

## **PROCEEDINGS OF THE 36<sup>th</sup> CROP SCIENTIST MEET ON MILLETS AND FORAGE CROPS HELD AT TNAU, COIMBATORE**

The 36<sup>th</sup> crop scientists meet on millets and forage crops was held on 18<sup>th</sup> and 19<sup>th</sup> May, 2018 at Tamil Nadu Agricultural University, Coimbatore. Review of University Research Sub Projects on Crop improvement, Crop management and Crop protection was taken on 18.05.2018 by the respective Technical Directors.

The action plan finalization meeting was held on 19.05.2018 under the Chairmanship of Dr. K. Ramasamy, Vice - Chancellor. Initiating the discussion, Dr.K.Ramaraju, the Director of Research highlighted the importance of millets as the current year (2018) has been declared by the Government of India as “National Year of Millets”. The government has also decided to promote millets cultivation by way of enhancing the utilization through procurement at MSP and distribution through PDS and inclusion in Government nutritious meal scheme. It has also been decided to enhance the millets supply by involving FPOs, NGOs and other agencies. The Vice-Chancellor in his remarks has emphasized that the scientists should intensify the research with a focus on key characteristics of millets and its enhancement through genetic manipulation to evolve varieties suitable for multivariate environments.

The details of cultures identified for release and ART/MLT and action plan to be taken up for the year 2017-18 on Millets and Forage crops in crop improvement was presented by Dr. K. Ganesamurthy, Director i/c, Centre for Plant Breeding and Genetics. Similarly, Dr. C. Jayanthi, Director i/c, CM and Dr. S. Krishnamoorthy, Director i/c, CPPS presented salient findings and action plan for Crop management and Crop protection, respectively.

### **Crop Improvement**

Proceedings of the 36<sup>th</sup> crop scientist’s on millets and forage crops for crop improvement is furnished under following subheads

- 1) General remarks
- 2) Abstracts of the projects reviewed
- 3) Remarks on the individual University Research Projects
- 4) Cultures proposed for Variety Release/ART/MLT
- 5) Action Plan: 2018-19

#### **1) General Remarks**

- The red grain sorghum types collected may be evaluated for special traits (Action: RRS, Paiyur and ARS, Kovilpatti)
- Pollen fertility studies may be carried out in maize hybrids during summer season at various locations (Action: Department of Millets, Coimbatore; MRS, Vagarai and RRS, Paiyur)

- Popularization of released Cumbu hybrids/composites in Villupuram and Thoothukudi districts. (Action: Department of Millets, Coimbatore)
- Research work on Varagu may be initiated at DARS, Chettinad (Action: DARS, Chettinad)
- Early duration Ragi varieties with uniform maturity may be evolved (Action : CEM, Athiyandal)
- Studies on fodder value of moringa may be initiated and its suitability to silvipasture may be explored (Action: Department of Forage Crops and FC & RI, Mettupalayam)

## 2) Abstracts of the projects reviewed

A total number of 41 projects comprising 31 projects on millets and five projects on forage crops and five from CPMB handled by 24 scientists were reviewed by the Director, CPBG. The abstract of the projects reviewed is furnished below:

### ABSTRACT

Crops and centres	University Sub-Projects	AICRP Projects	Externally funded projects	Total	No. of Scientists
<b>Sorghum</b>					
Coimbatore	3	1	-	4	2
Kovilpatti	2	-	-	2	1
Virinjipuram	1	-	-	1	1
Paiyur	1	-	-	1	1
Trichy	1	-	-	1	1
<b>Sub total</b>	<b>8</b>	<b>1</b>	<b>-</b>	<b>9</b>	<b>6</b>
<b>Pearl millet</b>					
Coimbatore	2	1	1	4	1
<b>Sub total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>1</b>
<b>Maize</b>					
Coimbatore	2	1	-	3	1
Vagarai	2	1	-	3	1
Veppanthattai	1	-	-	1	1
Bhavanisagar	1	-	-	1	1
<b>Sub total</b>	<b>6</b>	<b>2</b>	<b>-</b>	<b>8</b>	<b>4</b>
<b>Small millets</b>					
Athiyandal	3	1	1	5	2
Paiyur	1	-	-	1	1
Madurai	1	-	-	1	1
Chettinad	1	-	-	1	1
Trichy	2	-	-	2	2
<b>Sub total</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>10</b>	<b>7</b>
<b>Total Projects (Millets)</b>	<b>24</b>	<b>5</b>	<b>2</b>	<b>31</b>	<b>18</b>
<b>Forage crops</b>	3	1	1	5	3

<b>CPMB</b>	<b>1</b>	<b>-</b>	<b>4</b>	<b>5</b>	<b>3</b>
<b>Grand total</b>	<b>28</b>	<b>6</b>	<b>7</b>	<b>41</b>	<b>24</b>

### 3) Remarks on the individual University Research Projects

#### CROP IMPROVEMENT

##### Sorghum

<b>S. No.</b>	<b>URP Details</b>	<b>Remarks</b>
1	<b>CPBG/CBE/PBG/SOR/2016/001</b> Development of fodder sorghum varieties with improved quality traits <b>April 2016- March 2019</b> <b>Dr. A. Yuvaraja</b>	Quantification of quality parameters to be taken up.
2	<b>CPBG/CBE/PBG/SOR/2016/002</b> Maintenance, evaluation and utilization of germplasm in sorghum <b>April 2013 to Mar 2018</b> <b>Dr. A. Yuvaraja</b>	Closure report may be submitted and new project may be proposed Characterization based on descriptor guidelines may be continued.
3	<b>CPBG/CBE/PBG/SOR/2013/004</b> Development of dual purpose varieties suitable for rain fed and irrigated ecosystem of Tamil Nadu with improved tolerance to shoot fly and stem borer <b>June 2013 to May 2018</b> <b>Dr. B. Selvi</b>	Closure report may be submitted and new project may be proposed  The cultures tested in the advanced yield trials should be screened for shoot fly / stem borer and earhead bug
4	<b>CPBG/KPT/PBG/SOR/2015/001</b> Evolution of high yielding, suitable sorghum varieties with resistance to ear head midge for late / normal sowing conditions <b>Mar 2015 to Feb 2020</b> <b>Dr. N. Malini</b>	The work on red grain sorghum may be intensified
5	<b>CPBG/KPT/PBG/ SOR/ 2017/ 001</b> Nucleus and Breeder seed production of sorghum varieties of Tamil Nadu <b>Mar 2015 to Feb 2020</b> <b>Dr. N. Malini</b>	Indented quantity of breeder seed may be produced and supplied. Genetic purity of the released varieties may be ensured.
6	<b>CPBG/PAI/PBG/SOR/2016/001</b> Collection, characterization, evaluation and conservation of red sorghum ( <i>Sorghum bicolor</i> ) germplasm lines <b>Aug 2016 to Dec 2020</b> <b>Dr. M. Dhandapani</b>	Single plant selections to be made in red sorghum genotypes and evaluated for yield and quality parameters.

7	<b>CPBG / TRY/PBG/ MM/2017/001</b> Evolution of high yielding dual purpose Sorghum ( <i>Sorghum bicolor</i> ) varieties suited to sodic soils <b>Sept 2017 to Aug 2020</b> <b>Dr. A. Subramanian</b>	More number of accessions and pre release cultures from Coimbatore and Kovilpatti may be included in the screening
8	<b>CPBG/VIJ/PBG/SOR/2016/001</b> Evaluation of local thalaivirichan sorghum genotypes for higher yield <b>Nov 2106 to Oct 2019</b> <b>Dr. A. Gopikrishnan</b>	The single plant selections from Poigai local, Virinjipuram local and veerappam patti local should be critically evaluated

### Cumbu

S. No.	URP Details	Remarks
1	<b>CPBG/CBE/PBG/PEM/2015/004</b> Evolution of high yielding single cross pearl millet hybrids with resistance to downy mildew <b>April 2015 - Mar 2020</b> <b>Dr. P. Sumathi</b>	Required quantity of hybrid seeds may be produced and tested at Villupuram and Thoothukudi districts.
2	<b>CPBG/CBE/PBG/PEM/2015/005</b> Maintenance of genetic purity and production of nucleus seeds of parental lines of hybrids and composites developed in pearl millet ( <i>Pennisetum glaucum</i> L.) <b>July 2015 –June 2020</b> <b>Dr. P. Sumathi</b>	Genetic purity of the released varieties may be ensured. Indented quantity of seeds may be produced and supplied

### Maize

S. No.	URP Details	Remarks
1	<b>CPBG/CBE/PBG/MAZ/2013/001</b> Evolution of single cross high yielding maize hybrids resistant to SDM with different maturity groups viz., late (> 95 d), medium (> 85-95 d) and early (>75-85 d) suitable for irrigated ecosystem. <b>June 2013-May 2018</b> <b>Dr.R.Ravikesavan</b>	Closure proposal may be prepared and a new project may be proposed
2	<b>CPBG/CBE/PBG/MAZ/2013/002</b> Development of high yielding sweet corn hybrids suitable for Tamil Nadu <b>June 2013-May 2018</b> <b>Dr. R. Ravikesavan</b>	Closure proposal may be prepared and a new project may be proposed
3	<b>CPBG/VGI/PBG/MAZ/2015/002</b> Collection, characterization and maintenance of maize germplasm <b>April 2015 to March 2018</b> <b>Dr. N. Kumari Vinodhana</b>	The passport data of the available lines may be provided to PGR. The project may be closed and new project to be proposed

4	<b>CPBG/VGI/PBG/MAZ/2015/001</b> Development of high yielding single cross maize hybrids suitable for rainfed ecosystems <b>April 2015 to March 2020</b> <b>Dr.N. Kumari Vinodhana</b>	The hybrids in advance trials may be screened for TLB
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### Small Millets

S. No.	URP Details	Remarks
1	<b>CPBG/ATL/PBG/SMM/2014/001</b> Genetic improvement of drought resistance in samai, tenai and panivaragu to evolve high yielding varieties suitable for Tamil Nadu. <b>Aug 2014 - July 2019</b> <b>Dr. A. Nirmalakumari</b>	Drought related parameters may be measured in the advanced lines in addition to the yield parameters. Crop Physiologist may be involved
2	<b>CPBG/ATL/PBG/SMM/2016/002</b> Genetic improvement of finger millet, kodo millet and barnyard millet to evolve high yielding varieties suitable for rainfed conditions of Tamil Nadu <b>Aug 2015 to July 2018</b> <b>Dr. R. Kanchana Rani</b>	Efforts may be intensified to develop uniform maturing finger millet cultures with bold seeds and dark brown colour, better than GPU 28. The project may be closed and new project to be proposed
3	<b>CPBG/ATL/PBG/BSP/2015/003</b> Nucleus and breeder seed production in small millets <b>Oct 2015 - Sep 2018</b> <b>Dr. R. Kanchanarani</b>	Indented quantity of breeder seed may be produced and supplied. The project may be closed and new project to be proposed
4	<b>CPBG/MDU/PBG/SMM/2015/001</b> Development of short duration, high yielding barnyard millet variety with improved nutritional quality <b>July 2015 to June 2018</b> <b>Dr. C. Vanniarajan</b>	Popularization of newly released variety MDU 1 in the southern barnyard millet growing districts may be taken up and indented quantity of breeder seeds may be produced and supplied. The project may be closed and new project to be proposed
5	<b>CPBG/PAI/PBG/SMM/2017/001</b> Development of high yielding long duration ragi varieties suitable for rainfed areas of North Western Zone <b>April 2017 to March 2022</b> <b>Dr. P. Suthamathi</b>	Crossing programme may be initiated for the development of long duration ragi involving parents having elongated fingers and dark colour grains suited for Dharmapuri and Krishnagiri districts
6	<b>CPBG/CTN/PBG/SMM/2014/001</b> Development of climate resilient Barnyard millet ( <i>Echinochloa frumentaceae</i> ) genotypes through mutation breeding <b>Nov 2014 to Oct2017</b> <b>Dr.R. Sasikala</b>	Short duration, sturdy and non-lodging mutants which were identified in M <sub>2</sub> generation may critically be evaluated

7	<b>CPBG / TRY / PBG / SMM / 2017 / 001</b> Evolution of high yielding <i>Kudhiraivali</i> varieties (Barnyard millet) suited to sodic soils <b>May, 2017 to April, 2020</b> <b>Dr. T. Kalaimagal</b>	Pipe line cultures may also be evaluated under sodic soil conditions
8	<b>CPBG / TRY / PBG / SMM / 2017 / 002</b> Evaluation of sodicity tolerance in finger millet ( <i>Eleusine coracana</i> (L.) Gaertn) genotypes <b>June 2017 to April 2020</b> <b>Dr. S. Chitra</b>	Pipe line cultures may also be evaluated under sodic soil conditions
<b>Biotechnology</b>		
<b>S. No.</b>	<b>URP Details</b>	<b>Remarks</b>
1	<b>CPMB/CBE/PBT/SMM/2015/001</b> Characterization and expression profiling of genes involved in Zn and Fe homeostasis in barnyard millet <b>2016 – 2019</b> <b>Dr. S. Varanavasiappan</b>	Identify right stage and plant part for Fe and Zn estimation

#### Forage Crops

<b>S. No.</b>	<b>URP Details</b>	<b>Remarks</b>
1.	<b>CPBG / CBE / PBG / FRG/2015/004</b> Evolution of leguminous forage crops (Lucerne and Fodder cowpea) for high yield and protein content <b>April 2015 to March 2020</b> <b>Dr. C. Babu</b>	The project may be continued
2.	<b>CPBG/CBE/PBG/FRG/2015/005</b> Evolution of forage grasses (Cumbu Napier hybrid and Guinea grass) for high biomass and quality <b>April 2015 to March 2020</b> <b>Dr. C. Babu</b>	The project may be continued and handed over to Dr. R. Sudhagar, Assistant Professor (PBG)
3.	<b>CPBG/ KKM/ PBG/ 2017/ 001</b> Identifying superior Cumbu lines with superior fodder value based on morphological characterization 2017-2020 <b>April 2017 to March 2020</b> <b>Dr. R. Pushpam</b>	The project may be continued and handed over to Dr. Anandhi, Assistant Professor (PBG)

## Cultures proposed for Variety Release/ART/MLT

### Cultures Identified for release

#### State release

Crop : Cumbu  
 Culture name : TNBH 08804 (Proposed to be released as Pearlmillet COH 10)  
 Parentage : ICMA 99555 x PT 6067  
 Duration : 85-90 days  
 Centre : Dept. of Millets, TNAU, Coimbatore

#### Performance of Grain yield (kg/ha)

Details	TNBH 08804	Cumbu hybrid CO9	86M52
<b>Irrigated</b>			
Station trial (9)	4869	4151	3856
MLT (19)	4050	3552	3424
ART (149)	2297	2119	2101
OFT (32)	4241	3495	3274
AICPMIP(11)*	3748	-	-
Mean	3864	3329	3164
% over Cumbu hybrid CO 9	16		
% over 86M52	22		
<b>Rainfed</b>			
Station trial (3)	3718	3125	2797
MLT (6)	3535	3319	3292
ART (70)	2203	2061	2063
OFT (19)	3758	3335	3086
Mean	3304	2960	2810
% over Cumbu hybrid CO 9	12		
% over 86M52	18		

#### Salient Features

- Compact earhead
- Bold and grey colour grain
- Resistant to downy mildew and rust
- Yield advantage (15-20 %) over existing hybrids CO 9 and NBH 1717

**Cultures identified for ART 2018-19**  
**Details of the cultures proposed for ART 2018-19**

**I. Grain Sorghum**

S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNS 648 ( R )	APK1 x M35-1	100	2305	Dual purpose, resistant to shoot fly (12.0%)
2.	TKSV 1036 ( R )	ICSB 518 x SPV 1489	100	2102	Dual purpose, suitable for rainfed condition
3	TNS 661	TNS 603 x IS 18551	100	3016	Pearly white grain, Moderately resistant to shoot fly

Checks : CO 30, K12

**Observations to be recorded:** Days to 50 % flowering, plant height, grain yield, straw yield and pests and disease score if any

**II. Pearl millet (Hybrid trial)**

S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNBH 121235 ( R )	ICMA 01666x PT6303	90	2676	Compact earhead with bold grains and resistant to downy mildew

Checks; CO 9 hybrid and private hybrid

**Observations to be recorded:** Days to 50 % flowering, Days to maturity, seed set per cent, grain yield kg/ha, straw yield kg/ha and pests and disease score if any.

