

PROCEEDINGS OF THE 25th SCIENTISTS' MEET HELD ON 12.5.2017

The 25th Scientists' Meet on Sugarcane was held on 11th and 12th May, 2017 at TNAU, Coimbatore. The discipline wise sessions on crop improvement, crop management and crop protection were held under the chairmanship of the Director of Research along with the concerned Technical Director in charge on the first day of the meet. The Director of Research, while addressing the joint session of above groups briefed the objective of conducting annual review of the university research projects and the need for the reorientation of the same according to the need of the different stakeholders of the crop. He highlighted that, the action plan for the next three years in each discipline should be drawn to address the issues of the farmers and other stakeholders and suitable research projects are to be formulated involving scientists from varied disciplines at different centers. Popularization of high yielding varieties, critical technologies identified by the university for different crops also to be taken up with the financial assistance from the Government of India and the state Planning commission.

The plenary session was held on 12th May, 2017 under the Chairmanship of the Vice-Chancellor, TNAU, Coimbatore. The Director of Research welcomed the participants. The highlights of the research achievements and action taken on the recommendations of the previous meet in the research areas discipline of crop improvement, crop management and crop protection were presented by the respective lead scientists. The action plan for the year 2017-2020, with respect to the above three research areas were also presented by the lead scientists of CPBG, CMS and CPPS respectively. The Revered Vice-Chancellor, in his remarks offered suggestions and improvement in the action plan and technical programmes drawn for the year 2017-2020.

At the end, the Director of Research, TNAU, Coimbatore proposed the vote of thanks. The Vice Chancellor, TNAU, Coimbatore, offered the following suggestions for follow up by the three Sugarcane Research Stations working on Sugarcane.

Observations made by the Vice-Chancellor during the presentation were

1. Calcium and sugar content in promising chewing canes should be analyzed.
2. Data should be collected and documented on jaggery production area, sales centers, quality and market potential aspects.
3. Possibility of bottling sugarcane juice with minimum sucrose content of 6 % should be exploited.
4. Packages for organic method of cultivation for sugarcane should be developed.

Proceedings of the 25th Sugarcane Scientists' Meet are in the following order

1. Staff Pattern
2. Remarks on the individual University Research Projects
3. Decisions made on entries for Varietal release/ART/MLT evaluated by the breeders and OFTs from Crop Management and Crop Protection Scientists.
4. Action plan for 2017-2020.

1. Staff pattern

Station	Designation	Discipline								Total
		PBG	AGR	AGM	PHY	SST	ENT	PAT	NEM	
Cuddalore	Professor	-	1+1 (AICRP)	-	-	-	1	1	-	10 (7+3)
	Asst.Professor	1 (AICRP)	1	1	1	-	-	1 (AICRP)	1	
Sirugamani	Professor	-	1	-	-	-	-	-	-	4
	Asst.Professor	1	1	-	-	-	1	-	-	
Melalathur	Professor	-	-	-	-	1	1	-	-	3
	Asst.Professor	1	-	-	-	-	-	-	-	
	Total	3	5	1	1	1	3	2	1	17

Among the 17 scientists, 14 are working in Non-Plan Main and three are under ICAR AICRP (Breeder, Agronomist and Pathologist-one in each) are working under AICRP in sugarcane at SRS, Cuddalore. Among the 14 Non Plan Main Scientists, 3 are Professors and one Professor working in AICRP as Professor and Head.

2. Remarks on the individual University Research Projects

Crop Improvement

S.No	Project Number & Title	Remarks
1.	AICRP/PBG /CUD/SUG /025 Dr.S.Ganapathy , Asst. Professor (Plant Breeding) AICRP on Sugarcane 1. Initial Varietal Trail (Early) 2. Advanced Varietal Trail (Early) Plant I 3. Advanced Varietal Trail (Early) Plant II 4. Advanced Varietal Trail (Early) Ratoon 5. Initial Varietal Trail (Mid-late) 6. Advanced Varietal Trail (Mid-late) Plant I 7. Advanced Varietal Trail (Mid-late) Plant II	To be continued
2.	CPBG/SGM/PBG/SUG/2014/001 Dr. M. Shanmuganathan , Asst. Professor (Plant Breeding) Evolving mid-late maturing sugarcane varieties with high yield, quality and in-built resistance for red rot disease to cater the needs of Cauvery delta zone.	To be continued
3.	CPBG/SGM/PBG/SUG/2014/002 Dr.M.Shanmuganathan , Asst. Professor (Plant Breeding) Evolving sugarcane varieties suitable for early season with high yield, quality coupled with resistance for red rot disease.	To be continued
4.	CPBG/SGM/PBG/SUG/2014/003 Dr.M.Shanmuganathan , Asst. Professor (Plant Breeding)	To be continued

	Hybridization, fluff study, individual seedling selection and early stage selection in sugarcane (<i>Saccharum</i> spp. hybrid)	
5.	CPBG/MLT/PBG/SUG/2014/ 001 Dr. N. A. Saravanan , Asst. Professor (Plant Breeding) Hybridization and selection of sugarcane clones with high yield and quality for early and mid late season.	The results obtained may be consolidated and closure proposal should be submitted.
6.	CPBG/MLT/PBG/SUG/2014/ 002 Dr. N. A. Saravanan , Asst. Professor (Plant Breeding) Evolving high yielding and high quality sugarcane clones with red rot resistance for early season.	To be continued
7.	CPBG/MLT/PBG/SUG/2014/ 003 Dr. N. A. Saravanan , Asst. Professor (Plant Breeding) Evolving high yielding and high quality sugarcane clones with red rot resistance for mid late season.	To be continued

Decisions made on entries for Varietal release/ART/MLT evaluated by the breeders and OFTs from Crop Management and Crop Protection Scientists

A. Crop Improvement

I. Culture Proposed for National release for East Coast Zone (AICRP):

Nil

II. Cultures identified and recommended for release (state):

Culture Name : 05 G 019
Centre : SRS, Melalathur
Parentage : HR 83-144 X CoH 119
Season : Early
Cane Yield (t/ha) : 131.10 (32.79% increase over Co 86032)
CCS (%) : 13.04
Sugar Yield (t/ha) : 17.09

