

PROCEEDINGS OF THE 34th CROP SCIENTIST MEET ON MILLET AND FORAGE CROPS HELD AT TNAU, COIMBATORE

The 34th crop scientists meet on millets and forage crops was held on 21 and 22 June, 2016 at Tamil Nadu Agricultural University, Coimbatore. Review on University Research Projects on crop improvement, crop management and crop protection was taken up by the respective Technical Directors on 21.6.2016.

The research outcomes in crop improvement, crop management and crop protection were presented on 22.6.2016 with the introductory remarks of Dr.M.Maheswaran, Director of Research. The research action plans for the next three years were presented under the Chairmanship of Dr. K. Ramasamy, Vice Chancellor of TNAU.

The Action taken on the recommendations of 33rd crop scientists' meet for crop improvement on millets and forage crops was presented by Dr.P.Sumathi, Professor and Head, Department of millets and Dr.C.Babu, Professor and Head, Department of Forage crops respectively. The action taken on crop management on millets was presented by Dr. R.Kalpana, Assistant Professor (Agronomy) and on forage crops was presented by Dr. V.Vasuki Assistant Professor (Agronomy). Dr.P.Renukadevi Assistant Professor (Plant Pathology) presented the action taken report of crop protection on millets.

The action plans for crop improvement, crop management and crop protection were presented by Dr. .K.Ganesamurthy, Director i/c, CPBG. Dr. C. Jayanthi, Director i/c, CM and Dr. K. Ramaraj, Director i/c, CPPS respectively.

Proceedings of the 34th crop scientist's on millets and forage crops for crop improvement was furnished under following subheads

- 1) Remarks on the ongoing University Research projects
- 2) Decision made on the entries for Variety Release/ART/MLT from breeders
- 3) Decision made on OFT evaluation for technologies from Crop Management and Crop protection Scientists
- 4) Remarks made by the Vice-Chancellor
- 5) Action Plan for 2016-2019: Crop Improvement, Crop Management and Crop Protection

1) Remarks on the ongoing University Research projects

Crop Improvement

Sorghum

S.No.	URP Details	Remarks
1	CPBG/CBE/PBG/SOR/2013/002 Maintenance, evaluation and utilization of germplasm in sorghum April 2013 to March 2018 Dr. A. Yuvaraja	A total of 4260 accessions are available in sorghum. Of these 4260, how many are with complete passport data? This project should be continuous project for long time. In that case, how many accessions are really characterized? Do we have a core collection of sorghum derived from these 4260? Instead of making piecemeal reports, a consolidated report on the sorghum germplasm can be attempted.
2	CPBG/CBE/PBG/2013/003 Development of high yielding hybrids suitable for irrigated and rainfed ecosystem of Tamil Nadu with improved tolerance to shoot fly and stem borer June 2013 to May 2018 Dr. B. Selvi	Two advanced cultures viz. TNSH 487 and TNSH 488 are being evaluated and their seeds are being produced and maintained. The project on the development of dual purpose varieties has only the evaluation component.
3	CPBG/CBE/PBG/SOR/2013/004 Development of dual purpose varieties suitable for rainfed and irrigated ecosystem of Tamil Nadu with improved tolerance to shoot fly and stem borer June 2013 to May 2018 Dr. B.Selvi	In both the projects, objectives include improved tolerance to shoot fly and stem borer. But the reporting does not possess any information on this component. Is there any need to have two different projects considering the popularity of hybrids among the farmers?
4	CPBG/CBE/PBG/SOR/2016/new Development of high yielding single/multicut forage sorghum varieties with improved qualities and disease resistance April 2016- March 2021 Dr. A. Yuvaraja	Specific nutritional qualities should be targeted and addressed instead making random crosses and selection.
5	DRES/KPT/PBG/013/001 Breeder Seed and Nucleus Production of K8 Sorghum. April 2013- March 2016 Dr.R. Thangapandian	New numbering system should adopted by sending necessary proposal through the Technical Director. Is there any necessity for having a separate project just for producing the nucleus and breeder seed of a single variety? Since, Dr.Malini is the scientist working in sorghum the project may be transferred

		in her name. in lieu of this project he will propose a new project on Pearl millet
6	CPBG/KPT/PBG/New Evaluation of high yielding sorghum varieties with resistance/ tolerance to earhead midge for late/ normal sowing conditions March 2015 to Feb 2020 Dr. N. Malini	The objectives of the project include general stepwise methodology being adopted in any breeding project.
7	CPBG/APK/PBG/SOR/2015/002 Evaluation of sorghum genotypes for development of varieties suitable for rainfed regions of Tamil Nadu Mar 2015 to Feb 2018 Dr. K. Anandhi	

