<b>All India Network Project on Jute and Allied fibers</b>	Dr. R.Puspha	2017-18 to 2019-20	The project may be continued

## II. CROP MANAGEMENT

### A. Action Plan Projects

#### Action plans for 2020 – 2021

No	Title	Centers and Scientists	Period	Remarks
1.	<p>Mechanical weed management studies in cotton under high density planting system</p> <p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>• To evaluate power tiller and power weeder under high density planting system (HDPS) to maximize seed cotton yield</li> <li>• To study effect of mechanised weeding on growth and yield of cotton in comparison with chemical weeding.</li> <li>• To fix optimum time of mechanical weeding in cotton</li> <li>• To analyse the economics of mechanical and chemical weeding in HDPS cotton</li> </ul> <p><b>Treatments:</b></p> <p>T<sub>1</sub> – Control (No weeding)            T<sub>2</sub> – Pre E. herbicide application fb one hoeing on 40- 45 DAS            T<sub>3</sub> – Pre E. herbicide fb POE herbicide application on 20-25 DAS fb one hoeing on 40- 45 DAS            T<sub>4</sub> – Weeding by powerweeder on 20 and 40 DAS            T<sub>5</sub> – PE herbicide application fb weeding by powertiller on 25 and 45 DAS            *Pre Emergence herbicide - Pendimethalin @ 1.0 kg a.i./ha on 2-5 DAS            **Post Emergence herbicide Pyriithiobac-sodium @ 62.5 g a.i./ha</p>	<p><b>Dr. S.Thiruvarassan</b>            Asst. Prof            (Agronomy)            Dept. of Cotton,            TNAU, Coimbatore            (Lead Centre)</p> <p><b>Dr.R.Veeraputhiran</b>            Associate Prof.            (Agron), CRS,            Srivilliputhur</p> <p><b>Dr. S. Subbulakshmi,</b>            Asst. Prof            (Agronomy), ARS,            Kovilpatti</p>	2020 – 2021	Proposal may be submitted through proper channel to obtain URP number

	<p><b>Design:</b> RBD, <b>Replications:</b> 4  <b>Variety/Cultures :</b> CO 17/SVPR 6  <b>Spacing</b> : 90 x 45 cm  <b>Season:</b> <i>Rabi</i></p>			
2.	<p>Multi-tier cropping system to enhance resource utilization, profitability and sustainability of Bt cotton (<i>Gossypium hirsutum</i>) production system</p> <p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>To identify better inter cropping system to enhance resource utilization profitability and sustainability</li> </ul> <p><b>Treatments:</b></p> <p>T<sub>1</sub> – Sole Bt cotton  T<sub>2</sub> – Paired row planting of Bt cotton with two rows of intercrop (A)  T<sub>3</sub> – Paired row planting of Bt cotton with two rows of intercrop (B)  T<sub>4</sub> – Paired row planting of Bt cotton with two rows of intercrop (C)  T<sub>5</sub> – Paired row planting of Bt cotton with one rows (A)+one row (B)  T<sub>6</sub> – Paired row planting of Bt cotton with one rows (B)+one row (C)  T<sub>7</sub> – Paired row planting of Bt cotton with one rows (C)+one row (A)  T<sub>8</sub> – Paired row planting of Bt cotton with one rows (A)+one row (B)+one row (C)  T<sub>9</sub> – Sole hybrid cotton</p> <p><b>Design:</b> RBD, <b>Replications:</b> 3</p> <p><b>Variety/Cultures :</b> CO 17/SVPR 6</p> <p><b>Spacing</b> : 120 x 60 cm</p> <p><b>Season:</b> <i>Rabi</i></p>	<p><b>Dr. S.Thiruvvarassan</b>  Asst. Prof  (Agronomy)  Dept. of Cotton,  TNAU, Coimbatore  (Lead Centre)</p> <p><b>Dr.R.Veeraputhiran</b>  Associate Prof.  (Agron), CRS,  Srivilliputhur</p> <p><b>Dr. S. Subbulakshmi,</b>  Asst. Prof  (Agronomy), ARS,  Kovilpatti</p>	2020 – 2021	Proposal may be submitted through proper channel to obtain URP number

**B. Technologies for Adoption/OFT/Information****B 1. For Adoption : Growth retardant for cotton variety Co 17**

1. Foliar application of Mepiquat chloride @ 100 ppm (Commercial product: one litre/ha) at square formation and boll development stages for higher seed cotton yield and net return in cotton variety Co 17 under high density planting.

