

TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

**38th Millets and Forage crops Scientists' Meet 2020
(21st May 2020)**

Lead Center

Department of Millets,
CPBG, Coimbatore

Directorate of Research

Tamil Nadu Agricultural University
Coimbatore 641 003

2020

PROCEEDINGS

38th Millets and Forage crops scientist meet (21st May, 2020)

The 38th Millets & Forages Scientist Meet was conducted on 21.5.2020 in Anna Auditorium involving 40 scientists off-line and more than 220 scientists on-line covering all college campuses, research stations and KVKs. **Dr. N. Kumar**, Vice Chancellor, TNAU, offered his opening remarks and elucidated the importance of millets food and nutritional security of the State. TNAU has released 143 millets, 10 maize, 3 wheat and 21 forages that well received by farmers. Some of the minor millets and forage varieties released by TNAU are highly rewarding and nationally recognized. The Vice Chancellor applauded and appreciated the efforts of CPPS in developing technology capsule for the management of fall army worm in the State of Tamil Nadu. The Honorable Chief Minister of Tamil Nadu granted **Rs. 5 Crore** to undertake basic research and technology development. The high biomass producing Bajra Napier Grass is well known and spread across the state.

Dr. K.S. Subramanian, Director of Research flagged off issues such as speed breeding in millets, dryland cafeteria in research stations, exploitation rhizospheric biomolecules for enhancing host plant drought tolerance, seed pelletizing technique, artificial intelligence to forewarning of fall army worm, composite lure for monitoring FAW besides hydroponics production of fodder free from heavy metal contaminants.

Dr. S. Geetha, Director (CPBG), **Dr. V. Geethalakshmi**, Director (Crop Management and **Dr. K. Prabakar**, Director (CPPS), presented the research highlights, action taken on previous Millets and Forages Scientists Meet and Action Plan for the year 2020-2021 of their respective directorates and departments involved. The Director (CPPS) briefed the gathering about the activities and achievements of TNAU Fall Army Worm taskforce being headed by **Dr. N. Sathiah**, Prof. & Head, Dept. of Agricultural Entomology and **Dr. N. Muthukrishnan**, Prof. (Entomology).The Vice Chancellor offered concluding remarks and the Director of Research summarized the event.

The proceedings of the 38th Millets & Forage Crops Scientists meet are furnished below in the following headings:

1. CROP IMPROVEMENT

Entries for variety release proposal /OFT/ART/MLT
Action plan projects
Research Projects and remarks

2. CROP MANAGEMENT

Technologies for adoption/OFT
Action plan projects
Research Projects and remarks

3. CROP PROTECTION

Technologies for adoption/OFT/Information
Action plan projects
Research Projects and remarks

4. REMARKS OF THE VICE CHANCELLOR

5. REMARKS OF THE DIRECTOR OF RESEARCH

6. PARTICIPANTS

I. CROP IMPROVEMENT**MILLETS****1.1 Entries identified for variety release/ART/OFT/MLT (2020-2021)****Variety Release:****1. Ragi**

Culture	Pedigree	Duration (days)	Seed yield (kg/ha)	Yield increase over check CO 15 (%)	Special features
TNEc 1285	TNAU 900 x CO (Ra) 14	110	2256	12.5	<ul style="list-style-type: none"> • High yield • Large panicle • Bold seeds

2. Varagu

Culture	Pedigree	Duration (days)	Seed yield (kg/ha)	Yield increase over check CO 3 and TNAU 86 (%)	Special features
TNPsc 176	Selection from DPS 63	110	2956	21.80 16.9	<ul style="list-style-type: none"> • Short duration • Non lodging • 'R' to shootfly and grain smut

ADAPTIVE RESEARCH TRIALS (ART)**1 Sorghum**

S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield Kg/ha)	Special attributes
1.	TNS 661 (R)	TNS 603 x IS 18551	100	3016	Pearly white grain, Moderately resistant to shoot fly

Checks : CO 32 and K 12

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

2. Tenai					
S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNSi 337	CO 6 x ISe 19	90	1765	<ul style="list-style-type: none"> • High tillering • Absence of tip sterility • Blast tolerant
Checks : CO (Te) 7 and ATL 1					
Observations to be recorded: Days to maturity, grain yield kg/ha, straw yield kg/ha and pests and disease score if any.					

3. Panivaragu					
S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1	TNPm 247	PV1403 x PV 1673	70-75	1365	<ul style="list-style-type: none"> • High yield • Large panicles • Bold seeds
Check : ATL 1					
Observations to be recorded: Days to maturity, grain yield kg/ha, straw yield kg/ha and pests and disease score if any.					

Distribution of ART

Sorghum			
Season	<i>Kharif</i> (Jun-Jul)	<i>Rabi</i> (Sep-Oct)	<i>Summer</i> (Feb- March)
Districts	20 districts, 52 locations Villupuram(2), Vellore (4) Tiruvallur(2), Thiruvannamalai (4), Cuddalore(2), Dharmapuri(2), Krishnagiri(2), Salem (2)	7 districts, 28 locations Madurai, Dindigul, Virudhunagar, Ramnad, Sivagangai , Thoothukudi and Thirunelveli	14 districts, 52 locations Dharmapuri, Krishnagiri, Salem Namakkal, Coimbatore Tirupur , Trichy, Perambalur, Karur, Pudukkottai, Madurai, Theni, Dindigul, Virudhunagar

	Namakkal (2), Coimbatore(4) Tirupur (4), Erode (2), Trichy(2), Perambalur(2), Karur(2), Pudukkottai,(2) Madurai(2), Theni(2), Dindigul(2), Virudhunagar (4)		
KVK	8 KVKs, 16 trials, 2 trials/KVK Pudukottai, Perambalur, Cuddalore, Trichy, Vellore, Villupuram, Salem, Madurai	8 KVKs, 16 trials, 2 trials/KVK Pudukottai, Cuddalore, Virudunagar, Trichy, Vellore, Aruppukottai, Villupuram, Madurai	9 KVKs, 16 trials, 2 trials/KVK Pudukottai, Cuddalore, , Trichy, Vellore, Thiruvallur, Villupuram, Salem, Madurai, Dharmapuri,
KVKs	Pudukottai, Karur, Perambalur, Cuddalore, Trichy, Vellore, Thiruvallur, Villupuram, Salem, Madurai, Dharmapuri, Theni (kharif -16 trials, Rabi-18 trials, each 2 trials in respective KVKs)		

Small millets	
Tenai	
Season	<i>Kharif 2020-21 (Rainfed)</i>
Districts	Villupuram, Vellore, Cuddalore, Dharmapuri, Salem, Namakkal, Madurai, Virudhunagar, Thoothukudi, Thirunelveli (Each district 5 locations) (10 districts, 50 locations)
Panivaragu	
Season	<i>Kharif 2020-21 (Rainfed)</i>
Districts	Villupuram, Vellore, Thiruvanamalai, Salem, Namakkal, Madurai, Theni, Virudhunagar, Thoothukudi, Tirunelveli (Each district 5 locations)(10 districts, 50 locations)

ON FARM TRIALS**1. Sorghum**

S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield Kg/ha)	Special attributes
1.	TKSV 1036 (R)	ICSB 518x SPV 1489	100	2102	<ul style="list-style-type: none"> • Dual purpose • Suited to rainfed conditions

Checks : CO 32 and K 12

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

Rainfed - Kharif'20 - Salem, Tiruppur and Erode

2 . Forage sorghum

S. No.	Crop / Culture	Parentage	DFF (days)	GFY (t/ha)	Special attributes
1.	TNFS 220	TNS 623 x ICSV 700	60	31.97	Plant Height -270 cm; Brix-12 %; TSS-9.74%

Checks : CO 27 and K 11

Few trials to be laid out as per farmers practice (Braodcasting)

3. Pearl Millet

S.No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	TNBH 1619	ICMA 10444 A x PT 6679	90	3564	High grain yield, Bold, Compact and DM resistance

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.

Pearl Millet OFT Seasons		
Kharif	June-July	Villupuram, Vellore, Tiruvannamalai, Cuddalore, Dharmapuri, Salem, Namakkal, Erode, Coimbatore, Tiruchirapalli, Perambalur, Karur, Pudukkottai, Madurai
Rabi	Sept-Oct	Theni, Dindigul, Virudhunagar, Sivagangai, Thoothukudi and Tirunelveli

4. Maize (Irrigated): OFT					
S. No.	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	CMH 12-686	UMI N09153-1-2 x N148	100-110	10269	High yielding Orange kernels MR to charcoal rot (3.6)
Checks: CO 6, COH(M) 8, NK 6240, P 3401					
Observations to be recorded: 50 % tasseling, 50% silking, grain yield (kg/ha), shelling percentage					

Maize OFT Irrigated Seasons		
Kharif	June – July/ Jan-feb	Coimbatore, Tiruppur, Salem, Karur, Erode, Perambalur, Madurai, Theni, Dharmapuri, Krishnagiri, Cuddalore, Dindigul

5. Maize (Rainfed): OFT					
S.No	Crop / Culture	Parentage	Duration (days)	Grain yield (Kg/ha)	Special attributes
1.	CMH 15-005	UMI 1220 x UMI 1210	105	5276	High yielding, drought tolerant suited for rainfed situations
2.	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, NK 6240					
Observations to be recorded: 50 % tasseling, 50% silking, grain yield (kg/ha), shelling percentage					

Maize OFT Rainfed Seasons

<i>Rabi</i> - Rainfed (25)	September – October	Dindigul, Madurai, Thoothukudi, Virudhunagar, Thirunelveli
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MULTI LOCATION TRIALS**1. Grain Sorghum**

Design : RBD	No. of replications : Four
Plot size : 4 × 2.7 m ²	Seed Quantity : 100 g/entry/location
Spacing : 45 × 15 cm	Season: kharif, rabi, Summer

Salient Features of the proposed cultures

Culture	Parentage	Duration (days)	Yield (kg/ha)	Special traits
TKSV 1158 (R)	TKSV 818 x CSV 17	95-100	3165	<ul style="list-style-type: none"> • Creamy white grain; Early duration • Resistance to midge; Photo insensitive
TKSV 1146	ICSB 539 x K 8	100-105	2649	<ul style="list-style-type: none"> • Creamy white grain • Bold grain(26 g). • Tolerant to midge. • Photo insensitive. • Suitable for rainfed situation

Checks: CO 32, K12

<i>Kharif</i> (4)	(June – July)	Coimbatore, Paiyur, Bhavanisagar, Athiyanthal
<i>Rabi</i> (5)	(Sept-Oct)	Kovilpatti, Yethapur, Aruppukkottai, Paiyur, Vaigaidam
Summer (3)	(Jan – Feb)	Coimbatore, Bhavanisagar and Vaigaidam
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

2. Maize (Irrigated): MLT

Design : RBD	No. of replications : 4
Plot size : 4 × 3.6 m ²	Seed Quantity : 100 g/entry/location
Spacing : 60 × 25 cm	Season: <i>kharif, rabi (irrigated)</i>

Features of the proposed cultures

Hybrids	Yield (kg/ha)	% inc. over check	Special traits
CMH 14-716	9567	10.2	Yellow and semi dent grains
CMH 14-714	9812	10.9	High yield and Mod. Resistant to TLB and C.rot
Checks : Maize Hybrid CO 6, NK 6240, P 3401			
Seasons			
Maize MLT I	<i>Kharif</i> Irrigated (June – July) (7)	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Athiyanthal, Vaigaidam, Virinjipuram	
Maize MLT III	<i>Rabi</i> irrigated (Dec – Jan) (6)	Coimbatore, Vagarai, Bhavanisagar, Paiyur, Vaigaidam, Virinjipuram	
Fertilizer schedule: 250: 75:75 NPK Kg/ha			

3. Maize (Rainfed): MLT

Design : RBD	No. of replications : 4
Plot size : 4 × 3.6 m ²	Seed Quantity : 100 g/entry/location
Spacing : 60 × 25 cm	Season: Rabi (Rainfed)