Cumbu

S.No.	URP Details	Remarks
1	CPBG/CBE/PBG/PEM /2011/003 Maintenance of germplasm accessions and collection, evaluation and utilization of genetic resources in pearl millet (<i>Pennisetumglaucum</i>) July 2011 to May 2016 Dr. P. Sumathi	Of the 2608 accessions, how many are with complete passport data? This project should be continuous project for long time. In that case, how many accessions are really characterized? Instead of making piecemeal reports, a consolidated report on the pearl millet germplasm can be attempted. Why selfing and sibmating are followed? There could lot differences between the products of self-fertilization and sib mating?
2	CPBG/CBE/PBG/PEM/2015/004 Evolution of high yielding single cross pearl millet hybrids with resistance to downy mildew April 2015 - March 2020 Dr. P. Sumathi	Utmost care should be taken to maintain the purity of inbreds so that the evolved hybrids will have uniformity in the field. How breeding for downy mildew resistance is achieved under this project?
3	CPBG/CBE/PBG/PEM/2015/005 Maintenance of genetic purity and production of nucleus seeds of parental lines of hybrids and composites developed in pearl millet (<i>Pennisetumglaucum</i> L.) July 2015 –June 2020 Dr. P. Sumathi	What are the other parental lines being maintained under this project?

Maize

S.No.	URP Details	Remarks
1	CPBG/CBE/PBG/MAZ/2013/001 Evolution of single cross high yielding maize hybrids	The volume of work under this project includes all the components starting from

	resistant to SDM with different maturity groups viz., late (> 95 d), medium (> 85-95 d) and early (>75-85 d) suitable for irrigated ecosystem. June 2013-May 2018 Dr.R.Ravikesavan	making crosses to nucleus and breeder seed production. In this how the breeding for SDM is going to be achieved?
2	CPBG/CBE/PBG/MAZ/2013/002 Development of high yielding sweet corn hybrids suitable for Tamil Nadu June 2013-May 2018 Dr. R. Ravikesavan	Specific attributes associated with sweet corn may be evaluated to identify the right parents for crossing instead of going for random crossing and evaluation.
3	PBG/CBE/PBG/MAZ/2013/003 Collection, maintenance and evaluation of genetic resources in maize gene bank and development of inbred lines June 2013 to May 2018 Dr.A.Yuvaraja	This project includes the evaluation of all the materials from AICRP programmes. Instead of evaluating all the accessions, a set of core collection of maize accessions can be evaluated both at Coimbatore and Vagarai simultaneously. New numbering system should be adopted.
4	DRES/VGI/PBG/2015/New Collection, characterization and maintenance of maize germplasm April 2015 to March 2018 Dr. N. KumariVinodhana	
5	DRES/VGI/PBG/2015/New Development of high yielding single cross maize hybrids suitable for irrigated and rainfed ecosystems April 2015 to March 2018 Dr.N. KumariVinodhana	CPBG/CBE/PBG/MAZ/2013/001 and DRES/VGI/PBG/2015/New have same objectives. Care should be taken not to duplicate the work in both the places.

Small Millets

S.No.	URP Details	Remarks
1	CPBG/ATL/PBG/SMM/2014/001 Genetic improvement of drought resistance in samai, tenai and panivaragu to evolve high yielding varieties suitable for Tamil Nadu. August 2014 - July 2019 Dr. A. Nirmalakumari	Considering the availability of facilities right parents may be identified for making crosses. The extent of genetic variability in the available germplasm may studied
2	CPBG/ATL/PBG/SMM/2015/New Genetic improvement of finger millet, kodomillet and barnyardmillet to evolve high yielding varieties suitable for rainfed conditions of Tamil Nadu August 2015 to July 2018 Dr. R. Kanchana Rani	Considering the availability of facilities right parents may be identified for making crosses. The extent of genetic variability in the available germplasm may studied
3	PBG/ATL/PBG/SMM/2015/New Nucleus and breeder seed production in Small millets Oct, 2015 - Sep, 2020 Dr. A.Nirmalakumari, Dr. R. Kanchanarani	-