**B 2. On Farm Testing (OFT)**

<b>S.No</b>	<b>Project details</b>	<b>Centres and Scientists in-charge</b>	<b>Period</b>
1	<p><b>Nutrient management for cotton under high density planting system (HDPS)</b></p> <p><b>Treatments:</b>            T1 - RDF 100 % (80:40:40 kg NPK/ ha)            T2 - RDF 125 % (100:50:50 kg NPK/ ha)            T3 - STCR based (100 % RDF &amp; 2.5 t/ha target yield)            *Along with the above treatments straight and water soluble fertilizer may be tested</p> <p><b>Variety/Cultures :</b> CO 17</p> <p><b>Spacing :</b> 100 x 10 cm</p> <p><b>Season:</b> <i>Rabi</i></p>	<p><b>Lead centre</b>            Dr. R. Veeraputhiran,            Asst. Professor (Agron)            CRS, Srivilliputtur            Dr. N. Sakhivel            Assoc. Prof. (Agron)            Dept. of Agronomy</p>	June 2020- May 2021
2	<p><b>Labour saving techniques in cotton cultivation</b></p> <p><b>Treatments:</b>            T<sub>1</sub> -Land shaping by machine            T<sub>2</sub>-Pre and post emergence application            T<sub>3</sub> - T<sub>1</sub> + T<sub>2</sub> + Drip fertigation + Boom sprayer /Others sprayers</p> <p><b>Variety/Cultures :</b> CO 17  <b>Spacing :</b> 90 x 45 cm  <b>Season:</b> <i>Rabi</i></p>	<p><b>Lead centre</b>  <b>Dr. R. Veeraputhiran,</b>            Assoc. Prof. (Agron.)            CRS, Srivilliputtur</p> <p><b>Dr. S.Thirumarasan,</b>            Asst. Professor (Agron.)            Dept. of Cotton, TNAU,            Coimbatore</p>	2020- May 2021

### C. Research Projects and remarks

Crop	DCM			NRM		TOTAL
	CENTRE	URP/Core	AICRP	URP	AICRP	
Cotton	Coimbatore	3	1	-	1	5
	Srivilliputtur	1	1	-	-	2
	Veppanthattai	-	-	-	-	-
	Kovilpatti	1	-	-	3	3
Mesta	Aduthurai	-	1	-	-	1

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

Sl. No	Project No. and Title	Scientists in-charge	Duration	Remarks
<b>University Research Projects</b>				
1.	<b>DCM/SVPR/AGR/COT/2016/001</b> Management of plant density and architecture under high density planting system (HDPS) for mechanized cotton production	<b>Dr. R. Veeraputhiran</b> Assistant Professor (Agronomy), CRS, Srivilliputtur	July, 2016 to June, 2019	May be closed and completion report to be submitted
2.	<b>DCM/CBE/AGR/COT/2018/001</b> Nutrient management for cotton under high density planting system(HDPS)	<b>Dr. N. Sakthivel</b> Associate. Professor (Agronomy) Dept. of Agronomy, TNAU, Coimbatore  <b>Dr. J. Balamurugan,</b> Asst. Professor (SS &AC) Department of SS & AC, TNAU, Coimbatore	June 2016 to July 2019	May be closed and completion report to be submitted
3.	<b>DCM/KPT/AGR/COT/2016/001</b> Drought mitigation technology for rainfed cotton	<b>Dr. S. Subbulakshmi,</b> Asst. Prof (Agronomy), ARS, Kovilpatti	October' 2016 to July 2019	May be closed and completion report to be submitted



4.	<b>DCM/ CBE/ CRP/ COT/ 2018/ CP061</b>  Physiological characterization and approaches for yield and quality improvement of TCH 1819 Cotton and evaluation under water deficit condition	<b>Dr. P. Jeyakumar</b> Professor and Head (Crop Physiology)	2019-2020	To be continued and to be completed on 30.09.2020
5.	<b>DCM/CBE/CRP/COT/2018 /CP128</b>  Physiological dissection of defoliation at boll maturity in cotton	<b>Dr. V. Ravichandran,</b> Associate Professor, Department of Crop Physiology, Coimbatore	2019-2020	To be continued and to be completed on 30.09.2020
6.	<b>DCM/CBE/AGR/COT/2018 /CPO57</b>  Nutrient management for transplanted ELS cotton	<b>Dr.K.Vaiyapuri</b> Professor (Agronomy) Dept. of Agronomy Coimbatore	2019-2020	May be closed
7.	Effect of split application of N on yield and quality of cotton	<b>Lead centre</b> Dr. R. Veeraputhiran, Assoc. Prof. (Agron.) CRS, Srivilliputtur Dr. S.Thiruvarassan, Asst. Prof. (Agron.) Dept. of Cotton, TNAU	June 2019-March 2021	New
<b>AICRPs</b>				
1.	<b>AICRP/ PBG/SVR/ COT/024/ AICRP</b> on Cotton	Dr.R.Veeraputhiran Associate Pro. (Agronomy), CRS, Srivilliputhur	April, 2019 to March, 2020	To be continued
2.	<b>AICRP/ PBG/CBE/ COT/023/ AICRP</b> on Cotton	Dr. S.Thiruvarassan sst. Prof (Agronomy) Dept. of Cotton, TNAU, Coimbatore	April 2019 to March 2020	To be continued