Features of the proposed cultures

Hybrids	Yield (kg/ha)	% increase over check	Special traits
VaMH 16008	6995	12.5	Semi dent grains Suited for rainfed 'R' to TLB
Checks: Maize Hybrid CO 6, NK 6240			
Maize MLT II	Rainfed (Sept-Oct) (5)	Aruppukkottai, Kovilpatti, Yethapur, Veppanthattai, Vagarai	
Fertilizer schedule: 250: 75:75 NPK Kg/ha			

Observations to be recorded: Days to 50 % tasseling, Days to 50 % silking, Plant height (cm), Grain yield (kg/ha), pests and disease score if any

4. Small Millets - Samai: MLT	
Design : RBD	No. of replications : 4
No. of rows : 6 rows	Seed Quantity : 100 g/entry/location
Spacing : 22.5 × 10 cm	Season:Kharifi (Rainfed)

Features of the proposed cultures

Culture	Parentage	Yield (kg/ha)	%increase over CO4	Special traits
TNPsu 223	CO (samai) 4 x TNAU170	2426	19.3	Open panicle Bold and grey grain Tolerant to shoot-fly Drought tolerant
TNPsu 224	CO2 x BL 41/3	2389	17.4	Semi-compact panicle Yellow grains High bulk density
Check: CO (Samai) 4, ATL 1				
Fertilizer schedule: 40: 20:00 Kg of NPK /ha				
Centres: Coimbatore, Paiyur, Bhavanisagar, Vaigaidam, Aruppukottai, Kovilpatti, Athiyandal, Chettinadu				

5. Panivaragu: MLT	
Design : RBD	No. of replications : 4
No. of rows : 6 rows	Seed Quantity : 100 g/entry/location
Spacing : 22.5 × 10 cm	Season:Kharifi (Rainfed)

Features of the proposed cultures

Culture	Parentage	Yield (kg/ha)	% increase over CO(PV)5	Special traits
TNPm264	CO(PV)5 x TNPm 236	2504	23.8	Open panicle with bold grains Tolerant to shoot-fly Drought tolerant
TNPm267	TNAU164 x DHP 2181	2471	22.1	Semi-compact panicle Uniform maturity Tolerant to lodging
Checks: CO (Pv) 5, ATL 1				
Fertilizer schedule: 40: 20:00 Kg of NPK /ha				
Centres: Coimbatore, Paiyur, Bhavanisagar, 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

6. Baby trials on Ragi		
Cultures to be tested	TNEc 1310, CO 15 and ML 365	
Total Plot area	30 to 40 cents	
Locations	Number of trials	Centre responsible
Thali	20	CEM, Athiyanthal
Denkanikottai	20	RRS,Paiyur
Harur	20	RRS,Paiyur
Pappireddipatti	20	KVK,Dhramapuri

- The test entry and checks should be screened artificially for blast along with resistant and susceptible checks at CEM, Athiyanthal and Department of Millets
- The seeds for the same to be dispatched by end of May'20 by CEM, Athiyanthal

7. Baby trials on Kuthiraivali		
Cultures to be tested	ACM 353, TNEf 317, MDU 1	
Total Plot area	30 to 40 cents	
Locations	Number of trials	Centre responsible
Madurai	30	PBG, AC&RI, Madurai
Paramakudi	30	ARS,Paramakudi and ARS, Ramnad
Viruthunagar	20	RRS,Aruppukkottai
Sivagangai	20	AC&RI, Madurai and DARS, Chettinad

FORAGE CROPS
1.1. Entries identified for OFT/MLT
Culture identified for OFT

1. Fodder Maize (continued)	
Plot size : 4 m × 1.8 m	Seed quantity/plot : 50 g/entry/location
Spacing : 30 cm × 15 cm	Season: <i>Kharif 2020/ Rabi 2020-21</i>

Features of the proposed culture

Entry	Parentage	Duration (Days)	GFY (t/ha)	Special features
TNFM 131-9	Poly-cross derivative involving African Tall	65	45.0	10 days earlier than AT; White grain; More palatability
Check: African Tall				
Season : <i>Kharif 2020/ Rabi 2020-21</i>				
OFTs (2020-21): 25				
Fertilizer: 80:40:20 kg/ha				
Observations to be recorded: Days to 50 % flowering and Green fodder yield per plot				

Cultures identified for MLT

1. Cumbu Napier hybrid grass (continued)

Design : RBD	No. of replications : 2
Plot size : 4 m × 3 m	No. of cuttings/plot: 40 cuttings/entry/location
Spacing : 60 cm × 50 cm	Season: <i>Kharif</i> 2020

Features of the proposed cultures

Name of entries	Parentage	Duration	GFY (t/ha/yr)	Special features
TNCN 1534	IP 20379 x FD 434	Perennial	390.60	High biomass More leaf stem ratio
TNCN 1536	IP18308 x FD 470	Perennial	383.00	
Check: CO (BN) 5				
Locations (2020-21): 8 (Pongalur, Melalathur, Vamban, Sirugamani, Paramakudi, KVK-Madurai, Aruppukottai and Ambasamudram)				
Fertilizer: 150:50:40 kg/ha				
Observations to be recorded: Plant height (cm), Number of tillers/clump and Green fodder yield per plot				

Important cut off Dates - MLT and ART

Activities	Season	Tentative date/month
Dispatch of seed materials from the lead centre	<i>Kharif</i>	2 nd week of June
	<i>Rabi</i>	2 nd week of August
	<i>Summer</i>	1 st week of January
Visit of MLT/monitoring teams	<i>Kharif</i>	1 st fortnight of September
	<i>Rabi</i>	1 st fortnight of December
	<i>Summer</i>	1 st fortnight of April
Date for receiving the trials results for compilation	<i>Kharif</i>	2 nd week of November
	<i>Rabi</i>	1 st week of February
	<i>Summer</i>	3 rd week of June

Time of visit for Forage Crops	
Season	Month of monitoring team visit
<i>Kharif 2020</i>	September
<i>Rabi/rainfed</i>	December
<i>Late rabi/ Summer</i>	February/March

Monitoring team to visit Millets MLT 2020-21	
Team	Stations to be visited
Dr. N. Kumari Vinodhana Dr. D. Kavithamani Dr. A. Sudha	Bhavanisagar, Vagarai
Dr. R. Ravikesavan Dr. C. Vanniarajan	Kovilpatti, Aruppukkottai, Vaigaidam
Dr. K. R. V. Sathya sheela Dr. N. Malini Dr. Radhajayalakshmi	Coimbatore, Madurai
Dr. A. Nirmalakumari Dr. P. Suthamathi Dr. Rajesh	Paiyur, Virinjipuram
Dr. A. Yuvaraj Dr. K. Iyanar Dr. T. Srinivasan	Athiyanthal, Vridhachalam
Dr. C. Babu Dr. T. Ezhilarasi Dr. S. D. Sivakumar	Pongalur, Melalathur, Vamban, Sirugamani, Paramakudi, KVK-Madurai, Aruppukkottai and Ambasamudram

1.2. ACTION PLAN - 2020-2021				
Millets				
Theme 1: Germplasm characterization in Millets				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Characterization of 927 Maize lines	Characterization of 100 Maize lines	Coimbatore	Dr. N.Kumari Vinodhana
2.		Characterization of 100 Maize lines	Vagarai	Dr. K.R.V. Sathyasheela
3.	Characterization of 1200 Sorghum lines	Characterization of 100 Sorghum lines	Coimbatore	Dr. D. Kavithamani
4.		Characterization of 100 Sorghum lines	Kovilpatti	Dr. N. Malini
5.	Characterization of 305 Finger Millet lines (31 traits)	Documentation and digitalization of the characterized lines	Athiyandal	Dr. A. Nirmalakumari
6.	Characterization of 784 Foxtail Millet lines (28 traits)		Athiyandal	Dr. A. Nirmalakumari
7.	Characterization of 184 Kodo Millet lines		Athiyandal	Dr. A. Nirmalakumari
8.	Characterization of 175 Proso Millet lines (28 traits)		Athiyandal	Dr. A. Nirmalakumari
9.	Characterization of 100 Barnyard Millet lines (28 traits)		Madurai	Dr. C. Vanniarajan

Theme No 2 Evolution of Shoot fly and Midge resistant sorghum varieties				
Theme Leader Dr. B. Selvi, Professor (PBG), Department of Millets, Coimbatore				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Evolution of Shoot fly and Midge resistant sorghum varieties	<ul style="list-style-type: none"> • Effecting the double crosses • Evaluation of F₁'s for Shoot fly & Midge resistance • Raising and evaluation of F₂ for midge resistance at Kovilpatti 	Kovilpatti Coimbatore	Dr.N. Malini, AP (PB&G) Dr.N.Kumaravadivel Professor and Head (DPMB&B)
Theme No 3 Evolution of high yielding single cut forage sorghum varieties with improved quality traits				
Theme Leader Dr. D. Kavithamani, Asst.Prof (PBG), Department of Millets, Coimbatore				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Evolution of high yielding single cut forage sorghum varieties with improved quality traits	<ul style="list-style-type: none"> • Evaluation of F₁'s for green fodder yield • Raising and evaluation of F₂ based on leaf and stem characters 	Coimbatore	Dr. D. Kavithamani, Asst.Prof (PBG), Department of Millets,

Theme No 4 Development of biofortified Pearl millet hybrids for high Fe and Zn				
Theme Leader Dr. K. Iyanar, Associate Professor (PBG), Department of Millets, Coimbatore				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Development of biofortified Pearl millet hybrids for high Fe and Zn	<ul style="list-style-type: none"> • Advancing of F₂ (inbred line development) • Seed multiplication of biofortified hybrids (hybrid development) • Advancing of F₃(inbred line development) 	Coimbatore	Dr.T.Chitdeshwari Professor (SS&AC) Dr.I.Johnson Asst. Prof (Pl.Pathology)
Theme 5 Screening of maize inbreds for Charcoal rot				
Theme Leader Dr. N. Kumari Vinodhana, AP (PBG), Dept. of Millets, Coimbatore				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Screening of maize inbreds for Charcoal rot	<ul style="list-style-type: none"> • Raising of inbred lines in sick plot • Screening of inbreds under sick plot condition and scoring for charcoal rot • Recording yield and related parameters to estimate yield loss • Identification of promising inbreds resistant to charcoal rot and utilization in the breeding program. 	Coimbatore	Dr.Sendhilvel Asst.Prof (Pl.Pathology)

Theme 6 Screening of maize inbreds and hybrids for drought tolerance				
Theme Leader Dr. R. Ravikesavan, Professor and Head, Department of Millets, Coimbatore				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Screening of maize inbreds and hybrids for drought tolerance	<ul style="list-style-type: none"> • Screening of inbreds under induced drought at two locations and selection of tolerant inbreds • Crossing among the inbreds and development of new hybrids • Raising F₁ for drought screening selection • Raising F₁ for drought screening selection of hybrids 	Coimbatore Vagarai Veppanthattai	Dr.N.Kumari Vinodhana, AP (PBG), Dr.A.Senthil AP (CRP), Dr.Laxminarayanan, Assoc.Prof & Head Dr.K.R.V. Sathya Sheela, AP (PB&G) Dr.S.Sivakumar Professor (PB&G)
Theme 7 <i>Introgression of crtRB1/ lcyE</i> allele using marker-aided selection in to the elite inbreds of maize				
Theme Leader Dr. R. Ravikesavan, Professor and Head, Department of Millets, Coimbatore				
S. N	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	<i>Introgression of crtRB1/ lcyE</i> allele using marker-aided selection in to the elite inbreds of maize	<ul style="list-style-type: none"> • Raising BC₁F₁ and Marker assisted selection of BC₁ population • Effecting the BC₂ cross • Raising BC₂F₁ and Marker assisted selection of BC₂ population • Effecting the BC₃ cross 	Coimbatore	Dr.N.Senthil, Professor, DPMB&B,