4	DRES/PAI/PBG/011/001 Evolution of high yielding long duration ragi varieties within built resistance to blast suitable for rainfed areas of North western region May 2011 to April 2016 Dr. P. Suthamathi	The major objective of the project is evolving long duration ragi varieties with blast resistance. Priority should be given for evaluating a set of ragi accessions for blast resistance and yield.
5	DRES/PAI/PBG/011/002 Maintenance and production of nucleus and breeder seeds of rice and millet varieties released from RRS, Paiyur June 2011 to May 2016 Dr. M. Dhandapani	The component of producing nucleus and breeder seed of millets can be handled by Dr. P. Suthamathi
6	CPBG/MDU/PBG/SMM/2015/001 Development of short duration, high yielding barnyard millet variety with improved nutritional quality July 2015 to June 2018 Dr. C. Vanniarajan	The origin of cultures viz. ACM-10-145, ACM-10-082, ACM-10-161 and ACM-12-110 under advanced stages of evaluation may be mentioned in the reporting. The reason for this is since the same cultures are being used in the new crossing programmes. How these cultures are given nomenclature with ACM prefix?
7	CPBG/CTN/PBG/SMM/2010/001 Barnyard millet Advanced varietal trial (BAVT) March 2010 to Till date Dr.R.Sasikala	Both the projects need to be modified in consultation with Dr. C. Vanniarajan at Madurai
8	CPBG/CTN/PBG/SMM/2014/002 Development of climate resilient Barnyard millet (<i>Echinochloafrumentaceae</i>) genotypes through Mutation Breeding November 2014 to October 2017 Dr.R.Sasikala	

Biotechnology

S. No	URP Details	Remarks
1	CPMB/CBE/PBT/SMM/2015/001 Characterization and expression profiling of genes involved in Zn and Fe homeostasis in barnyard millet 2016 – 2019 Dr. S. Varanavasiappan	What are the physiological attributes recorded? The relationship between the recorded attributes and Zn and Fe content may be reported.
2	CPMB/CBE/PBT/MAZ/2015/001 Development of superior maize inbreds through anther culture 2015 – 2018 Dr. V. Rajanbabu	The project was started in 2015. Still the standardization of explant for inoculation is not achieved?

Forage Crops

S.No.	URP Details	Remarks
1.	CPBG / CBE / PBG / NEW Collection, evaluation, documentation and selection of <i>Cenchrus</i> , <i>Deennath</i> and <i>Bracharia</i> species June 2014 to May 2017 Dr. C. Babu	The promising <i>Cenchrus</i> culture (FDC 265) identified project may be studied for its quality aspects
2.	CPBG/ CBE/ PBG/ NEW Evolving high biomass yielding genotypes in <i>Desmanthus</i> and <i>Stylosanthus</i> June 2014 to May 2017 Dr. C. Babu	The <i>Desmanthus</i> mutant (TND 1308) identified may be evaluated under MLT/OFT
3.	CPBG / CBE / PBG / FRG/2015/004 Evolution of leguminous forage crops (Lucerne and Fodder cowpea) for high yield and protein content April 2015 to March 2020 Dr. C. Babu	The Lucerne culture (TNLC 14) may be evaluated under MLT/OFT
4.	CPBG/CBE/PBG/FRG/2015/005 Evolution of forage grasses (Cumbu Napier hybrid and Guinea grass) for high biomass and quality April 2015 to March 2020 Dr. C. Babu	The project may be continued

Crop Management

Agonomy

S. No.	URP Details	Remarks
1	No.DCM/KPT/AMT/New Light interception study for optimizing biophysical requirements of Kudiraivali (<i>Echinochloafrumentacea</i>) by altering the sowing window and plant geometry to achieve higher yields under dry land 2015 – 2017 Dr. B.Arthirani Dr. P. Anandhi	Check the mean of plant population for D2 and D3. Check the population of D3 under S1. How the light interception was measured? How the study on light interception will be used optimizing biophysical requirements? What are those parameters? Whether the statistical design adopted suits to the experimentation?
2	DRES/APK/SAC/01/013 Studies on the effect of zinc in conjoint with organic manures on Hybrid Maize. (Var Co6) May 2013 to April 2016 Dr. S.Senthivel Dr. B.BhakiyathuSaliha	The project period is over and the completion report may be submitted with specific recommendation.