3.	<b>AICRP/NRM/CBE/SAC/004</b> Screening of crop genotypes for micronutrient efficiency - Screening of cotton genotypes for magnesium efficiency	<b>Dr. T. Chitdeshwari,</b> Professor (SS&AC)  <b>Dr.D.Jegadeeswari,</b> Assoc. Prof (SS&AC) Dept. of SS& AC Chemistry, NRM,TNAU, Coimbatore	2019 – 2020	May be closed and completion report to be submitted
4.	<b>AICRP for Dryland Agriculture (AICRPDA)</b>  Permanent manurial experiments on cotton under rainfed deep black soils	<b>Dr. V. Sanjivkumar</b> Asst. Professor (SS&AC)  <b>Dr. K. Baskar</b> Professor (SS&AC), ARS, Kovilpatti	2019- 2020	To be Continued
5.	<b>AICRP/DCM/KPT/AGR/004</b>  Integrated plant nutrient supply on nitrogen fertilization in cotton under rainfed alfisols.	<b>Dr. V. Sanjivkumar</b> Asst. Professor (SS&AC)  <b>Dr. K. Baskar</b> Professor (SS&AC), ARS, Kovilpatti	2019 2021	To be Continued
6.	<b>AICRP/DCM/KPT/AGR/004</b>  Satellite experiment on effect of integrated nutrient management (INM) in cotton	<b>Dr. V. Sanjivkumar</b> Asst. Professor (SS&AC)  Dr. K. Baskar Professor (SS&AC), ARS, Kovilpatti	2018- 2021	To be Continued
6.	<b>PROJECT NP (JA) 6.19</b> (modified):  Nutrient management for mesta based cropping system	<b>Dr. M. Raju, .</b> Assoc. Prof. (Agronomy) TRRI, Aduthurai	2018-20	To be Continued

### III. CROP PROTECTION

A. Action Plan Projects				
ACTION PLAN (2020 -2021)				
Action Plan No. 1		Monitoring of Pest and Diseases in cotton		
Theme Leader(s)		<b>Dr. K. Senguttuvan</b> , Assistant Professor (Entomology), Department of Cotton, TNAU, Coimbatore <b>Dr. P.Latha</b> , Assistant Professor (Plant Pathology), Department of Cotton, TNAU, Coimbatore		
S. No	Activity	Name of the scientist(s) and centre	Observations to be made	Deliverables/ expected out come
1.	Survey and monitoring for the incidence of key insect pest and 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)	<b>TNAU, Coimbatore</b> Dr. K. Senguttuvan, Asst. Prof. (Entomology) & Dr. P. Latha, Asst. Prof. (Pathology) Dept. of Cotton,  <b>ACRC, Coimbatore</b> Dr.Kokilavani, Asst. Professor  <b>Cotton Research Station, Srivilliputtur</b> Dr. K. Sasikumar Asst. Prof. (Entomology) & Dr. R. Vimala, Prof. (Pathology) & Head,  <b>AC&amp;RI, Madurai</b> Dr. K. Suresh, Asst. Professor (Entomology),  <b>KVK, Ramanathapuram</b> Dr. J. Ramkumar, Asst. Professor (Entomology)	Correlation and regression analysis of pest and diseases incidence and damage percentage with weather parameters	<ul style="list-style-type: none"> <li>Forecasting and forewarning of pest and disease incidence for making management decisions</li> </ul>

	<p><b>AC&amp;RI, Eachankottai (for Perambalur District)</b> Dr. A. Kalyanasundaram, Assoc. Professor (Entomology)</p> <p><b>HC&amp;RI (W), Trichy</b> Dr. V. R. Saminathan, Assoc. Prof. (Entomology)</p> <p><b>AC&amp;RI, Killikulam</b> Dr. M. Ravi, Asst. Professor (Entomology)</p> <p><b>RRS, Vriddhachlam</b> Dr. Sheeba Jasmine, Asst. Professor (Entomology)</p>		
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<b>Action Plan No. 2</b>		<b>Screening of cotton cultures &amp; Exploring mechanisms against pests and diseases</b>		
<b>Theme Leader(s)</b>		<b>Dr. K. Sasikumar</b> , Assistant Professor (Entomology), CRS, Srivilliputhur (Entomology) <b>Dr. R. Vimala</b> , Professor and Head, CRS, Srivilliputhur (Pathology)		
<b>S. No</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>
1.	<ul style="list-style-type: none"> <li>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.</li> <li>Identification of resistant sources and study of physical and biochemical characters conferring resistance</li> </ul>	<b>TNAU, Coimbatore</b> Dr. K. Senguttuvan Asst. Prof. (Entomology) & Dr. P. Latha Asst. Prof. (Pathology)  <b>CRS, Srivilliputtur</b> Dr. R. Vimala, Professor and Head Dr. K. Sasikumar Asst. Prof. (Entomology)	<ul style="list-style-type: none"> <li>Observations on the incidence / expression of key insect pests and diseases (Leafhopper, bollworms, stem weevil, <i>Alternaria</i> leaf blight, Bacterial leaf blight, Tobacco streak virus and root rot) - 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 pest 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>Semio chemical based management of cotton stem weevil, <i>Pempherulus affinis</i></b>		
<b>Theme Leader</b>		<b>Dr. K. Senguttuvan, Assistant Professor (Entomology), Department of Cotton, TNAU, Coimbatore</b>		
<b>S. No</b>	<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>Observations to be recorded</b>	<b>Deliverables/ expected outcome</b>
1.	Identification of semio chemicals, standardization of trapping methods and evaluation for stem weevil	<b>TNAU, Coimbatore</b> Dr. K. Senguttuvan Asst. Prof. (Entomology)	Volatile characterization  No. of adults oriented towards volatiles through Olfactometer (2020-21)	Development and Standardization of phagostimulant based trapping method for stem weevil