Theme 8 Farmers' participatory selection of high yielding Barnyard millet and long duration blast resistant Ragi varieties (CEM, ATL, AC&RI, Madurai, RRS, Paiyur)				
Theme Leader Dr. A. Nirmala kumari, Professor (PBG), CEM, Athiyandal				
S. No	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Farmers' participatory selection of high yielding Barnyard millet and long duration blast resistant Ragi varieties	Baby trial : Ragi and Barnyard millet <ul style="list-style-type: none"> • Seed multiplication for baby trials • Baby trials 80 locations (Krishnagiri and Dharmapuri for ragi • 100 trials of barnyard millet (Madurai,, Paramakudi, Sivaganagai and Viruthunagarai) 	Madurai	Dr.Vanniarajan Professor and Head Dept. of Pl.Breeding and Genetics
Theme 9. DNA fingerprinting of varieties/hybrids and pre- release cultures				
Theme Leader Dr. N. Kumaravadivel, Professor and Head (DPMB&B)				
S. N	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	DNA fingerprinting of varieties/hybrids and pre- release cultures	<ul style="list-style-type: none"> • Establishment of referral panel of standard SSR markers for varietal identification in millets • The prelease cultures in ART and land races collected every year will be fingerprinted for registration and varietal notification using codominant markers • Development of reference database using bioinformatics tools for marker and variety identification 	CPMB & B Coimbatore	Dr. N. Senthil, Professor, DPMB&B

Department of Forage Crops				
Action Plan				
S. No.	Details of action plan	Work plan for 2020-2021	Centre	Scientists
1.	Development of high water use efficient CN hybrids (2019-22)	Raising of crossing block with identified parents (Aug. 20-Nov. 20)	Dept. of Forage Crops, TNAU, Coimbatore	Dr. C. Babu Dr. T. Ezhilarasi Dr. S. D. Sivakumar Dept. of Forage Crops
		Hybridization between identified fodder cumbu and Napier grass parents (Oct. 20– Jan. 21)	Dept. of Forage Crops, TNAU, Coimbatore	Dr. C. Babu Dr. T. Ezhilarasi Dr. S. D. Sivakumar Dept. of Forage Crops Dr. V. Ravichandran Dept. of Crop Physiology Dr.G.Thiyagarajan (WTC)

2. New Action Plan 2020 - 2023						
Millets						
Theme 1 : Development of FAW tolerant / resistant maize hybrids						
Team leader ; Dr.R.Ravikesavan, Professor (PBG) & Head						
S. No	Proposed action plan	Proposed Activities for			Centre	Scientist
		2020-2021	2021-2022	2022-2023		
1.	Development of FAW tolerant / resistant maize hybrids	<ul style="list-style-type: none"> • Collection and evaluation of new FAW resistant lines from other sources • Identification of FAW tolerant / resistant lines / wild species • Effecting crosses with the identified lines / Wild species and superior inbreds • Raising F₁'s for simultaneous evaluation of yield and FAW screening 	<ul style="list-style-type: none"> • Identification of FAW tolerant / resistant lines / wild species • Effecting crosses with the identified lines / Wild species and superior inbreds • Seed increase of inbreds and superior FAW tolerant hybrids • Evaluation of superior hybrids at different locations for yield and FAW scoring 	<ul style="list-style-type: none"> • Seed increase of inbreds and superior FAW tolerant hybrids • Evaluation of hybrids in MLT and OFT 	<p>Coimbatore</p> <p>Vagarai</p>	<p>Dr.R.Ravikesavan Prof(PBG)</p> <p>Dr.N.Kumari Vinodhana Asst.Prof (PBG)</p> <p>Dr.T.Srinivasan, Asst.Prof (Ento)</p> <p>Dr.N.Lakshmi Narayanan Assoc.Prof (PBG)</p> <p>Dr.K.R.V.Sathyasheela, Asst.Prof (PBG)</p> <p>Dr.N.M.Arivudainambi Asst.Prof (Ento)</p>

Theme 2 : Development of Synthetics in Pearl millet						
Team Leader: K. Iyanar, Associate Professor (PBG)						
	Development of Synthetics in Pearl millet	<ul style="list-style-type: none"> • Identification of Pearl Millet inbreds possessing high gca • Synthesis of new cross combinations in diallele mating system • Progeny evaluation (Syn1) 	<ul style="list-style-type: none"> • Progeny evaluation (Syn₁) • Progeny evaluation (Syn₂) • Progeny evaluation (Syn₃) 	<ul style="list-style-type: none"> • Assessing the comparable performance of Syn₂ and Syn₃ with Syn₁ and inbreeding depression. • Resynthesis of identified cross combination with selected inbred lines • Evaluation under MLT trials/OFT trials 	Coimbatore	Dr. K.Iyanar Associate Professor(PBG)
Theme 3 : Evaluation of grain Amaranthus for its suitability to North eastern zone of TN						
Team leader ; Dr.A.Nirmalakumari, Professor (PBG)						
	<ul style="list-style-type: none"> • Collection and evaluation of new grain Amaranthus lines from other sources • Raising the entries for evaluation and characterisation • Large scale evaluation of superior entries 				CEM, Athiyanthal	Dr.A.Nirmalakumari, Professor (PBG)

Forage Crops				
Theme: Development of high yielding <i>Stylosanthes</i> variety suitable for pasture land				
Activity	2020-21	2021-22	2022-23	Name of the scientists and centre
Development of high yielding <i>Stylosanthes</i> variety suitable for pasture land	Collection of different <i>Stylosanthes</i> spp. and accessions Characterization of entries for fodder yield and quality	Studies to break seed dormancy and to enhance seed setting Selection of single homozygous plant for green fodder yield and quality	Evaluation of Progeny rows	Dr. T. Ezhilarasi Dr. C. Babu Dr. S.D. Sivakumar Dept. of Forage Crops Dr. S. Kavitha Asst. Prof. (SS&T) Dept. of PGR

1.3. Research Projects and remarks

Research Projects

A total number of 43 projects including URPs, AICRP and Externally funded projects of Millets and Forage crops and CPMB handled by 26 scientists were reviewed by the respective Directors of CPBG and CPMB.

Crops	Centres	URP	AICRP	Externally funded	Total	Scientists
Sorghum	Coimbatore	3	1		4	2
	Kovilpatti	3			3	1
	Virinjipuram	1			1	1
	Aruppukottai	1			1	1
	Paiyur	1			1	1
	Trichy	1			1	1
	Madurai	1			1	1
	Sub total	11	1	-	12	8
Pearl millet	Coimbatore	2	1	-	3	1
Maize	Coimbatore	3	1		4	2
	Vagarai	1	1		2	1
	Veppanthattai	1			1	1
	Bhavanisagar	1			1	1
		Sub total	6	2	-	8
Small millets	Athiyandal	3	1		4	1
	Paiyur	1			1	1
	Madurai	2			2	2
	Chettinad	2			2	1
	Trichy	2			2	2
	Sub total	10	1	-	11	7
Forage Crops	Coimbatore	2	1	2	5	2
	Killikulam	1			1	1
		Sub total	3	1	2	6
CPMB&B	Coimbatore	1	-	2	3	2
Grand total		33	6	4	43	26

URP: University Research Project, AICRP: ICAR funded AICRP projects, EFP: Externally funded projects

Remarks on Research Projects				
I. University Research Projects				
Sl. No	Project No and Title	Period	Investigators	Remarks of DCPBG/CPMB&B
I. SORGHUM				
1.	CPBG/CBE/PBG/SOR/2018/001 Collection and characterization of sorghum germplasm	April 2018 to March 2023	Dr. D. Kavithamani Assistant Professor (PBG) Dept. of Millets	Based on the results a publication can be made. The identified superior lines for ear length should be raised during current season and test verify the trait expression and for further utilization in breeding work. The white sorghum types may be hunted from the available germ plasm resources. Drought tolerance should be given more importance. The project may be continued
2.	CPBG/CBE/PBG/SOR/2018/002 Development of dual purpose varieties of sorghum resistant to major pests (Shoot fly/Stem borer/ Midge)	June 2018 to May 2023	Dr. B. Selvi, Professor (PBG) Dept. of Millets	Multiple parent crosses may be effected to infuse shoot fly , stemborer, midge and earhead bug resistance. The project may be continued. New efforts may be put forth for biofortification .
3.	CPBG/CBE/PBG/SOR/2019/001 Development of high yielding fodder sorghum varieties with improved quality traits	Feb' 2019 to June 2022	Dr. D. Kavithamani Assistant Professor (PBG) Dept. of Millets	The project may be continued. The HCN content in BMR lines may be tested and also the biochemical reasons for high fodder yield in BMR lines may be explored with the student's research

4.	CPBG/KPT/PBG/SOR/2015/001 Evolution of high yielding, suitable sorghum varieties with resistance to earhead midge for late / normal sowing conditions	Mar' 2015 to Feb' 2020	Dr. N. Malini, Assistant Professor (PBG) ARS, Kovilpatti	Possibilities of raising one generation under irrigated conditions of RRS, ASD may be explored for hastening the breeding process. Special focus on white sorghum is required. May be continued
5.	CPBG/KPT/PBG/SOR/2017/001 Nucleus and Breeder seed production of sorghum varieties of Tamil Nadu.	Dec'2016 to Nov' 2019	Dr. N. Malini, Assistant Professor (PBG) ARS, Kovilpatti	The project may be continued
6.	CPBG/ KPT/ PBG/SOR/2019/New Collection and characterization of sorghum germplasm	Oct' 2019 to Sep' 2022	Dr. N. Malini, Assistant Professor (PBG) ARS, Kovilpatti	The midge resistance in identified lines should be subjected to confirmatory results. Early maturing types to escape drought could be identified.
7.	CPBG/APK/PBG/SOR/2018/001 Evolution of dual purpose sorghum varieties suitable for rainfed regions of south Tamil Nadu	Sep' 2018 to Aug' 2023	Dr. M. Gunasekaran, Professor (PBG) RRS, Aruppukottai	The project may be continued
8.	CPBG/TRY/PBG/SMM/2017/001 Evolution of high yielding dual purpose Sorghum (<i>Sorghum bicolor</i>) varieties suited to sodic soils	Sep' 2017 to Aug' 2020	Dr. A. Subramanian, Associate Professor (PBG) ADAC&RI, Trichy	May be continued. Possibilities to raise the crop in one of the farmer's holdings with saline soils in Manapparai location may be explored

9.	CPBG/PAI/PBG/SOR/2016/001 Collection, characterization, evaluation and conservation of red sorghum (<i>Sorghum bicolor</i>) germplasm lines	Aug' 2016 to Dec' 2020	Dr. K. Geetha, Professor (PBG) RRS, Paiyur	The project may be closed. Publication should be made with the results obtained from this project
10.	CPBG/VIJ/PBG/SOR/2016/001 Evaluation of local thalaivirichan sorghum genotypes for higher yield	Nov'2106 to Oct' 2019	Dr. A. Gopikrishnan, Assistant Professor (PBG) ARS, Vrinjipuram	The culture VMS 18001 should be raised in Dept of Millets , Coimbatore for further evaluation . The observations from ARS,Kovilpatti should be reported. The project may be closed
11.	CPBG/MDU/PBG/SOR/2019/001 Evolution of high yielding red sorghum (<i>Sorghum bicolor</i>) varieties suitable for industrial utilities	Feb' 2019 to Jan' 2024	Dr. A. Yuvaraja, Associate Professor (PBG) AC&RI, Madurai	Intensive efforts to study the performance of selections of local red sorghum types for early release. The project may be continued
II. PEARL MILLET				
1.	CPBG/CBE/PBG/PEM/2015/004 Evolution of high yielding single cross pearl millet hybrids with resistance to downy mildew	April 2015 to March 2020	Dr. K.Iyanar Associate Professor (PBG) Dept. of Millets	More attention may be given for the development of composites. Genetic purity of the important parental lines should be maintained and also checked periodically. Product from biofortification work is to be developed at the earliest. The project may be continued