Special features

- Suitable for Jaggery production
- Suitable for problem soil
- Moderately resistant to red rot

Scientist In-charge: Dr. N.A. Saravanan, Asst.Prof. (Plant Breeding), SRS, Melalathur

III. Cultures identified for conducting ART

Sl. No.	clones	Maturity Group	Remarks	Proposed centre
	Early			
1.	C 29 090	Early	High yield	Cuddalore
2.	C 29 229	Early	High yield	Cuddalore
3.	Si 08 05	Early	High yield	Sirugamani
4.	G 07 017	Early	High yield	Melalathur
5.	Co 08 020	Early	High yield	Coimbatore
	Standards			
6.	CoC (Sc) 24	Early		
7.	TNAU Si (Sc) 7	Early		
	Midlate			
1.	C 29 442	Mid late	High Sugar	Cuddalore
2.	Si 08 06	Mid late	High yield	Sirugamani
3.	G 07 023	Mid late	High yield	Melalathur
4.	Co 08 009	Mid late	High yield	Coimbatore
5.	Co 08 016	Mid late	High yield	Coimbatore
	Standards			
	Co 86032	Mid late		
	TNAU Si (Sc) 8	Mid late		

Traits to be observed:

1. No. of tillers ('000/ha)
2. Number of Millable Cane ('000/ha)
3. Stalk length (cm)
4. Cane diameter (cm)
5. CCS (%)
6. CCS yield (t/ha)
7. Cane yield (t/ ha)

Distribution of Trials at the following locations

1. SRS, Cuddalore - No. of Locations / Sugar Mills – 4.

1. M/s E.I.D. Parry India Pvt. Ltd., Sugar mill, Nellikuppam,
2. M/s Rajshree Sugar mill Unit- 2, Mundiyampakkam,
3. M/s MRK Co-operative Sugar mill, Sethiathope &
4. M/s Cheyyar Co-operative Sugar mill, Cheyyar & Farmers field.

2. SRS, Sirugamani - No. of Locations / Sugar Mills – 5

1. M/s E.I.D. Parry India Pvt. Ltd., Sugar mill, Pettavathalai
2. M/s E.I.D. Parry India Pvt. Ltd., Sugar mill, Pugalur
3. M/s The Salem Co-operative Sugar Mill, Mohanur
4. M/s Thiru Arroran Sugars, Kattur
5. M/s V. V. Sugars, Perambalur

3. SRS, Melalathur - No. of Locations / Sugar mills – 5

1. M/s Ambur Co-operative mill, Vadapudupattu – 2- locations
2. M/s Vellore Co-operative mill, Ammundi
3. M/s Thirupathur Co-operative Sugar mills, Kethandapatti
4. M/s Subramaniya Siva Co-operative Sugar mills, Harur
5. M/s Dharmapuri District Co-operative Sugar mills, Palacode

4. Sugarcane Breeding Institute, Coimbatore - No. of Locations / Sugar Mills – 4

1. M/s Bannari Amman sugars, Aluthukombai, Sathayamangalam
2. M/s Sakthi sugars, Appakoodal, Erode
3. M/s Ponni Sugars, Pallipalayam, Erode
4. M/s Amaravathi Co-operative sugar mill, Udumalaipettai

Scientists in-charge:

- Dr. S. Ganapathy, Asst. Professor (Breeding), SRS, Cuddalore
 Dr. M. Shanmuganathan, Asst. Professor (Breeding), SRS, Sirugamani
 Dr. N. A. Saravanan, Asst. Professor (Breeding), SRS, Melalathur

IV. Cultures Proposed For Testing Under Multilocation Trial

New Clones identified for conducting MLT in 2017-18

Sl. No.	Clones	Maturity Group	Remarks	Proposed centre
	Early			
1.	C 32 011	Early	High yield	Cuddalore
2.	C 31 095	Early	High yield	Cuddalore
3.	Si 11 417	Early	High yield	Sirugamani
4.	Si 11 633	Early	High yield	Sirugamani
5.	G 07 038	Early	High yield	Melalathur
6.	G 08 028	Early	High yield	Melalathur
	Standards			
7.	CoC (Sc) 24			
8	TNAU Si (Sc) 7			
	Midlate			
1.	C 30 040	Midlate	High yield	Cuddalore
2.	Si 11 483	Midlate	High yield	Sirugamani
3.	Si 11 620	Midlate	High yield	Sirugamani
4.	G 07 039	Midlate	High yield	Melalathur
5.	G 07 028	Midlate	High yield	Melalathur
	Standards			
6.	Co 86032			
7.	TNAU Si (Sc) 8			

Traits to be observed

1. Number of tillers ('000/ha)
2. Number of Millable Cane ('000/ha)
3. Stalk length (cm)

4. Cane diameter (cm)
5. CCS (%)
6. CCS yield (t/ha)
7. Cane yield (t/ ha)

Locations:

1. SRS, Cuddalore
2. SRS, Sirugamani
3. SRS, Melalathur
4. AC & RI, Madurai (New centre identified)
5. ARS, Bhavanisagar (New centre identified)

Scientists in-charge:

Dr. S. Ganapathy, Asst. Professor (Breeding), SRS, Cuddalore
 Dr. M. Shanmuganathan, Asst. Professor (Breeding), SRS, Sirugamani
 Dr. N. A. Saravanan, Asst. Professor (Breeding), SRS, Melalathur

V. Clones proposed for AICRP (S) – ZVT - 2017-18 – (SRS, Cuddalore)

Category	Clone	Parentage	Cane yield (t/ha)	Reaction to red rot
Early	C 32 013	Co 85002 x ISH 229	139.25	R
	C 32 021	Co 85002 x Co 775	137.50	MR
Mid-late	C 31 184	Co 86032 x Co 86249	138.70	MR
	C 32 012	Co 85002 x ISH 229	140.50	MR