3	<p>Action plan 2015 – 16 Short term plan 1: Quantifying crop-weather relationship of selected food crops under current and future climate scenarios 1.7.14 to 30.6.2016 Dr. V. Geethalakshmi Dr. V. K. Paulpandi</p>	<p>The reporting of results is from some other source. The outcome of the project work is to be submitted since the project period. How this project is being operated without any numbering all these years?</p>
4	<p>New project Nutrient Management for hybrid maize in rainfedvertisol August 2015 – July 2017 Dr. R. Kavimani</p>	<p>Application of higher dose of fertilizer was found to be effective for augmenting the growth characters, yield attributes, grain yield, to get maximum net profit and BC ratio of maize in rainfedvertisol. What is the new finding from this project? Since the scientists has been transferred the project may be closed by sending the completion report'</p>
5	<p>URP. New Developing organic production technologies for millet (Samai-Blackgram) based cropping system 2015 to 2017 Dr. M. Jayachandran Dr. K. Sivagamy</p>	<p>Why the project number is not obtained? What is the new finding? The only difference between T2 and T3 is: in T2 FYM is applied and T3 EFYM is applied. The Effect of EFYM is known but what are the actual causes? How an experiment is completed without any replications?</p>
6	<p>DCM/ATL/AGR/SMM//2015/001 Evaluation of System of Finger millet Intensification in Tamil Nadu October 2015 – June 2018 Dr. M. Jayachandran Dr. K. Sivagamy</p>	<p>Nursery management (six treatments) and spacing (five levels) are being two different practices followed. How various treatments of two different practices can be analyzed under single design (split plot design)? (In simple terms, a split-plot experiment is a blocked experiment, where the blocks themselves serve as experimental units for a subset of the factors. Thus, there are two levels of experimental units. The blocks are referred to as whole plots, while the experimental units within blocks are called split plots, split units, or subplots).</p>
7	<p>DCM/ATL/AGR/SMM/2015/002 Effect of organic foliar spray on growth and yield of ragi (<i>Eleusinecoracana</i>) in Tiruvannamalai District. January 2015 to March 2017 Dr.M.Jayachandran Dr.K.Sivagamy</p>	<p>What are the critical differences between 3% panchakavya (S1), 3 % vermiwash (S2), 3 % jeevamruth (S3), and 5 % coconut water (S4) for their nutrient status? Whether the differences were established before or after the experiment?</p>
8	<p>URP New Enhancing the productivity of small millets by dry farming techniques. 2014 – 16 Dr. R. Jeyasrinivas Dr. S. Senthilvel</p>	<p>The experiment was assigned to four different locations for two years and the trial was taken up in three places and not in RRS, Paiyur. The reason for not taking up the trial may be explained. The results of combined analysis of the trial conducted</p>

	Dr. N. Satheeskumar Dr. P. Ayyadurai	may be reported. If it is a research project number should be obtained.
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Soil Science and Agricultural Chemistry

S. No.	URP Details	Remarks
1	NRM/CBE/SAC/2014/001 Phosphorus acquisition and phosphorus use efficiency as influenced by various P sources in maize – groundnut sequence: An investigation using ³² P June, 2014 to May, 2016 Dr. S.Meena	The project period is over by 2016. Based on the reporting it is understood that the results obtained have to be test verified with field experiments.
2	NRM/CBE/SAC/13/004 Permanent Manurial Experiment of Coimbatore Under irrigated Tropical Agro Ecosystem November 2013 to October 2018 Dr. M. Malarkodi	Most of the findings are well established over period of times. A consolidated report on the PME may be prepared.
3	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. M. Elayarajan	Most of the PME across the stations are being conducted without any replications. The need for such kind of experimentations is to be elaborated with scientific reasons.

Agricultural Microbiology

S. No.	URP Details	Remarks
1	NRM/CBE/AGM/2015/001 Standardization of application of ArbuscularMycorrhizal Inoculum developed through root organculture in direct sown crops March 2015 – February 2018 Dr. K.Kumutha	Who will continue the experiment since the project leader is transferred to AC&RI, Madurai?

Seed Science and Technology

S. No.	URP Details	Remarks
1	SC/CBE/SST/2013/008 Influence of seed moisture content and containers under controlled and modified atmospheric conditions on storability of maize and blackgram seeds December 2013 to November 2016 Dr.K.NelsonNavamaniraj	The project is in the verge of completion stage. No substantial outputs are made available.

2	URP New. Influence of seed priming on productivity and storage of small Millets August 2014 to July 2016 Dr.K.Sundaralingam Dr.P.Srimathi Dr.V.Paramasivam Dr.C.Menaka Dr.D.ThirusenduraSelvi Dr.N.Indra	Both the experiments were assigned for two years. Since the project period is over these projects may closed and completion report sent. Here after this kind of project with ambiguity need not be proposed.
3	URP New Effect of seed invigouration treatment on seed quality maintenance during storage in maize August, 2014 to July, 2016 Dr.P.Selvaraju Dr.S.Kavitha Dr.K.Raja	

Crop Protection

Agricultural Entomology

S. No.	URP Details	Remarks
1	CPPS/KPT/ENT/SOR/2015/001 Eco-friendly approaches for the management of important pests of sorghum October 2014- September 2017 Dr. P. Anandhi	The effect of all the treatments in all the experiments were interpreted based on the yield obtained. The real causes of the treatments on the pest incidence are not made available.
2	CPPS/CBE/ENT/SOR/2015/001 Screening of sorghum accession against major pests of sorghum and its management September 2015 to September 2018 Dr. R. Philip Sridhar	The project report does not have substantial outcome. The continuation of the project can be decided based on the availability of the scientist in the Department.
3	CPPS/ATL/ENT/RAG/2014/001 Evaluation of plant based insecticides ragi aphids, <i>Rhopalosiphum maidis</i> (Fitch.) <i>Tetraneuranigriabdominalis</i> (Sasaki) December 2014 – November 2016 Dr. K.Govindan	None of the plant based insecticides are evaluated and reported.