**III. Maize (Irrigated)**

S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1	CMH 11-586	N 09 164-2 x N148	100	7501	High yielding, Orange kernels, MR to charcoal rot (3.35)
2	VaMH 12014	UMI 1200x 357	100	7204	High yielding, yellowish dent kernels, MR to TLB (2.9)

Checks: Co 6, 900 M Gold, NK 6240

**Observations to be recorded:** 50 % tasseling, 50% silking and Shelling percentage

**IV. Maize Rainfed**

S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1	VaMH 12013	UMI 1200 X VIM 419	100	5009	Suitable for rainfed condition, Orange yellow dent kernels, Moderately resistant to TLB (3.0)

Checks : Co 6, 900 M Gold, NK 6240

**Observations to be recorded :** 50 % tasseling, 50% silking and shelling percentage



## V. Small millets

### Ragi

S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNEc 1285	TNAU 900 x CO (Ra) 14	110	2256	High yield, large panicle, bold seeds
Checks : Paiyur 2, CO (Ra)14, CO 15					

**Observations to be recorded:** Days to 50% flowering, Days to maturity, Plant height (cm), Number of productive tillers/plant, Number of fingers/ear, Finger length (cm), Grain yield (kg/ha), Straw yield (kg/ha) and pests and disease score if any.

### Samai

S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TN Psu176 ( R )	CO (Samai) 4 x IPM 113	88	1205	Drought tolerant, Non shattering and non lodging
2.	TN Psu 177 ( R )	CO (Samai) 4 x TNAU141	87	1323	High yielding and bold grains
Checks: CO (Samai) 4					

**Observations to be recorded:** Days to 50% flowering, Days to maturity, Plant height (cm), Number of productive tillers/plant, Number of fingers/ear, Finger length (cm), Grain yield (kg/ha), Straw yield (kg/ha) and pests and disease score if any

### Panivaragu

S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNPm 231	K1 x TNAU 137	69	2729	High yielding, Input responsive, Bold grains
2.	TNPm 238	Selection from IPM19	63	2405	Stable in yield potential, Drought tolerant and non lodging.
Checks: CO (PV) 5					

### Tenai

S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNAU 330	SiA 326 x ISe 186	84	2779	High yielding, Drought tolerant, Large panicle
2.	TNAU 331	P S 4 x ISe 198	86	2889	Drought tolerant and High tillering
Checks: CO (Te) 7					

## Cultures for OFT

### I. Sweet corn (OFT)

S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1	CSCH 13002	WNC12069-2 x SC 11-2	70-73	13129	Early and total sugar ( 18.9%)
2	CSCH 14003	WNC 12039-1x Sc 1421-5-2-1	71-73	13864	Early and total sugar (18.5%)

## Cultures identified for MLT 2018-19

### I. Grain Sorghum

Culture	Parentage	Yield (kg/ha)	Special traits
TNS 663 (R)	TNS 627 x TNS 640	2361	Dual purpose and resistant to shoot fly
TNS 667 (R)	TNS 630 x TNS 634	2537	Dual purpose, moderately resistant to shoot fly and stem borer
TKSV1038 (R)	ICSVB535x K8	2429	Bold seed, creamy white colour, suitable for rainfed

Seasons		
<i>Kharif</i> (4)	(June – July)	Coimbatore, Paiyur, Bhavanisagar, Athiyanthal
<i>Rabi</i> (4)	(Sept-Oct)	Kovilpatti, Yethapur, Aruppukkottai, Paiyur, Vaigaidam
Summer (3)	(Jan – Feb)	Coimbatore, Bhavanisagar and Vaigaidam
Replication: 3	Plot size: 4m x 2.7 m (4 rows)	Spacing: 45 cm x 15 cm
Fertilizer dose	95:45:45 NPK kg/ha	

**Observations to be recorded:** Days to 50 % flowering, Days to maturity, grain yield kg/ha, straw yield kg/ha and pests and disease score if any

### II. Pearl Millet

Culture	Parentage	Yield (kg/ha)	% over checks	Special traits
TNBH 1514 (R)	ICMA 99222x PT6687	3008	15.3 % TNAU cumbu hybrid CO 9 15.6 % NBH 1717	Compact, DM and Rust resistance
TNBH 1525 (R)	ICMA 98222x PT 6680	2854	9.4 % TNAU cumbu hybrid CO 9 9.6 % NBH 1717	Dark grey seed, compact, DM resistance, Fe 63 ppm

<b>Seasons</b>		
<i>Kharif</i> (8)	(June – July)	Coimbatore ,Paiyur, Yethapur, Bhavanisagar, Vaigaidam , Vriddhachalam, Tindivanam and Athiyanthal
<i>Rabi</i> (5)	(Sept-Oct)	Kovilpatti, Aruppukkottai, Paiyur and Tindivanam
Summer (6)	(Jan – Feb)	Coimbatore, Pattukkottai, Paiyur, Bhavanisagar, Vriddhachalam and Vaigaidam,
Replication: 3	Plot size: 4m x 2.7 m (6 rows)	Spacing: 45 cm x 15 cm
Fertilizer schedule:	80: 40:40 NPK Kg/ha	

**Observations to be recorded:** Days to 50 % flowering, Days to maturity, seed set per cent, grain yield kg/ha, straw yield kg/ha and Pests and disease score if any

#### IV. Maize

##### MLT I

Hybrids	Yield (kg/ha)	% inc. over check	Special traits
CMH 12-686	10269	10.4	High yielding, Orange kernels MR to charcoal rot (3.6)
ACM M15-009	10730	11.3	High beta carotene (9. 60 µg/g)
CMH 15-005	9657	11.5	High yielding, drought tolerant suited for rainfed and irrigated situations
<b>Checks :</b> TNAU Maize Hybrid CO 6, 900 M (G), NK 6240			

<b>Seasons</b>		
Maize MLT I	<i>Kharif</i> (Irrigated) (June – July) (8) :	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Athiyanthal, Vaigaidam, Virinjipuram, Madurai
Maize MLT III	<i>Rabi</i> - irrigated (Dec – Jan) (6):	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Vaigaidam, Madurai
Replication: 4	Plot size: 5m x 3.6 m (6 rows each)	Spacing: 60 cm x 25 cm.
Fertilizer schedule: 250: 75:75 NPK Kg/ha		

##### MLT II

Hybrids	Yield (kg/ha)	% increase over check	Special traits
VaMH 15028	6927	10.2	Orange yellow semi dent grains
VaMH 15036	7195	14.4	Yellow and semi dent
CMH 15-005	9657	11.5	High yielding, drought tolerant suited for rainfed and irrigated situations

Maize MLT II	<i>Rabi</i> (Rainfed) (Sept-Oct) (5) :	Aruppukkottai, Kovilpatti, Yethapur, Veppanthattai, Vagarai
Replication: 4	Plot size: 5m x 3.6 m (6 rows each)	Spacing: 60 cm x 25 cm.
Fertilizer schedule: 250: 75:75 NPK Kg/ha		

**Observations to be recorded:** Days to 50 % tasselling, Days to 50 % silking, yield, pests and disease score if any

### I. Sweet corn hybrids

Hybrids	Yield (kg/ha)	% increase over check	Special traits
CSCH 15001	16363	22.0	High yield and big kernel size
CSCH 15005	15807	17.9	Long cobs and plumpy sweet kernels

\*Early duration hybrids and hence should be harvested 4 to 5 days earlier to Sugar 75

Sweet corn MLT	<i>Kharif</i> (Jul-Aug) : Irrigated	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Athiyanthal, Vaigaidam, Virinjipuram, Madurai
Replication: 7	Plot size: 5m x 3.6 m (6 rows each)	Spacing: 60 cm x 20 cm.
Fertilizer schedule: 150: 50:50 NPK Kg/ha		

**Observations to be recorded:** Days to 50 % tasselling, Days to 50 % silking, green cob yield, pests and disease score if any

### II. Small millets

#### Ragi

Culture	Parentage	Yield (kg/ha)	% increase over CO (Ra) 14	Special traits
TNEc 1294 (R)	CO (Ra) 14 x TNAU 950	2707	13.17	Long panicle, uniform maturity, non lodging
PYR009-04 (R)	CO 12 X TNAU 946	2986	25.0	High yielding, drought tolerant, closed ear head, bold grains
TNEc1299	CO15x KMR 346	2000	9.28	High yield, large panicle, bold seeds
Checks : Paiyur 2, CO (Ra)14, CO 15				

Seasons : <i>Kharif</i>		
Replication : 3	Plot size: 3 m x 2.5 m (10 rows per plot)	Spacing: 22.5 cm x 10 cm.
Fertilizer schedule: 40: 20:00 Kg of NPK /ha		
Centers : Coimbatore, Paiyur, Bhavanisagar, Vaigaidam, Aruppukkottai, Kovilpatti, Athiyandal		

**Kudiraivali**

Culture	Parentage	Grain Yield (kg/ha)	Special traits
ACM 15-343 (R)	ACM 10-16XACM10-012	1605	Short duration (85-90days); Fe-18mg/100g)
ACM 15 - 353(R)	ACM 12 -110 X ACM 10-011	1900	Lengthy compact panicle (29.5cm)
TNEf 197 (R )	CO (kv) 2 x TNAU 153	1727	Large ear head, bold seeds
TNEf 301	CO (Kv) 2 x TNAU 185	2050	Large and compact ear head, bold seeds
TNEf 307	CO (Kv) 2 x ACM 10-161	2120	High yielding, drought tolerant

Seasons : <i>Kharif &amp; Rabi</i>		
Replication : 3	Plot size: 3 m x 2.5 m (10 rows per plot)	Spacing: 22.5 cm x 10 cm
Fertilizer schedule: 40: 20:00 Kg of NPK /ha		
Centers : Coimbatore, Paiyur, Bhavanisagar, Vaigaidam, Aruppukottai, Kovilpatti, Athiyandal		

**Samai**

Culture	Parentage	Yield (kg/ha)	%increase over CO4	Special traits
TNPsu183 (R)	CO2 x MS4729	1820	7.3	Tall plant stature, good fodder yield, large panicle
TNPsu 202	CO (samai) 4 x TNAU167	2290	23.12	Semi compact ear head, profusely tillering, non lodging
TNPsu 203	CO (samai) 4 x TNAU170	2521	35.54	Large panicle, uniform maturity, resistant to shoot fly
TNPsu 207	CO2 x BL 41/3	2174	16.88	More basal tillers, thick culm, non lodging, bold seeds
Check : CO (Samai) 4				

Seasons : <i>Kharif &amp; Rabi</i>		
Replication : 3	Plot size: 3 m x 2.5 m (10 rows per plot)	Spacing: 22.5 cm x 10 cm.
Fertilizer schedule: 40: 20:00 Kg of NPK /ha		
<i>Kharif</i> Centres : Coimbatore, Paiyur, Bhavanisagar		
<i>Rabi</i> Centres : Vaigaidam, Aruppukottai, Kovilpatti, Athiyandal, Chettinadu		

**Tennai**

Culture	Parentage	Yield (kg/ha)	% increase over Co(Te)7	Special traits
TNSi337 (R)	CO6 x ISe198	2428	20.1	High tillering, blast tolerant, tip sterility absent

TNSi353	CO5 x TNSi266	2393	15.0	Large panicle, Non lodging, Shoot fly tolerant, Rust tolerant
TNSi354	CO5 x TNSi278	2391	15.0	Large panicle No tips sterility Rust tolerant
TNSi356	CO6 x TNSi267	2389	15.0	Profuse tillering, Drought tolerant Compact panicle
Checks :CO (Te) 7				

Seasons : <i>Kharif &amp; Rabi</i>		
Replication : 3	Plot size: 3 m x 2.5 m (10 rows per plot)	Spacing: 22.5 cm x 10 cm.
Fertilizer schedule: 40: 20:00 Kg of NPK /ha		
<i>Kharif</i> Centres : Coimbatore, Paiyur, Bhavanisagar		
<i>Rabi</i> Centres : Vaigaidam, Aruppukottai, Kovilpatti, Athiyandal, Chettinadu		

### Varagu

Culture	Parentage	Yield (kg/ha)	% increase over CO 3	Special traits
TNPSc 176 (R)	Selection from DPS 19	1700	14.1	High yielding, suitable for rainfed conditions
TNPsc 301	Selection from RK 156	1920	14.97	Profuse tillering and high yielding
Checks : CO 3				

Seasons : <i>Kharif &amp; Rabi</i>		
Replication : 5	Plot size: 3 m x 2.5 m (10 rows per plot)	Spacing: 22.5 cm x 10 cm.
Fertilizer schedule: 40: 20:00 Kg of NPK /ha		
<i>Kharif</i> Centres : Coimbatore, Paiyur, Bhavanisagar		
<i>Rabi</i> Centres : Vaigaidam, Aruppukottai, Kovilpatti, Athiyandal, Chettinadu		

### Panivaragu

Culture	Parentage	Yield (kg/ha)	% increase over Co(PV)5	Special traits
TNPm247(R)	PV1403 x PV1673	2082	26.4	High yield, large panicle, bold seeds
TNPm251	TNAU145 x IPL2650	2279	24.0	Profuse tillering, non-lodging, shoot fly tolerant, bold grains
TNPm252	TNAU151 x IPL2710	2291	25.0	Large panicle, golden yellow grains, shoot fly resistant, drought tolerant

TNPm255	TNAU164 x IPL2718	2177	19.0	Large panicle, compact panicle, drought tolerant, upright flag leaf
Checks : CO (Pv) 5				

Seasons : <i>Kharif &amp; Rabi</i>		
Replication : 3	Plot size: 3 m x 2.5m (10 rows per plot)	Spacing: 22.5 cm x 10 cm.
Fertilizer schedule: 40: 20:00 Kg of NPK /ha		
<i>Kharif</i> Centres : Coimbatore, Paiyur, Bhavanisagar		
<i>Rabi</i> Centres : Vaigaidam, Aruppukottai, Kovilpatti, Athiyandal, Chettinadu		

**Observations to be recorded:** Days to 50 % flowering, Days to maturity, grain yield kg/ha, straw yield kg/ha and pests and disease score if any.

### Forage crops

#### 1. Cumbu Napier hybrid grass

Entry	Parentage	Duration	Green fodder yield (t/ha/yr)	Special features
TNCN 1534	IP 20379 x FD 434	Perennial	390.60	<ul style="list-style-type: none"> <li>• High biomass yield</li> <li>• More leaf stem ratio</li> </ul>
TNCN 1535	CO 7 x FD 459	Perennial	386.40	
Check : CO (BN) 5				

#### Season

*Kharif* 2018 (June –July) Coimbatore, Bhavanisagar, Vriddhachalam, Paiyur, Vaigaidam, Yethapur, Pattukottai, Killikulam, Virinjipuram, Madurai, Vamban, Mettupalayam, Aduthurai, Tindivanam and Ambasamuthiram

Plot size: 4 m x 3 m

Spacing: 60 x 30 cm

Fertilizer: 150:50:40 kg/ha

#### 2. Fodder maize (Continued for second year testing)

Entry	Parentage	Duration (Days)	Green fodder yield (t/ha)	Special features
TNFM 131-9	Composite of 5 inbreds	65	45.1	<ul style="list-style-type: none"> <li>• Shorter in duration</li> <li>• White coloured grain</li> <li>• More palatability</li> </ul>
Check : African Tall				

#### Season

*Kharif* 2018 (June –July) Coimbatore, Vagarai, Bhavanisagar, Paiyur, Athiyanthal, Vaigaidam, Aduthurai, Aruppukottai, Melalathur, Killikulam, Tindivanam and Vriddhachalam

Plot size: 4 m x 1.8 m

Spacing: 30 x 15 cm

Fertilizer: 30:40:20 kg/ha

### Monitoring team visit for MLT

Team	Stations to be visited
Dr. P. Sumathi Dr.B.Selvi Dr.Kumarivinothana	Athiyanthal, Vridhachalam, Yethapur
Dr.R.Ravikesavan Dr.C.Vanniarajan	Vaigaidam, Vagarai, Kovilpatti, Aruppukkottai, Chettinad
Dr. P. Sumathi Dr.P.Suthamathi Dr.Sathyasheela	Coimbatore, Bhavanisagar, Madurai
Dr.A.Nirmalakumari Dr..Kavithamani	Tindivanam, Virinjipuram, Paiyur
Dr.S.Sivakumar Dr.K.Iyanar	Veppanthattai, Vamban, Trichy
Dr. C. Babu Dr. R. Suthakar Dr. S.D. Sivakumar	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Athiyanthal, Vaigaidam, Aduthurai, Aruppukkottai, Melalathur, Killikulam, Tindivanam and Vridhachalam

### Time of visit

Season	Month of monitoring team visit
<i>Kharif</i>	September
<i>Rabi/rainfed</i>	December
<i>Late rabi/ Summer</i>	February/March