2.	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 to June 2020	Dr. K.Iyanar Associate Professor (PBG) Dept. of Millets	The project may be continued
III. MAIZE				
1.	CPBG/CBE/PBG/MAZ/2018/001 Development of high yielding sweet corn hybrids suitable for Tamil Nadu	June 2018- May 2023	Dr.R.Ravikesavan Professor (PBG) & Head	Development of hybrids with good cob / earhead features should be given top priority. FAW breeding should closely be monitored. Project may be continued
2.	CPBG/CBE/PBG/MAZ/2018/002 Development of high yielding single cross maize hybrids in late (> 95 d) and medium (> 85-95 d) maturity suitable for irrigated ecosystems.	June 2018- May 2023	Dr.N.Kumari Vinodhana, Asst. Professor (PBG)	The Project may be continued
3.	CPBG/CBE/PBG/MAZ/2018/003 Germplasm maintenance and Breeder seed production in Maize	June 2018- May 2023	Dr.N.Kumari Vinodhana, Asst. Professor (PBG)	The Project may be continued
4.	CPBG/VGI/PBG/MAZ/2015/001 Development of high yielding single cross maize hybrids suitable for rainfed ecosystems	April 2015 - March 2020	Dr. S. Lakshmi Narayanan Associate Professor and Head (PB&G)	The Project may be continued

5.	CPBG/VPT/PBG/MAZ/2016/001 Development of high yielding Single cross Maize Hybrids for Rainfed system in Tamil Nadu	June 2016 – May 2019	Dr.S.Sivakumar Professor (PBG) and Head CRS, Veppanthattai	In addition to drought, heat tolerance during reproductive stage may be evaluated
6.	CPBG/BSR/PBG/MAZ/2017/001 Breeder seed production in Maize	June 2017 to May 2020	Dr. D. Malarvizhi, Assoc. Professor (PB&G)	The project may be closed
IV. SMALL MILLETS				
1.	CPBG/ATL/PBG/SMM/2014/001 Genetic improvement of drought resistance in <i>Samai, Tenai and Panivaragu</i> to evolve high yielding varieties suitable for Tamil Nadu	Jul 2014 to Jun 2019	Dr. A.Nirmalakumari, Professor (PBG) CEM, Athiyandhal	In all the germplasm characterization trials, the state and National check varieties should be included and data on the checks should also be reported
2.	CPBG/ATL/PBG/SMM/2016/002 Genetic improvement of Finger millet, Kodo millet and Barnyard millet to evolve high yielding varieties suitable for rain fed conditions of Tamil Nadu	Aug 2015 to July 2018	Dr. A.Nirmalakumari, Professor (PBG) CEM, Athiyandhal	The genetic material may down sized for inclusion in the subsequent project
3.	CPBG/ATL/PBG/BSP/2015/003 Nucleus and breeder seed production in Ragi, Samai, Varagu, Kudiraivali, Tenai and Panivaragu	Oct' 2015 to Sep 2020	Dr. A.Nirmalakumari, Professor (PBG) CEM, Athiyandhal	The project may be continued

4.	CPBG/MDU/ PBG / SMM / 2019/001 Evolution of high yielding, high nutritive value and problem soil tolerant barnyard millet variety better than MDU 1	June 2019 to May 2024	Dr. C. Vanniarajan P & H(PBG) AC & RI, Madurai	The project may be continued
5.	CPBG/MDU/PBG/BSP/2020/001 Nucleus and Breeder seed production of Madurai varieties of rice, Barnyard millet and black gram	Sep' 2019 to Aug'2022	Dr. A. Yuvaraja, Associate Professor (PBG) AC&RI, Madurai	The project may be continued
6	CPBG/TRY/PBG/SMM/2017/001 Evolution of high yielding Kudhiraivali varieties (Barnyard millet) suited to sodic soils	May'2017 to Apr., 2020	Dr. A. Subramanian Assoc. Prof(PBG) Dr. P. Jeyaprakash Prof & Head (PB&G)	The project may be closed
7.	CPBG/TRY/PBG/SMM/2017/002 Evaluation of sodicity tolerance in finger millet (<i>Eleusine coracana</i> (L.) Gaertn) genotypes	June 2017 to Apr. 2020	Dr. S. Chitra Asst. Prof . (PBG) AD&ACRI, Trichy	The project may be continued
8.	CPBG/CTN/SMM/2018/CP172 Core project under phase IV - Evolution of barnyard millet genotypes suitable under rainfed alfisols through mutation breeding	2019- 2020	Dr.R.Chandirakala Assoc.Professor (PBG), AC & RI, Madurai	Completion report should be submitted. The status of the mutants should be updated to the DCPBG

9.	CPBG/CTN/PBG/SMM/2010/001 Barnyard millet Advanced varietal trial (BAVT)	March 2018 to Till date	Dr.R.Chandirakala Assoc.Prof PBG), AC & RI, Madurai	-
10	CPBG/PAI/PBG/SMM/2017 / 001 Development of high yielding long duration ragi varieties suitable for rainfed areas of North Western Zone	Apr. 2017 to Mar. 2022	Dr. P.Suthamathi Assoc.Prof. (PB&G) RRS, Paiyur	Earlier attempts to replace Paiyur 1 and Paiyur 2 ragi varieties should be made and work should be intensified
Centre for Plant Molecular Biology & Biotechnology				
I. Core Project				
1.	CPMB/CBE/PBT/2018/CP004 DNA fingerprinting and barcoding of varieties and hybrids and pre-release cultures for varieties/hybrids identification and notification	2018 to 2020	Dr. N. Kumaravadivel, Professor and Head, DPMB&B	DNA Profile of TNAU released varieties of millets may be documented. More SSR markers may be tested in minor millets based on genome sequences available. An URP may be proposed and the work may be continued with request of additional funding. The project is to be completed on 30.09.2020

II. Externally funded projects - 02				
Sl. No	Project number and Title	Period	Investigators	
1.	DBT/CPMB/CBE/PMB/2015/R006 Development of shoot fly resistant sorghum varieties suitable for Tamil Nadu through marker assisted selection	June 2015 to June 2020	Dr. N. Kumaravadivel, P& H, DPMB&B Dr.B. Selvi, Professor(PBG), Dr.T. Elaiyabharathi, AP (Ento)	The resources developed in the project will be handed over to Dr. N. Senthil and the efforts made for shootfly resistant varietal development with CPBG will be continued. Completion report has to be submitted to DBT along with publications
2.	E28-ZI Enrichment of nutritional quality in maize through molecular breeding	Apr. 2015 to Mar. 2020	Dr. N. Senthil, Professor, DPMB&B Dr.R.Ravikesavan, Prof.(PBG), Mr.S.Vellaikumar, Asst.Prof.(Biotech)	The resources developed in this project will be utilized further and joint efforts with CPBG will be continued. Completion report has to be submitted to DBT along with publications. A new project may be proposed for funding.

III. AICRP Projects - 05				
Sl. No	Project No.	Period	Investigators	Remarks of DCPBG
I. SORGHUM				
1.	AICRIP/PBG/CBE/SOR/006 ICAR – AICRP on Sorghum	April 2017 to March 2020	Dr. B.Selvi, Prof.(PBG) Dr. D. Kavithamani Asst. Prof. (PBG)	The project may be continued

II. PEARL MILLET				
1.	AICRP /PBG/CBE/PEM/009 All India Coordinated Research Project on pearl millet	April 2017 to March 2020	Dr. K.Iyanar Associate Professor (PBG) Dept. of Millets	The project may be continued
III. MAIZE				
1.	AICRP /PBG/CBE/ MAZ/004 Evaluation of hybrids and composites from All India Coordinated Research Project on Maize	June 2017-May 2020	Dr. R. Ravikesavan Professor and Head Dr.N.KumariVinodhana Assistant Professor (PBG)	The project may be continued
2.	AICRP/PBG/VGI/MAZ/005 ICAR – AICRP on Maize	June2017- May 2020	Dr.K.R.V.Sathya Sheela Asst professor (PB&G) MRS, Vagarai	The project may be continued
IV. SMALL MILLET				
1.	AICRP / PBG / ATL / SMM / 008 ICAR – AICRP on Small Millets	Continuous Project	Dr. A. Nirmalakumari Professor (PB & G) CEM. Athiyanthal	The project may be continued

Forage Crops				
Centre for Plant Breeding and Genetics				
I. University Research Projects				
S. No.	Project No.	Period	Investigators	Remarks of DCPBG
1.	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	More efforts should be made to generate new genetic material in cowpea and Lucerne. Newer legume fodder crops like <i>Stylosanthus</i> may be given impetus. The project may be continued.
2.	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. T. Ezhilarasi	The project may be continued.
3.	CPBG/KKM/PBG/2017/001 Development of Cumbu Napier hybrids with superior quality traits for Tamil Nadu	April 2017 to March 2020	Dr. N. Ananthi	The project may be continued. Drought tolerance in cumbu germplasm may be assessed with the support of physiologists.

II. Externally Funded Projects				
1.	DBT/CPBG/CBE/FC/2019/R004 Establishment of biotech KISAN hub at Tamil Nadu Agricultural University, Coimbatore	April 2018 to March 2020	Dr. C. Babu	The objectives of the project have to be fulfilled without any deviation
2.	DBT/CPBG/CBE/FC/2019/R004 Establishment of biotech KISAN hub in Two aspirational districts (Virudhunagar and Ramanathapuram) of Tamil Nadu	April 2019 to March 2021	Dr. C. Babu	The objectives of the project have to be fulfilled without any deviation

II. CROP MANAGEMENT

MILLETS

2.1 Technologies for adoption/OFT

1. Adoption

1. Evaluation of new chelated zinc and iron formulations for Maize crop

- In Zn and Fe deficient soils, foliar spraying of 0.5% Zn citrate (9% Zn) + 1.0 % Ferric citrate (10.9% Fe) thrice at 30, 40 and 50 DAS along with STCR based NPK registered 7.4 % higher mean grain yield (9458 kg ha⁻¹) than the existing recommendation of foliar spraying with 0.5% ZnSO₄ + 1% FeSO₄ + 0.1% citric acid (8806 kg ha⁻¹) besides higher grain Zn and Fe content, net income and B: C ratio.

2. On Farm Trial

OFT 1. System of Finger millet intensification (SFI) for rainfed agro ecosystem of Tamil Nadu

Objectives:

- To optimize spacing for enhancing productivity under system of finger millet intensification (SFI) in rainfed agro ecosystem
- To assess the performance of weeding operations on growth and yield of rainfed finger millet

Treatments

T₁: Control (10 kg seeds/ha @ 22.5 x 10 cm + Two HW at 15 and 30 DAS

T₂: SFI (7.5 kg seeds/ha @ 30 x 10 cm) + Two HW at 15 and 30 DAS

T₃: SFI (7.5 kg seeds/ha @ 30 x 10 cm) + One HW at 15 DAS + mechanical weeding at 30 DAS

Season: *Kharif / Rabi*, 2020

Observations to be recorded:

Growth and yield parameters, yield and economics

Centres and Scientists

Coordinating scientist : Dr. P. Parasuraman Professor and Head, CEM, Athiyandal

CEM, Athiyandal : Dr. K. Sivagamy, Assistant Professor (Agronomy)

RRS, Paiyur : Dr. N. Tamilselvan, Professor & Head

ARS, Virinjipuram : Dr. P. Veeramani, Asst. Prof. (Agronomy)

Dept. of Millets, Coimbatore: Dr. N. Vadivel, Assoc. Prof. (Agronomy)

OFT 2. Performance of kodomillet (*Paspalum scrobiculatum*) based intercropping system in irrigated and rainfed agro ecosystem

Objectives:

- To find out the influence of intercropping and crop geometry on growth and yield of kodomillet.
- To identify a suitable intercrop for enhancing productivity of kodomillet based intercropping system.