<b>Action Plan No. 4</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>S. No</b>	<b>Action Plan</b>	<b>Name of the scientist(s) and centre</b>	<b>Activity</b>	<b>Deliverables/ expected outcome</b>
1.	Biological management of grey mildew in cotton	<b>Dr. P. Latha</b> Asst. Prof. (Pathology) Department of Cotton, Coimbatore  <b>Dr. R. Vimala,</b> CRS, Srivilliputtur	Isolation of <i>Ampelomyces quisqualis</i> parasitising grey mildew pathogen 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 (Srivilliputtur centre has to be send sample to Coimbatore)	Effective of newer bio-control agent for the disease management

			centre for isolation)	
<b>Action Plan No. 5</b>		<b>Technology capsule for IPDM in cotton</b>		
<b>Theme Leader</b>		<b>Dr. K. Bhuvanewari, Professor (Entomology), Department of Agri. Entomology, TNAU, Coimbatore Dr. P. Latha, Assistant Professor (Pathology), Dept. of Cotton, TNAU, Coimbatore</b>		
<b>S. No</b>	<b>Treatment</b>	<b>Name of the scientist(s) and centre</b>	<b>Observations to be recorded</b>	<b>Deliverables/ expected outcome</b>
1.	<p><b>T1 - IPDM capsule</b></p> <ol style="list-style-type: none"> <li>Seed treatment (Imidacloprid 600 FS @ 10 g/1kg) &amp; <i>Bacillus subtilis</i> (10g/kg)</li> <li>Installation of yellow sticky trap 12/ha at 20 days after sowing &amp; pheromone traps 12/ha at 40 DAS</li> <li>Need based application of Profenophos 50% EC (5 ml/lit.) on 25 DAS (Stem weevil)</li> </ol> <p>Nimbecidine 0.03% EC – 2.5 lit. / ha) 30 DAS (Sucking pests)</p> <p>Trifloxystrobin + tebuconazole @ 0.6 g/lit. (ALB)</p> <p>Field release of <i>T. chilonis</i> &amp; <i>T. bactrae</i> @ 1.5 lakh/ha at weekly intervals from 45 DAS @ 3 times</p> <p>Based on ETL at vegetative stage (sucking pests : Flonicamid 50% WG 150g/ha, Bollworms: Profenophos 50% EC 2 lit./ha)</p> <p><b>T2– Farmer’s practice</b> (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 + Profenophos 50% EC 2 lit./ha and tebuconazole @ 0.6 g/lit)</p>	<p><b>Cotton Research Station, Srivilliputtur</b> Dr. K. Sasikumar Asst. Prof. (Entomology) Dr. R. Vimala, Professor and Head, CRS, Srivilliputtur</p> <p><b>TNAU, Coimbatore</b> Dr. K. Bhuvanewari Professor (Entomology) <b>Dr. P. Latha</b> Asst. Prof. (Pathology) Dept. of Cotton, Coimbatore</p> <p><b>ADAC&amp;RI, Trichy</b> Dr. Sheeba Joyce Rosleen Asst. Professor (Entomology),</p> <p><b>AC&amp;RI, Killikulam</b> Dr. G Ravi Professor (Entomology)</p>	<p>Sucking pests population (leaf hopper, thrips, whitefly, aphids and mealy bug), per cent crop damage, Natural enemies’ population &amp; Yield</p> <p>Disease incidence, disease severity by PDI and yield</p> <p><b>Variety : CO17</b></p>	<p>Development of IPDM module for cotton pest and diseases under HDPS</p>