**ART cultures tested in Department of Agriculture (Sorghum)**

ART No.	Entry	Check	Districts																						Total		
			Thiruvallur	Villupuram	Vellore	Tiruvannam	Cuddalore	Dharmapuri	Salem	Krishnagiri	Namakkal	Erode	Coimbatore	Tiruppur	Tiruchirappalli	Perambalur	Karur	Pudukkottai	Madurai	Theni	Dindigul	Virudhunag	Ramanad	Sivagangai		Thoothukud	Tirunelveli
1/2018-19 (June-July)	TNS648 (R) TNS 661 TKSV1036 (R)	CO 30, K 12	2	2	4	4	2	2	2	2	2	2	4	4	2	2	4	2	2	2	2	4	-	-	-	-	52
2//2018-19 (Sept-Oct.)	TNS648 (R) TNS 661 TKSV 1036 (R)	CO 30, K 12	2	2	4	4	2	4	4	2	2	2	4	4	2	2	4	2	2	2	2	4	2	4	2	2	62
3/2019-20 (Mar. April.)	TNS648 (R) TNS 661 TKSV 1036 (R)	CO 30, K 12	2	2	4	4	2	2	2	2	2	2	4	4	2	4	2	2	2	2	2	2	-	-	-	-	50

**ART cultures tested in Department of Agriculture (Pearl Millet)**

ART No.	Entry	Check	Districts																							Total	
			Thiruvallur	Villupuram	Vellore	Tiruvanna	Cuddalore	Dharmapu	Salem	Krishnagiri	Namakkal	Erode	Coimbatore	Tiruppur	Tiruchirap	Perambalu	Karur	Pudukkotta	Madurai	Theni	Dindigul	Virudhuna	Ramanad	Sivagangai	Thoothuku		Tirunelveli
1//2018-19 (June-July)	TNBH1 21235 ( R )	TNAU Cumbu hybrid CO 9, Private hybrid	2	2	-	2	2	2	2	-	4	4	-		2	4	4	-	-	2	4	-	-	-	-	-	38
2//2018-19 (Sept- Oct.)	TNBH1 21235 ( R )	TNAU Cumbu hybrid CO 9, Private hybrid	-	2	-	-	2	-	-	-	2	2	2	-	-	-	-	2	2	2	2	2	-	2	2	2	
3/2019-20 (Jan- Feb.)	TNBH1 21235 ( R )	TNAU Cumbu hybrid CO 9, Private hybrid	2	2	2	2	2	2	2	-	2	2	2	-	2	2	2	2	2	2	2	2	-	-	2	-	38

**ART cultures tested in Department of Agriculture (Maize)**

<b>ART No.</b>	<b>Entry</b>	<b>Check</b>	<b>Thiruvallu</b>	<b>Villupura</b>	<b>Vellore</b>	<b>Tiruvanna malai</b>	<b>Cuddalore</b>	<b>Dharmapu</b>	<b>Salem</b>	<b>Krishnagir</b>	<b>Namakkal</b>	<b>Erode</b>	<b>Coimbatore</b>	<b>Tiruppur</b>	<b>Tiruchirap</b>	<b>Perambalu</b>	<b>Karur</b>	<b>Pudukkott</b>	<b>Madurai</b>	<b>Theni</b>	<b>Dindigul</b>	<b>Virudhuna</b>	<b>Ramanad</b>	<b>Sivagangai</b>	<b>Thoothuku</b>	<b>Tirunelveli</b>	<b>Total</b>
ART I (June- July)	CMH 11-586 VaMH 12014	900 M Gold COH (M) 6 NK6240	-	3	-	-	3	3	3	3	3	3	3	3	-	3	3	-	3	3	-	-	-	-	-	-	39
ART III (jan- Feb.)	CMH 11-586 VaMH 12014	900 M Gold COH (M) 6 NK6240		5			5	5	5	5	5	5	5	5	-	5	5	-	5	5							65
ART II (Sep- Oct-)	VaMH 12013	900 M Gold COH (M) 6 NK6240														5					5	5			5	5	25

Small Millets																											
ART No.	Entry	Check	Thiruvallur	Villupuram	Vellore	Tiruvannam	Cuddalore	Dharmapuri	Salem	Krishnagiri	Namakkal	Erode	Coimbatore	Tiruppur	Tiruchirapall	Perambalur	Karur	Pudukkottai	Madurai	Theni	Dindigul	Virudhunaga	Ramanad	Sivagangai	Thoothukudi	Tirunelveli	Total
<b>Ragi</b>																											
ART 1 / /2018- 19 (June- July)	TNEc128 5 ( R)	CO (Ra) 14, CO 15	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40
ART 2 / /2018- 19 (Sept- Oct)	TNEc128 5	CO (Ra) 14, CO 15	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40
<b>Samai</b>																											
ART 1 / /2018- 19 (June- July)	TNPsu 176 ( R) TNPsu 177 ( R)	CO (Samai ) 4	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40
ART 2 / /2018- 19 (Sept- Oct)	TNPsu 176 ( R) TNPsu 177 ( R)	CO (Samai ) 4	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40

<b>Panivaragu</b>																											
1/2018-19 (Rainfed) (June-July)	TNPm 231 TNPm 238	CO (PV) 5 TNAU 151	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40
2 / 2018-19 (Irrigated) (Sep-Oct)	TNPm 231 TNPm 238	CO (PV) 5 TNAU 151	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40
<b>Tennai</b>																											
	TNAU 330 TNAU 331	CO (T) 7	-	4	4	4	-	4	4	4	4	4	4	-	-	-	-	-	-	-	-	4	-	-	-	-	40

**ADAPTIVE RESEARCH TRIALS ON MILLET CROPS (KVK's) 2019 – 2020**

ART No.	Entry	Check	Pudukkottai	Karur	Perambalure	Cuddalore	Virudhunagar	Trichy	Vellore	Thiuvallur	Krishnagiri	Arupkottotai	Villupuram	Salem	Madurai	Dharmapuri	Namakkal	Kovilpatti	Theni	Coimbatore	Erode	Tiruvannamalai	Total			
<b>Sorghum</b>																										
1/2017-18 (June-July)	TNS648 (R) TNS 661 TKSV 1036( R)	CO 30, K 12	2	-	2	2		2	2	-	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-	16
2/2017-18	TNS648 (R)	CO 30, K	2	-	-	2	2	2	2	-	-	2	2	-	2	-	-	-	-	-	-	-	-	-	16	

(Sept-Oct.)	) TNS 661 TKSV 1036 (R)	12																				
3/2018-19 (Mar-April.)	TNS648 (R) ) TNS 661 TKSV 1036 (R)	CO 30, K 12	2	-	-	2	-	2	2	2	-	-	2	2	2	2	-	-	-	-	-	18
<b>Pearl Millet</b>																						
1/2018-19 (June-July)	TNBH1212 35	TNAU Cumbu hybrid CO 9, Private hybrid	2	-	2	2	2	2	2	-	-	2	2	2	2	-	-	-	-	-	-	20
2/2018-19 Sep-Oct	TNBH1212 35	TNAU Cumbu hybrid CO 9, Private hybrid	2	-	-	2	-	2	2	-	-	2	2	-	2	-	-	-	-	-	-	14
3/2018-19 Sep-Oct	TNBH1212 35	TNAU Cumbu hybrid CO 9, Private hybrid	2	-	-	2	-	2	2	2	-	-	2	2	2	2	-	-	-	-	-	18

<b>Maize</b>																						
(June-July)	CMH 11-586 VaMH 12014	<b>900 M Gold COH (M) 6 NK6240</b>	-	2	-	2	-	2	2	-	-	-	-	2	-	-	-	-	2	-	-	12
(Sep-Oct)	VaMH 12013	<b>900 M Gold COH (M) 6 NK6240</b>	-		2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4

**Small millets**

<b>Ragi</b>																						
ART 1 / 2017-18 (June-July)	TNEc128 5 ( R)	CO (Ra) 14, CO 15	-	-	-	4	-	4	-	4	-	4	4	-	4	4	-	-	4	4	4	40
ART 2 / 2017-18 (Sept-Oct)	TNEc128 5	CO (Ra) 14, CO 15	-	-	-	-	4	-	4	-	4	-	4	4	-	4	4	-	-	4	4	40
<b>Samai</b>																						
ART 1 / 2018-19 (June-July)	TNPsu 176 ( R) TNPsu 177 ( R)	CO (Samai) 4	-	-	-	-	4	-	4	-	4	-	4	4	-	4	4	-	-	4	4	40
ART 2 / 2018-19 (Sept-Oct)	TNPsu 176 ( R) TNPsu 177 ( R)	CO (Samai) 4	-	-	-	-	4	-	4	-	4	-	4	4	-	4	4	-	-	4	4	40

<b>Pani varagu</b>																							
1/2018-19 (Rainfed) (June-July)	TNPm 231 TNPm 238	CO (PV) 5 TNAU 151	-	-	-	-	4	-	4	-	4	-	4	4	-	4	4	-	-	4	4	40	
2 / 2018 - 19 (Irrigated) (Sep-Oct)	TNPm 231 TNPm 238	CO (PV) 5 TNAU 151																					



## Action plan for 2018-19

### Theme 1: Germplasm characterization in Millets

S. No.	Activity	Name of the scientist and centre	2018-19
1	Characterization of 927 Maize lines (27 traits)	<b>Coimbatore</b> Dr. R. Ravikesavan	150 lines
		<b>Vagarai</b> Dr. K.R.V. Sathyasheela	150 lines
2	Characterization of 1200 Sorghum lines (15 traits)	<b>Coimbatore</b> Dr. D. Kavithamani	300 lines
		<b>Kovilpatti</b> Dr. N. Malini	300 lines
3	Characterization of 305 Finger Millet lines (31 traits)	<b>Athiyandal</b> Dr. A. Nirmalakumari	79 lines
4	Characterization of 784 Foxtail Millet lines (28 traits)	<b>Athiyandal</b> Dr. A. Nirmalakumari	150 lines
		<b>Chettinad</b> Dr. R.Chandirakala	150 lines
5	Characterization of 184 Kodo Millet lines	<b>Athiyandal</b> Dr. A. Nirmalakumari	New collections to be characterized
6	Characterization of 175 Proso Millet lines (28 traits)	<b>Athiyandal</b> Dr. A. Nirmalakumari	75 lines
7	Characterization of 234 Barnyard Millet lines (28 traits)	<b>Athiyandal</b> Dr. A. Nirmalakumari	New collections to be characterized
		<b>Madurai</b> Dr. C. Vanniarajan	

<b>Theme 2 : Evolution of dual purpose sorghum varieties</b>				
<b>Theme Leader : Dr. B. Selvi, Professor</b>				
<b>Sub theme i) : Evolution of high yielding dual purpose varieties with resistant to biotic stresses</b>				
S.No	Activity	Name of the scientist and centre	2018-19	Deliverables
1	Screening and Identification of donors for shoot fly/ stem borer/ midge resistance	<b>Coimbatore</b> Dr.B. Selvi, Professor (PBG) Dr. Manimegalai, Prof. (Ento)	<ul style="list-style-type: none"> <li>• Screening of the germplasm for shoot fly, stem borer</li> <li>• Seed multiplication of promising resistant lines</li> </ul>	Promising resistant donors will be identified for further breeding programme

		<b>Kovilpatti</b> Dr. N. Malini, AP (PBG)	<ul style="list-style-type: none"> <li>• Screening of the germplasm for midge resistance</li> <li>• Seed multiplication of promising resistant lines</li> </ul>	
2.	Hybridization and generating segregating materials	<b>Coimbatore</b> Dr.B. Selvi, Professor (PBG)	<ul style="list-style-type: none"> <li>• Evaluation of F<sub>2</sub></li> <li>• Selection of superior lines and forwarding</li> </ul>	Promising resistant culture will be identified
		<b>Kovipatti</b> Dr.N. Malini, AP (PB&G)	<ul style="list-style-type: none"> <li>• Evaluation of F<sub>2</sub></li> <li>• Selection of superior lines and forwarding</li> </ul>	
3	Evaluation of promising cultures/hybrids	<b>Coimbatore</b> Dr.B.Selvi, Professor (PBG)	<ul style="list-style-type: none"> <li>• Evaluation of MLT&amp; ART cultures &amp; seed multiplication of promising entries</li> </ul>	Identification of promising variety for commercial utilisation
		<b>Kovipatti</b> Dr.N. Malini , AP(PBG)	<ul style="list-style-type: none"> <li>• Evaluation of MLT &amp; ART cultures &amp; seed multiplication of promising entries</li> </ul>	
<b>Sub Theme ii) : Evolution of dual purpose varieties with tolerance to abiotic stresses</b>				
<b>Theme Leader : Dr. N. Malini, Asst. Professor</b>				
S.No	Activity	Name of the scientist and centre	2018-19	Deliverables
1	Screening and Identification of donors for drought	<b>Aruppukottai</b> Dr. J. Rajkumar. Asst. Prof. (Physiol.)	<ul style="list-style-type: none"> <li>• Screening of the germplasm for drought</li> </ul>	Promising resistant donors will be identified for further breeding programme
		<b>Kovipatti</b> Dr.N. Malini Asst.Prof. (PBG)	<ul style="list-style-type: none"> <li>• Evaluation of lines for yield traits</li> </ul>	
2.	Hybridization and generating segregating materials	<b>Kovilpatti</b> Dr.N. Malini , Asst.Prof. (PBG)	<ul style="list-style-type: none"> <li>• Evaluation of F<sub>1</sub> and F<sub>2</sub></li> </ul>	Promising lines will be identified
		<b>Aruppukottai</b> Dr. M. Gunasekaran	<ul style="list-style-type: none"> <li>• Evaluation of segregating materials in next generation</li> </ul>	

<b>Sub Theme iii) :Selection and improvement of farmers' sorghum varieties for yield and tolerance to abiotic stress</b>				
<b>Theme Leader : Dr. Geetha, Professor</b>				
<b>S. No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
1	Collection and evaluation of local types	<b>Paiyur</b> Dr. Geetha, Professor (PB&G) Dr. R. Sivakumar AP(Physiology)	<ul style="list-style-type: none"> <li>Collection of local types and evaluation for grain and forage traits</li> <li>Screening of the collected local types for drought associated traits</li> </ul>	Improved promising local types (red grain and thalaivirichan sorghum) will be available for advanced yield trials
2	Pureline selection to identify superior progenies	<b>Paiyur</b> Dr. Geetha, Professor (PB&G) <b>Trichy</b> Dr. A. Subramanian, Assoc. Prof (PBG)	<ul style="list-style-type: none"> <li>Evaluation of promising local types under IVT and screening for drought traits</li> </ul>	Improved promising local types (red grain and thalaivirichan sorghum) will be available for advanced yield trials

<b>Theme 3: Development of fodder sorghum varieties with improved quality traits</b>				
<b>Theme Leader: N.Kumari Vinothana Assistant Professor (PBG)</b>				
<b>S. No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
1	Strengthening of existing germplasm collection	<b>Coimbatore</b> Dr. N.Kumari Vinothana Asst. Professor (PBG)	<ul style="list-style-type: none"> <li>Collection of local types</li> <li>Evaluation for forage traits</li> </ul>	Identification new donors for fodder traits
2	Hybridization involving superior lines and development of segregating materials	<b>Coimbatore</b> Dr. D. Kavithamani Asst. Professor (PBG)	<ul style="list-style-type: none"> <li>Evaluation of F<sub>1</sub> and F<sub>2</sub> generations</li> </ul>	Effecting crosses and identification of superior lines
3	Evaluation of promising cultures	<b>Coimbatore</b> Dr. D. Kavithamani Asst. Professor (PBG)	<ul style="list-style-type: none"> <li>Promising cultures evaluated for forage quality traits</li> <li>Seed multiplication of promising entries</li> </ul>	Identification of promising entries for fodder quality traits
		<b>Kovilpatti</b> Dr. N. Malini, Asst. Professor (PBG)	<ul style="list-style-type: none"> <li>Promising cultures evaluated for forage quality traits</li> </ul>	