CROP IMPROVEMENT**Action plan for 2017-2020 on the identified themes**

Theme No. 1		Evolving high sugar varieties				
Theme Leader		Dr. S. Ganapathy, Assistant Professor (Plant Breeding), SRS, Cuddalore				
Project		1. CPBG/CDL/PBG/SUG/2017/New 2. CPBG/SGM/PBG/SUG/2014/002 3. CPBGI/MLT/PBG/SUG/2014/ 002				
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Year 2019-20	Deliverables / expected out come
1.	Evolving high sugar varieties with red rot resistance for Early and Mid-late seasons.	Dr. S. Ganapathy, Assistant Professor (Plant Breeding), SRS, Cuddalore	Evolution of promising culture for high sugar with red rot resistance			Release of sugarcane variety for high sugar content with red rot resistance could be achieved.
2.	Evolving high yielding, high quality sugarcane varieties suitable for water logged condition.	Dr. M. Shanmuganathan, Assistant Professor (Plant Breeding), SRS, Sirugamani	Evolution of promising culture for high sugar and water logged condition			Release of high yielding, high quality sugarcane varieties for water logged condition could be evolved.
3.	Evolving high yielding, high quality sugarcane varieties suitable for jaggery production.	Dr. N. A. Saravanan, Assistant Professor (Plant Breeding), SRS, Melalathur	Evolution of promising culture for high sugar and jaggery production.			Release of high yielding, high quality sugarcane varieties for jaggery production.

Theme No. 2		Evaluation and identification of chewing cane variety				
Theme Leader		Dr. M. Shanmuganathan, Assistant Professor (Plant Breeding), SRS, Sirugamani				
Project		CPBG/SGM/PBG/SUG/2014/001				
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Year 2019-20	Deliverables / expected out come
1.	Evaluation and identification of chewing cane varieties with high yield and long inter-nodal length with acceptability.	Dr. M. Shanmuganathan, Assist. Professor (Plant Breeding), SRS, Sirugamani	Collection and Evaluation of different chewing cane genotypes	Evaluation of chewing cane genotypes for higher yield	Seed increase of identified chewing cane culture for variety release.	Release of Chewing cane variety with high yield with high inter-nodal length could be achieved

Theme No. 3		Evolving sugarcane varieties suitable for abiotic stresses				
Theme Leader		Dr. N. A. Saravanan, Assistant Professor (Plant Breeding), SRS, Melalathur.				
Project		CPBG/MLT/PBG/SUG/2014/ 001				
S. No.	Activity	Name of the Scientist and Centre	Year 2017-18	Year 2018-19	Year 2019-20	Deliverables / expected out come
1.	Evolving high yielding, high quality sugarcane varieties suitable for abiotic stresses	Dr. N. A. Saravanan, Assistant Professor (Plant Breeding), SRS, Melalathur.	Evolution of promising culture for high sugar and abiotic stresses			Release of sugarcane varieties for drought and problematic soils of Vellore District could be evolved.

CROP MANAGEMENT

I. List of Projects Reviewed

S. No.	Discipline/ Station	University Research Projects	AICRP Projects	Externally Funded Project	Total
AGRONOMY					
1.	SRS, Cuddalore	6	1	-	7
2.	SRS, Sirugamani	2	-	-	2
3.	SRS, Melalathur	-	-	-	
4.	AC& RI, Madurai	1	1	-	2
SOIL SCIENCE & AGRICULTURAL CHEMISTRY					
1.	SRS, Cuddalore	2	-	-	2
	Crop Physiology	3	-	-	3
SEED SCIENCE AND TECHNOLOGY					
1.	SRS, Melalathur	2	-	-	2
AGRICULTURAL MICROBIOLOGY					
1.	TNAU, Coimbatore	-	-	1	1
ENVIRONMENTAL SCIENCE					
1.	TNAU, Coimbatore	1	-	-	1
	Total	17	2	1	20

II. Remarks on the individual University Research Projects

S. No	Project Number & Title	Remarks
1.	AICRP/PBG/CUD/SUG/025 Dr. M. Jayachandran, Professor & Head AS. 67. Optimization of fertigation schedule for sugarcane through micro irrigation technique under different agro climatic conditions. AS. 68. Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity. AS. 69. Use of plant growth regulator (PGRs) for enhanced yield and quality of sugarcane. AS. 70. Scheduling irrigation with mulch under different sugarcane planting methods AS. 71. Carbon sequestration assessment in sugarcane based cropping system AS. 72. Agronomic performance of elite sugarcane genotypes	To be continued
2.	AICRP/WTC/CBE/IWM/001 Dr. T. Ragavan, Unit Officer (AICRP-IWM), Agronomy Performance and Evaluation of Chewing cane under sub-surface method of drip irrigation.	To be continued
3.	DCM/CDR/AGR/SUG/2015/001 Dr. G. Manickam, Professor (Agronomy) Studies on herbicides in weed management of sugarcane	To be continued

4.	DCM/CDR/AGR/SUG/2015/New Dr. G. Manickam, Professor (Agronomy) Studies on the effect of herbicidal combinations on nut sedge management in sugarcane	Project number to be obtained by submitting the proposal approved by RPAC. To be continued
5.	DCM/CDR/AGR/SUG/2016/New Dr. G. Manickam, Professor (Agronomy) Integration of best management practices for resource conservation in sugarcane	Project number to be obtained by Caddalore centre by submitting the proposal approved by RPAC. To be continued
6.	DCM/CDR/AGR/SUG/2015/001 Dr. S. Thiruvarassan, Asst. Professor (Agronomy) Effect of leguminous intercrops on productivity of plant and ratoon crop of sugarcane.	To be continued.
7.	DCM/CDR/AGR/SUG/2016/001 Dr. S Thiruvarassan, Asst. Professor (Agronomy) Studies on identification of promising chewing cane and optimizing the doses of N, P and K for sustainable cane yield and quality.	To be continued
8.	DCM/ SGM/AGR/SUG/2016/001 Dr. R. Chandrasekaran, Professor and Head Studies on Plant geometry and intercropping under sustainable sugarcane initiative (SSI) in Cauvery delta region.	To be continued
9.	DCM/ SGM/AGR/SUG/2016/002 Dr. R.Nageswari, Asst. Professor (Agronomy) To evolve technologies for controlling binding weeds in grown up sugarcane.	To be continued
10.	DCM/MDU/AGR/SUG/2016/001 Dr. S. AnittaFanish, Asst. Professor (Agronomy) Agronomic evaluation of brown manuring and herbicides on management of weeds in sugarcane.	To be continued
11.	DCM/CDR/CRP/SUG/2015/001 Tmt. R. Anitha, Asst. Professor (Crop Physiology) Studies to standardize the growth promoting nutrients to enhance the cane yield and sucrose accumulation in CoC (SC) 24.	To be continued
12.	DCM/CDR/CRP/SUG/2014/002 Tmt. R. Anitha, Asst. Professor (Crop Physiology) Response of sugarcane clones to salt stress and role of exogenous application of ascorbic acid in mitigating salt induced damages.	To be continued