Plant Pathology

S. No.	URP Details	Remarks
1	New project Management of leaf blight diseases of maize caused by <i>Helminthosporium turcicum</i> (Pass)	The project work does not have any experimental results related to the title and objectives proposed.

	Jan 2016 to Dec 2018 Dr.R.Radhajeyalakshmi Dr.K.Sethuraman	
2	CPPS/ATL/PAT/SMM/2014/001 Assessment and management of seed borne pathogens infection of Finger millet (<i>Elusinecoracana</i> (L.) Gaertn.) in Tiruvannamalai District of Tamil Nadu. October 2014 – September 2015 Dr. M. Rajesh	Without completing the assessment component, the management component has been initiated. What are the actual seed borne pathogens o finger millet first?
3	CPPS/ATL/PAT/SMM/2015/002 An investigation into the epidemiology and ecofriendlymanagement of blast disease in finger millet. January 2015 to December 2017 Dr. G. Senthilraja	<i>The present project is to understand epidemiology of blast disease in ragi.</i> Without establishing that how one can move on to ecofriendly Management of the concerned disease.

Nematology

S. No.	URP Details	Remarks
1	CPPS/CBE/ANM/2014/030 Evaluation of biocontrol potential of ArbuscularMycorrhizal Fungi viz., <i>Glomus</i> spp., <i>Acaulospora levis</i> and <i>Gigaspora margarita</i> against root-knot nematode, <i>Meloidogyne incognita</i> on tomato and lesion nematode, <i>Pratylenchus</i> spp. on maize July 2014 to June 2017 Dr. A.Shanthi	The project has been initiated in 2014. Substantial progress is not made
2	CPPS/ATL/NEM/SMM/2014/001 Studies on the occurrence of plant parasitic nematodes associated with small millets in Tiruvannamalai District November, 2014 – October, 2016 Dr. M. ShanmugaPriya	The project period is going to be over by November 2016. Substantial progress is not made

2) Decision made on the entries for Variety Release/ART/MLT from breeders

A. Cultures Identified for release

State release

Crop : Kudiraivali
Culture name : ACM -10-145
Centre : AC &RI , Madurai

Parentage : PLS from Aruppukottai local K 11 x K 9
 Duration : 95-100 days

Performance of grain yield

Year	No. of districts	Locations	ACM10-145 (kg/ha)	CO (Kv)2 (kg/ha)
MLT				
2012-2013	-	6	2677	2312
ART				
2013-2014	6	27	1277	1258
2014-2015	7	57	1658	1406
2015-2016	7	38	1641	1320
Mean		128	1813	1574

Why data for MLT is just for one year?

Salient Features

Grain yield : 2700 kg/ha
 Fodder yield : 3800 kg/ha
 High iron content : 16.67mg/100 g; Compact panicle

B. Cultures identified for ART 2016-17

Pearl millet (Hybrid trial)

Culture	Parentage	Duration (days)	Grain yield (kg/ha)	Special attributes
TNBH 08 804 (R)	Why no parentage?	88	4198	Bold and compact ear head, Resistance to downy mildew
TNBH 10885 (R)	ICMA92777 X PT 6069	91	5583	Compact earhead, DM and rust resistant
Checks: TNAU Cumbu hybrid CO 9, 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. The number of locations and seasons are furnished below

ART under Department of Agriculture

ART No.	1/2015-16	(June-July)	2/2015-16	(Sept-Oct.)	3/2015-16
Entry	TNBH08804	TNBH 10885	TNBH08804	TNBH 10885	TNBH08804
Check	TNAU Cumbu hybrid CO 9,	Private hybrid	TNAU Cumbu hybrid CO 9,	Private hybrid	TNAU Cumbu hybrid CO 9,
Thiruvallur	2		-		2
Villupuram	2		2		2
Vellore	-		-		2

Tiruvannamalai	2		-		2
Cuddalore	2		2		2
Dharmapuri	2		-		2
Salem	2		-		2
Namakkal	2		2		2
Erode	4		2		2
Coimbatore	4		2		2
Tiruchirapalli	2		-		2
Perambalur	4		-		2
Karur	4		-		2
Pudukkottai	-		2		2
Madurai	-		2		2
Theni	2		2		2
Dindigul	4		2		2
Virudhunagar	-		2		2
Sivagangai	-		2		-
Thoothukudi	-		2		2
Tirunelveli	-		2		-
Total	38		26		38