	<b>T3 - Untreated check</b>	<b>AC&amp;RI, Eachangkottai</b> Dr. A. Kalyanasundaram Assoc. Professor (Enomology)		
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<b>Action Plan No. 6</b>		<b>Management of cotton mealy bug in rainfed and irrigated cotton ecosystem</b>		
<b>Theme Leader</b>		<b>Dr. R. P. Soundararajan</b> Associate Professor (Entomology), HC & RI (W), Trichy		
<b>S. No</b>	<b>Treatment</b>	<b>Name of the scientist(s) and centre</b>	<b>Observation to be recorded</b>	<b>Deliverables/ expected out come</b>
1.	<p><b>T1 - IPM capsule for mealybug</b></p> <ol style="list-style-type: none"> <li>1. Deep ploughing to destroy mealybug eggs in left over crop residues</li> <li>2. Field sanitation throughout the cropping period (Remove alternate host plants like congress grass, guputna, bhakhra).</li> <li>3. Need based application of sulfoxaflor 24 SC 150 ml/ha followed by flocanimid 150g/ha or thiamethoxam 25 WG @ 250g/ha or could be sprayed in rotation in consecutive sprays by drenching or Use of soap oil or fish oil resin soap twice at an interval of 15–20 days.</li> <li>4. Release of <i>Chrysoperla carnea</i> at 1,00,000 / ha at 6th, 13th and 14<sup>th</sup> week after sowing.</li> </ol> <p><b>T2 – Farmer’s practice</b> (Fipronil 5% SC@ 2000ml/ha on 25 DAS + Imidacloprid 30.5 SC@ 75g/ha on 40 DAS +</p>	<p><b>Cotton Research Station, Srivilliputtur (irrigated) &amp; ARS, Kovilpatti (rainfed)</b> Dr. K. Sasikumar Asst. Prof. (Entomology)</p> <p><b>TNAU, Coimbatore (irrigated)</b> Dr. K. Senguttuvan Asst. Prof. (Entomology)</p> <p><b>HC &amp; RI (W), Trichy Veppanthattai (rainfed)</b> Dr. R. P. Soundararajan Associate Professor (Entomology)</p> <p><b>KVK, Ramanathapuram</b></p>	Mealy bug damage in per cent, No. of Natural enemies (name)/plant, Yield & BC ratio	Development of IPM capsule for cotton mealy bug under rainfed and irrigated cotton ecosystem.



	Thiamethoxam 25 % WG @ 100g/ha on 55 DAS and Profenophos 50% EC 2 lit./ha)  <b>T3 - Untreated check</b>	Dr. J. Ramkumar Asst. Professor (Ento.)  <b>AC&amp;RI, Killikulam</b> Dr. S. Allwin Asst. Professor (Ento.)		
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<b>Action Plan No. 7</b>		<b>Management of pink bollworm <i>Pectinophora gossypiella</i> (Saunders) in <i>Bt</i> and Non-<i>Bt</i> cotton</b>		
<b>Theme Leader</b>		<b>Dr. T. Senguttuvan , Professor (Entomology), AC&amp;RI, Eachangkottai</b>		
<b>S. No</b>	<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>Observation to be recorded</b>	<b>Deliverables/ expected outcome</b>
1.	<b>T1 - IPM capsule for pinkbollworm</b> 1. Timely sowing (Mid of August) 2. Installation of pheromone traps 12/ha at 45 DAS 3. Neem based application of Nimbecidine 0.03% EC – 2.5 litres/ha at 30 DAS and profenophos 50 EC 2000 ml/ha 4. Release of <i>Trichogrammatoidea bactrae</i> @ 1.5 lakh/ ha at weakly intervals from 45 DAS @ 3 times 5. Timely harvest of crop (Last week of December) and remove the crop residues and cotton stalks immediately after harvest. Crop rotation	<b>AC&amp;RI, Eachankottai</b> Dr. T. Senguttuvan Professor (Entomology)  <b>CRS, Srivilliputtur &amp; ARS, Kovilpatti</b> Dr. K. Sasikumar Asst. Prof. (Entomology)  <b>TNAU, Coimbatore</b> Dr. M. Murugan Professor (Entomology)  <b>HC &amp; RI (W), Trichy</b>	Rosette flower, Square & boll damage in per cent, Open boll or locule damage in per cent after harvest, No. of Natural enemies (name)/plant, Yield & B:C ratio  <i>Bt</i> : RCH 659 Non- <i>Bt</i> : CO17	Development of IPM capsule for pink bollworm in <i>Bt</i> and Non- <i>Bt</i> cotton.

	<p><b>T2 – Farmer’s practice</b> (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)</p> <p><b>T3 - Untreated check</b></p>	<p><b>Dr.M. Chandrasekar</b> Asst. Professor (Entomology)</p> <p><b>Veppanthattai</b> Dr. V. Radhakrishnan Asst. Professor (Entomology) AC&amp;RI, Vazhavachanur</p>		
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**B. Technologies for adoption/OFT/Information****For OFT****OFT : 1 Management of sucking pests of cotton under high density planting system**

T1	Seed treatment with imidacloprid 70 % WS @ 7ml/ 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
T2	Seed treatment with <i>Beaveria bassisana</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
T3	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)
T4	Untreated check

**Observations to be recorded: Population** of sucking pests (leaf hopper, thrips, whitefly), damage percentage (aphids and mealy bug), Natural enemies, Yield

**Theme Leader :**

**Dr. K. Sasikumar**, Assistant Professor (Entomology), **Srivilliputhur**

**Centres :**

**Srivilliputhur:** **Dr. K. Sasikumar**, Assistant Professor (Entomology),

**Coimbatore :** Dr. K. Senguttuvan, AP (Ento.), Dept. of Cotton, TNAU, Coimbatore

**Perambalur:** Dr.V. Baskaran, Assistant Professor, IOA, Kumulur

**Erode :**Dr. B. Vinoth Kumar, AP(Ento), TNAU, Coimbatore

**Thiruvvarur :** Dr. Raja Ramesh, AP (Ento), KVK, Needamangalam, Thiruvvarur

**OFT :2 Studies on the impact of ginger, garlic and green chilli (3Gs) extract for the management of insect pests in organic cotton**