Theme No 4		Development of high yielding pearl millet hybrids / composites		
Theme Leader		Dr. P. Sumathi, Professor and Head, Department of millets		
S. No	Activity	Name of the scientist and centre	2018-19	Deliverables
1	Development of inbreds	<b>Coimbatore</b> Dr. P. Sumathi (PB&G)	<ul style="list-style-type: none"> <li>Evaluation of promising progenies in F<sub>3</sub></li> <li>Evaluation of promising progenies in F<sub>4</sub></li> </ul>	Superior inbreds will be identified and could be used for hybridization programme to develop best hybrids/composites.
2	Evolving hybrids utilizing diverse CMS sources and assessing their performance	<b>Coimbatore</b> Dr. P. Sumathi (PB&G)	<ul style="list-style-type: none"> <li>Identification of superior single cross hybrids</li> <li>Nomination of identified hybrids in MLT</li> <li>Seed multiplication of promising hybrids in isolation</li> </ul>	The hybrids with higher yield will be forwarded to MLT for evaluation.
3	Screening of hybrids and composites for downy mildew (DM) resistance	<b>Coimbatore</b> Dr. P. Sumathi (PB&G)  Dr. I. Johnson, AP (PAT)	<ul style="list-style-type: none"> <li>Screening Identified promising hybrids /composites and parental lines</li> <li>Screening hybrids /composites under MLT and ART</li> </ul>	The pearl millet lines identified with downy mildew resistance will be utilized for development of downy mildew resistant variety/hybrid/composites
4	Evaluation of hybrids /composites and conduct of MLT/ART	<b>Coimbatore</b> Dr. P. Sumathi (PB&G)	<ul style="list-style-type: none"> <li>Conduct of ART with promising cultures under MLT</li> </ul>	The evaluated best hybrid will be proposed for release throughout Tamil Nadu state
		<b>Killikulam</b> Dr. N. Ananthi AP (PBG)	<ul style="list-style-type: none"> <li>Evaluation of promising hybrids received from Coimbatore</li> <li>Evaluation of hybrids nominated for MLT</li> </ul>	

Theme No 5		Development of single cross maize hybrids		
Theme Leader		Dr. R. Ravikesavan, Professor (PBG), Department of millets		
S.No	Activity	Name of the scientist and centre	2018-19	Deliverables
1	Screening of inbreds for diseases	<b>Coimbatore – Charcoal rot</b> Dr.P.Renukadevi, AP (Pl.Patho) Dr,R,Ravikesavan , Prof (PB&G)	<ul style="list-style-type: none"> <li>Screening of 100 inbreds under sick plot condition for charcoal rot</li> </ul>	Identification of lines resistant to TLB and charcoal rot for further utilization in the crossing programme and development of resistant hybrids
		<b>Vagarai : Turcicum leaf blight</b> Dr. K. Sethuraman P&H, MRS Dr. K.R.V. Sathya Sheela, AP (PB&G)	<ul style="list-style-type: none"> <li>Screening of 100 inbreds under sick plot condition and scoring for TLB</li> </ul>	
2	Synthesis of new hybrids and their evaluation	<b>Irrigated situation Coimbatore:</b> Dr. R. Ravikesavan Prof (PB&G)	<ul style="list-style-type: none"> <li>Effecting crosses among the superior lines</li> <li>Evaluation of identified hybrids in IHT and MLT</li> <li>Seed multiplication of superior hybrids</li> </ul>	High yielding single cross hybrids with charcoal rot resistance for irrigated situations  High yielding single cross maize hybrids suitable for water limiting situations with TLB resistance
		<b>Rainfed situation Vagarai :</b> Dr. K.R.V. Sathya Sheela, AP (PBG)	<ul style="list-style-type: none"> <li>Identification of superior single cross hybrids</li> <li>Evaluation of identified hybrids in MLT</li> <li>Seed multiplication of superior hybrids</li> </ul>	
3	Evaluation of existing hybrids and conduct of MLT	<b>Veppanthattai :</b> Dr. S. Sivakumar, Prof (PBG)	<ul style="list-style-type: none"> <li>Evaluation of hybrids suited for rainfed situations supplied by Vagarai /Coimbatore centres</li> <li>Identification of superior hybrids for rainfed conditions</li> </ul>	
4	Evaluation of inbreds and hybrids for drought	<b>Coimbatore</b> Dr. R. Ravikesavan Prof (PBG) Dr. A. Senthil, Assoc. Prof (CRP) <b>Vagarai</b> Dr. K.R.V. Sathya Sheela, AP (PBG)	<ul style="list-style-type: none"> <li>Evaluation of Parents and hybrids Under drought situation for physiological parameters</li> </ul>	High yielding single cross maize hybrids suitable for water limiting environments

<b>Theme No 6: Development of specialty corns (Sweet corn, high <math>\beta</math>-carotene &amp; QPM)</b>				
<b>Theme Leader: Dr. R. Ravikesavan, Professor (PBG), Department of millets</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
1	Evaluation of inbreds of sweet corn and hybrid development	<b>Sweetcorn Coimbatore:</b> Dr. R. Ravikesavan, Prof (PB&G)	<ul style="list-style-type: none"> <li>• Evaluation of new inbreds for high sugar content</li> <li>• Crossing among the inbred lines</li> <li>• OFT of the hybrids</li> <li>• CSCH 13002, CSCH 14003 and MLT for CSCH 15001 and CSCH 15005</li> </ul>	High yielding sweetcorn hybrids with high sugar suitable for cultivation in Tamil Nadu
2	To stack <i>crtRB1/lcyE</i> and <i>opaque2</i> alleles using marker-aided selection	Dr. N. Senthil, Professor Dept.of PMB	<ul style="list-style-type: none"> <li>• Evaluation of hybrids in preliminary trials and marker analysis</li> <li>• Foreground selection for <i>crtRB1</i></li> </ul>	High yielding maize hybrids with stacked <i>crtRB1/lcyE</i> and <i>opaque2</i> alleles

<b>Theme 7: Evolving small millets varieties suitable for drought</b>				
<b>Theme leader : Dr. A. Nirmalakumari, Professor (PB &amp; G), CEM, Athiyandal</b>				
<b>S. No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-2019</b>	<b>Deliverables</b>
1	Effecting crosses and evaluation of hybrids and segregating materials	<b>Athiyandal</b> Dr. A. Nirmalakumari (PBG)	<ul style="list-style-type: none"> <li>• Evaluation and selection of promising hybrids and proposed to MLT</li> <li>• Seed increase of promising culture</li> </ul>	Promising drought tolerant Samai, Tenai and Panivaragu materials will be available.
		<b>Paiyur</b> Dr. P. Suthamathi Assoc. Professor (PBG)	<ul style="list-style-type: none"> <li>• Evaluation of segregating generations</li> </ul>	
		<b>Madurai</b> Dr. C.Vanniarajan Professor (PB&G)	<ul style="list-style-type: none"> <li>• Evaluation of segregating generations</li> </ul>	
		<b>Athiyandal</b> Dr. K. Ananthi Asst. Professor (CRP)	<ul style="list-style-type: none"> <li>• Screening and selection of promising genotypes for drought using physiological traits</li> </ul>	

2.	Screening & selection of genotypes for drought resistance based on physiological characters	<b>Athiyandal</b> Dr. A. Nirmalakumari Professor (PB&G)	<ul style="list-style-type: none"> <li>Conducting station trials, seed multiplication of promising entries and promotion to MLT/ART</li> </ul>	Sodicity tolerant barnyard millet genotypes will be identified
3.	Evaluation of promising cultures	<b>Madurai</b> Dr. C.Vanniarajan Professor (PB&G)	<ul style="list-style-type: none"> <li>Conducting station trials, seed multiplication of promising entries and promotion to MLT/ART</li> </ul>	Proposing promising entries for ART / Variety release.
		<b>DARS, Chettinad</b> Dr.R.Chandirakala, Asst. Professor (PBG)	<ul style="list-style-type: none"> <li>Identified mutant population will be tested for their growth and yield attributes</li> </ul>	
		<b>Trichy</b> Dr. Ushakumari, Professor, (PBG)	<ul style="list-style-type: none"> <li>Screening and selection of promising genotypes for drought using physiological traits in barnyard millet</li> </ul>	
		<b>Trichy</b> Dr.S.Chithra Asst. Professor, (PBG)	<ul style="list-style-type: none"> <li>Screening and selection of promising genotypes for drought using physiological traits in finger millet</li> </ul>	
		<b>Athiyandal</b> Dr. K. Ananthi (CRP)	<ul style="list-style-type: none"> <li>Screening and selection of promising genotypes for drought using physiological traits.</li> </ul>	
4	Screening & selection of genotypes for drought resistance based on physiological characters	<b>Athiyandal</b> Dr. K. Ananthi (CRP)	<ul style="list-style-type: none"> <li>Drought screening of promising genotypes in advance trials using physiological traits.</li> </ul>	Promising drought tolerant materials will be available

## Forage crops

<b>Theme No. 1: Development of tree fodders suitable for agri-silvipastural system</b>				
<b>Theme Leader:</b> Dr. K.T. Parthiban, Professor and Head (Agroforestry), FC & RI, Mettupalayam Dr. C. Babu, Professor and Head, Dept. of Forage Crops, TNAU, Coimbatore				
<b>S. No.</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
1	<p>Characterization of tree fodders for yield and its component traits</p> <p>Screening of tree fodders for their quality parameters</p> <p>Identification of promising tree fodders for further studies</p>	<p><b>Mettupalayam</b> Dr. K.T. Parthiban, Dr. R. Jude Sudhagar</p> <p><b>Coimbatore</b> Dr. S. D. Sivakumar Dr. C. Babu</p> <p><b>Chettinad</b> Dr. R. Chandirakala</p>	<p>The saplings of identified tree fodders will be supplied by FC&amp;RI, Mettupalayam.</p> <p>They will be planted and evaluated in agri-silvipastural design at Mettupalayam, Coimbatore and Chettinad.</p>	<p>Fodder trees with high fodder yield and quality suitable for agri-silvipastural system will be identified.</p>

<b>Theme No. 2: Development of high biomass yielding Cumbu Napier hybrids</b>				
<b>Theme Leader:</b> Dr. C. Babu, Professor and Head, Dept. of Forage Crops, TNAU, Coimbatore				
<b>S. No.</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
1	<p>Characterization of available germplasm accessions in Cumbu and Napier grass</p> <p>Screening of accessions for their yield and quality parameters</p> <p>Identifying superior accessions for further studies</p>	<p><b>Coimbatore</b> Dr. C. Babu Professor and Head (PBG)</p>	<p>Identified superior clones will be studied under Perennial trial/MLT for forage yield and quality</p> <p>Fresh crosses will be made</p>	<p>Superior CN hybrids with high fodder yield and quality will be identified for commercial release.</p>



	<p>Identifying superior Cumbu lines with superior fodder value based on morphological characterization</p>	<p><b>Killikulam</b> Dr. Anandhi Asst.professor (PBG)</p>	<p>Hybrid seeds of corresponding cross combinations will be evaluated for yield and quality</p> <p>Selected hybrids will be raised in clonal nursery and studied</p> <p>Identified clones will be evaluated under Perennial trial for forage yield and quality</p>	<p>Superior CN hybrids with high fodder yield and quality will be identified for commercial release</p>
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## Millets - Theme wise action plan

THEME 1	<b>Germplasm characterization in Millets</b>	
	<b>1a</b>	Maize, Sorghum, Finger Millet, Foxtail Millet, Kodo Millet, Proso Millet, Barnyard Millet
THEME2	<b>Evolution of dual purpose sorghum varieties</b>	
	2(i)	<b>Evolution of high yielding dual purpose varieties with resistant to biotic stresses</b>
	<b>2(i)a</b>	Screening and Identification of donors for shoot fly/ stem borer/ midge resistance
	<b>2(i)b</b>	Hybridization and generating segregating materials
	<b>2(i)c</b>	Evaluation of promising cultures/ hybrids
	2(ii)	<b>Evolution of dual purpose varieties with tolerance to abiotic stresses</b>
	<b>2(ii)a</b>	Screening and Identification of donors for drought
	<b>2(ii)b</b>	Hybridization and generating segregating materials
	2(iii)	<b>Selection and improvement of farmers' sorghum varieties for yield and tolerance to abiotic stress</b>
	<b>2(iii)a</b>	Collection and evaluation of local types
	<b>2(iii)b</b>	Pureline selection to identify superior progenies
THEME 3	<b>Development of fodder sorghum varieties with improved quality traits</b>	
	<b>3a</b>	Strengthening of existing germplasm collection
	<b>3b</b>	Hybridisation involving superior lines and development of segregating materials
	<b>3c</b>	Evaluation of promising cultures
THEME 4	<b>Development of high yielding pearl millet hybrids / composites</b>	
	<b>4a</b>	Development of inbreds
	<b>4b</b>	Evolving hybrids utilising diverse CMS sources and assessing their performance
	<b>4c</b>	Screening of hybrids and composites for downy mildew (DM) resistance
	<b>4d</b>	Evaluation of hybrids/composites and conduct of MLT/ART
THEME 5	<b>Development of single cross maize hybrids</b>	
	<b>5a</b>	Screening of inbreds for diseases
	<b>5b</b>	Synthesis of new hybrids and their evaluation
	<b>5c</b>	Evaluation of existing hybrids and conduct of MLT
	<b>5d</b>	Evaluation of inbreds and hybrids for drought
THEME 6	<b>Development of specialty corns (Sweetcorn, high <math>\beta</math>-carotene &amp; QPM)</b>	
	<b>6a</b>	Evaluation of inbreds of specialty corns and hybrid development
THEME 7	<b>Evolving small millets varieties suitable for water limiting environment</b>	
	<b>7a</b>	Effecting crosses and evaluation of hybrids and segregating materials
	<b>7b</b>	Screening & selection of genotypes for drought resistance based on physiological characters
	<b>7c</b>	Evaluation of promising cultures
	<b>7d</b>	Screening & selection of genotypes for drought resistance based on physiological characters

**MILLETS - THEMewise WORK LOAD FOR INDIVIDUAL SCIENTISTS**

Sl. No	Scientists	THEME 1	THEME 2						
		Germplasm characterization in Millets	Evolution of dual purpose sorghum varieties						
			Evolution of high yielding dual purpose varieties with resistant to biotic stresses			Evolution of dual purpose varieties with tolerance to abiotic stresses		Selection and improvement of farmers' sorghum varieties for yield and tolerance to abiotic stress	
Maize Sorghum, Finger Millet Foxtail Millet Kodo Millet Proso Millet Barnyard Millet	Screening and Identification of donors for shoot fly/ stem borer/ midge	Hybridization and generating segregating	Evaluation of promising cultures/ subsides	Screening and Identification of donors for drought	Hybridization and generating segregating materials	Collection and evaluation of local types	Pureline selection to identify superior progenies		
1	Dr. B. Selvi		√	√	√				
2	Dr. J. Rajkumar					√			
3	Dr. M. Gunasekaran						√		
4	Dr. N. Malini	√	√	√	√	√			
5	Dr. K. Geetha							√	√
6	Dr. N. Kumari Vinothana	√							
7	Dr. R. Ravikesavan	√							
8	Dr. K.R. V. Sathyasheela	√							
9	Dr. C. Vanniarajan	√							
10	Dr. A. Nirmalakumari	√							
11	Dr. R. Chandirakala	√							
12	Dr. R. Sivakumar								√
13	Dr. P. Suthamathi							√	
14	Dr..S.Manimegalai		√						

Sl. No	Scientists	THEME 3			THEME 4				THEME 5			
		Development of fodder sorghum varieties with improved quality traits			Development of high yielding pearl millet hybrids / composites				Development of single cross maize hybrids			
		Strengthening of existing germplasm collection	Hybridisation involving superior lines and development of segregating	Evaluation of promising cultures	Development of	Evolving hybrids utilising diverse CMS sources and assessing their performance	Screening of hybrids and composites for downy mildew (DM) resistance	hybrids/composites and conduct of MLT/ART	Screening of inbreds for diseases	Synthesis of new hybrids and their evaluation	Evaluation of existing hybrids and conduct of MLT	Evaluation of inbreds and hybrids for drought
1	Dr. N. Anandhi						√					
2	Dr. N. Malini			√								
3	Dr. N. KumariVinothana							√		√		
4	Dr.D. Kavithamani	√	√	√								
5	Dr. P. Sumathi				√	√	√	√				
6	Dr. I. Johnson						√					
7	Dr. R. Ravikesavan								√			√
8	Dr. K. Sethuraman							√				
9	Dr.S. Sivakumar									√		
10	Dr.A .Senthil											√
11	Dr.P. Renukadevi							√				
12	Dr.K.R.V. Sathyasheela							√	√	√		√

Sl. No	Scientists	THEME 6	THEME 7			
		Development of specialty corns (Sweetcorn, high $\beta$ -carotene & QPM)	Evolving small millets varieties suitable for water limiting environment			
		Evaluation of inbreds of specialty corns and hybrid development	Effecting crosses and evaluation of hybrids and segregating materials	Screening & selection of genotypes for drought resistance based on physiological characters	Evaluation of promising cultures Evaluation of promising cultures	Screening & selection of genotypes for drought resistance based on physiological characters
1	Dr. P. Sumathi		√			
2	Dr. K. Anandhi				√	√
3	Dr. R. Ravikesavan	√				
4	Dr. N. Senthil	√				
5	Dr. C. Vanniarajan		√		√	
6	Dr. A. Nirmalakumari		√	√	√	
7	Dr.R. Chandirakala				√	
8	Dr. P. Suthamathi		√			
9	Dr. R. Ushakumari				√	
10	Dr. S.Chithra				√	