ART under KrishiVigyanKendras

ART No. 2015-16	1/2015-16	(June-July)	ART-2	Sep-Oct
Entry	TNBH08804	TNBH10885	TNBH08804	TNBH 10885
Check	TNAU Cumbu hybrid CO 9	Private hybrid	TNAU Cumbu hybrid CO 9,	Private Hybrid
Pudukkottai	2		2	
Cuddalore	2		2	
Virudhunagar	2		-	
Trichy	2		2	
Vellore	2		2	
Thiuvallur	2		-	
Arupkottai	-		2	
Villupuram	2		2	
Salem	2		-	
Madurai	2		2	
Dharmapuri	2		-	
Kovilpatti	-		2	
Total	20		16	

C. Cultures identified for MLT 2016-17

I. Grain Sorghum

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TKSV 1036 (R)	ICSB 518 x SPV 1489	93	2682	Moderately resistant to shoot fly and stem borer.
ASV 11029 (R)	IS18417 X CO25	100-105	2519	Non lodging, loose ear heads and white grains.
TNS648 (R)	APK 1 x M 35	100	2574	Dual purpose variety, moderately resistant to shoot fly and stem borer
TNS 660(R)	TNS 603x EP 60	100	2295	Red grain, moderately resistant to shoot fly and stem borer
TNS 661	TNS 603 x IS 18551	100	3016	Pearly white grain, Moderatly resistant to shoot fly
TNSH 487	ICS12Ax ICSR 89020	98	2930	Dual purpose, Moderatly resistant to shoot fly
TNSH488	ICS324 A x ICSR 89020	100	2819	Dual purpose, Moderatly resistant to shoot fly
Checks: CO 30, K12, Paiyur 2, Hybrid CO 5				

Seasons		
Kharif	(June – July) :	Coimbatore, Paiyur, Bhavanisagar, Vaigaidam, Athiyanthal
Rabi	(Sept-Oct) :	Kovilpatti, Yethapur, Aruppukkottai, Paiyur
Summer	(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. Forage sorghum

Entry	Parentage	Duration (Days)	Fodder yield (t/ha)	Special features
TNFS 213 (Repeat-3 rd year)	(Co26xM35)-1-3-3-2-3	65	22.69 t/ha	High green fodder yield, Tall Plant stature. Moderately resistant to shootfly.

TKFS 11109 (Repeat-2 rd year)	K 11 x SPV 2126	100	19.75 t/ha	Moderately resistant to shootfly and stem borer
Checks : Co 27 and K11				

Kharif	(June – July) :	Coimbatore, Paiyur, Bhavanisagar, Vaigaidam, Yethapur, Athiyanthal
Rabi	(Sept-Oct) :	Kovilpatti, Aruppukkottai
Replication: 5	Plot size: 9.6 m ² 4m x 2.4 m (8 rows)	Spacing: 30 cm x 15 cm
Fertilizer dose	90:45:45 NPK kg/ha (with two equal splits of N, one at basal and the other at 30 DAS)	

Observations to be recorded: Days to 50 % flowering, plant height, green fodder yield at 50 per cent flowering t/ha and pests and disease score if any

III. Pearl Millet

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TNBH 121235	ICMA02777xPT6303	90	5323	Bold, Compact, DM resistance
TNBH 121255	ICMA01666xPT6303	91	5598	Compact earhead, DM resistant
Checks : TNAU Cumbu Hybrid CO 9 , Private hybrid				

Seasons

Kharif	(June – July) :	Coimbatore ,Paiyur, Yethapur, Bhavanisagar, Vaigaidam , Vriddhachalam, Tindivanam and Athiyanthal
Rabi	(Sept-Oct) :	Kovilpatti, Aruppukkottai, Paiyur and Tindivanam
Summer	(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

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
VMH 12014	UMI 1200 X VIM 357	110	9907	Grain type: yellow semi-dent, High shelling percentage (79%) and test weight (39g/100 grains) Moderately resistant to TLB and stem borer
VMH 14020	UMI 1230 x VIM 153	110	9823	Grain type: orange semi-flint, High shelling percentage (79%) and test weight (39g/100 grains) Moderately resistant to TLB and stem borer
ACM-M13-007	UMI285 lpa x UMI1200-1	110	11840	Orange yellow color grain Flint type kernel, Low phytate content.
ACM-M-13-02	UMI1200 β^+ x UMI1230 β^+	110	8450	Orange yellow grain, Flint type kernel High β -carotene content
CMH 11-583	N09-153-3A x N10-65-3	105	12904	High yielding Deep orange kernels
CMH 11-586	N09-164-2 x N148	110	12500	High yielding Deep orange kernels

Checks : TNAU Maize Hybrid CO 6, 900 M (G), NK 6240

Seasons

Maize MLT I	Kharif (Irrigated) (June – July) :	Coimbatore, Vagarai, Bhavanisagar, Vriddhachalam, Paiyur, Athiyanthal, Vaigaidam, Virinjipuram, Madurai
Maize MLT III	Rabi - irrigated (Dec – Jan) :	Coimbatore, Vagarai, Bhavanisagar, Vriddhachalam, Paiyur, Vaigaidam
Replication: 3	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