**Treatment details**

T<sub>1</sub>–Need based application of 3 G’s extract (Ginger extract 5 % + Garlic extract 5 % + Green chilli extract 5% extracted with Cow urine)

T<sub>2</sub> - Need based application of Neem Seed Kernel Extract 5 % (standard check)

T<sub>3</sub> - Untreated check (water spray)

**Observations to be recorded** :Population of sucking pests (leaf hopper, thrips, whitefly, aphids and mealy bug), bollworms and damage percentage due to sucking pests and boll worms, Natural enemies, Yield and BCR

**Theme Leader :**

**Dr. K. Ganesan**, Asst. Prof. (Agrl. Entomology), Department of Sustainable Organic Agriculture, TNAU, Coimbatore

**Centres :**

**Coimbatore :**

**Dr. K. Ganesan**, Asst. Prof. (Agrl. Entomology), Dept. of Sust. Org. Agriculture, TNAU, CBE

**Srivilliputhur** : Dr. K. Sasikumar, AP (Ento.), Dept. of Cotton, TNAU, Coimbatore

**Trichy** : D. Sheeba Joyce Rosleen AP (Ento.), AC&RC Trichy

**Erode** : Dr. K. Senguttuvan, AP (Ento), TNAU, Coimbatore

**OFT : 3 Management of Cotton diseases**

<b>Treatment No.</b>	<b>Treatment details</b>
T <sub>2</sub>	Seed treatment with <i>Bacillus subtilis</i> @10g/kg + foliar spray 0.5% on 30 and 45 days after sowing
T <sub>3</sub>	Untreated control

**Variety** : RCH 659

**No. of replications:** 7

**Centres** : 1. Dr. R. Vimala, Professor and Head, ARS, Srivilliputtur.

2. Dr.P.Latha, Asst. Prof. (Pathology) Department of Cotton, TNAU, Coimbatore.

3. Dr.T. Saravanan, Assistant Professor (Pl. Pathology), ADAC&RI, Trichy (to be conducted at Veppanthattai)

**Observations to be recorded:**

1. Per cent disease incidence and Per cent disease index for all diseases
2. Seed Cotton Yield
3. CB ratio

**For information****Entomology**

1. Spinosad 45 % SC @ 250 ml/ha was effective against pink bollworm in both summer and winter cotton crops in terms of the highest seed cotton yield and the lowest per cent boll and locule damage.
2. Six releases of *Trichogrammatoidea bactrae* @ 2cc/ac + pheromone traps (12/ha) resulted in minimum pink bollworm damage and was similar to insecticide (thiodicarb 75 WP 1kg/ha) treatment with high BC ratio of 1: 2.41.

**Pathology**

1. Out of 71 cotton entries evaluated, 7 and 22 entries were found to be resistant and moderately resistant against ALB, BLB and root rot diseases in cotton respectively.
2. The lowest incidence of *Myrothecium* leaf spot was observed with seed treatment of *Bacillus subtilis* (10g/kg) + foliar spray (0.5%) on 30 and 45 days after sowing when compared to control.
3. Copper oxy chloride (COC) 50 WP @ 2.25g/lit. of water was found to reduce incidence of sooty mould in cotton sowing when compared to control.

**C. Research Projects and remarks**

**Research Projects**

Crop	Centre		URP	Core	AICRP	Total
Cotton	Coimbatore	Entomology	2	1	1	4
		Pathology	1	0	1	2
	Srivilliputtur	Entomology	1	1	1	3
		Pathology	1	0	0	1
	Madurai	Entomology	1	0	0	1

Remarks of the Research Projects				
1.Agrl. Entomology				
S. No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
<b>URP</b>				
1	<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> Assistant Professor (Entomology)	September 2019 to March 2021	Project may be continued
2	<b>CPPS/SVR/ENT/COT/2016/001</b> Population dynamics and management of pink bollworm <i>Pectinophora gossypiella</i> (Saunders) in upland cotton	<b>Dr. K. Sasikumar,</b> Assistant Professor (Entomology)	August 2018 to July 2020	Completion report may be sent by the end of August, 2020. The results may be published in peer reviewed journals and a copy may be sent to the Director, CPPS for record.