**FORAGE CROPS - THEME WISE WORK LOAD FOR INDIVIDUAL SCIENTISTS**

S. No.	Scientists	THEME 1		THEME 2		
		Development of tree fodders suitable for agri-silvipastural system		Development of high biomass yielding cumbu Napier hybrids		
		The superior tree fodders identified will be planted and evaluated in agri-silvipastural design at all the three centres involved viz., Coimbatore, Mettupalayam & Chenttinad	Evaluation of fodder quality and yield parameters of the selected tree fodders raised in agri-silvipastural design	Identified superior clones will be studied under Perennial trial for forage yield and quality	Evaluation of hybrids in MLT	Selected ten cumbu lines will be utilized in crossing programme against high yielding Napier grass at Coimbatore
1.	Dr. C. Babu			√		√
2.	Dr. S.D. Sivakumar	√				
3.	Dr. N. Aananthi			√		
4.	Dr. K.T. Parthiban		√			
5.	Dr. R. Jude Sudhagar	√				
6.	Dr. R. Chandirakala	√				
7.	Dr.R. Sudhagar		√	√		

**Millets – Crop wise Action plan of Crop Improvement and workload**  
**Sorghum - Work load of Millet Scientists - Action plan of Crop Improvement**

Scientists	Titles	Theam	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	% time
<b>Dr. B. Selvi</b>															
URP	CPBG/CBE/PBG/SOR/2013/004	2a	Kharif trials									Summer Trials, Reporting		30	
AICRP	AICRIP/PBG/CBE/SOR/006		<-Kharif trials----->									Data compilation & Reporting & Meeting		40	
Teaching	Guiding PG and Ph.D students		<-----PG & Ph.D guidance, PG teaching----->												10
Others	Department activiteis		Compilation of Reports												10
<b>Dr. N. KumariVinothana</b>															
URP	CPBG/CBE/PBG/SOR/2013/002	Theme 3	<-----Kharif trials ----->						Summer trials , Report & Meeting			20			
	CPBG/CBE/PBG/SOR/2016/001	Theme 1	<-----Kharif trials ----->						Summer trials , Report & Meeting			20			
AICRP	AICRIP/PBG/CBE/SOR/006		<-----Kharif trials ----->						Breeder seed production, Data compilation & Reporting & Meeting			40			
Teaching	UG and PG teaching		Throughout the year												10
Others	Department activities		Compilation of reports, arranging exhibition and purchase etc.												10
<b>Dr.N. Malini</b>															
URP	CPBG/KPT/PBG/SOR/2015/001	2a, 2b							<--Rabi trials->			Summer Trials, Reporting		50	
	CPBG/KPT/PBG/SOR/2017/001		-						<--Rabi trials->			-		25	
Others	Research station activities		Conducting MLT trials, Compilation of reports etc.												25
<b>Dr.M.Gunasekaran</b>															
URP	CPBG/APK/PBG/SOR/2015/002	2b							<--Rabi trials->			Reporting		20	
Others	Research station activities		Handling other research projects, MLT trials on other crops, reporting												80
<b>Dr. K. Geetha</b>															
URP	CPBG/PAI/PAI/SOR/2016/001	2c	<-----Kharif trials----->						<--Rabi trials->			Summer Trials, Reporting		20	
Others	Research station activities		Handling other research projects, MLT trials on other crops, reporting												80

<b>Dr.R. Sivakumar (Physiol)</b>					
Screening germplasm	<b>Screening sorghum lines for drought at paiyur</b>		<-----Kharif trials----->	Rabi trials	Reporting
Others	Research station activity		Handling other research projects and reporting		
<b>Dr. J. Rajkumar (Physiol)</b>					
Screening germplasm	<b>Screening sorghum lines for drought at Kovipatti and Aruppukottai</b>			<--Rabi trials-->	
Others	Research station activities		Handling other research projects and reporting		

**PEARLMILLET - Work load of Scientists - Action plan of Crop Improvement (Millets)**

Scientists	Titles	Theme	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	% time
<b>Dr.P.Sumathi, Professor (PBG) and Head, Dept. of Millets</b>															
URP	CPBG/CBE/PBG/PEM/2015/004	4a, 4b, 4c	< -----Kharif trials----->						Summer Trials, Reporting						
	CPBG/CBE/PBG/PEM/2015/005	4d	<-----Kharif trials----->						Summer Trials, Reporting						
AICRP	AICRP /PBG/CBE/PEM/009		<-----Kharif trials----->						Summer Trials, Reporting						
EFP	DBT/DCPBG/CBE/MIL/2014/R008		<- ----Kharif trial---->			<-----Final report----->									
Teaching	Guiding and Course teacher PG students		<-----PG guidance and Teaching----->												
Others	P&H, Millets, Germplasm maintenance, MLT & ART, Seed multiplication, FLD		<-----Administration----->												
<b>Dr.I.Johnson, Asst. Prof. (Pathology), Dept. of Millets</b>															
AICRP	AICRP/PBG/CBE/PEM/009		<-----Kharif trials----->						Summer Trials, Reporting						
Action plan -1	Screening of hybrids and composites for downy mildew (DM) resistance	4c	<-----Kharif trials----->						Summer Trials, Reporting						
URP & Action plan	Biological management of pearl millet rust disease using mycoparasite (New)	1	<-- Research work (Lab studies)-->						Reporting						
Teaching	UG& PG teaching, Year Coordinator (B.Sc. (Agri.) 2016-2020 batch)		<-----Teaching & year Coordination----->												
Others	PI – VCS ( <i>Pseudomonas</i> ), PI –RF-Tree killer, Dept. Vehicle In-charge		< ----- <i>Pseudomonas</i> production & other activities----- >												



Dr.Anandhi, Asst. Prof. (PBG), AC & RI, Killikulam							
URP	CPBG/KKM/PBG/2017/001		< ----- Hybridization & Evaluation ----- >				30
Action plan	Evaluation of hybrids/composites and conduct of MLT/ART	4d	<-Kharif trials----->	<--Rabi trials->	Summer Trials, Reporting		10
Teaching	UG and PG course and PG guidance		<-----Teaching and PG guidance ----->				60

### MAIZE - Work load of Millet Scientists - Action plan of Crop Improvement

Scientists	Titles	Theme													% time	
			Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
Dr.R.Ravikesavan, Professor (PBG) ,Department of millets																
URP	CPBG/CBE/PBG/MAZ/2013/001	5 a,b,c	<-----Kharif trials & Crossing work ----->				Data analysis	<-----Rabi trials & Crossing work ----->				Data analysis	20			
	CPBG/CBE/PBG/MAZ/2013/002	6a	<Kharif trials & Crossing work->				Data analysis	<Rabi trials & Crossing work ----->				Data analysis	20			
AICRP	AICRP /PBG /CBE/ MAZ/ 004			<-----Kharif trials----->			Data reporting	<-----Rabi trials----->				Data reporting	25			
EFP	TANII millets/Maize Consortium/2051-ZI		< Monitoring Trials , seed production and FLD plots ----->												10	
Teaching	Course and guiding students		<----- Ph.D Courses and PG students guidance ----->												10	
Others	Breeder & hybrid seed production, monitoring hybrid seed production at SSF's, inbred/ Germplasm maintenance, MLT and extension activities	1a		Seed production/ Germplasm maintenance and characterization , extension activities												15

<b>Dr.K.R. V. Sathyasheela, Asst.Prof (PB&amp;G), MRS, Vagarai</b>										
URP	CPBG/VGI/PBG/MAZ/2015/001	5 a,b,c,d		←----Kharif trials & Crossing work ---->	Data analysis	←----Rabi trials & Crossing work ----->	Data analysis		<b>25</b>	
	CPBG/VGI/PBG/MAZ/2015/002	1a		Germplasm maintenance and characterization	Data analysis	Germplasm maintenance and characterization	Data analysis		<b>20</b>	
AICRP	AICRP/PBG/VGI/MAZ/005 BREEDING			←---Kharif trials Irrigated ---->	Data reporting	←---Kharif trials Rainfed - ---->	Data reporting	←-Rabi trials --->	Data reporting	<b>30</b>
Others	Breeder seed production, hybrid seed production , MLT etc.,			Seed production/seed multiplication/ maintenance activities					<b>20</b>	
Extension activities	Tribal sub plan training programme			Conduct of TSP trainings in tribal pockets of Tamil Nadu				Reporting	<b>5</b>	
<b>Dr.S.Sivakumar, Prof (PB&amp;G) , CRS, Veppanthattai</b>										
URP	CPBG/VPT/PBG/MAZ/2016/001			←----Kharif trials---->	Data analysis				<b>25</b>	
	Other activities including cotton project								<b>75</b>	
<b>Dr.K.Sethuraman, P&amp;H, MRS, Vagarai</b>										
URP & Action plan trial (Breeding)	CPPS/VGI/PAT/MAZ/2017/001	2a		Kharif trials Screening of maize inbreds for TLB	Data analysis	Rabi trials Screening of maize inbreds for TLB	Data reporting		<b>40</b>	
Teaching	-			Guiding of PG students					<b>10</b>	
Administrative activities	-			Administration Work					<b>40</b>	
Extension activities	TSP and ATMA trainings			Involved in delivering lectures and training programmes to the farmers					<b>10</b>	
<b>Dr.P.Renukadevi, Asst.Prof. (Pl.Patho)</b>										
URP	CPPS/CBE/PAT/MAZ/2018/001			←----Kharif trials---->		←-Lab studies & Rabi trials----->			<b>20</b>	
AICRP	AICRP/PBG/CBE/MAZ/2018/004			←----Kharif trials---->		←Rabi trials reporting --->			<b>40</b>	

Action plan	Crop Improvement			←-----Kharif trials--->		20
Two Ext.Funded Projects	DBT/CPPS/PAT/CBE/2015/R011 DST/CPPS/PAT/CBE/2015/D001			DBT-Research work (Lab studies ); DST-FIST Infrastructure development of Pathology Department	Reporting	10
Teaching	UG and PG teaching; Students guiding			<-----UG and PG Courses & student guidance ----->		10
<b>Dr.A.Senthil, Assoc. Prof (CRP)</b>						
Action plan	Evaluation for drought	5d		←---Kharif drought evaluation trials-->	-	20
	Other activities including teaching			-		80

#### Work load of Scientists- Action plan of Crop Improvement (Small millets)

Scientists	Titles	Theam													% time
			Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
<b>Dr.A. Nirmalakumari, Professor (PBG), CEM, Athiyandal</b>															
URP	CPBG/ATL/PBG/SMM/2014/001	1 b,1c,1e 7a,7b,7c	<-Kharif trials----->				<--Rabi trials->			Summer Trials, Reporting				50	
	CPBG/ATL/PBG/SMM/2016/002		<----Kharif trials ---->							Report & Meeting					
	CPBG/ATL/PBG/BSP/2015/003		<----Kharif trials ---->							Report & Meeting					
AICRP	AICRP/PBG/ATL/SMM/008		<-Khariftrials----->				Reporting								30
Teaching	Guiding PG students		<-----PG guidance----->												5
Others	Research Co ordinator, Tribal sub plan, Mega seed Projects, DUS and MLT		<-Kharif trials----->				<--Rabi trials->			Summer Trials, Reporting				15	
<b>Dr. P. Suthamathi, Associate Professor (PBG), RRS, Paiyur</b>															
URP	CPBG/PAI/PBG/SMM/2017/001	1a,7a, 7C	<-Kharif trials----->				<--Rabi trials->			Summer Trials, Reporting				20	
Others	Other activities		< -----other activities----- >												80

<b>Dr.R. Chandirakala, Assistant Professor (PBG), DARS, Chettinadu</b>						
URP	CPBG/SMM/New	1b, 7b,7c	<-Kharif trials----->	<--Rabi trials->	Summer Trials, Reporting	20
Others	Other activities		<-----other activities----->			80
<b>Dr.C.Vanniarajan Professor and Head, AC&amp;RI, Madurai</b>						
URP	CPBG / MDU / PBG / SMM / 2015/001	1f 7a,7b,7c	<-Kharif trials----->	<--Rabi trials->	Summer Trials, Reporting	20
Teaching	PG course teacher and guidance		<----- PG Course teacher & guidance----->			20
Others	Other activities including administration		<-----other activities----->			60
<b>Dr.R. Usha Kumari, Professor and Head, ADAC&amp;RI, Trichy</b>						
URP	CPBG/TRY/PBG/SMM/2017 /001	7c	<-Kharif trials----->	<--Rabi trials->	Summer Trials, Reporting	20
Teaching	UG Course teacher		<----- UG Course teacher ----->			30
Others	Other activities		<-----other activities----->			50
<b>Dr. S. Chitra, Assistant Professor (PBG), ADAC&amp;RI, Trichy</b>						
URP	CPBG/TRY/PBG/SMM/2017 /002		<-Kharif trials----->	<--Rabi trials->	Summer Trials, Reporting	20
Teaching	UG Course teacher		<----- UG Course teacher ----->			30
Others	Other activities		<-----other activities----->			50
<b>Dr.K. Ananthi, Assistant Professor (Physiology), CEM, Athiyandal</b>						
URP	DCM/ATL/CRP/SMM/ New	7d	<-Kharif trials----->		Summer Trials, Reporting	30
Others	Other activities		<-----other activities----->			70

### Work load of Scientists- Action plan of Crop Improvement (Forage Crops)

Scientists	Titles	Theme	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	% time
<b>Dr. C. Babu, Professor and Head, Dept. of Forage Crops, CPBG, TNAU, Cbe-03</b>															
URP	CPBG / CBE / PBG / FRG/2015/005	2a,2b,2c	<-----Perennial trial-----Reporting----->												15
	CPBG/ CBE / PBG/ FRG/ 2017/ New	1b	<-----Perennial trial-----Reporting----->												15
AICRP	AICRP/PBG/CBE/FCR/026		<-----Kharif trials----->					<-----Rabi trials----->			Summer Trials, Reporting			20	
Teaching	Guiding PG students		<-----PG guidance----->												10
Others	P&H, Dept. of Forage Crops;		<-----Administration----->												40
<b>Dr. S.D. Sivakumar, Asst. Prof (Agron.), Dept. of Forage Crops, TNAU, Cbe-03</b>															
URP	DCM/CBE/AGR/FRG/2016/001		<-----Perennial trial-----Reporting----->												10
	DCM/CBE/AGR/FRG/2016/002		<-----Perennial trial-----Reporting----->												10
AICRP	AICRP/PBG/CBE/FCR/026		<-----Kharif trials----->					<-----Rabi trials----->			Summer Trials, Reporting			20	
VCS	Venture Capital Scheme (V60AE)		<-----Seed production activities----->												15
Teaching	UG & PG Teaching; Guiding PG students		<-----Teaching & PG guidance----->												15
Others	Farm manager; Lab incharge; Vehicle incharge; Extension activities		<-----Farm Management & Administration ----->												30
<b>Dr. R. Sudhagar, Asst. Prof (PBG), Dept. of Forage Crops, TNAU, Cbe-03</b>															
URP	CPBG / CBE / PBG / FRG/2015/004		<-----Perennial trial-----Reporting----->												35
Teaching	UG & PG Teaching; Guiding PG students		<-----Teaching & PG guidance----->												35
Others	Breeder seed production; Extension activities		<-----Farm Management & Administration ----->												30

URP-University Research Project; Others- Other responsibilities; VCS-Venture Capital Scheme

## CROP MANAGEMENT

### General remarks

- Rainfall data has to be presented for all the experiments conducted under rainfed situation
- If the experiment is not completed in time, extension proposal has to be submitted with full justification before the closure of the project for approval.
- The following scientists from AC&RI, Vazhavachanur have not attended the pre-review on CSM on Millets and Forage Crops, 2018 on 17.05.2018. They are requested to explain through proper channel.
  1. Dr.S. Krishna kumar, Assistant Professor (SS&AC),
  2. Dr.R.Mythili, Assistant Professor (Agrl.Engg.)
  3. Dr.E.Jamuna ,Assistant Professor(Agrl.Microbiology)

### Abstracts of the projects reviewed

A total number of 65 projects handled by 34 scientists were reviewed by the Director, Crop Management. The abstract of the projects reviewed is furnished below:

<b>ABSTRACT</b>			
<b>Dept./Station</b>	<b>URP</b>	<b>AICRP</b>	<b>Total</b>
<b>TNAU,CBE</b>			
<b>i) Agronomy</b>	2	13	15
<b>ii) SS&amp;AC</b>	3	5	8
<b>iii) Microbiology</b>	1	-	1
<b>iv) Seed Centre</b>	-	3	3
<b>MRS,Vagarai</b>	2	7	9
<b>AC&amp;RI, Madurai</b>	1	-	1
<b>ADAC&amp;RI, Trichy</b>	1	-	1
<b>DARS, Chettinad</b>	1	-	1
<b>RRS, Aruppukottai</b>	1	-	1
<b>ARS, Kovilpatti</b>	2	1	3
<b>CEM, Athiyandal</b>	9	9	18
<b>RRS, Paiyur</b>	2	-	2
<b>AEC&amp;RI, Kumulur</b>	1	-	1
<b>CRS, Veppanthattai</b>	1	-	1
	<b>27</b>	<b>38</b>	<b>65</b>

### University Research Projects

S.No.	Title of the Projects	Period	Project Leaders	Remarks
1	AECRI/FMC/CBE/2015/001 Mechanization in irrigated maize	December,2015 to May,2017	Dr.A.Surendrakumar Professor (Farm machinery)  Dr.A.P.Sivamurugan Assistant Professor (Agronomy)  Dr.R.Karthikeyan Assistant Professor (Agronomy)  Dr.K.Sathiyabama Assistant Professor (SS&AC)  Dr.C.Menaka Assistant Professor (SST)	<ul style="list-style-type: none"> <li>Mechanization practices for sowing, weeding and harvesting of stover in maize were standardized</li> <li>Extension proposal is to be submitted for approval</li> <li>To be continued for one more year in Field No. 75 of Eastern block farm and AEC&amp;RI, Kumulur with modification in treatment details.</li> </ul>
2	DCM/CBE/AGR/MAZ/ 2017/ 001 Enhancing water use efficiency and water productivity of Maize – Vegetable cropping system	July, 2017 to March, 2019	<b>WTC, Coimbatore</b> Dr. G. Senthil Kumar Asst.Professor(Agronomy)  Dr. K. Nagarajan Professor (SWC)  <b>AC&amp;RI, Madurai</b>  Dr. N.K.Sathyamoorthy Asst. Professor (Agronomy)  Dr.M.Rajeswari Professor and Head  <b>AEC&amp;RI, Kumulur</b>  Dr.S. VallalKannan	<ul style="list-style-type: none"> <li>Drip fertigation @ 125% pan evaporation regime in Maize - Onion / Bendi cropping system recorded higher yield attributes and yield, higher economic returns and water saving around 25-30 % when compared to conventional furrow irrigation method.</li> <li>STCR based fertilizer recommendation for all crops are to be adopted instead of blanket recommendation in the treatments.</li> </ul>

			Asst Professor(Agronomy) Dr. K. Arunadevi Assistant Professor (SWCE)	<ul style="list-style-type: none"> <li>To be continued with modification. Bhendi can also be tried at Coimbatore centre.</li> </ul>
3	NRM/CBE/SAC/2013/004  Permanent Manurial Experiment of Coimbatore Under irrigated Tropical Agro Ecosystem	November, 2013 to October, 2018	Dr. M. Malarkodi Assistant Professor (SS & AC)	<ul style="list-style-type: none"> <li>Impact of continuous fertilization on soil health and yield sustainability over 109 years was studied</li> <li>Conclusion may also be drawn based on the SYI.</li> <li>To be continued</li> </ul>
4	NRM/CBE/SAC/MAZ/2016/001  Screening and evaluating maize hybrids for lime induced Fe chlorosis in calcareous soils	July, 2016 to June, 2019	Dr.T.Chitdeshwari Professor (SS&AC)  Dr. R.Ravikesavan Professor (PB&G),  Dr. A. Senthil Associate Professor (CRP)  Dr. A.P.Sivamurugan Asst. Professor (Agronomy)	<ul style="list-style-type: none"> <li>Identified Fe efficient maize hybrid for lime induced Fe chlorosis in calcareous soils</li> <li>Developed technology for Fe management in calcareous soils</li> <li>To be validated as OFT during next year</li> </ul>



5	NRM/CBE/SAC/MAZ/2016/002  Development, characterization and evaluation of new chelated zinc and iron formulations for Maize crop	July, 2016 to June, 2019	Dr.P.Malathi Assistant Professor (SS&AC)	<ul style="list-style-type: none"> <li>• Newer Zn and Fe chelate formulations which increase the nutrient use efficiency, yield and quality of crops will be developed.</li> <li>• To be continued</li> </ul>
6	NRM/CBE/AGM/SMM/2016/001  Strategies for enhancing productivity of organic foxtail millet under rainfed condition	Sept, 2016 to August, 2018	Dr.R.Subhashini, Assistant Professor (Agrl.Micro.)  Dr.P.Parasuraman Professor (Agronomy)  Dr. S. Krishnakumar, Assistant Professor (SS&AC)  Dr. E. Jamuna Assistant Professor (Agrl.Micro.)	<ul style="list-style-type: none"> <li>• Application of PPFM @ 1% or panchakavya @ 3% on 30, 45 and 60 DAS significantly increased yield of foxtail millet under rainfed situation.</li> <li>• Influence of rainfall with the crop growth and yield may be analyzed and included in the completion report</li> <li>• To be closed.</li> </ul>
7	MFPI/NRM/CBE/AGM/2015/R016  Lactic acid bacteria of functional interest in nutrition of finger millet	February,2015 to March,2018	Dr.R.Subhashini, Assistant Professor (Agrl.Micro.)  Dr.M.Senthilkumar Assistant Professor (Agrl.Micro.)	<ul style="list-style-type: none"> <li>• Further testing with Agrl. Microbiology and Food Science and Nutrition/ DABD for commercialization of the technology may be attempted.</li> <li>• To be closed</li> </ul>

8	NRM/VGI/SAC/ MAZ/2014/001 Permanent Manurial Experiment on maize-green gram cropping system in red sandy loam soil of vagarai under irrigated condition	Oct, 2014 to Sep, 2019	Dr. P.Thukkaiyannan Assistant Professor (Agronomy)	<ul style="list-style-type: none"> <li>• Continuous addition of organics and inorganics to maize resulted in improvement in soil physico-chemical properties and biological changes</li> <li>• To be closed</li> </ul>
9	DCM/VGI/AGR/MAZ/2017/001 Optimizing the pre emergence herbicide and time of post emergence weed management practice in Irrigated Maize	June, 2017 to May, 2021	Dr. P.Thukkaiyannan Assistant Professor (Agronomy)	<ul style="list-style-type: none"> <li>• Dose of pre emergence herbicide and post emergence weed management practice in irrigated maize will be identified.</li> <li>• To be continued</li> </ul>
10	DCM/ATL/AGR/SMM/2016/002 Samai based cropping system for rainfed agro ecosystem	June, 2016 to May, 2019	<b>CEM, Athiyandal</b> Dr. K.Sivagamy Assistant Professor (Agronomy) Dr.K.Ananthi Assistant Professor (Crop Physiology) <b>DARS,Chettinad</b> Dr. P. Kannan Assistant Professor (SS&AC) Dr. T.Myrtle Grace Professor (Agronomy) <b>RRS, Paiyur</b> Dr. N.Tamilselvan Professor (Agronomy) Dr. M. Vijayakumar Assistant Professor (SS&AC)	<ul style="list-style-type: none"> <li>• Samai and redgram in 8:2 ratio was found to be better in achieving higher samai grain equivalent yield</li> <li>• Crop failure during rabi was due to excess rainfall</li> <li>• To be continued</li> </ul>

11	<p>WTC / ATL / AGR / SMM / 2017 / 001</p> <p>Enhancing the productivity of nutri-cereals through supplemental irrigation and soil moisture conservation</p>	<p>Sept,2017 to March, 2019</p>	<p><b>CEM, Athiyandal</b></p> <p>Dr.P.Parasuraman Professor and Head Dr.S.Krishnakumar Assistant Professor (SS&amp;AC)</p> <p><b>RRS,Aruppukkotai</b></p> <p>Dr.R.Durai Singh Professor (Agronomy) Dr.B. BhakiyathuSaliha Assistant Professor (SS&amp;AC) Dr.S. Selvakumar, Assistant Professor (SWC)</p> <p><b>ARS,Kovilpatti</b></p> <p>Dr.N. Anandaraj Assistant Professor (SWC) Dr.V.Sanjivkumar Assistant Professor (SS&amp;AC)</p>	<ul style="list-style-type: none"> <li>• Supplemental irrigation twice (50 DAS and 78 DAS) through mini portable sprinkler and crop residue mulch at 2.5 t/ha resulted in higher yield of kuthiraivali and samai.</li> <li>• To be continued</li> <li>• The Scientists of RRS, Aruppukkotai have not presented their results in the pre review meet.</li> </ul>
12	<p>DCM/KPT/AGR/SMM/2016/001</p> <p>Minor millet based contingency intercropping system for late monsoon sowing for Southern district of Tamil Nadu</p>	<p>October, 2016 to March, 2018</p>	<p>Dr. B.Arthirani Assistant Professor (Agrl. Meteorology) ARS, Kovilpatti</p>	<ul style="list-style-type: none"> <li>• Tenai + bengal gram (4:2)intercropping system recorded higher yield and B:C ratio</li> <li>• Influence of weather parameters on the crop growth and yield should be included</li> <li>• Extension proposal may be submitted for approval and the project is to be continued</li> </ul>

13	DCM/KPT/AMT/SMM/2015/001 Light interception study for optimizing biophysical requirements of Kudiraivali ( <i>Echinochloa frumentacea</i> ) by altering the sowing window and plant geometry to achieve higher yields under dry land	Sept, 2015 to May 2017	Dr. B. Arthirani Assistant Professor (Agrl. Meteorology)  Dr. P. Anandhi Assistant Professor (Agrl. Entomology) ARS, Kovilpatti	<ul style="list-style-type: none"> <li>• Sowing by seed drill (30 x 10 cm) during 42<sup>nd</sup> standard week recorded highest light interception, dry matter production, growing degree day and yield.</li> <li>• Need strong weather based parameters for arriving conclusion</li> <li>• Needs explanation for non submission of extension proposal during 2017-18</li> <li>• To be closed</li> </ul>
14	DCM/ATL/AGR/SMM/2016/001 Agronomic management to suit mechanization in small millet ( <i>Tenai</i> )	June, 2016 to May, 2019	Dr. K.Sivagamy Assistant Professor (Agronomy) Dr.K.Ananthi Assistant Professor (Crop Physiology) Dr.R.Mythili Assistant Professor (Agrl.Engg.) CEM, Athiyandal	<ul style="list-style-type: none"> <li>• Mechanization practices for sowing(air assisted seed drill) and weeding (Long handled weeder) were standardized.</li> <li>• Labour requirement for different mechanization practices has to be assessed.</li> <li>• To be continued</li> </ul>
15	DCM/ATL/AGR/SMM/2015/001 Evaluation of System of Finger millet intensification for rainfed agro ecosystem of Tamil Nadu	Sept, 2017 to December, 2019	Dr.P.Parasuraman Professor (Agron) and Head Dr.K.Sivagamy Assistant Professor (Agronomy) CEM, Athiyandal	<ul style="list-style-type: none"> <li>• Optimum spacing (30 x 10 cm) and two mechanical weeding at 15 and 30 DAS recorded higher yield.</li> <li>• To be continued</li> </ul>

16	DCM/ATL/AGR/SMM/2015/002 Effect of organic foliar spray on growth and yield of ragi ( <i>Eleusine coracana</i> ) in Tiruvannamalai District	February, 2015 to March, 2017	Dr.P.Parasuraman Prof. (Agron) and Head CEM, Athiyandal	<ul style="list-style-type: none"> <li>FYM @ 6.5 t/ha + insitu incorporation of sunhemp at 45 DAS + 3 % Panchakavya spray at 30 and 45 DAS enhanced the growth and yield of ragi.</li> <li>Extension proposal has to be submitted</li> </ul>
17	DCM/ATL/CRP/SMM/2015/001 Impact of foliar application of nutrients and plant growth regulators on growth and yield of Kodo Millet ( <i>Paspalum scorbiculatum</i> ) under rainfed condition	June, 2015 to July, 2017	Dr. K.Ananthi Assistant Professor (Crop Physiology) CEM, Athiyandal	<ul style="list-style-type: none"> <li>Application of 0.5% FeSO<sub>4</sub>+ 0.5% urea foliar spray at vegetative and flowering stages (45 DAS and 60 DAS) recorded higher grain yield of 1597 kg/ha.</li> <li>To be discussed with Professor and Head, Dept. of Crop physiology, Coimbatore for treatment justification and continuation/closure of the project</li> </ul>
18	DCM/PAI/CRP/RAG/2015/001 Physiological approaches to increase the productivity of finger millet under rainfed conditions	July, 2015 to March, 2018	Dr. R. Sivakumar Assistant Professor (Crop Physiology) RRS, Paiyur	<ul style="list-style-type: none"> <li>Foliar spray of KCl + BAP + BL registered higher chlorophyll content, soluble protein and relative water content leading to increased yield of 2250 kg /ha.</li> <li>To be discussed with Professor and Head, Dept.of Crop physiology, Coimbatore for continuation/ closure of the project and for replacing BAP so as to make recommendations to the farmers.</li> </ul>

19	DCM/VPT/AGR/MAZ/2015/001 Nutrient management for hybrid maize in rainfed vertisol	August, 2015 to July, 2017	Dr.N.Meyyazhagan Professor (Agronomy) CRS,Veppanthattai	<ul style="list-style-type: none"> <li>Both farmer's practice and application of 75 per cent of RDF of the irrigated maize crop resulted in higher yield parameters and yield of the maize crop followed by 50 per cent of RDF under rainfed condition.</li> <li>Project extension proposal has to be submitted for 2017-18 for approval</li> <li>To be closed</li> </ul>
20	DCM/VGD/AGR/MAZ/2016/001 Studies on pre and post herbicidal weed management in TNAU maize hybrid CO6	April,2016 to May,2018	Dr.R.Jeyasrinivas Asst.Prof. (Agronomy) ARS,Vaigai Dam	<ul style="list-style-type: none"> <li>Pre-emergence application of atrazine @ 0.5 kg a.i. ha<sup>-1</sup>+ post emergence application of Tembotrione@ 120 g a.i. ha<sup>-1</sup> on 20 DAS recorded higher grain and stover yield.</li> <li>To be closed</li> </ul>
21	DCM/TRY/AGR/2016/001 Productivity enhancement of sodic soils through biointensive complementary cropping with organic amendments	June,2016 to March,2018	Dr.S. Somasundaram Asst.Prof. (Agronomy) ADAC&RI,Trichy	<ul style="list-style-type: none"> <li>Complementary cropping of maize + cowpea + daincha with application of 75% recommended NPK through fertilizers + 25% N through poultry manure may be recommended for sodic soils.</li> <li>To be closed</li> </ul>

**For adoption**

Altering crop geometry to suit mechanical weeding in maize centres

1. Maize Research Station, Vagarai
2. Agricultural College and Research Institute, Madurai
3. Agricultural Research Station, Bhavanisagar

Pre emergence application of Atrazine @ 0.25 kg/ha + power weeding on 45 DAS in 75 x 20 cm spacing increased the grain yield of irrigated maize

**Proposal for OFT****Nutrient management for hybrid maize in rainfed vertisol****Objective**

To find out the effect of fertilizer application on yield and economics of rainfed maize

**Treatments**

T1- Farmer's practice (165:50:75 Kg NPK/ha)

T2 - 50% of the RDF for irrigated maize (125:38:38 Kg NPK/ha)

T3 - 75% of the RDF for irrigated maize (188:56:56 Kg NPK /ha)

(RDF for irrigated Maize is 250:75:75 Kg NPK /ha)