Treatments

T₁ - Sole varagu

T₂ - Varagu + Blackgram (1:1)

T₃ - Varagu + Greengram (1:1)

Season: *Kharif / Rabi* 2020

Observations to be recorded:

Growth and yield parameters, yield and economics

Centres and Scientists

Coordinating scientist : Dr. P. Parasuraman Professor and Head, CEM, Athiyandal

CEM, Athiyandal : Dr. K. Ananthi, Assistant Professor (Crop Physiology)

RRS, Paiyur : Dr. N. Tamilselvan, Professor & Head

ARS, Virinjipuram : Dr. P. Veeramani, Asst. Prof. (Agronomy)

Dept. of Millets, Coimbatore : Dr. M. Senthivelu,, Asst. Prof. (Agronomy)

OFT 3. Weed management options in irrigated hybrid maize

Objectives:

- To identify suitable combination of pre and post emergence herbicides for weed management in maize

Treatments

T₁ - Weedy check

T₂ - Tembotrione @ 120 g a.i./ha + Atrazine 750 g a.i./ha at 15 DAS

T₃ - Topromezone @ 25.2 g a.i./ha + Atrazine 750 g a.i./ha at 15 DAS

T₄ - Atrazine @ 1000 g a.i./ha (PE) fb Tembotrione @ 120 g a.i./ha at 25 DAS

Season: *Kharif / Rabi* 2020

Observations to be recorded:

Weed observations, growth and yield attributes, yield and economics

Centres and Scientists

Coordinating scientist: Dr. P. Thukkaiyannan, Asst. Prof (Agronomy), MRS, Vagarai
MRS, Vagarai : Dr. P. Thukkaiyannan, Asst. Prof (Agronomy)
ARS, Bhavanisagar : Dr. N. Satheeshkumar, Asst. Prof. (Agronomy)
ARS, Vaigaidam : Dr.R. Jeyasrinivas, Asst. Prof. (Agronomy)
Dept. of Millets, Coimbatore: Dr.A.P.Sivamurugan, Asst. Prof. (Agronomy)

OFT 4. Response of sorghum varieties to sowing windows under rainfed Vertisols**Objectives:**

- To find the effect of varied times of sowing on crop weather relationship and growth and yield of sorghum
- To find out the suitable varieties for prevailing weather situation under rainfed vertisols of Southern district of Tamil Nadu.

Treatments

Main plot: Date of sowing

D₁: Pre monsoon sowing (15 days before normal onset of monsoon)

D₂: Monsoon sowing

Subplot: Sorghum varieties

V₁: K 12

V₂: K 8

V₃: CO 30

Season: *Kharif / Rabi* 2020

Observations to be recorded:

Growth and yield attributes, yield and economics

Centres and Scientists

Coordinating scientist : Dr. S. Subbulakshimi, Asst. Prof. (Agronomy), ARS, Kovilpatti
ARS, Kovilpatti : Dr. S. Subbulakshimi, Asst. Prof. (Agronomy)
RRS, Aruppukottai : Dr. R. Duraisingh, Professor (Agronomy)

OFT 5: Optimization of N, P and K requirement for Barnyard millet (*var. MDU 1*) in Red and Black soils

Objective: To test verify the optimized dose of N, P and K requirement for barnyard millet in Red and black soils of Tamil Nadu

Treatments (Non replicated)

T₁ Blanket Recommendation (44:22:0 kg NPK ha⁻¹)

T₂ 40:15:15 kg NPK ha⁻¹

T₃ 50:15:15 kg NPK ha⁻¹

Crop: Barnyard Millet-Var.MDU 1; Irrigated

Observations to be recorded

- ✓ Initial and Post harvest soil analysis for available N,P & K
- ✓ Dry matter production, plant nutrient content and uptake at harvest
- ✓ Yield attributes: Ear head length, number of productive tillers per plant, ear head weight per plant (g) and 1000 grain weight (g)
- ✓ Grain and straw yield
- ✓ Grain quality parameters *viz.*, protein content (%) and starch content (%)

Centres and Scientists

Coordinating scientist: Dr. S. Thiyageshwari, Professor, Dept. of SS&AC, TNAU, CBE-3

AC&RI, Coimbatore : Dr. S. Thiyageshwari, Professor (SS&AC), Dept. of SS&AC

AC&RI, Madurai : Dr. P. Kannan, Asst. Prof. (SS&AC), Dept. of Soils and Environment

CEM Millets, Athiyandal : Dr. K. Sivakami, Asst. Professor (Agronomy)

2.2. Action Plan

Action Plan 1: Finger Millet Intercropping with Blackgram and Redgram under Irrigated Eco-system

Theme leader: Dr. P. Parasuraman, Professor and Head, Centre of Excellence in Minor Millets, Athiyandal

Activity	Name of the scientist and centre	2020-21	2021-22	2022-23	Deliverables/expected outcome
<ul style="list-style-type: none"> To evaluate finger millet + blackgram and redgram intercropping system for enhancing the cropping system productivity vis-avis sustaining the soil fertility under irrigated ecosystem <p>Treatments T₁ - Sole finger millet in row planting T₂ - Finger millet with blackgram 3: 1 ratio T₃ - Finger millet with blackgram 3: 2 ratio T₄ - Finger millet with blackgram 4: 1 ratio T₅ - Finger millet with blackgram 4: 2 ratio T₆ - Finger millet with Redgram 6: 1 ratio T₇ - Finger millet with Redgram 8: 1 ratio</p>	<p>Centre of Excellence in Millets, TNAU, Athiyandal</p> <p>1. Dr.K.Ananthi Asst. Prof.(Crop Physiology) 2. Dr. P. Parasuraman Professor and Head</p>	<ul style="list-style-type: none"> Project proposal and approval Experiment layout and sowing Crop management, monitoring and observation Harvest and data processing Report submission for CSM, 2021 	<ul style="list-style-type: none"> Confirmative trial 	<ul style="list-style-type: none"> Data processing, report preparation, article preparation and publication 	<ul style="list-style-type: none"> Suitable and profitable finger millet + blackgram intercropping system with right row proportion/ratio will be indentified

Action Plan 2: Studies on the production potential of foxtail millet + oilseed intercropping systems in Jawadhu Hills of Tamil Nadu

Theme leader: Dr. P. Parasuraman, Professor and Head, Centre of Excellence in Minor Millets, Athiyandal

Activity	Name of the scientist and centre	2020-21	2021-22	2022-23	Deliverables/ expected outcome
<ul style="list-style-type: none"> • To study growth and yield potential of foxtail millet + oilseed intercropping system and to assess the economics of the system productivity <p>Treatments</p> <p>T₁ - Sole foxtail millet</p> <p>T₂ - Foxtail millet + Groundnut at 4: 1 ratio</p> <p>T₃ - Foxtail millet + Groundnut at 6: 1 ratio</p> <p>T₄ - Foxtail millet + Sesame at 4: 1 ratio</p> <p>T₅ - Foxtail millet + Sesame at 6: 1 ratio</p> <p>T₆ - Foxtail millet + Niger at 4: 1 ratio</p> <p>T₇ - Foxtail millet + Niger at 6: 1 ratio</p>	<p>Centre of Excellence in Millets, TNAU, Athiyandal</p> <p>Dr. K. Sivagamy, Asst. Professor (Agron.)</p> <p>Dr. P. Parasuraman Professor and Head</p>	<ul style="list-style-type: none"> • Project proposal and approval • Experiment layout and sowing • Crop management, monitoring and observation • Harvest and data processing • Report submission for CSM, 2021 	<ul style="list-style-type: none"> • Confirmative trial 	<ul style="list-style-type: none"> • Data processing, report preparation, article preparation and publication 	<ul style="list-style-type: none"> • Most profitable and economically viable foxtail millet + oilseed intercropping will be assessed with suitable row pattern for complimentary interaction between component crops

Action Plan 3: Grain cum Fodder Production in Maize Based Intercropping System under Irrigated Condition

Theme leader: Dr. M. Mohamed Amanullah, Professor (Agronomy)

Activity	Name of the scientist and centre	2020-21	2021-22	2022-23	Deliverables/ expected outcome
<ul style="list-style-type: none"> To find out the influence of intercropping fodder maize and fodder cowpea on the yield of grain maize and green fodder under different fertilizer levels <p>Treatments T₁ - Maize alone for grain (100% RDF) T₂ - Maize (for grain) + Maize (for fodder) with 100% RDF T₃ - Maize (for grain) + Maize (for fodder) with 125% RDF T₄ - Maize (for grain) + Maize (for fodder) with 150% RDF T₅ - Maize for grain + Fodder cowpea with 100% RDF T₆ - Maize for grain + Fodder cowpea with 125% RDF T₇ - Maize for grain + Fodder cowpea with 150% RDF Design: RBD & Rep: Three Maize Hybrid: Co8 Fodder Cowpea: Co (Fc) 8/ Co 9</p>	<p>1. MRS, Vagarai: Dr. M. Mohamed Amanullah, Prof. (Agron.) Dr. P. Thukkaiyannan, Asst. Professor (Agronomy), 2. ARS, Vaigaidam Dr. R. Jeyasrinivas Asst. Prof. (Agron) 3. ARS, Bhavanisagar Dr. N. Satheeshkumar Asst. Prof. (Agron)</p>	<ul style="list-style-type: none"> Project proposal and approval Experiment layout and sowing Crop management, monitoring and observation Harvest and data processing Report submission for CSM, 2021 	<ul style="list-style-type: none"> Confirmative trial 	<ul style="list-style-type: none"> Data processing, report preparation, article preparation and publication 	<ul style="list-style-type: none"> Most suitable and profitable grain maize + fodder crops intercropping system with right RDF will be identified for augmenting the productivity of grain maize as well as fodder production

2.3. Research Projects and remarks

Research Projects

Crop	Centre	URP	Action plan	Core project	AICRP	EFP	Total
Agronomy							
Sorghum	Dept. of Agronomy, Coimbatore	-	-	-	4	-	4
	ARS, Kovilpatti	1	-	-	1	-	2
Pearl Millet	Dept. of Agronomy, Coimbatore	-	1	-	3	-	4
	ARS, Kovilpatti	1	-	-	-	-	1
Maize	Dept. of Agronomy, Coimbatore	-	2	1	5	-	8
	MRS, Vagarai	2	-	1	5	-	8
	ARS, Kovilpatti	-	-	-	1	-	1
Finger Millet	ADAC&RI, Trichy	1	-	1	-	-	2
	CEM, Athiyandal	1	-	-	-	-	1
Minor Millets	CEM, Athiyandal	-	-	1	5	-	6
	ADAC&RI, Trichy	1	-	-	-	-	1
Total		7	3	4	24	-	38
Sustainable Organic Agriculture							
Sorghum	DSOA, Coimbatore	1	-	-	-	-	1
Pearl millet	DSOA, Coimbatore	-	-	-	1	-	1
Finger Millet	DSOA, Coimbatore	-	-	1	1	-	2
Minor Millet	DSOA, Coimbatore	-	-	-	1	-	1
Total		1	-	1	3	-	5
Crop Physiology							
Sorghum	Dept. of Crop Physiology, Coimbatore	1	-	-	-	-	1
Finger Millet	Dept. of Crop Physiology, Coimbatore	-	-	1	-	-	1
Minor Millet	Dept. of Crop Physiology, Coimbatore	-	1	-	-	-	1
	RRS, Paiyur	1	-	-	-	-	1
Total		2	1	1	-	-	4