<b>3.</b>	<b>CPPS/CBE/ENT/COT/2018/001</b> Studies on the impact of ginger, garlic and green chilli extract for the management of insect pests in organic cotton	<b>Dr. K. Ganesan,</b> Assistant Professor (Entomology)	August 2018 to July 2020	Completion report may be sent by the end of August, 2020. The results may be published in peer reviewed journals and a copy may be sent to the Director, CPPS for record.
<b>4.</b>	<b>CPPS/MDU/ENT/COT/2016/</b> Development of eco friendly management strategies for the mealybug in rainfed cotton	<b>Dr. G. Srinivasan,</b> Associate Professor (Agrl. Entomology)	April 2016 - March 2021	The project may be continued.
<b>CORE PROJECTS – Phase II</b>				
<b>5.</b>	<b>CPPS/SVP/ENT/COT/2018/CP108</b> Management package for sucking pest complex of cotton under high density planting system	<b>Dr. K. Sasikumar,</b> Assistant Professor (Entomology)	Oct.2018 to Oct. 2019	Completion report should be submitted by the end of June, 2020. The results may be published in peer reviewed journals and a copy may be sent to the Director, CPPS for record.
<b>5.</b>	<b>CPPS / CBE / ENT / COT / 2018 / CP072</b> Semio chemical based Pitfall trap for the Management of Cotton Stem weevil, <i>Pempherulus affinis</i>	<b>Dr. N. Muthukrishnan,</b> Professor (Entomology)	October 2018 to March 2020	The project leader may be changed and to be completed on 30.09.2020

<b>AICRP</b>				
<b>8.</b>	<b>AICRP/ PBG/ CBE/ COT/ 023</b> All India Coordinated Research Project on Cotton	<b>Dr. K. Senguttuvan,</b> Assistant Professor (Entomology)	2019 - 2020	The project may be continued.
<b>9.</b>	<b>AICRP/ PBG/ SVR/ COT/ 024</b> All India Coordinated Research Project on Cotton	<b>Dr. K. Sasikumar,</b> Assistant Professor (Entomology)	2019 - 2020	The project may be continued.

<b>2. Plant Pathology</b>				
<b>S. No.</b>	<b>Project Number and Title</b>	<b>Name and Designation of the Project leader</b>	<b>Duration</b>	<b>Remarks</b>
<b>URP</b>				
<b>1.</b>	<b>CPPS/SVP/PAT/COT/2019/001</b> Evaluation of cotton breeding materials and accessions for resistance to major foliar and root diseases	<b>Dr. R. Vimala,</b> Professor and Head, CRS, Srivilliputtur	From August 2019 to July 2022	<ul style="list-style-type: none"> <li>• In addition to sick plot screening for root rot the artificial screening may be carried out for other foliar diseases.</li> <li>• The mechanism of resistance may also to be studied.</li> <li>• The project may be continued.</li> </ul>
<b>2.</b>	<b>CPPS/CBE/PAT/COT/2019/001</b> Exploitation of endophytic bacteria for the management of bacterial blight of cotton	<b>Dr. P. Latha,</b> Assistant Professor (Pathology)	From July 2019 to June 2022	<ul style="list-style-type: none"> <li>• More endopytes may be isolated.</li> <li>• The isolated endophytes have to be characterized and identified at species level with molecular tool.</li> <li>• Come out with a technology to manage the disease.</li> <li>• The project may be continued.</li> </ul>



<b>AICRP</b>				
<b>3.</b>	<b>AICRP/ PBG/ CBE/ COT/ 023</b> All India Coordinated Research Project on Cotton	<b>Dr. P. Latha,</b> Assistant Professor (Pathology)	2020 - 2021	The project may be continued as per the technical programme of AICRP.

## **Specific recommendations of the Director, CPPS**

- All the scientists are instructed to monitor the insect pests, diseases and nematodes 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 noticed report to the Director (CPPS) immediately.
- Monthly pest and disease surveillance report should be submitted to the Professor and Head, Department of Agricultural Entomology, CPPS on or before 25<sup>th</sup> of every month without fail in the Google Forms for consolidation.
- The dates given for sending the closure proposal / deletion proposal should be strictly adhered.
- All the Plant Protection scientists working in the stations need to have at least three URPs and if working in AICRP schemes/teaching campuses need to have at least one URP.
- Any new URP proposals related to plant protection is to be presented before the RPAC convened by the Director (CPPS) before getting final approval.
- Technology capsule for Integrated Pest and Diseases Management (IPDM) in cotton should be developed.
- Pink bollworm has become apparent as a threat to cotton cultivation in south and central cotton growing zones of India where the pest has developed resistance to Cry1Ac and Cry2Ab expressing cotton, also developing resistance to insecticides and infesting late season cotton. Suitable management module should be developed

## **Remarks of the Vice Chancellor**

1. Research on exploitation of heterosis in cotton has to be intensified (**Action :** Department of cotton, Coimbatore, CRS, Srivilliputhur, ARS, Kovilpatti & CRS, Veppanthattai )
2. Identifying the naked seeds in cotton for the purpose of cattle feed (**Action :** Department of Cotton, Coimbatore )
3. Strengthen the research on introgression of genes from wild species and development of pre-breeding materials (**Action :** Department of Cotton)
4. Action may be taken for improvement of *G.barbadense* (**Action :** Department of Cotton, Coimbatore& CRS, Srivilliputhur)
5. Collection of tree cotton species (*Cochlospermum gossypium*) in Western and Eastern Ghats and can be used as pre-breeding materials (**Action :** Department of Cotton, Coimbatore)
6. Nutrient uptake pattern in cotton may be studied (**Action:** Dept. of Soil science and Agricultural chemistry).
7. In organic cotton trial, the entire nutrient requirement of the crop must be supplemented in the form of organic sources. Also, include the package of practices recommended by DSOA as one of the treatments for comparison. (**Action:** Dept of Cotton, TNAU Coimbatore, CRS, Srivilliputhur, DSOA and Dept. of Microbiology).
8. Suitable microbial inoculants for imparting drought tolerance in cotton may be recommended (**Action:** Dept. of Microbiology).
9. Studies to be taken up to compare All 19 fertilizer with other water soluble fertilizers for drip fertigation. eg. Urea / DAP/SSP/ Urea phosphate/ MOP etc. (**Action:** Dept. of Soil Science and Agricultural Chemistry).
10. Suitable modification has to be done in the recommendation of Mepiquat chloride + Sodium chloride in cotton for canopy management and defoliation (**Action:** Dept. of Agronomy and Dept. of Crop Physiology).