13.	DCM/CDR/CRP/SUG/2015/003 Tmt. R. Anitha , Asst. Professor (Crop Physiology) Impact of silicon nutrition on physiology, yield and quality of sugarcane under drought condition.	To be continued
14.	NRM/CDR/SAC/SUG/2015/001 Dr.P.Christy Nirmala Mary , Asst.Professor (Soil Science) Use of sugarcane trash biochar for Soil health enhancement and sugarcane productivity.	To be continued
15.	NRM/CDR/SAC/SUG/2016/001 Dr.P.Christy Nirmala Mary , Asst.Professor (Soil Science) Assessing soil compaction in sugarcane growing areas under mechanization.	To be continued
16.	SEED/MEL/SST/SUG/2016/001 Dr. K. Indira , Professor (Seed Science & Technology) Studies on the effect of Arbuscular mycorrhizal fungi on Chip bud seedling vigor and resultant seed cane yield.	To be continued
17.	NRM/CBE/ENS/SUG/2015/001 Dr. J. Kannan , Professor (Environmental Sciences) <i>In situ</i> management of sugarcane trashes to enrich soil available nutrients for sustainability.	The results obtained may be consolidated and closure proposal should be sent in January 2018.

III. On Farm trial

1. Developing newer methods of mass production of Arbuscular Mycorrhizal fungi for Sustainable Sugarcane Production.

Duration: 2017-18

Components

T₁ - 100% NPK alone

T₂ – 75% NP + 100% K + *Gluconacetobacter diazotrophicus* + AM

Observations to be recorded

- Tiller production (90 DAP)
- Economic shoot population
- Millable cane at harvest
- Individual cane weight
- Cane and sugar yield
- Cane quality parameters – Pol, Brix, Purity and CCS %
- Economics

Action: SRS, Cuddalore, Sirugamani, Melalathur.

Scientists incharge

Dr. G. Gayathry, Asst. Professor (Agrl.Microbiology), SRS, Cuddalore

Dr. R.Nageswari, Asst. Professor (Agronomy), SRS, Sirugamani

Expected outcome

The possibilities of reducing the recommended dose of NPK through integrated application of newer strains of bio inoculants could be explored.

IV. ACTION PLAN FOR IDENTIFIED THEMES

Theme No. 4		Integrated best management practices for resource conservation in sugarcane			
Theme Leader		Dr. G. Manickam, Profesor (Agronomy), SRS, Cuddalore			
Project		1. DCM/CDR/AGR/SUG/2016/New			
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Deliverables / expected out come
1.	Integration of mechanization in sugarcane cultivation.	Dr. G. Manickam, Profesor (Agronomy), SRS, Cuddalore Dr. R.Nageswari, Asst. Professor (Agronomy), SRS, Sirugamani Dr. K. Indira, Professor (Seed Science & Technology), SRS, Melalathur	<p>T₁ - Integration of mechanization in sugarcane cultivation.</p> <ul style="list-style-type: none"> ❖ Crop geometry: Adoption of 150 cm between inter row spacing. ❖ Sett treatment: Bio inoculants (Water soluble formulation of Endophytic bacteria and Arbuscular Mycorrhizal fungi) ❖ Sugarcane cutter & planter: Forming crop bed, cutting and planting of sugarcane setts and fungicide application in single operation. ❖ Irrigation management: Sub surface drip irrigation. ❖ Decomposition of trashes: <i>In situ</i> trash decomposition after cane harvest by SRS Mixture @ 100 kg/t + TNAU Bio-mineralizer @ 2 kg/t <p>Mechanization</p> <ul style="list-style-type: none"> ❖ Power weeder (30 & 60 DAP) ❖ Earthing up (90 DAP) ❖ Detrashing at 150 and 210 DAP ❖ Harvesting by Combine harvester ❖ Trash shredder <p>T₂ - Control (Farmers practice : Spacing 90 cm, manual cutting and planting , sett treatment with fungicides, flooding/drip irrigation, burning of trash, no detrashing & earthing up, manual harvesting</p>		The impact of complete mechanization practice on physio-chemical soil properties, microbial population, weed flora, water use efficiency, labour saving, growth and yield of sugarcane could be ascertained.

			and no mechanization in cultural operations like weeding etc.,)		
Theme No. 5	To evolve technology for controlling binding weeds in grown up sugarcane crop				
Theme Leader	Dr. R.Nageswari, Asst. Professor (Agronomy), SRS, Sirugamani				
Project	1. DCM/ SGM/AGR/SUG/2016/002				
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Deliverables / expected outcome
1.	To evolve technology for controlling binding weeds in grown up sugarcane crop	1. Dr. R.Nageswari, Asst. Professor (Agronomy), SRS, Sirugamani 2. Dr.S.Thirubarassan, Asst. Professor (Agronomy), SRS, Cuddalore 3. Dr.K.Kathirvel Prof. & Head Dept. of Farm Machinery, AEC&RI, Kumalur 4. Dr.D.Manohar Jesudas, Prof. & Head, AMRC, TNAU, Coimbatore	Treatments T ₁ – P.E atrazine 1.00 kg/ha and Po.E metribuzin @ 0.75 kg/ha on 60 DAP T ₂ - P.E atrazine 1.00 kg/ha and Po.E 2,4D Na salt @1.25kg/ha on 60 DAP T ₃ - P.E atrazine 1.0 kg/ha followed by weeding and earthing up on 75 DAP T ₄ – Mechanical weeding by power tiller on 45, 90 and 120 DAP T ₅ – Inter cropping of sunnhemp and its incorporation <i>insitu</i> at 60 DAP T ₆ – Detrashing and mulching at 150 th & 210 th DAP T ₇ – Hand weeding and manual removal of weeds on 45, 90 and 120 DAP Integrated nutrient management has to be followed as per CPG Observations to be recorded <ul style="list-style-type: none"> • Germination % at 21 and 35 DAP • Plant height at 90 and 120 DAP • Tillers at 120 DAP • NMC, individual cane weight and cane yield at harvest • Quality parameters (pol %, brix, purity % and CCS %) • Economics (Gross return and net return) • Weed flora at 35 DAP • Weed density (No./m²) Design : RBD Replications : 3		A viable cost-effective and eco-friendly agro technology on the control of creeper weeds in sugarcane could be identified.