Soil Science & Agricultural Chemistry							
Sorghum	ARS, Kovilpatti	1	-	-	1	-	2
	Dept. of SS&AC, ADAC&RI, Trichy	-	-	-	1	-	1
Maize	Dept. of SS&AC, TNAU, Coimbatore	4	-	-	-	-	4
Finger Millet	Dept. of SS&AC, TNAU, Coimbatore	-	-	-	1	-	1
Minor Millets	Dept. of SS&AC, TNAU, Coimbatore	-	-	-	2	-	2
Total		5	-	-	5	-	10
Agricultural Microbiology							
Finger Millet	CEM, Athiyandal	-	-	-	-	1	1
Minor millet	Dept. of Agrl. Microbiology, Coimbatore	-	1	-	-	-	1
	Dept. of Agrl. Microbiology, AC&RI, Madurai	1	-	-	-	-	1
Total		1	1	-	-	1	3
Seed Science & Technology							
Maize	DSST, Coimbatore	1	-	-	-	-	1
	ARS, Bhavanisagar	1	-	-	-	-	1
Minor Millet	DSST, Coimbatore	-	1	-	1	-	2
Total		2	1	-	1	-	4
Grand Total							64

Remarks on the ongoing university research projects/AICRP/Externally funded projects

AGRONOMY

University Research Project (URP) on Sorghum

S. No	Project No. & Title	Remarks
1	<p>DCM/KPT/AGR/SOR/2018/CP105 Evaluation of optimum age of seedling and crop geometry on growth and yield of transplanted sorghum (November, 2018 to March, 2020)</p> <p>Dr. S. Subbulakshmi Asst. Professor (Agronomy), ARS, Kovilpatti</p>	<ul style="list-style-type: none"> • Project to be closed • Completion report is to be submitted

University Research Project (URP) on Pearl millet

2	<p>New University Research Project Effect of mulching materials and anti-transpirants on growth and yield of rainfed pearl millet in the southern agroclimatic condition (October, 2019 to September, 2021)</p> <p>Dr. A. Solaimalai Assoc. Professor (Agronomy), ARS, Kovilpatti</p>	<ul style="list-style-type: none"> • Project to be continued
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University Research Project (URP) on maize

3	<p>DCM/CBE/ AGR/ AMS/ 2018/ CP126 Developing low cost agronomic management strategies in irrigated maize for the control of Fall Army Worm (<i>Spodoptera frugiperda</i>) in Western agro-climatic zone of Tamil Nadu (January, 2019 to September, 2020)</p> <p>Dr. R. Karthikeyan Asst. Professor (Agronomy), Dept. of Agronomy, Coimbatore Dr. N. Muthukrishnan Professor (Agr. Entomology), Dept. of Agr. Entomology, Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued and is to be completed on 30.09.2020 • Result of the project may be given for information
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4	<p>DCM/VGI/AGR/MAZ/2018/001 Influence of detopping on growth, fodder and grain yield of rainfed Maize (<i>Zea mays</i> L.) (July, 2018 to June , 2020)</p> <p>Dr. Mohamed Amanullah Professor (Agronomy), MRS, Vagarai</p>	<ul style="list-style-type: none"> • Project to be closed • Completion report may be submitted
5	<p>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)</p> <p>Dr.P.Thukkaiyannan Asst. Prof. (Agronomy), MRS, Vagarai</p>	<ul style="list-style-type: none"> • Project to be continued
6	<p>DCM/VGI/AGR/MAZ/2018/CP110 Evaluation of drought mitigation strategy and irrigation scheduling to increase irrigation use efficiency and grain yield of maize (2018 - 2019)</p> <p>Dr. P. Thukkaiyannan Asst. Prof. (Agronomy), MRS, Vagarai</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be closed • Completion report is to be submitted
University Research Project (URP) on Finger Millet		
7	<p>DCM/TRY/AGR/SMM/2018/001 Effect of irrigation scheduling on the performance of finger millet varieties in sodic soil of Trichy district, Tamil Nadu (May, 2018 to May, 2020)</p> <p>Dr. S. Avudaithai, Professor (Agronomy) & Head Dept. of Agronomy, ADAC&RI, Trichy</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be closed
8	<p>DCM/TRY/AGR/SMM/2018/CP 152 Organic finger millet (<i>Eleusine coracana</i>. L.) production under sodic soil (Feb,2019 – Sep,2020)</p> <p>Dr. S. Rathika Assistant Prof. (Agronomy) Dr.P.Janaki Associate Prof.(SS&AC) ADAC&RI, Trichy</p>	<ul style="list-style-type: none"> • Project to be continued and is to be completed on 30.09.2020

9	<p>DCM/ATL/AGR/SMM/2015/001 Evaluation of System of Finger millet (<i>Elusine coracana</i>) Intensification (SFI) for rainfed agro ecosystem of Tamil Nadu (August, 2018 to Dec, 2021)</p> <p>Dr.P.Parasuraman, Professor(Agronomy) & Head Dr.K.Sivagamy Asst.Professor (Agronomy), CEM, Athiyandal</p>	<ul style="list-style-type: none"> • Project to be closed • Result of the project may be recommended for OFT
University Research Project (URP) on Minor Millets		
10	<p>DCM/ATL/AGR/SMM/2018/CP049 Performance of kodomillet (<i>Paspalum scrobiculatum</i>) based intercropping system in irrigated and rainfed agro-ecosystem (August, 2018 to September, 2020)</p> <p>Dr. P. Parasuraman, Professor(Agronomy) & Head Dr. K. Ananthi, Asst. Prof. (Crop Physiology) CEM, Athiyandal</p>	<ul style="list-style-type: none"> • Project is to be closed • Result of the project may be recommended for OFT
11	<p>DCM/TRY/AGR/SMM/2018/002 Effect of crop geometry and nutrient management in summer irrigated Barnyard millet (Kudiraivali) under sodic soil conditions (Feb ,2018 to Jan, 2020)</p> <p>Dr.S. Anandha krishnaveni Assistant Professor (Agronomy), ADAC & RI, Trichy</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be closed
All India Coordinated Research Project (AICRP) on Sorghum		
12	<p>AICRP/PBG/CBE/SOR/006 Quantifying the response of pre-released kharif grain sorghum genotypes to different fertility levels under rainfed environments (June, 2019 to May, 2020)</p> <p>Dr. N. Vadivel Assoc. Professor (Agronomy), Dept. of Millets, Coimbatore</p>	<p>Project may be continued / closed as per the proceeding of the AICRP meet</p>

13	<p>AICRP/PBG/CBE/SOR/006 Quantifying the response of pre-released sweet sorghum genotypes to different fertility levels under rainfed conditions (June, 2019 to May, 2020)</p> <p>Dr. N. Vadivel Assoc. Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
14	<p>AICRP/PBG/CBE/SOR/006 Quantifying the response of kharif grain sorghum to different levels and sources of sulphur (June, 2019 to May, 2020)</p> <p>Dr. N. Vadivel Assoc. Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
15	<p>AICRP/PBG/CBE/SOR/006 Mechanization in <i>kharif</i> grain sorghum (June 2018- May 2020)</p> <p>Dr. N. Vadivel Assoc. Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued / closed as per the proceeding of the AICRP meet
16	<p>AICRP/DCM/KPT/AGR/003 Response of sorghum varieties to sowing windows (September, 2016 to June,2020)</p> <p>Dr. S. Subbulakshmi Asst. Professor (Agron.), ARS, Kovilpatti</p>	<ul style="list-style-type: none"> • Result of the project may be recommended for OFT • Project to be closed
All India Coordinated Research Project (AICRP) on Pearl Millet		
17	<p>Action Plan Studies on performance of pre release pearl millet hybrids under different spacing and nutrient levels (June, 2019 - May, 2022)</p> <p>Dr. M. Senthivelu, Asst Prof. (Agronomy) Dr. K. Iyanar, Assoc. Professor (PB&G) Dr. A. Renuka Devi, Asst. Prof (SS&AC) Dept. of Millets, Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued

18	<p>AICRP/PBG/CBE/PEM/009 Effect of mulching and hydrogel on the productivity of pearl millet under rainfed conditions (June, 2017 to May, 2020)</p> <p>Dr. M. Senthivelu, Asst.Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
19	<p>AICRP/PBG/CBE/PEM/009 Performance of different weed management practices on pearl millet productivity (June, 2018 to May, 2020)</p> <p>Dr. M. Senthivelu, Asst.Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
20	<p>AICRP/PBG/CBE/PEM/009 Nutrient management through organic sources in rainfed pearl millet (June, 2018 to May, 2020)</p> <p>Dr. M. Senthivelu, Asst.Professor (Agronomy), Dept. of Millets, Coimbatore</p>	<ul style="list-style-type: none"> • Project may be continued / closed as per the proceeding of the AICRP meet • Result of the project may be given for information
All India Coordinated Research Project (AICRP) on Maize		
21	<p>Action Plan Performance evaluation of pre release sweet corn hybrid (CSCH-15001) under varying planting density and nutrient levels (July,2019 - Feb,2022)</p> <p>Dr.A. P.Sivamurugan Asst. Professor (Agronomy) Dr. R. Ravikesavan Professor (PBG) & Head Dept. of Millets, TNAU, Coimbatore Dr. C. Bharathi Asst. Professor(SS&AC), Dept. of Agronomy, TNAU, Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued

22	<p>Action Plan Optimizing spacing and nutrient levels for pre release late maturity maize hybrids (Jan,2020 - July,2021)</p> <p>Dr. A. P. Sivamurugan Asst. Professor (Agronomy) Dr. R. Ravikesavan Professor (PBG) & Head Dept. of Millets, TNAU, Coimbatore Dr. C. Bharathi Asst. Professor (SS&AC) Dept. of Agronomy, Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued
23	<p>AICRP/PBG/CBE/MAZ/004 Performance of pre release late maturity genotypes in <i>Kharif</i> under varying planting density and nutrient levels in PZ (June,2019 -May,2020)</p> <p>Dr. A. P. Sivamurugan, Asst.Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
24	<p>AICRP/PBG/CBE/MAZ/004 Performance of pre release sweet corn genotypes in <i>Kharif</i> under varying planting density and nutrient levels in PZ (June,2019 -May,2020)</p> <p>Dr. A. P. Sivamurugan Asst. Professor (Agronomy), Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
25	<p>AICRP/PBG/CBE/MAZ/004 Ecological intensification for climate resilient maize based cropping systems (Greengram - Maize) (June,2019 -May,2020)</p> <p>Dr. A. P. Sivamurugan Asst. Professor (Agronomy) Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet

26	<p>AICRP/PBG/CBE/MAZ/004 Weed management in maize (June,2019 -May,2020)</p> <p>Dr. A. P. Sivamurugan Asst. Professor (Agronomy) Dept. of Millets, Coimbatore</p>	<ul style="list-style-type: none"> • Project may be continued/ closed as per the proceeding of the AICRP meet • Result of the project may be recommended for OFT
27	<p>AICRP/PBG/CBE/MAZ/004 Long term trial on integrated nutrient management in maize (June,2018 - May,2021)</p> <p>Dr. A. P. Sivamurugan Asst. Professor (Agronomy) Dept. of Millets, Coimbatore</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
28	<p>AICRP/PBG/VGI/MAZ/005 Performance of Pre release late maturity genotypes in <i>rabi</i> under varying nutrient levels (June,2019 -May,2020)</p> <p>Dr. P. Thukkaiyannan Asst. Prof. (Agronomy) MRS,Vagarai</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
29	<p>AICRP/PBG/VGI/MAZ/005 Ecological intensification for climate resilient maize based cropping systems (Pulse-Maize) -Maize (June,2019 -May,2020)</p> <p>Dr. P. Thukkaiyannan Asst. Prof. (Agronomy) MRS,Vagarai</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
30	<p>AICRP/PBG/VGI/MAZ/005 Performance of pre release quality protein maize genotypes in <i>kharif</i> under varying planting density and nutrient levels (June,2019 -May,2020)</p> <p>Dr. P.Thukkaiyannan Asst. Prof. (Agronomy) MRS,Vagarai</p>	Project may be continued/ closed as per the proceeding of the AICRP meet