11. "Best Management Practices" recommended for cotton may be integrated and come up with capsule of technologies (**Action:** Dept. of cotton and CRS, Srivilliputhur).
12. Study on Rice fallow Cotton. (**Action:** Agronomist of TRRI, Aduthurai).
13. TNAU Cotton Plus developed by Department of Crop Physiology is an exclusive formulation to improve the yield, quality and also abiotic stress tolerance by influencing nutrition and hormonal status of the crops. It is given as general recommendation and included in Crop Production Guide. On the other hand nutrient mixtures/formulations proposed from the Department of Soil Science & Agricultural Chemistry, TNAU is pertinent for nutrient deficiencies to correct specific problems. A consensus is to be arrived (**Action:** Director of Research; Director, CM and Director, NRM)

### **Remarks of the Director of Research**

1. Inter-specific hybridization with *Gossypium arboreum* to confer resistance against pests and diseases
2. Initiate research on Bt varieties / hybrids to develop genotypes resistant to boll worms
3. Optimization of Drip fertigation and transplanting techniques to augment production
4. Development of multi-micronutrient formulations to overcome deficiencies
5. Holistic technology capsule for pests and disease management in Cotton
6. Artificial Intelligence for early detection / forewarning of whiteflies in cotton
7. Study on complete mechanization in cotton

**DIRECTOR OF RESEARCH**

## **IV. 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. T. Raguchander (DSW)
4. Dr. S. Mohankumar, Director (CPMB&B)
5. Dr. V. Geethalakshmi, Director(CM)
6. Dr. R. Santhi, Director(DNRM)
7. Dr. S. Sundarswaran, Director(Seeds)
8. Dr. S. Panneerselvam, Director (WTC)
9. Dr. K. Prabakar, Director(CPPS)
10. Dr. K.R. Ashok, Director (CARDS)
11. Dr. B. Shridhar, Dean (AEC&RI), CBE

#### **HODs**

12. Dr.S.Rajeswari, Dept. of cotton
13. Dr. N. Muthukrishnan, Dept. of Entomology
14. Dr. G. Karthikeyan, Dept.of Plant Pathology
15. Dr. M. Raveendran, Dept. of Biotechnology
16. Dr. C. R.Chinnamuthu, Dept. of Agronomy
17. Dr. P.Malarvizhi, Dept. of SS&AC
18. Dr.V.Gomathi, Dept.of Microbiology
19. Dr.P.Jeyakumar, Dept. of Crop Physiology
20. Dr.SP.Ramanathan, ACRC

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

21. Dr.M.Kumar, Professor (PBG)
22. Dr.L.Mahalingam, Professor (PBG)
23. Dr.M.Kannan, Professor (Hort.)
24. Dr.V.K. Duraisamy, Professor (Agronomy)
25. Dr.M. Mohamed Yassin, Professor (Agronomy)
26. Dr. D. Jegadeeswari, Assoc.Professor (SS&AC)

27. Dr. R. Vishnupriya, Assoc.Professor
28. Dr. S. Jeyarani, Assoc.Professor
29. Dr. G. Srinivasan, Assoc.Professor
30. Dr. R. P. Soundararajan, Assoc.Professor
31. Dr.N.Premalatha, Asst.Professor (PBG)
32. Dr.K.Senguttuvan, Asst.Professor (Entomology)
33. Dr.P.Latha, Asst.Professor (Pl.Pathology)
34. Dr.Thiruvvarasan, Asst.Professor (Agronomy)
35. Dr. P. Renukadevi, Asst.Professor
36. Dr. P. T. Sharavanan, Asst.Professor
37. Dr. K. Senguttuvan, Asst.Professor
38. Dr.K.Sasikumar, Asst.Prof.
39. Dr. K. Ganesan, Asst.Prof.

**List of scientists attended the Cotton Scientist's Meet on 27.05.2020 through video conference**

<b>S.No.</b>	<b>Name &amp; Designation</b>	<b>e-mail id</b>	<b>Phone No.</b>
1.	Dr.S.Sivakumar, Prof. & Head, CRS, Veppanthattai	sivakumartnau@yahoo.com arsvpt@tnau.ac.in,	9443567327
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