Theme No. 6	Assessing the effect of mechanization on soil compaction in sugarcane and developing suitable management strategies				
Theme Leader	Dr. M. Jayachandran, Professor and Head, SRS, Cuddalore				
Project	1. NRM/CDR/SAC/SUG/2016/001		2. DCM/ SGM/AGR/SUG/2016/001		
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Deliverables / expected outcome
1.	Survey of sugarcane growing regions to assess the compaction due to mechanization	1. Dr.N.Chandrasekaran, Professor (SS&AC), TNAU, Coimbatore 2. Dr. M. Jayachandran, Professor and Head, SRS, Cuddalore	Area to be studied Sugarcane fields in and around sugar factories located at Cuddalore and Villupuram district. Observations to be recorded <ul style="list-style-type: none"> • Soil bulk density • Particle density • Hydraulic conductivity • Infiltration rate • Porosity Soil texture at 3 different depth (20,40 & 60 cm)		The impact of mechanization on soil layer, physio-chemical characteristics could be ascertained by which appropriate agro-technological methods could be formulated to safeguard the soil fertility and the productivity.

CROP PROTECTION**I. List of Projects Reviewed**

S. No.	Discipline/ Station	University Research Projects	AICRP Projects	Externally Funded Project	Total
AGRICULTURAL ENTOMOLOGY					
1.	SRS, Cuddalore	2	-	-	2
2.	SRS, Sirugamani	2	-	-	2
3.	SRS, Melalathur	3	-	-	3
PLANT PATHOLOGY					
1.	SRS, Cuddalore	2	1	-	3
NEMATOLOGY					
1.	SRS, Cuddalore	2	-	-	2
	Total	11	1	-	12

II. Remarks of the University Sub Projects**Agricultural Entomology**

S.No	Project Number & Title	Remarks
1.	CPPS/CDR/ENT/SUG/2016/001 Dr.S.Douressamy , Professor (Agrl. Entomology) Screening for assessment of field resistance in sugarcane clones against endemic pests of Cuddalore region .	To be continued
2.	CPPS/CDR/ENT/SUG/2016/002 Dr.S.Douressamy , Professor (Agrl.Entomology) Ecofriendly management of borer pests and white grub in sugarcane.	To be continued
3.	CPPS/SGM/ENT/SUG/2015/001 Dr. V. Baskaran , Asst.Professor (Agrl.Entomology) Screening for assessment of field resistance in sugarcane clones against endemic pests and suitable management practices for Cauvery delta region.	To be continued
4.	CPPS/SGM/ENT/SUG/2015/002 Dr. V. Baskaran , Asst.Professor (Agrl.Entomology) Monitoring of major insect pests and exploration of their natural enemies in sugarcane ecosystem.	To be continued
5.	CPPS/MLT/ENT/SUG/2014/001 Dr.A.Thirumurugan , Professor and Head Developing IPM strategies for management of white fly under precision farming sugarcane cultivation.	The results obtained may be consolidated and closure proposal should be sent in January2018.
6.	CPPS/MLT/ENT/SUG/2015/002 Dr.A.Thirumurugan , Professor and Head	To be continued

	Development of IPM packages for management of white grub in sugarcane.	
7.	CPPS/MLT/ENT/SUG/2015/003 Dr.A.Thirumurugan , Professor and Head Evaluation of insecticides against borer pests of Sugarcane under SSI	To be continued

Plant Pathology

S. No	Project Number & Title	Remarks
1.	AICRP/PBG/CUD/SUG/025 AICRP on Sugarcane Dr.V.Ravichandran , Asst.Professor (Plant Pathology) PP 14. Identification of pathotype of red rot pathogen PP 17. Evaluation of zonal variety for resistance to red rot, smut PP22. Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties PP 23. Assessment of elite and ISH genotypes for resistance to red rot.	To be continued
2.	CPPS/CDR/PAT/SUG/2011/001 Dr.V.Ravichandran , Asst.Professor (Plant Pathology) Evaluation of Sugarcane clones / varieties for resistance to red rot caused by <i>Colletotrichum falcatum</i> went.	The results obtained may be consolidated and closure proposal should be sent. New sub project has to be proposed.
3.	CPPS/CDR/PAT/SUG/2013/002 Dr.T.Kalaimani , Professor(Plant Pathology) Evaluation of resistance in sugarcane to smut caused by <i>Ustilago scitaminea</i> Syd.	The results obtained may be consolidated and closure proposal should be sent immediately for approval.

III. Nematology

S. No	Project Number & Title	Remarks
1.	CPPS/CDR/NEM/SUG/ 2014/001 Dr.J.Jayakumar , Asst.Professor (Nematology) Management of sugarcane nematodes using non chemical methods.	To be continued
2.	CPPS/CDR/NEM/SUG/2015/002 Dr.J.Jayakumar , Asst. Professor (Nematology) Screening of sugarcane varieties against root knot nematode, <i>Meloidogyne incognita</i> and lesion nematode, <i>Pratylenchus zae</i> and confirmation on the same.	To be continued

III. ON FARM TRIAL

On Farm trial – Integrated Management of internode borer in sugarcane

Duration: 2017-18

Theme Leader: Dr.V. Baskaran , Asst. Professor (Agrl.Entomology), SRS, Sirugamani

Pest: Internode borer

Components

T₁-Release of egg parasitoid- *Trichogramma chilonis*@2.5CC/ha from 4th to 6th month at fortnightly interval.

T₂-Installation of INB sex pheromone trap for monitoring and mass trapping @ 20 Nos./ha

T₃-Detrashing at 5th and 7th month after planting.

T₄-Integration of T₁ and T₂

T₅-Integration of T₁, T₂ and T₃

T₆-Untreated control

Replications: Four with 25 cents per treatment.

Observations: Per cent damage and yield.