31	<p>AICRP/PBG/VGI/MAZ/005 Weed management in maize system (Maize alone) (June,2019 -May,2020)</p> <p>Dr. P. Thukkaiyannan Asst. Prof. (Agronomy) MRS,Vagarai</p>	<ul style="list-style-type: none"> • Project may be continued/ closed as per the proceeding of the AICRP meet • Result of the project may be recommended for OFT
32	<p>AICRP/PBG/VGI/MAZ/005 Ecological intensification for climate resilient maize based cropping systems (Pulse-Maize) – Greengram (June,2019 -May,2020)</p> <p>Dr. P. Thukkaiyannan, Asst. Prof. (Agronomy) MRS,Vagarai</p>	<p>Project may be continued/ closed as per the proceeding of the AICRP meet</p>
33	<p>AICRP/DCM/KPT/AGR/003 Effect of micro environments on phenology, thermal requirements and grain yield of prominent rabi maize hybrids under rainfed condition. (September, 2015 to March, 2021)</p> <p>Dr. G. Sudhakar, Asst. Professor (Agronomy) ARS, Kovilpatti</p>	<ul style="list-style-type: none"> • Project to be continued • Result of the project may be given for information
All India Coordinated Research Project (AICRP) on Minor Millets		
34	<p>AICRP/PBG/ATL/SMM/008 Chemical weed control studies in kodo millet (June,2019 to May,2020)</p> <p>Dr. K. Sivagamy Asst. Professor (Agronomy) CEM, Athiyandal</p>	<p>Project may be continued/ closed as per the proceeding of the AICRP meet</p>
35	<p>AICRP/PBG/ATL/SMM/008 Response of pre-released foxtail millet varieties to different levels of fertilizer under rainfed conditions (June,2019 to May,2020)</p> <p>Dr. K. Sivagamy Asst. Professor (Agronomy) CEM, Athiyandal</p>	<p>Project may be continued/ closed as per the proceeding of the AICRP meet</p>

36	<p>AICRP/PBG/ATL/SMM/008 Response of pre-released kodo millet varieties to different levels of fertilizer under rainfed conditions (June,2019 to May,2020)</p> <p>Dr. K. Sivagamy Asst. Professor (Agronomy) CEM, Athiyandal</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
37	<p>AICRP/PBG/ATL/SMM/008 Enhancing the millet - system productivity with intercrops (June,2019 to May,2020)</p> <p>Dr. K. Sivagamy Asst. Professor (Agronomy) CEM, Athiyandal</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
38	<p>AICRP/PBG/ATL/SMM/008 Effect of different sowing windows (Varagu, Samai and Kuthiraivali) (June,2019 to May,2020)</p> <p>Dr. K. Sivagamy Asst. Professor (Agronomy) CEM, Athiyandal</p>	Project may be continued/ closed as per the proceeding of the AICRP meet
Sustainable Organic Agriculture		
University Research Project (URP) on Finger Millet		
39	<p>DCM / CBE / AGR / SMM / 2018 / CP011 Developing organic package of practices for finger millet (August, 2018 to September, 2020)</p> <p>Dr. E. Somasundaram, Prof. (Agron.) & Head Dept. of Sustainable Organic Agriculture, Coimbatore</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project is to be continued and completed on 30.09.2020
University Research Project (URP) on Sorghum		

40	<p>DCM/CBE/ENS/SOA/2018/CP062 On farm resource quantification and utilization under zero budget natural farming system (low external input organic farming) (October 2018 – September, 2020)</p> <p>Dr. R. Sunitha Asst. Prof. (ENS) Dr. E. Somasundaram Prof. (Agron.) & Head Dept. of Sustainable Organic Agriculture, Coimbatore</p>	<ul style="list-style-type: none"> • Project is to be continued and completed on 30.09.2020
All India Coordinated Research Project (AICRP) on Finger Millet		
41	<p>ICAR/DCM/CBE/SOA/2015/R001 Network Project on Organic Farming: Evaluation of organic, inorganic and integrated production systems in Finger millet (August, 2013 to August 2023)</p> <p>Dr. E. Somasundaram Professor (Agron.) & Head Dr. K. Ganesan Asst. Professor (Agrl. Entomology) Dept. of Sustainable Organic Agriculture, Coimbatore</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be continued
All India Coordinated Research Project (AICRP) on Pearl Millet		
42	<p>ICAR / DCM / CBE / SOA / 2015 / R001 Network Project on Organic Farming : Evaluation of organic, inorganic and integrated production systems in Pearl millet (August, 2013 to August 2023)</p> <p>Dr. E. Somasundaram Professor (Agron.) & Head Dr. K. Ganesan Asst. Professor (Agrl. Entomology) Dept. of Sustainable Organic Agriculture, Coimbatore</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be continued

All India Coordinated Research Project (AICRP) on Minor Millets		
43	<p>ICAR/DCM/CBE/SOA/2015/R001 Network Project on Organic Farming : Evaluation of organic, inorganic and integrated production systems in Barnyard millet (August, 2013 to August 2023)</p> <p>Dr. E. Somasundaram Professor (Agron.) & Head Dr. K. Ganesan Asst. Professor (Agrl. Entomology) Dept. of Sustainable Organic Agriculture, Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued • Result of the project may be given for information
Crop Physiology		
University Research Project (URP) on Sorghum		
44	<p>DCM/CBE/CRP/SOR/2019/001 Assessment of Nanoceria Toxicity At Different Trophic Levels And Its Influence on Sorghum Yield Under Terminal Drought Stress (November, 2019 to December, 2021)</p> <p>Dr. M. Djanaguiraman Asst. Professor(Crop Physiology) Department of Crop Physiology Dr. R. Raghu Assistant Professor (Agrl. Microbiology) O/o of Dean (Agriclture)</p>	<ul style="list-style-type: none"> • Project to be continued
University Research Project (URP) on Finger Millet		
45	<p>DCM/CBE/CRP/CSF/2018/CP009 Development of crop specific foliar formulations for yield enhancement in selected crops (rice, redgram, sesame and finger millet) under normal and water deficit environments (2018 to 30.09.2020)</p>	<ul style="list-style-type: none"> • Project is to be continued and completed on 30.09.2020

	<p>Dr. P. Jeyakumar Professor and Head (Crop Physiology) Dr. V. Ravichandran Assoc. Professor (Crop Physiology) Dr. S. Vincent Professor (Crop Physiology) Dr. S. Srinivasan Asst. Professor (Crop Physiology) N. Sritharan Asst. Professor (Crop Physiology) Department of Crop Physiology ,Coimbatore</p>	
University Research Project (URP) on Minor Millets		
46	<p>Action plan Physiological characterization of minor millets for the traits associated with photosynthesis (June, 2019 -May ,2021)</p> <p>Dr. A. Senthil Assoc. Professor (Crop Physiology) Dr. M. Djanaguiraman Asst. Professor (Crop Physiology) Department of Crop Physiology ,Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued
47	<p>DCM / PAI / CRP / SMM / 2019 / 001 Physiological manipulation of source and sink in Samai (2019 to 2021)</p> <p>Dr. R. Sivakumar Asst. Professor (Crop Physiology), RRS, Paiyur</p>	<ul style="list-style-type: none"> • Project to be continued
Soil Science & Agricultural Chemistry		
University Research Project (URP) on Sorghum		
48	<p>NRM/KPT/SAC/SOR/2019/001 Yield maximization through optimization of nutrients for Dual sorghum (K12) in different land configurations of dryland Vertisols tract of Southern Tamil Nadu (October, 2018 to September, 2021)</p> <p>Dr. K. Baskar Professor (SS&AC), ARS, Kovilpatti</p>	<ul style="list-style-type: none"> • Results are to be given for information and the project work to be continued.

University Research Project (URP) on Maize		
49	<p>NRM/CBE/SAC/2013/004 Permanent Manurial Experiment of Coimbatore Under irrigated Tropical Agro Ecosystem (Maize- Sunflower cropping sequence) (November, 2019 to March, 2024)</p> <p>Dr. M. Malarkodi Asst. Professor (SS&AC), Dept. of SS&AC, Coimbatore</p>	<p>LTFE scheme in-charge may be included as Co-Project Leader and the project work to be continued.</p>
50	<p>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)</p> <p>Dr.P.Malathi Assistant Professor (SS&AC), Dept. of SS&AC, Coimbatore</p>	<p>Result of the project may be recommended for adoption and the project may be closed</p>
51	<p>NRM / CBE / SAC /MA2/ 2018/ CP 012 Economizing Phosphorus Use in Maize - Groundnut Production by Exploiting Native Phosphorus Build up in Soil (August, 2018 to September, 2020)</p> <p>Dr. S. Meena Professor (SS&AC) Dept. of SS&AC, Coimbatore</p>	<ul style="list-style-type: none"> • The ongoing experiment on maize to be completed and the effect of the best treatments of succeeding crop may be studied in the ensuing season. • To be continued and completed on 30.09.2020
52	<p>NRM/CBE/SAC/LTM/2018/CP063 Impact of long-term organic and inorganic nutrient management on soil biochemical and biological processes for soil health sustainability (Maize-Sunflower cropping sequence) (November, 2018 to September, 2020)</p> <p>Dr. M. Malarkodi Assistant Professor (SS&AC) Dept. of SS&AC, TNAU, Coimbatore Dr. D. Balachandar Professor (Agrl. Microbiology) Dept. of Agrl. Microbiology, TNAU, Coimbatore</p>	<ul style="list-style-type: none"> • The work on alterations in the soil microbiome by next-generation sequencing has to be completed and soil quality index has to be computed. • To be continued and completed on 30.09.2020

All India Coordinated Research Project (AICRP) on Sorghum		
53	<p>AICRP/NRM/TRY/005 Evaluation of different crops for their tolerance to sodicity levels (April, 2018 to March, 2020)</p> <p>Dr. P. Balasubramaniam, Prof. (SS&AC) & Head Dept. of SS&AC, ADAC&RI, Trichy</p>	<ul style="list-style-type: none"> • To be continued.
54	<p>AICRP/DCM/KPT/SAC/AGR/1971/004 Real time monitoring and management of drought in major rainfed crops (October, 2019 to Sep, 2021)</p> <p>Dr. K. Baskar, Professor (SS&AC0, ARS, Kovilpatti</p>	<ul style="list-style-type: none"> • To be continued (As per the AICRPDA technical programme).
All India Coordinated Research Project (AICRP) on Finger Millet		
55	<p>AICRP/NRM/CBE/SAC/002 AICRP on Long Term Fertilizer Experiments-Soil Quality, Crop Productivity and Sustainability as influenced by Long Term Fertilizer Application and Continuous Cropping of Finger Millet-Maize sequence in Swell-Shrink Soil (2017 - 2020)</p> <p>Dr. D. Jayanthi, Associate Professor (SS&AC) Dr. M. Malarkodi, Assistant Professor (SS&AC) Dept. of SS&AC, Coimbatore</p>	<ul style="list-style-type: none"> • Sub programmes may be formulated from 2020-21 and both the scientists may individually carry out the assigned programmes and the report should be submitted. • The project to be continued as per technical programme.
All India Coordinated Research Project (AICRP) on Minor Millets		
56	<p>AICRP/NRM/CBE/SAC/002 Soil Test Crop Response Correlation Studies under IPNS for Foxtail millet (2019-2022)</p> <p>Dr. S. Maragatham, Assoc. Prof. (SS&AC) Dr. J. Balamurugan, Asst. Prof. (SS&AC) Dr. M.Gopalakrishnan, Asst. Prof. (SS&AC) Dept.of SS&AC,Coimbatore</p>	<p>To be continued.</p>