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
VMH 12013	UMI 1200 X VIM 319	110	6865	Grain type: yellow dent High shelling

				percentage (79%) and test weight (37.0g/100) grains. Moderately resistant to TLB and stem borer
VMH 13023	UMI 1200 X VIM 153	105	7385	Grain type: yellow semi-dent High shelling percentage (78%) and test weight (37.5g/100) grains. Moderately resistant to TLB and stem borer
Checks : TNAU maize Hybrid CO 6, 900 M (G), NK 6240				

Maize MLT II	Kharif (Rainfed) (Sept-Oct) :	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

V. Sweet corn hybrids

Entry	Parentage	Duration (Days)	Green cob yield (Kg/ha)	Special features
CSCH 13002	WNC 12069 X SC 11-2	73-75 days	13129	High sugar content (16.9)
CSCH 14003	WNC 12039-1 x SC 1421-5-2-1	72-75 days	13864	Plumby kernels and high sugar content (17.3)
Checks : Sugar 75				

Sweetcorn MLT	Kharif (Jul-Aug) : Irrigated	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Athiyanthal, Vaigaidam, Virinjipuram, Madurai
Replication: 5	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

VI.Small millets

Ragi

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TNEc 1281	Selection from TNAU 900	108	3050	High yielding, Suitable for rainfed conditions
TNEc 1285	TNAU 900 x CO 14	110	2976	Suitable for rainfed conditions
PYR 009-04	CO 12 X TNAU 946	105	3660	Short duration, drought resistant
Checks :Paiyur 2, Co 15				
Seasons : <i>Kharif</i>				
Replication : 4		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

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TNPsu 176	CO 4 x IPM 113	87	1859	Drought tolerant, Non shattering and non lodging
TNPsu 177	CO 4 x TNAU141	88	1966	High yielding and bold grains
Check : CO (Samai) 4				
Seasons : <i>Kharif</i>				
Replication : 7		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				

Tenai

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TNAU 331	PS 4 x ISe 198	86	2889	High yielding, Drought tolerant and large panicle
TNAU 330	SiA 326 x ISe 186	84	2779	Drought tolerant and high tillering
Checks : CO (Samai) 4				
Seasons : <i>Kharif</i>				
Replication : 7		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				

Varagu

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TNPSc 176	Selection from DPS 19	107	1016	High yielding, Suitable for rainfed conditions
TNPSc 262	Selection from DPS 63	107	988	Suitable for rainfed conditions
Checks : CO 3				
Seasons : <i>Kharif</i>				
Replication : 7		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				

Panivaragu

Entry	Parentage	Duration (Days)	Grain yield (Kg/ha)	Special features
TN Pm 231	K1 x TNAU 137	69	2729	High yielding, bold grains and input responsive
TN Pm 238	Selection from IPM19	63	2405	Stable in yield potential, drought tolerant and non

				lodging
Checks	: CO (Pv) 5			
Seasons	: <i>Kharif</i>			
Replication	: 7	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			

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. Hedge Lucerne

Entry	Parentage	Duration (Days)	Green fodder yield (t/ha/yr)	Special features
TND 1308	Gamma ray mutant of Velimasal	Perennial	80	More number of pods per plant
Check : Velimasal				

Season

<i>Kharif</i> 2016 (June – July)	Vamban, Mettupalayam, Pattukottai, Thanjavur, Aruppukottai, Paiyur, Killikulam, DLF, Echenkottai DLF, Abishekapatti, DLF, Pudukottai, Papparapatty, Aliyarnagar, Yethapur and TNAU, Coimbatore			
Plot size: 8 m x 5 m	Spacing: 50 x 15 cm	Fertilizer: 25:40:20 kg/ha		

2. Lucerne

Entry	Parentage	Duration (Days)	Green fodder yield (t/ha/yr)	Special features
TNLC 14	Poly cross derivative involving CO 1	Perennial	136	Higher seed yield
Check : CO 2				

Season

<i>Rabi</i> 2016-17 (October – November)	Mettupalayam, Aliyarnagar, Paiyur, Papparapatty, DLF, Hosur, DLF, Echenkottai, DLF, Pudukottai, DLF, Abishekapatti, Anamalaipatti and TNAU, Coimbatore			
Plot size: 8 m x 5 m	Spacing: 25 x 15 cm	Fertilizer: 25: 120: 40 kg/ha		