Action: SRS, Cuddalore, Sirugamani and Melalathur

Scientists incharge

Dr. S. Douressamy, Professor (Agrl. Entomology), SRS, Cuddalore

Dr. V. Bhaskaran, Assistant Professor (Agrl. Entomology), SRS, Sirugamani

Dr. A. Thirumurugan, Professor and Head, SRS, Melalathur.

Expected outcome

Best IPM package for the inter node borer in sugarcane will be confirmed by the consecutive trials, which will be recommended for adoption.

V. ACTION PLAN FOR IDENTIFIED THEMES

Theme No. 7		Monitoring of pests, diseases, nematodes and natural enemies in sugarcane				
Theme Leader		Dr. S. Douressamy, Professor (Agrl. Entomology), SRS, Cuddalore				
Project		1. CPPS/CDR/ENT/SUG/2016/001 2. CPPS/SGM/ENT/SUG/2015/002 3. CPPS/MLT/ENT/SUG/2015/003 4. CPPS/CDR/PAT/SUG/2011/001 5. CPPS/CDR/NEM/SUG/2014/001				
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Year 2019-20	Deliverables / expected out come
1.	<p>Monitoring of borers, sucking pests, root feeders and natural enemies in sugarcane in the endemic areas of respective district should be made.</p> <p>Monitoring of red rot, smut, wilt and YLD in endemic areas of the respective district.</p> <p>Awareness campaign on the integrated management of pests and diseases should be arranged at appropriate time</p>	<p>SRS, Cuddalore Dr. S. Douressamy, Professor (Agrl. Entomology). Dr. T. Raguchander Professor (Plant Pathology) Dr. V. Ravichandran, Assistant Professor (Plant Pathology). Dr. J. Jayakumar, Assistant Professor (Nematology).</p> <p>SRS, Melalathur Dr. A. Thirumurugan, Professor and Head</p> <p>SRS, Sirugamani Dr. V. Bhaskaran, Assistant Professor (Agrl. Entomology),</p>	<ul style="list-style-type: none"> • Pests/diseases/nematodes damage level should be recorded based on Agro-eco system approach. • Correlation and regression analysis of abiotic and biotic factors in sugarcane for three years should be analyzed • Preparation of pests/disease/nematode calendar based on the monitoring data 	<p>Forecasting the outbreak of pests, diseases and nematodes in sugarcane at appropriate time, for taking up management measures by the farmers.</p> <p>Prediction analysis on the incidence of pests, diseases and nematodes in sugarcane.</p> <p>Pests, diseases and nematodes calendar for sugarcane crop</p>		

Theme No. 8		Management of pests, diseases & nematodes			
Theme Leader		Dr. V. Baskaran , Asst. Professor (Agrl.Entomology), SRS, Sirugamani			
Project		1. CPPS/CDR/ENT/SUG/2016/002 4. CPPS/CDR/NEM/SUG/ 2014/001		2. CPPS/MLT/ENT/SUG/2014/001 5.CPPS/MLT/ENT/SUG/2015/003	
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Deliverables / expected out come
1.	Evaluation of insecticides against borer pests of Sugarcane under Precision farming technology	Dr.S. Douressamy, Professor (Agrl. Entomology), SRS, Cuddalore. Dr.V. Bhaskaran, Assistant Professor (Agrl. Entomology), SRS, Sirugamani. Dr. A. Thirumurugan, Professor and Head, SRS, Melalathur	Treatments T ₁ -Imidacloprid 17.8SL (200 ml/ ha) T ₂ - Imidacloprid 17.8SL (300 ml/ha) T ₃ -Chlorantraniliprole 18.5SC (375 ml/ha) T ₄ -Chlorpyriphos 20EC (1500 ml /ha) T ₅ -Untreated Control ❖ The treatments are to be done as pestigation through drip irrigation. ❖ Replicated (four) with each valve covering of 15 cents ❖ The shoot borer incidences are to be recorded-based on ETL. ❖ Residue analysis for the best treatment.		Best insecticide for the management of early shoot borer and inter node borer in sugarcane in precision farming technology will be confirmed by the consecutive trials and will be recommended for adoption
2.	Development of IPM package for whitefly in sugarcane	Dr. A. Thirumurugan, Professor and Head, SRS, Melalathur	T ₁ =Destruction of nymphs & puparia from removing infested leaves T ₂ = T ₁ + installation of cages @15Nos/ha T ₃ =T ₁ + application of imidacloprid 17.8% SL @ 100ml/ha along with 5% extra N T ₄ =T ₁ + application of imidacloprid 17.8% SL @ 100ml/ha along with 5% extra K T ₅ =T ₁ + application of chlorantraniliprole 20CS @375ml/ha		Best IPM package for the management of whitefly in sugarcane in precision farming technology will be confirmed by the consecutive trials