**Location**

1. CRS Farm, Veppanthattai and TCRS farm, Yethapur
2. Farmers field – 2 Nos.

**Crop Management- Millets- Action plan for 2018-19**

S.No.	Action plan	Name of the scientist(s) and centre	Year 2018-19	Deliverables
			Activities	
1.	WTC/ATL/AGR/SMM/2017/001 Enhancing the productivity of Nutri-Cereals through supplemental irrigation and moisture conservation.	<b>CEM, Athiyandal</b> Dr.P.Parasuraman Professor (Agron.)and Head Dr.S.Krishnakumar Assistant Professor (SS&AC) <b>RRS,Aruppukottai</b> Dr.R.Durai Singh Professor (Agronomy) Dr.B. BhakiyathuSaliha Assistant Professor (SS&AC) Dr.S. Selvakumar, Assistant Professor (SWC) <b>ARS,Kovilpatti</b> Dr.N. Anandaraj Assistant Professor (SWC) Dr.V.Sanjivkumar Assistant Professor (SS&AC)	The experiment at three centres viz..CEM, Athiyandal, RRS, Aruppukottai, ARS, Kovilpatti with the following treatments will be conducted  T <sub>1</sub> - Farmers practice (rainfed cultivation without supplemental irrigation) T <sub>2</sub> - Supplemental irrigation twice through mini portable sprinkler T <sub>3</sub> - Supplemental irrigation twice through mini portable sprinkler & crop residue mulch 2.5 t/ha.	Supplemental irrigation to mitigate the moisture stress at critical stages of the crop enhances the yield.
	DCM/CBE/AGR/MAZ/2017/001 Enhancing water use efficiency and water productivity of Maize – Vegetable cropping system	<b>WTC, Coimbatore</b> Dr. G. Senthil Kumar AP(Agronomy) Dr. K. Nagarajan Professor (SWC) <b>AC&amp;RI, Madurai</b> Dr. N.K.Sathyamoorthy AP (Agronomy) Dr.M.Rajeswari Professor and Head <b>AEC&amp;RI,Kumulur</b> Dr.S. VallalKannan Asst. Professor(Agronomy) Dr. K. Arunadevi Assistant Professor (SWCE)	The experiment at three centres viz.. WTC, Coimbatore, AC&RI, Madurai and AEC&RI, Kumulur will be conducted T <sub>1</sub> - Drip fertigation @100% PE in maize – onion/ bhendi T <sub>2</sub> - Drip fertigation @125% PE in maize - onion/ bhendi T <sub>3</sub> - Conventional irrigation in maize – onion/bhendi	Drip fertigation for Maize - Onion /Bhendi cropping system increases yield attributes and yield



## Crop Management- Forage Crops

### General remarks

1. The fodder value of *Moringa* may be studied and included in the feed ration for validation. **(Action: Department of Forage Crops, TNAU, Coimbatore)**
2. The possibility of using mushroom spent waste for cattle feeding may be explored. **(Action: Department of Pathology and Forage Crops, TNAU, Coimbatore)**
3. Effect of ecto mycorrhiza on nutrient mobilization in cereal and grass fodders may be assessed. **(Action: Department of Forage Crops and Agri. Microbiology TNAU, Coimbatore)**

### I. List of projects reviewed

Sl. No.	Dept. / Station	URP	AICRP
1.	Dept. of Forage Crops, TNAU, Coimbatore	2	1(4)
2.	Dept. of Agronomy, TNAU, Coimbatore	2	
3.	Dept. of SST, TNAU, Coimbatore	1	
4.	Regional Research Station, Aruppukottai	1	
<b>Total</b>		<b>6</b>	<b>1 (4)</b>

### II. Remarks of the Director, Crop Management, Tamil Nadu Agricultural University

#### List of University Research Projects

S.No	Project number & title	Remarks
1.	<b>DCM/CBE/AGR/FRG/2016/002</b> Fodder bank for balanced nutrition to livestock Dr. S. D. Sivakumar, AP (Agronomy) M.Thirunavukarasu, AP (VAS) (August 2016 to July 2018)	The two year results showed that 14 cents area for green fodder cultivation (Cumbu Napier hybrid grass: 9 cents and <i>Desmanthus</i> : 5 cents) is needed for a milch animal with a milk yield of 10 lit./day. Growing of 2.5 cents area for green fodder (Cumbu Napier hybrid grass: 1.5 cents and <i>Desmanthus</i> : 1.0 cent) is needed for a goat with average body weight of body weight of 40 kg.  The findings recommended for OFT. Completion report needs to be submitted in time.

2.	<p><b>DCM/CBE/AGR/FRG/2016/001</b>          Developing package of practices for yield maximization in <i>Desmanthus</i> pre-release culture TND 1308.          Dr.S. D. Sivakumar, AP (Agronomy)          (January 2016 to June 2018)</p>	<p>Based on the two years of experimentation, adopting the seed rate of 20 kg/ha and application of 100 % of RDF as basal (25:40:20 kg NPK /ha) + 100 % of N and K as top dressing every year were found to be optimum for achieving higher growth and yield in <i>Desmanthus</i> pre-release culture TND 1308.          Salient findings can be given to breeders for information. Results have to be consolidated and completion report may be submitted.</p>
3.	<p><b>DCM/CBE/AGR/FRG/2016/001</b>          Fodder preservation through silage making          Dr. V. Vasuki, AP (Agronomy)          (September 2016 to September 2018)</p>	<p>BN grass along with fodder maize / multi cut fodder sorghum and <i>Desmanthus</i> in 2:1:1 ratio with 2 % jaggery solution produced a good quality and highly nutritive silage with high protein content, lactic acid, dry matter and low pH. The results have to be consolidated with required data and completion report has to be submitted in time.</p>
4.	<p><b>DCM/CBE/SAC/MAZ/2016/001</b>          Economic evaluation of intensive cultivation of fodder maize and its impact on soil health          Dr. K.SathiyaBama, AP (SS&amp;AC) ,          Dr. R. Karthikeyan, AP (Agronomy),          Dr. A. Ramalakshmi, AP (Agrl. Microb.)          (August 2016 to July 2018)</p>	<p>For continuous supply of green fodder, three crops of fodder maize and one fodder cowpea with FYM @ 25t/ha had produced maximum green fodder yield (128.4 t/ha/yr) and higher BCR (1.73) over four continuous crops of fodder maize. Findings may be given as information. The project needs to be continued for one more year to complete the third crop. Extension has to be obtained</p>
4.	<p><b>SEED/CBE/SST/LUC/2016/001</b>          Studies on maximisation of seed yield and standardisation of seed germination testing procedure in <i>Desmanthus</i>.          Dr.S.Sundareswaran          Professor (SST)          (September 2016 to August, 2018)</p>	<p>Foliar application of either 2% DAP or 1% TNAU Pulse wonder at 50% flowering and at pod formation stages is the best method for obtaining higher seed yield with higher germination and vigour in <i>Desmanthus</i>.          Salient findings may be given as information. The results have to be consolidated and completion report may be submitted.</p>
5.	<p><b>DCM/APK/AGR/FSO/2016/001</b>          Performance of multi cut fodder sorghum varieties under different land treatments and nutrient management in rainfed vertisol condition          Dr. S.Senthivel,          Professor (Agronomy)          (September 2016 to August, 2019)</p>	<p>Land management treatments did not resulted any significant impact on green fodder yield of fodder sorghum. However, application of 50 per cent recommended dose of fertilizers through inorganic and 50 per cent through organics found to be suitable for achieving higher green and dry fodder yield in multi cut fodder</p>

		<p>sorghum variety CO 31 under rainfed vertisols.</p> <p>Salient findings may be given as information. The results have to be consolidated with pooled data and completion report may be submitted.</p>
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### III. PROPOSED ON FARM TRIAL

#### Fodder bank for balanced nutrition to livestock

**Project leaders:** Dr. S. D. Sivakumar, AP (Agronomy), Department of Forage Crops and Dr. M.Thirunavukarasu, AP (VAS), Department of VAS, TNAU, Coimbatore -3.

#### Treatments

##### Milch cow

- Balanced nutrition through fodder crop combination (14 cents)  
(Grass fodder 35 kg + Legume fodder 10 kg + Dry fodder 7 kg /day / animal )

BN Grass	-	9.0 cents
<i>Desmanthus</i>	-	5.0 cents
- Farmers practice

##### Goat

- Balanced nutrition through fodder crop combination (2.5 cents)  
(Grass fodder 5 kg + Legume fodder 2 kg /day / animal )

BN Grass	-	1.5 cents
<i>Desmanthus</i>	-	1.0 cents
- Farmers practice

#### Observations to be recorded

##### Fodder crops

Green fodder yield

Economics of fodder production

##### Cow

Milk yield (lit/animal/day),

Lactation period

No. of insemination/calf

## Goat

Weight gain/day/animal

Inter kidding interval

**Action:** Department of Forage Crops, TNAU, Coimbatore – 3.

**Duration:** 2018-19

### Scientist incharge

Dr. S. D. Sivakumar, AP (Agronomy), Department of Forage Crops, TNAU ,Coimbatore

Dr. M.Thirunavukarasu, AP (VAS), Department of VAS, TNAU ,Coimbatore.

### Deliverable

The findings will be useful to optimize the grass and legume green fodder production to meet out per day requirement of animals

## V. ACTION PLAN FOR IDENTIFIED THEMES (2018-19)

<b>CROP MANAGEMENT</b>				
<b>Theme No. 1</b>		<b>Economic evaluation of intensive cultivation of fodder maize and its impact on soil health</b>		
<b>Theme Leader</b>		Dr. K.Sathiya Bama, Asst. Professor (SS&AC), Dept. of Agronomy, TNAU, Coimbatore		
<b>Project No.</b>		<b>DCM/CBE/ SAC/ MAZ/ 2016/ 001</b>		
<b>S.No.</b>	<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
1.	To assess the green fodder yield and soil health in fodder maize based cropping system	Dr. K.Sathiya Bama Asst. Professor (SS&AC) Dr. R. Karthikeyan Asst. Professor (Agronomy) Dr. A. Ramalakshmi Asst. Professor (Agrl. Microbiology) Dept. of Agronomy, TNAU,Coimbatore.	Six crops raised (four crops of first cropping sequence and first two crops of second cropping sequence completed during 2016-18. Remaining two crops of second cropping sequence 2017 - 2018 will be continued during 2018-2019 and the data pertaining to the soil physico chemical characteristics, crop biometrics, varied microbial population and economics are to be studied.	Maintenance of soil fertility in continuous fodder maize cropping system.

<b>Theme No. 2</b>		<b>Assessing the suitability of single budded setts in bajra napier hybrid grass CO (BN) 5</b>		
<b>Theme Leader</b>		Dr. S. D. Sivakumar, Asst. Professor (Agronomy), Dept. of Forage crops, TNAU, Coimbatore		
<b>Project No.</b>		New project		
<b>S.No.</b>	<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
2.	To assess the performance of single budded setts on establishment, growth, yield and economics in Bajra Napier hybrid grass	Dr. S. D. Sivakumar, Asst. Professor (Agronomy),  Dr. N.Sridharan Asst. Professor (CRP)	<p>One year field experiment will be conducted with following treatments</p> <p>1.Horizontal planting of manually prepared single budded setts with sett treatment</p> <p>2. Horizontal planting of manually prepared single budded setts without sett treatment.</p> <p>3. Horizontal planting of sett cutter prepared single budded setts with sett treatment</p> <p>4.Horizontal planting of sett cutter prepared single budded setts without sett treatment</p> <p>5.Vertical planting of two budded setts</p> <p>(Sett treatment: 12 hours soaking in water+ 24 hours incubation)</p> <p>Data on bio- chemical parameters (reducing sugars, phenolic content, IAA oxidase activity) green fodder yield and economics will be assessed.</p>	Reduced quantity of planting materials and cost.

<b>Theme No. 3</b>		<b>Optimizing the feedstuffs for air evacuating method of silage production in polybags</b>		
<b>Theme Leader</b>		Dr. S. D. Sivakumar, Asst. Professor (Agronomy), Dept. of Forage crops, TNAU, Coimbatore		
<b>S.No.</b>	<b>Activity</b>	<b>Name of the scientist(s) and centre</b>	<b>2018-19</b>	<b>Deliverables</b>
3.	To optimize the grass and fodder combinations and additives for silage using air evacuating techniques	Dr. S. D. Sivakumar, Assist. Professor (Agronomy),  Dr. K.Sathiya Bama Asst. Professor (SS&AC)	Experiments will be conducted using poly bags with a capacity of 50 kg and having 80 gsm thicknesses. The trial will be established with following treatments T1 - BN grass alone T2 - Fodder maize alone T3 - Multi cut fodder sorghum alone T4 - BN grass + <i>Desmanthus</i> (3 :1) T5 - Fodder maize + <i>Desmanthus</i> (3 :1) T6 - Multi cut fodder sorghum + <i>Desmanthus</i> (3 :1) T7 - BN grass + fodder cowpea (3 :1) T8 - Fodder maize + fodder cowpea (3 :1) T9 - Multi cut fodder sorghum + fodder cowpea (3 :1) With out additives & With additives {Molasses (2 kg/ 100 kg) + Salt (0.8 kg/ 100 kg) Observations on green and dry fodder yield, moisture percentage, economic analysis, crude fibre (%), total protein (%), lactic acid (%), acetic acid (%), propionic acid (%), butyric acid (%) will be done for obtaining low cost and high quality silage in poly bags.	Simplified silage making technique to meet the fodder requirement especially for lean period.

## CROP PROTECTION

**Present: Dr.A.S.Krishnamoorthy, Director i/c(CPPS), TNAU, Coimbatore**

The review of the university research projects on millets crop protection was conducted under the chairmanship of the Director, CPPS, TNAU, Coimbatore at Seminar Hall of the Department of Plant Pathology on 17<sup>th</sup> May, 2018. The Professor and Heads of the Department of Agricultural Entomology, Plant pathology and Nematology co-chaired the session. The following scientists attended the review meeting and presented the progress of research activities for the year 2017-18.

S.NO.	Name of the Scierntist	Mobile No.	E.Mail. ID
1.	Dr. P. Renukadevi, Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore.	9442007218	renucbe88@gmail.com
2.	Dr. I. Johnson, Asst. Prof. (Pl. Path.), Dept. of Millets, CBE.	9791244944	johnsonpath@gmail.com
3.	Dr. K. Sethuraman, Professor and Head (Pl. Pathology), MRS, Vagarai	8098637070	sethusamu1966@gmail.com
4.	Dr. R. Radhajeyalakshmi, Asst. Prof. (Pl. Path.), MRS, Vagarai.	8870323410	radhajeyalakshmi@hotmail.com
5.	Dr. M. Rajesh, Asst. Prof. (Pl. Path.), CEM, Athiyandal.	9524948319	mrjeshpath@yahoo.co.in
6.	Dr. T. Anand, Asst. Prof. (Pl. Path.), RRS, Paiyur.	9865135089	barathiana@gmail.com
7.	Dr. M. Paramasivan, Asst. Prof. (Pl. Path.), DARS, Chettinad.	9080826943	madathisivan@gmail.com
8.	Dr. S. Manimegalai, Professor (Agrl. Ent.), Dept. of Agrl. Entomology, CBE	9487550446	manimegalai.s@tnau.ac.in
9.	Dr. P. Anandhi, Asst. Prof. (Agrl. Ent.), ARS, Kovilpatti	8903155400	anandhi.aaidu@gmail.com
10.	Dr.N.M.Arivudainambi, Asst. Prof. (Agrl. Ent.), MRS, Vagarai	9843290842	Maize_ento@rediffmail.com

## A. Remarks on ongoing University Research projects

S.NO	Project Details	Project wise remarks
<b>I. Sorghum</b>		
<b>Entomology</b>		
S.No.	Project No., Title and PI	Remarks
1.	<p>CPPS/KPT/ENT/SOR/2015/001 Eco-friendly approaches for the management of important pests of sorghum (Oct. 2014- Sep. 2017) <b>Dr. P. Anandhi</b> Asst. Prof. (Agrl. Ent.),ARS, Kovilpatti</p>	<p>Since the project duration is over, completion report needs to be submitted on or before 30.06.2018 along with the data on neem oil ingredient analytical report and copy of publication A copy has to be submitted to Director (CPPS), TNAU, Coimbatore</p>
2.	<p>CPPS/CBE/ENT/SOR/2015/001: Screening of sorghum accession against major pests of sorghum and its management (Sep. 2015- Sep. 2018) <b>Dr.S.Manimegalai</b> Professor, Dept. of Agrl. Entomology, CBE</p>	<p>As a part on mechanism of resistance, in addition to recording the trichome density and size, it is suggested to find out the role of volatiles (through GCMS studies), HCN content, tannins, lignins, phenols, coumarin, carotenoids, iron, zinc, total sugars, total aminoacids, cellulose and silica content, which may be correlated with pest infestation.</p>
<b>II. Pearl Millet</b>		
<b>Plant Pathology</b>		
3.	<p>CPPS/ /PAT/2018-New Biological management of Pearl millet rust disease using mycoparasite <i>Sphaerellopsis ilum</i> (Biv.)B.Sutton (April 2018-March 2021) <b>Dr. I. Johnson</b> Asst. Prof. (Pl. Path.), Dept. of Millets, CBE.</p>	<p>The project work has been initiated without getting URP number. Immediate steps may be taken to get the URP approval number from the Director of Research.</p>
<b>III.Maize</b>		
<b>A. Plant Pathology</b>		
4.	<p>CPPS/CBE/PAT/MAZ/2018/001 Biointensive management of charcoal rot in maize (Mar. 2018-Apr. 2021) <b>Dr.P.Renukadevi</b> Asst. Prof. (Pl. Path.), Dept. of Millets, CBE.</p>	<p>The project work may be continued. It is suggested to include AM fungi in the treatment schedule along with other treatments proposed.</p>
5.	<p>CPPS/VGI/PAT/MAZ/2016-001 Management of leaf blight diseases of maize caused by <i>Helminthosporium turcicum</i> (Pass) and <i>Bipolaris maydis</i> (Nisik. and Miyake). (Jul. 2016 to Jun. 2019) <b>Dr.R.Radhajeyalakshmi</b></p>	<p>As a mid-term correction, two experiments involving fungicides and Biologicals separately, with different doses at different stages of application may be planned. <i>Bacillus subtilis</i> or any other <i>Bacillus</i> sp. with accession no. from the Dept. of Plant Pathology, TNAU,</p>