Monitoring team visit for MLT

Team	Stations to be visited	Time of visit
Millet Crops		
Dr.P.Sumathi Dr.B.Selvi	Athiyanthal, Vridhachalam, Yethapur	Kharif : September/October 2016 Rabi/rainfed : December 2016 Late rabi/ Summer : February / March 2017
Dr.R.Ravikesavan Dr.C.Vanniarajan	Vaigaidam, Vagarai, Kovilpatti, Aruppukottai, Chettinad	
Dr.Kumarivinothana Dr.P.Suthamathi	Coimbatore, Bhavanisagar, Madurai	
Dr.A.Nirmalakumari Dr.S.Kanchanarani	Veppanthattai, Paiyur	
Dr.S.Sivakumar Dr.A.Yuvaraja	Tindivanam, Virinjipuram,	
Forage Crops		
Dr. C.Babu Dr.SD.Sivakumar	Vamban, Mettupalayam, Pattukottai, Thanjavur, Aruppukottai, Paiyur, Killikulam, DLF, Echenkottai DLF, Abishekapatti, DLF, Pudukottai, Papparpatty, Aliyarnagar, Yethapur, Hosur, DLF, Anamalaipatti and TNAU, Coimbatore	Kharif : September/October 2016 Rabi/rainfed : December 2016

3) Decision made on OFT evaluation for technologies from Crop Management and Crop protection Scientists

Crop Management

1. Altering crop geometry to suit mechanical weeding in maize

Objective: To evaluate the mechanical weeder by altering crop geometry for enhancing productivity of maize

Treatments

Treatment	First weeding	Second weeding	Spacing (cm)
T ₁	PE Atrazine at 0.25 kg/ha	Power weeder of 60 cm width on 45 DAS	75 x 20
T ₂	Power weeder of 60 cm width on 20 DAS	Power weeder of 60 cm width on 45 DAS	75 x 20
T ₃	PE Atrazine at 0.25 kg/ha	Hand weeding on 45 DAS	60 x 25

Variety: TNAU Maize hybrid Co 6; Season: Kharif / rabi (2016 -17)

Observations to be recorded

- Growth parameters
 - Crop establishment (population ha⁻¹)
 - Plant height at 20 and 45 DAS
 - DMP (kg/ha)
- Yield parameters
 - No. of cobs / plant
 - Individual cob weight (g)
 - No. of grains / cob
 - Test weight
- Grain and stover yield (kg/ha)
- Economics - Gross return, net return, BCR
- Weed observation
 - Weed count (no/m²)
 - Weed dry weight (g/m²)
- Weeder evaluation
 - Area coverage (m²/hr)
 - Crop damage %
 - Labour requirement in mandays / ha

Co-ordinating centre & scientist: Dr. R. Thukkaiyanan, Asst. Professor (Agronomy)
Maize Research Station, Vagarai

Centers and Scientists:

1. Maize Research Station, Vagarai
Dr. R. Thukkaiyanan, Asst. Professor (Agronomy)
2. Agriculture Research Station, Kovilpatti
Dr. S. Subbalakshmi, Asst. Professor (Agronomy)
3. Cotton Research Station, Veppanthattai
Dr. R. Kavimani, Professor and Head

Note: coordinating scientist may be contacted for further details / any clarification

4) Remarks made by the Vice-Chancellor

Crop Improvement

- The local sorghum genotypes from Tenkasi and Dharmapuri may be collected and evaluated for special traits (Action: Department of millets and RRS, Paiyur)
- Pollen fertility studies may be undertaken in maize (Action: Department of millets and RRS, Paiyur)

- Pearl millet research work may be initiated at ARS, Kovilpatti and ORS, Tindivanam (Action : ARS, Kovilpatti and ORS, Tindivanam)
- Research work on varagu may be initiated at DARS, Chettinad (Action : DARS, Chettinad)
- Pasture land grass species may be introduced at AC&RI, Killikulam and a model land for grazing may be established. (Action: Department of Forage Crops and AC & RI, Killikulam)

Crop Management

- The soil problems either in Ramnad or in Sivagangai District may be assessed (Action: Department of SS&AC, TNAU, Coimbatore)
- Treatment based on STCR approach may be included in the “Nutrient Management for hybrid maize in rainfedvertisol” experiment for comparison. (Action: Professor and Head, CRS, Veppanthattai).
- An IFS experiment may be formulated with one or two animals for effective utilization of waste water. (Action: Department of Agronomy, Coimbatore and Department of Forage crops, Coimbatore).

Crop Protection

- Survey and documentation of small millets diseases may be intensified and the spore length and width of blast pathogen of rice and Finger millet should be compared and documented
- Screening for disease resistance should be done using standard grading system
- The reasons behind the pest reduction in sorghum with various intercrop system may be studied
- Percentage of Azadirachtin in Neem Seed Kernel Extract used for sorghum pest management may be ascertained
- Major natural enemies under sorghum intercropping system may be identified and exploited