			<p>T₆= T₁ + application of dimethoate @500ml/ha T₇=T₁+ application of thiomethoxam 25WG@100gms/ha T₈= T₁+application of carbosulfan 25 EC @ 500ml/ha T₉ =untreated control</p>	and will be recommended for adoption.																																										
3.	Development of IPM package against white grub of sugarcane	<p>Dr. S. Douressamy, Professor (Agrl. Entomology) Dr. V. Ravichandran, Assistant Professor (Plant Pathology) Dr. J. Jayakumar, Assistant Professor (Nematology) Dr. V. Bhaskaran, Assistant Professor (Agrl. Entomology), SRS, Sirugamani Dr. A. Thirumurugan, Professor and Head, SRS, Melalathur</p>	<p>1. Monitoring of white grub adults immediately after 1st summer shower 2. Installation of light trap and neem branches 3. Border cropping with fresh planting of sugarcane 4. Soil drenching with insecticides</p> <table border="1"> <thead> <tr> <th>T. No.</th> <th>Treatments</th> <th>Dose/ha</th> </tr> </thead> <tbody> <tr> <td>T₁</td> <td>Imidacloprid 17.8 SL</td> <td>250 ml</td> </tr> <tr> <td>T₂</td> <td>Chlorantraniliprole 18.5 SC</td> <td>300ml</td> </tr> <tr> <td>T₃</td> <td>Carbofuran 3G</td> <td>33kg</td> </tr> <tr> <td>T₄</td> <td>Fipronil 5SC</td> <td>1000ml</td> </tr> <tr> <td>T₅</td> <td>Phorate 10G</td> <td>50kg</td> </tr> <tr> <td>T₆</td> <td>Untreated control</td> <td></td> </tr> </tbody> </table> <p>5. Soil application with bio inoculants at the time of earthing up</p> <table border="1"> <thead> <tr> <th>T. No.</th> <th>Treatments</th> <th>Dose/ha</th> </tr> </thead> <tbody> <tr> <td>T₁</td> <td><i>Metarhizium anisopliae</i></td> <td>4 X 10⁹ cfu-5 kg</td> </tr> <tr> <td>T₂</td> <td><i>Beauveria brongniarti</i></td> <td>4 X 10⁹ cfu-5 kg</td> </tr> <tr> <td>T₃</td> <td><i>Beauveria bassiana</i></td> <td>4 X 10⁹ cfu-5 kg</td> </tr> <tr> <td>T₄</td> <td>EPN (<i>Heterorhabditis indica</i>)</td> <td>8 x 10⁹ nematodes/ha</td> </tr> <tr> <td>T₅</td> <td>EPN (<i>Steinernema glaseri</i>)</td> <td>8 x 10⁹ nematodes/ha</td> </tr> <tr> <td>T₆</td> <td>Untreated control</td> <td></td> </tr> </tbody> </table>	T. No.	Treatments	Dose/ha	T ₁	Imidacloprid 17.8 SL	250 ml	T ₂	Chlorantraniliprole 18.5 SC	300ml	T ₃	Carbofuran 3G	33kg	T ₄	Fipronil 5SC	1000ml	T ₅	Phorate 10G	50kg	T ₆	Untreated control		T. No.	Treatments	Dose/ha	T ₁	<i>Metarhizium anisopliae</i>	4 X 10 ⁹ cfu-5 kg	T ₂	<i>Beauveria brongniarti</i>	4 X 10 ⁹ cfu-5 kg	T ₃	<i>Beauveria bassiana</i>	4 X 10 ⁹ cfu-5 kg	T ₄	EPN (<i>Heterorhabditis indica</i>)	8 x 10 ⁹ nematodes/ha	T ₅	EPN (<i>Steinernema glaseri</i>)	8 x 10 ⁹ nematodes/ha	T ₆	Untreated control		Best IPM package for the management of white grub in sugarcane will be confirmed by the consecutive trials and will be recommended for adoption.
T. No.	Treatments	Dose/ha																																												
T ₁	Imidacloprid 17.8 SL	250 ml																																												
T ₂	Chlorantraniliprole 18.5 SC	300ml																																												
T ₃	Carbofuran 3G	33kg																																												
T ₄	Fipronil 5SC	1000ml																																												
T ₅	Phorate 10G	50kg																																												
T ₆	Untreated control																																													
T. No.	Treatments	Dose/ha																																												
T ₁	<i>Metarhizium anisopliae</i>	4 X 10 ⁹ cfu-5 kg																																												
T ₂	<i>Beauveria brongniarti</i>	4 X 10 ⁹ cfu-5 kg																																												
T ₃	<i>Beauveria bassiana</i>	4 X 10 ⁹ cfu-5 kg																																												
T ₄	EPN (<i>Heterorhabditis indica</i>)	8 x 10 ⁹ nematodes/ha																																												
T ₅	EPN (<i>Steinernema glaseri</i>)	8 x 10 ⁹ nematodes/ha																																												
T ₆	Untreated control																																													

4.	Management of sugarcane red rot disease	Dr. V. Ravichandran Assistant Professor (Plant Pathology), SRS, Cuddalore	<p>Treatments Components – sett treatment and spray at 45th and 65th days after planting</p> <p>T₁-thiophanate methyl 0.5 g/l T₂-carbendazim 0.5 g/l T₃-tebuconazole 0.5 ml/l T₄-azoxystrobin 0.5 ml/l T₅-propiconazole 0.5 ml/l T₆-<i>Pseudomonas fluorescens</i> 10 g/l T₇- Untreated control</p> <p>Replications : Three Design : RBD Observations : Germination count, Disease incidence (once in 15 days -35 DAP until harvest), Yield</p>	Best fungicide/bio inoculants for the management of red rot in sugarcane will be confirmed by the consecutive trials and will be recommended for adoption.
5.	Management of sugarcane smut	Dr. V. Ravichandran, Assistant Professor (Plant Pathology), SRS, Cuddalore	<p>Components</p> <p>T₁ - Sett treatment with propiconazole 1 ml/l T₂ - Sett treatment with propiconazole 1 ml/l + spray at 45 DAP T₃ - Sett treatment with propiconazole 1 ml/l + two sprays at 45 and 65 DAP T₄ - Sett treatment with carbendazim 0.5 g/l T₅ - Sett treatment with carbendazim 0.5 g/l + spray at 45DAP T₆ - Sett treatment with carbendazim 0.5 g/l + two sprays at 45 and 65 DAP T₇- Untreated control</p>	Best fungicide for the management of smut in sugarcane will be confirmed by the consecutive trials and will be recommended for adoption.

			Replications : Three Design : RBD Observations: Germination count, Disease incidence (once in 15 days from 35 DAP until harvest), Yield	
6.	Management of Nematodes	Dr. J. Jayakumar, Assistant Professor (Nematology), SRS, Cuddalore	Components <ul style="list-style-type: none"> • Screening of bio control agents against nematodes in sugarcane. • Influence of sett treatment with bacterial and fungal antagonist for the management of sugarcane nematodes. 	Best bio inoculant for the management of nematodes in sugarcane will be confirmed by the consecutive trials and will be recommended for adoption