	Asst. Prof. (Pl. Path), MRS, Vagarai	Coimbatore may be used in the experiments. Microplot experiment has to be carried out to assess the grade wise yield loss assessment due to turicum blight disease in maize.
6.	<p>CPPS/VGI/PAT/MAZ/2017/001: Management of Maize Banded Leaf and sheath Blight (BLSB) caused by <i>Rhizoctoniasolani</i> f. sp. <i>sasakii</i> with biocontrol agents and fungicides (Jul. 2017 to Jun. 2020) <b>Dr. K. Sethuraman</b>, Professor and Head (Pl. Pathology), MRS, Vagarai</p>	The antagonism index has to be worked out for the microbial antagonists used. The microbes used should have accession number given by the Dept. of Plant Pathology, TNAU, Coimbatore. The best organism identified should be deposited in any IDA recognized culture collection bank before technology release. Separate trials have to be laid out to test the efficacy of fungicides and bioagents. As a midterm correction, it is also suggested to include AM fungi in the treatments.
<b>B. Entomology</b>		
7.	<p>CPPS/VGI/AEN/2014/001 Studies on the insect pests of maize and their natural enemies (Dec..2013-May 2018) <b>Dr.N.M.Arivudainambi</b>, Asst. Prof. (Agrl. Ento.), MRS, Vagarai</p>	As the progress made in the project is not fruitful, it is recommended to be closed. A deletion proposal may be sent to the Director of Research. The scientist is advised to send a new URP based on the theme area identified.
8.	<p>CPPS/VGI/ENT/MAZ/2014/002 Evaluation of certain insecticides and bio control agent <i>Trichogramma chilonis</i> against stem borer (<i>Chilopartellus</i>) in maize (May2014-Apr.1 2018) <b>Dr.N .M. Arivudainambi</b>, Asst. Prof. (Agrl. Ento.), MRS, Vagarai</p>	Satisfactory progress has not been made in the project. It is recommended for closure. A deletion proposal may be sent to the Director of Research. The scientist is advised to send a new URP based on the theme area identified.
<b>IV. Ragi and Small millet</b>		
9.	<p>CPPS/ATL/PAT/SMM/2014/001 Assessment and management of seed borne pathogens infection of Finger millet (<i>Elusine coracana</i> (L.) Gaertn.) in Tiruvannamalai District of Tamil Nadu. (Oct. 2014 – Sep. 2017) <b>Dr. M. Rajesh</b>, Asst. Prof. (Pl. Path.), CEM, Athiyandal.</p>	The work progress in this project is insufficient. The first objective of the project (to collect, identify and assess the seed borne pathogens infection in finger millet) has not been completed satisfactorily since 2015. The work has to be completed covering many villages in Thiruvannamalai districts on or before 31.08.2018. In this context, a separate report may be sent to the Director (CPPS). To fulfill the second objective, for the evaluation of integrated disease management strategies from seed to harvest in finger millet, a separate URP may be proposed on or before 30.06.2018 and sent for RPAC remarks. The year round work load of the scientist needs to be justified.

10.	CPPS/PAI/PAT/SMM/2016/001 Management of finger millet blast (Oct. 2016 – Oct., 2019) <b>Dr. T. Anand,</b> Asst. Prof. (Pl. Path.), RRS, Paiyur.	The OFT results on management of blast in finger millet conducted at RRS, Paiyur has to be repeated at three locations viz., KVK, Papparapatti, RRS, Paiyur and RRS, Vridhachalam by including a standard check and control.
11.	CPPS/CTN/PAT/SMM/2016/001 Management of leaf blight and node blast diseases in Indian Barnyard millet ( <i>Echinochloa frumentacea</i> (Roxb) (Oct. 2016 to Sep. 2019) <b>Dr.M.Paramasivan,</b> Asst. Prof. (Pl. Path.), DARS, Chettinad	Koch postulates need to be proved for the reported pathogen. Morphological and molecular confirmation of the pathogen has to be carried out. The effect of botanicals and fungicides should be evaluated in separate experiments.

## B. Thrust areas and Action Plans

### I. Entomology:

#### Sorghum

- ❖ Pest management
- ❖ Identification of pest resistance mechanisms in resistant entries
- ❖ Validating IPM modules

#### Action Plan 1: Sorghum pest management

Theme Leader	<b>Dr. S. Manimegalai, Professor (Agrl. Entomology)</b>	
Sub-theme	Activities (2018-19)	Deliverables
Evaluation of non-sorghum border crops for enhancing natural enemies	<ul style="list-style-type: none"> <li>❖ Comparing border crop with non-IPM module</li> <li>❖ Orientation behaviour of parasitoids and predators on flower &amp; leaf samples of sorghum and non-sorghum crops using olfactometer and EAG</li> <li>❖ Identification and estimation of volatile compounds of flower and leaf samples of sorghum and non-sorghum crop using GC-MS</li> </ul>	Suitable border crop that encourages natural enemies will be identified.

### Action Plan 2 : Identification of resistance mechanism

Theme Leader	<b>Dr. S. Manimegalai, Professor (Agrl. Entomology)</b>	
Sub-theme	Activities (2018 – 19)	Deliverables
Screening of sorghum accession against major pests.	<p>Response of resistant entries viz., TNS 671 TNS 665 , TNS 648 and IS 18551 to IPM practices in comparison with susceptible entry DJ 6514.</p> <p>Biochemical – tannins, lignins phenols, coumaric acids, total carotenoids, iron, zinc, total sugars, total aminoacids, cellulose, HCN, silica content and volatiles are analysed and correlated with pest infestation.</p>	Basis of resistance will be identified.

### Action Plan 3 : Validating IPM modules for sorghum resistant entries

Theme Leader	<b>Dr. S. Manimegalai, Professor (Agrl. Entomology)</b>	
Sub-theme	Activity (2018 – 19)	Deliverables
Validating IPM module for stem borer	<p><u>IPM module:</u></p> <ol style="list-style-type: none"> <li>1. Calcium silicate application @10 DAE (20 kg/ha)</li> <li>2. Intercropping sorghum + cowpea (4:1)</li> <li>3. Border cropping with cumbunapier</li> <li>4. Releasing egg parasitoid, <i>T. chilonis</i> at 30 and 40 DAE</li> <li>5. Spraying NSKE 5% at 45 DAE(need based)</li> <li>6. Phorate 10G @ 8 Kg/ha at 60 DAE (need based)</li> </ol>	IPM for stem borer

## II. Plant Pathology

- ❖ Disease management
  - Management of diseases of maize
  - Management of rust disease in pearl millet
  - Management of blast disease in finger millet
  - Management of leaf blight in barn yard millet
- ❖ Epidemiological studies on diseases and yield loss assessment in finger millet

### Action Plan 1 : Management of diseases of maize (CPPS/CBE/PAT/MAZ/2018/001)

Theme leader	<b>Dr. P. Renukadevi, Asst. Prof. (Pl.Path), Dept. of Millets, TNAU, CBE</b>	
Sub-theme	Activity (2018-19)	Deliverables
Biointensive management of charcoal rot in maize	<ul style="list-style-type: none"> <li>• Use of bio-inoculants viz., <i>T. harzianum</i> , <i>T. asperellum</i>, <i>Bacillus</i> spp and AM</li> <li>• Use of fungicides viz., carbendazim, propineb and trifloxystrobin + tebuconazole</li> </ul> <p><b>Observations:</b> PDI on 60<sup>th</sup> DAS</p>	Effective method of management of charcoal rot.

**Action plan 2 : Management of diseases of maize (CPPS/VGI/PAT/MAZ/2016/001)**

<b>Theme leader</b>	<b>Dr.R.Radhajeyalakshmi,Asst. Prof. (Pl.Path),MRS,Vagarai</b>	
<b>Sub-theme</b>	<b>Activity (2018-19)</b>	<b>Deliverables</b>
Management of leaf blight diseases of maize	Seed treatment with <i>Pfl</i> @ 10 g/kg Foliar Spray at the appearance of symptom with Mancozeb (0.2%), Azoxystrobin (0.3%) and Propiconazole (0.1%) during <i>kharifand rabi</i> under artificial and natural incidence  <b>Observations:</b> PDI on 30 <sup>th</sup> , 45 <sup>th</sup> and 60 <sup>th</sup> DAS	Effective method of management of leaf blight.

**Action plan 3 : Management of rust disease in Pearl Millet (New)**

<b>Theme leader</b>	<b>Dr. I. Johnson, Asst. Professor (Pl. Path.), Dept. of Millets, TNAU, CBE</b>		
<b>Sub-theme</b>	<b>Activity (2018-19)</b>	<b>(Activity) 2019-20</b>	<b>(Activity) 2020-21</b>
Biological management of rust	Selection and characterization of efficient isolates of <i>Sphaerellopsis filum</i> from hot spots.	Standardization of media for mass multiplication  Fixing dosage and delivery system ( <i>In vitro</i> and glass house).  <b>Observations:</b> Mycelia growth, sporulation PDI on 30 <sup>th</sup> ,45 <sup>th</sup> and 60 <sup>th</sup> DAS	Fixing dosage and delivery system ( <i>In vivo</i> ).  To validate the efficacy of liquid formulation of <i>S. filum</i> against <i>P. substriata</i> in pearl millet under field condition

**Action plan 4 : Management of leaf blight in barnyard millet(CPPS/CTN/PAT/SMM/2016/001)**

<b>Theme leader</b>	<b>Dr. M .Paramasivan, Asst. Prof. 9Pl. Path.), DARS, Chettinad</b>	
<b>Sub-theme</b>	<b>Activity (2018-19)</b>	<b>Deliverables</b>
Management of leaf blight in barnyard millet	Seed treatment with <i>Pfl</i> @ 10 g/kg, <i>B. subtilis</i> @ 10 g/kg (Accession no. should be obtained from Department of Plant Pathology, TNAU, Coimbatore). Foliar Spray at the appearance of symptom with carbendazim + Mancozeb (0.2%), Mancozeb (0.2%) and Carbendazim (0.1%) during <i>kharif</i> , 2018 and 2019.  <b>Observations:</b> PDI on 30 <sup>th</sup> and 45 <sup>th</sup> DAS	Effective method of management of leaf blight.

**Theme 2 : Epidemiological studies on diseases and yield loss assessment in finger millet**

<b>Theme leader</b>	<b>Dr. M. Rajesh, Asst. Prof. (Pl. Path), CEM, Athiyandal</b>	
<b>Sub-theme</b>	<b>Activity (2018-19)</b>	<b>Deliverables</b>
Fortnightly sowing of finger millet for blast disease assessment	<ul style="list-style-type: none"> <li>• Susceptible entry - KM 252</li> <li>• <i>Kharif</i> – 1<sup>st</sup> June to 16<sup>th</sup> Sep’ 2018</li> <li>• <i>Rabi</i> – 1<sup>st</sup> Oct’ to 16<sup>th</sup> Dec’ 2018</li> <li>• Summer – 1<sup>st</sup> Jan’ to 16<sup>th</sup> Feb’ 2019</li> </ul> <p><b>Observations to be recorded:</b></p> <ul style="list-style-type: none"> <li>• Leaf blast incidence on 35<sup>th</sup> DAS</li> <li>• Neck blast incidence on 50<sup>th</sup> DAS</li> <li>• Finger blast incidence on 70<sup>th</sup> DAS</li> </ul>	Farm advisory on critical stages of disease incidence based on date of sowing

**OFT proposed:**

**T<sub>1</sub>:** ST with TNAU-Pf1 @ 10g/kg + two sprays of Tricyclazole @ 1 g/l

**T<sub>2</sub>:** ST with Carbendazim @ 2g/kg + two sprays of Carbendazim @ 1 g/l

**T<sub>3</sub>:** Untreated control

Design : RBD

Variety : PY2 /CO(Ra)14

Replications : 7

Time of application : Foliar application of talc-based formulation of TNAU-*Pf1* and fungicide will be given during maximum tillering and heading phase.

**Observations to be recorded:**

A. Incidence of different types of blast - Leaf blast (PDI), neck blast (%) and finger blast (%)

B. Grain yield and Cost-Benefit ratio

<b>S. No.</b>	<b>Name of the centre</b>	<b>Scientist in-charge</b>
1.	RRS, Paiyur	Dr. T. Anand, Asst. Prof. (Pl. Path.)
2.	KVK, Papparapatty	
3.	CEM, Athiyandal	Dr. M.Rajesh, Asst. Prof. (Pl. Path.)
4.	RRS, Vriddhachalam	Dr. G. Senthilraja, Asst. Prof. (Pl. Path.)

### C. General recommendations:

1. All the scientists are requested to have a minimum of one URP based on their work load.
2. Any survey data should be accompanied by GPS coordinate.
3. In the management trials, pesticides, which are having CIB label claim alone should be tested.
4. All the effective microbial cultures used for the experiments should have an accession number from IDA recognized culture collection centre (AITCC, Mau). All microbial cultures used in experiments should have an accession number given by the Department of Plant Pathology, TNAU, Coimbatore. GenBank accession numbers are not acceptable during evaluation of the culture. It may be used as a tool for taxonomic identity.
5. While testing the *in vitro* efficacy of an organism against a pathogen, the antagonism index has to be worked out by giving due weight-age to antibiosis, competitive saprophytic ability (CSA), and enzyme production.
6. The experiment on yield loss assessment due to blast in finger millet may be proposed as a separate URP on or before 30.06.2018 (Dr.M.Rajesh, Asst. Prof. CEM, Athiyandal).
7. The IPM module developed by Dr. Anandhi for the management of sorghum pests has to be test verified in two locations namely *viz.*, ARS, Kovilpatti and Dept. of Millets at Coimbatore as OFT and the results may be proposed as recommendation (Action: Dr. Manimekalai, TNAU, Coimbatore)
8. The following team of scientists are identified for documenting the pests and diseases of millets. The time line fixed for the completion of task is 31.10.2018. The work progress may be periodically updated to the Director (CPPS)

<b>Team Leader (s)</b>	<b>Entomology: Dr.S. Manimegalai</b> <b>Plant Pathology: Dr. P. Renukadevi</b>
<b>Activity</b>	<b>Maize</b>
Documentation of millet pest and diseases (Book, pamphlets and leaflets in Tamil and English)	1. Dr. K. Sethuraman 2. Dr.R. Radhajeyalakshmi <b>Pearl millet:</b> 1. Dr. I. Johnson, <b>Small millets:</b> 1. Dr. M. Rajesh, Asst. Prof. (Pl. Path.), CEM, Athiyandal 2. Dr.T.Ananth, Asst. Prof. (Pl. Path.), RRS, Paiyur 3. Dr.M. Paramasivan, Asst. Prof. (Pl. Path.) DARS, Chettinad 4. Dr. G. Senthilraja,Asst. Prof. (Pl. Path.),RRS, Vriddhachalam

### General remarks:

- Location specific and farmers preferred varieties may be developed
- In fodder crops besides yield, the quality parameters viz., fibre content and mineral contents should be studied
- Rainfall details of the experimentation period for trials related to rainfed trials and time of sowing should be given
- Midterm correction of the project if needed, should be done to improve the outcome of the project
- Population dynamics of insect pests and correlation regression of diseases in relation to weather parameters should be carried out.
- In fodder crops also, the reaction to diseases and pests must be studied
- Utilization of *Ectomycorrhiza* for fodder crops to supplement the nutrient requirement may be studied. Also fertilizer non responsive type may be developed.
- Screen and evaluate the performance varieties in sodic soil area
- Evaluate the performance of short duration millet varieties in Nagapattinam area
- At Kovilpatti, forage sorghum studies to be discouraged.
- Centre of Excellence in millets, Athiyandal may send training proposals as instructed by Agrl. Production commissioner.
- Crop cafeteria is to be established in each station /centre.
- Large scale demonstration of recent varieties to be taken up, in farmers fields.
- Stemcutting of desmanthus to be studied for multiplication
- Herbicides with less residue or alternate sources of herbicides may be taken up for study
- Approved chemicals can be taken up for studies for giving recommendation to farmers (CRP trials at RRS, Paiyur)
- Residue analysis has to be taken in herbicide trials
- Methodology for the evaluation of yield loss to be given in yield loss trials – Pathology