Theme No. 9	Identification of resistant sources to major pests, diseases and nematodes					
Theme Leader	Dr. S. Douressamy, Professor (Agrl. Entomology), SRS, Cuddalore					
Project	1. CPPS/CDR/ENT/SUG/2016/001 2. CPPS/SGM/ENT/SUG/2015/001 3. CPPS/CDR/PAT/SUG/2011/001 4. CPPS/CDR/NEM/SUG/2015/002					
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Year 2019-20	Deliverables / expected out come
1.	Mechanisms of resistance in promising sugarcane clones.	Dr.S. Douressamy, Professor (Agrl. Entomology), SRS, Cuddalore Dr. V. Ravichandran, Assistant Professor (Plant Pathology), SRS, Cuddalore. Dr. V. Bhaskaran, Assistant Professor (Agrl. Entomology),	Crop/ Diseases /insect pests Diseases: Red rot & Smut Pests: Early shoot borer Mechanisms ➤ Pests -Antixenosis, Antibiosis & Tolerance ➤ Diseases -Physical, Biochemical and molecular basis One each R/MR/S entries			The resistance mechanism in the identified less susceptible/ resistant clones against early shoot borer/ red rot will be categorized and the promising clone

		SRS, Sirugamani. Dr. A. Thirumurugan, Professor and Head, SRS, Melalathur.		will be released as a new variety.
--	--	--	--	---------------------------------------

Theme No. 10	Yield loss estimation in sugarcane due to nematodes					
Theme Leader	Dr.J.Jayakumar, Assistant Professor (Nematology)					
Project	1. CPPS/CDR/NEM/SUG/ 2014/001					
S. No.	Activity	Name of the scientist and Centre	Year 2017-18	Year 2018-19	Year 2019-20	Deliverables / expected out come
1.	Yield loss estimation in sugarcane due to nematodes	Dr.J.Jayakumar, Assistant Professor (Nematology).	Components Raising sugarcane in Nematode infested sick plot. Raising sugarcane in Nematode free plot. Parameters to be observed Nematode species population Damage level Yield loss			Actual per cent yield loss at different population level of nematodes in sugarcane will be predicted

Load of each scientist (Theme wise)

- Theme 1 : Evolving high sugar varieties
- Theme 2 : Evaluation and identification of chewing cane variety
- Theme 3 : Evolving sugarcane varieties suitable for abiotic stresses
- Theme 4 : Integrated best management practices for resource conservation in sugarcane
- Theme 5 : To evolve technology for controlling binding weeds in grown up sugarcane crop
- Theme 6 : Assessing the effect of mechanization on soil compaction in sugarcane and developing suitable management strategies
- Theme 7 : Monitoring of pests, diseases, nematodes and natural enemies in sugarcane

Theme 8 : Management of pests, diseases & nematodes

Theme 9 : Identification of resistant sources to major pests, diseases and nematodes

Theme 10 : Yield loss estimation in sugarcane due to nematodes

S. No.	Name of the Scientist	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Theme 7	Theme 8	Theme 9	Theme 10	Total
(Man hours / week)												
1.	M. Jayachandran						20					20
2.	N. Chandrasekaran						15					15
3.	A. Thirumurugan							8	12	7		27
4.	R. Chandrasekaran	5			20							25
5.	S. Ganapathy	20	5	5								30
6.	M. Shanmuganathan	20	5									25
7.	N. A. Saravanan	12		15								27
8.	G. Manickam				20							20
9.	S. Thiruvarassan					20						20
10.	R. Nageswari		5			20						25
11.	K. Indira				15		15					30
12.	S. Douressamy							10	10	10		30
13.	V. Baskaran							8	8	9		25
14.	V. Ravichandran							8	10	5		23
15.	J. Jayakumar							5	5	10	5	25

Work Load of Sugarcane scientist for the Year 2017-18

S. No.	Scientists	% of time
1.	M. Jayachandran	
	AICRP (S)	50
	Administration	30
	Student guide	10
	Extension	5
	Other Activities	5
2.	R. Chandrasekaran	
	Univ. Sub Project – 1	35
	Administration	30
	Student guide	10
	Other activities	25
3.	A. Thirumurugan	
	Univ. Sub Project – 1	22
	Univ. Sub Project – 2	33
	Univ. Sub Project – 3	20
	Administration	25
4.	S. Ganapathy	
	Univer. Sub Project – 1	20
	AICRP(S)	50
	Breeder seed Production	15
	MLT & ARTs	10
	Other Activitites	5
5.	M. Shanmuganathan	
	Univ. Sub Project – 1	20
	Univ. Sub Project – 2	20
	Univ. Sub Project – 3	15
	Univ. Sub Project – 4	20
	Teaching (ODL)	5
	Other activities	20
6.	N. A. Saravanan	
	Univ. Sub Project – 1	20
	Univ. Sub Project – 2	27
	Univ. Sub Project – 3	28
	Other Activitites	25
7.	G. Manickam	
	Univ. Sub Project – 1	25
	Univ. Sub Project – 2	25
	Univ. Sub Project – 3	25
	Other activities	25
8.	R.Nageswari	
	Univ. Sub Project – 1	30
	Externally Funded Project	20
	Administration	10
	Teaching (ODL)	15
	Seed Production	15
	Other activities	10

S. No.	Scientists	% of time
9.	Dr. S. Thiruvarassan	
	Univ. Sub Project – 1	25
	Univ. Sub Project – 2	25
	Univ. Sub Project – 3	25
	Other activities (Farm)	25
10.	R. Anitha	
	Univ. Sub Project – 1	20
	Univ. Sub Project – 2	20
	Univ. Sub Project – 3	20
	External Funded	25
	Other Activities	15
11.	K. Indira	
	Univ. Sub Project – 1	40
	Univ. Sub Project – 2	40
	Other Activities	20
12.	G. Gayathri	
	Univ. Sub Project – 1	25
	Externally funded	30
	Teaching (ODL)	15
	Extension	10
	Other Activities	20
13.	S. Douressamy	
	Univ. Sub Project – 1	30
	Univ. Sub Project – 2	30
	Farm superintendent	30
	Extension & other activities	10
14.	V.Baskaran	
	Univ. Sub Project – 1	25
	Univ. Sub Project – 2	30
	Teaching (ODL)	15
	Other activities (Farm)	30
15.	T. Raguchander	
	Univ. Sub Project – 1	25
	External Funded Projects	30
	Student guide	25
	Other activities	20
16.	V. Ravichandran	
	Univ. Sub Project – 1	25
	AICRP (S)	50
	Extension	10
	Other activities	15
17.	J. Jayakumar	
	Univ. Sub Project – 1	25
	Univ. Sub Project – 2	25
	Teaching (ODL)	15
	Extension	15
	Other activities	20