57	<p>AICRP/NRM/CBE/SAC/002 AICRP on Soil test crop response Soil Test Crop Response Correlation Studies under IPNS for Little Millet (2017-2020)</p> <p>Dr. J. Balamurugan, Asst. Prof. (SS&AC) Dr. R. Santhi, Director (DNRM) (2017-19) Dr. S. Maragatham, Assoc.Prof (SS&AC) (2019-20) Dr. M. Gopalakrishnan, Asst. Professor (SS&AC) Dept.of SS&AC, Coimbatore</p>	<ul style="list-style-type: none"> • The results of the experiment conducted during 2019-20 are to be reported. • Remaining number of experiments are to be conducted in the ensuing season and the project work to be completed and included in the Annual Report.
Agricultural Microbiology		
University Research Project (URP) on Minor millets		
58	<p>Action plan Dissecting the microbiome of little millet (<i>Panicum sumatransae</i> L.) and their mechanism of stress tolerance towards crop growth and fitness (2019-2021)</p> <p>Dr. U. Sivakumar Professor (Agrl.Microbiology) Dept. of Agrl. Microbiology, Coimbatore</p>	To be continued
59	<p>New University Research Project Microbial nutrient supplementation for certain localized minor millets 2019-2022</p> <p>Dr. R. Thamizh Vendan Professor (Agrl.Microbiology), AC&RI, madurai</p>	To be continued

Externally Funded Project - Finger Millet		
60	<p>Decoding microbiome associated with Finger millet : A holistic approach on their metabolites and mechanisms towards crop fitness (November, 2018 to October, 2019)</p> <p>Dr. P. Parasuraman, Prof. (Agron) & Head, CEM, Athiyandal Dr. T.C. K. Sugitha, Post Doctoral Fellow, Dept. of Ag. Microbiology, TNAU, Coimbatore Dr. U. Sivakumar, Prof. (Agrl. Microbiol.) Dept. of Ag. Microbiology, TNAU, Coimbatore</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be continued.
Seed Science & Technology		
University Research Project (URP) on Maize		
61	<p>SEC/CBE/SST/MAZ/2018/CP075 Assessing the seed maturity and vigour of groundnut and maize crops using Chlorophyll fluorescence technique (November, 2018 to October, 2019)</p> <p>Dr. D. Thirusendura Selvi, Asst. Prof. (SS&T), Dept. of Seed Science & Tech., Coimbatore</p>	<ul style="list-style-type: none"> • Result of the project may be given for information • Project to be closed
62	<p>SEC/BSR/SST/MAZ/2019/001 Study on mitigating the impact of heat stress on flowering phenology, seed yield and quality in maize (September, 2019 -August, 2021)</p> <p>Dr.V. Manonmani Professor (SST), ARS, Bhavanisagar</p>	<ul style="list-style-type: none"> • Project to be continued

University Research Project (URP) on minor millets		
63	<p>Action plan Seed pelleting for mechanized sowing in small millets (2019- 2021)</p> <p>Dr. P.R. Renganayaki Professor and Head Dept. Seed Sci. & Technology, TNAU, Coimbatore</p> <p>Dr.S.Lakshmi Assoc. Professor (SST) Department of Pulses, TNAU, Coimbatore</p> <p>Dr. V. Alex Albert Asst. Professor (SST)</p> <p>Dr. P. Mohan Kumar Asst. Professor (Farm machinery), AEC &RI, Kumulur</p> <p>Dr.K.Sivagamy Asst. Professor (Agronomy), CEM, Athiyandal</p>	<ul style="list-style-type: none"> • Project to be continued
All India Coordinated Research Project (AICRP) on Minor Millets		
64	<p>AICRP/STR/CBE/SEP/001 Integrated approach for enhancing seed yield and quality in Millets (2016 - 2020)</p> <p>Dr. C. Vanitha, Asst. Prof. (SST), Dept. of Seed Science & Tech., Coimbatore</p>	<ul style="list-style-type: none"> • Project to be continued/closed as per the proceeding of AICRP meet

CROP MANAGEMENT : FORAGE CROPS

A. Adoption / OFT

1. Adoption

1. Suitability of single budded setts in Cumbu Napier hybrid grass

Horizontal planting of single budded setts with sett treatment (12 hours soaking in water + 24 hours incubation) was found to be a viable option for better establishment with reduced sett requirement (50%).

B. Action Plan (2019-2022)

Action plan 1 : Optimizing the spacing and fertilizer levels in fodder maize pre release culture TNFM 131-9

Theme leader: Dr. V. Geethalakshmi, Director, Crop Management, TNAU, Coimbatore

Activity	Name of the scientist and centre	2019-20	2020-21	2021-22	Deliverables / expected out come
<ul style="list-style-type: none"> To optimize the spacing for achieving higher green fodder yield in fodder maize pre release culture TNFM 131-9 To identify the suitable nutrient levels for higher yield and economics in fodder maize pre release culture TNFM 131-9 <p>Treatments Main plot (Spacing) M1 : 30cm x 15cm M2: 30 cm x 10 cm</p>	<p>Operating Centre: Dept. of Forage Crops, Coimbatore- Dr.S.D.Sivakumar) Assoc.Prof.(Agron,) Dr.C.Babu Professor and Head Dr.R.Karthikeyan Assoc.Prof.(Agron)</p>	<ul style="list-style-type: none"> Project proposal and approval Experiment layout and sowing Crop management, monitoring and observation Harvest and data processing 	Confirmative trial	<ul style="list-style-type: none"> On-Farm Trial (OFT) Report preparation 	<ul style="list-style-type: none"> Suitable package of practice for achieving higher productivity in fodder maize pre release culture TNFM 131-9 may be developed

M3: 20cm x 10 cm M4: 40cm x 15 cm Sub plot (Nutrient levels) N1: 75% RDF N2: 100 % RDF N3: 125% RDF RDF: 60:40:20 kg NPK/ha Design: Split plot Replication :3					
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2.3. Research Projects and remarks

Research Projects : Forage Crops

Centre	URP	AICRP	EFP	Total
Agronomy				
Dept. of Forage Crops, TNAU, Coimbatore	1	3	3	7
Dept. of Agronomy, AC & RI, Madurai		1	-	1
Total	1	4	-	8

URPs /AICRPs / Externally Funded Projects

Agronomy

Sl. No.	Project No. and Title	Remarks
University Research Projects		
1.	Optimizing the spacing and fertilizer levels in fodder maize pre release culture TNFM 131 (June 2019 – May 2021) Dr. S. D. Sivakumar Associate Professor (Agronomy) Dept. of Forage Crops, TNAU, Coimbatore Dr. R. Karthikeyan, Associate Professor (Agronomy) Dept. of Agronomy, TNAU, Coimbatore	The project may be continued.

AICRP Projects		
A. AICRP on FCU		
1.	Studies on Carbon sequestration in perennial grass based cropping system (R 15- AST-11 C) (June 2015– May 2019) Dr. S. D. Sivakumar Associate Professor (Agronomy) Dept. of Forage Crops, TNAU, Coimbatore	The project to be closed.
2.	Studies on the performance of top feeds under varied planting geometry with and without intercrop (K-17-AST-1) (June 2016 – May 2020) Dr. S. D. Sivakumar Associate Professor (Agronomy) Dept. of Forage Crops, TNAU, Coimbatore	The project may be continued.
3.	Studies on organic source of nutrient on green forage yield and quality of fodder Cowpea - Fodder maize under irrigated situation (K-17-AST-1) (June 2019 to May 2022) Dr. S. D. Sivakumar Associate Professor (Agronomy) Dept. of Forage Crops, TNAU, Coimbatore	The project may be continued.
AICRP on Irrigation Water Management – Dept. of Agronomy, AC&RI, Madurai		
1.	Evaluation of performance and response of Cumbu Napier Hybrid CO (BN) 5 to different levels of fertilization through Drip Fertigation (Jan 2020 to Dec 2021) Dr. J. Prabhakaran Asst. Prof. (SS&AC) Dr. K. Kalaichelvi Asst. Prof. (Agronomy) Dept. of Agronomy, AC&RI, Madurai	The project may be continued.

Externally funded projects		
1.	TANII – 2019-21 : Pelletization of forage crops for enhancing livestock productivity (April 2019 to March 2021) Dr.S.D.Sivakumar, Assoc.Prof.(Agron.)	The project may be continued
2.	DBT/CPBG/CBE/FC/2019/004 Establishment of biotech KISAN hub in Two aspirational districts (Virudhunagar and Ramanathapuram) of Tamil Nadu (April 2019 to March 2021) Dr.S.D.Sivakumar, Assoc.Prof.(Agron.)	The project may be continued
3.	DBT/CPBG/CBE/FC/2019/R004 Establishment of Biotech KISAN hub at Tamil Nadu Agricultural University, Coimbatore (April 2018 to March 2020) Dr.S.D.Sivakumar, Assoc.Prof.(Agron.)	The project may be continued

III. CROP PROTECTION

3.1 Technologies for adoption/OFT/Information

Agricultural Entomology

Adoption

1 : Management of fall armyworm (*Spodoptera frugiperda*) in maize

TNAU IPM technology Capsule *viz.*, application of neem cake @ 250 kg/ha, seed treatment with *Beauveria bassiana* @ 10g/kg seed (or) thiamethoxam 30 FS @ 10 ml/kg seed, spacing of 60x25 cm, rogue spacing of 75 cm for every 10 rows, border cropping with cowpea, gingelly or sunflower, mass trapping of FAW males with pheromone traps @ 50/ha, spray of azadirachtin @ 20ml/10 l (or) thiodicarb 75 WP @ 20g/10 l (or) emamectin benzoate 5 SG @ 4 g/10 l at early whorl stage (20 DAS); spraying of *Metarhizium anisopliae* @ 80g/10 l (or) spinetoram 12 SC @ 5 ml/10 l (or) Novaluron @ 15 ml/10 l (or) flubendiamide @ 4 ml/10 l (or) chlorantraniliprole @ 4 ml/10 l at late whorl stage (40 DAS) and at tasseling and cob formation stage (60 DAS) on need basis is recommended for management of fall armyworm in maize.

2 : Management of sorghum stem borer (*Chilo partellus*)

The IPM module comprising calcium silicate application @ 10 DAE (30 kg/ha), intercropping sorghum + cowpea (4:1), border cropping with cumbu napier 2 rows, releasing egg parasitoid, *Trichogramma chilonis* @ 1,00,000 /ha thrice at 20, 30 and 40 DAE, need based spraying of NSKE 5% at 45 DAE is recommended for the management of sorghum stem borer.

3 : Management of rice weevil (*Sitophilus oryzae*)

Seed treatment of *Acorus calamus* TNAU formulation (Sweet flag 6%EC) @ 10 ml/kg seed is recommended for the management of rice weevil, *Sitophilus oryzae* in maize.

On Farm Trial

OFT 1: Botanicals for the management of *Sitophilus oryzae* in sorghum

Treatments:

T1	<i>Acorus calamus</i> TNAU formulation (Sweet flag 6%EC) @ 10 ml / kg of seed
T2	<i>Azadirachta indica</i> (Neem) leaf powder 10 g/kg seed
T3	<i>Vitex negundo</i> (Nochi) leaf powder 10 g/kg seed
T4	Emamectin benzoate 5%SG 40 mg/kg seed
T5	Untreated control

Design: CRD

Replication: Four

Methodology

Freshly harvested and untreated sorghum seeds will be used for the study. Five hundred grams of sorghum seeds will be treated with respective products. Treated seeds will be taken in one kg capacity plastic container and 20 pairs of newly emerged rice weevils (*S. oryzae*) will be released. Untreated control will be maintained. The experiment will be conducted under ambient conditions.

Observations:

- Mortality assessment will be made immediately after treatment on 3rd, 7th and 15th day after insect release and at monthly intervals up to 6 months.
- Per cent germination after six months

Centres & Scientist incharge:

- Dr. R. Arulprakash, Seed Centre, TNAU, Coimbatore
- Dr. M.R. Srinivasan, C&RI, Killikulam
- Dr. Zadda Kavitha, AC&RI, Madurai
- Dr. V.R. Saminathan, HC&RI (W), Trichy
- Dr. V. Radhakrishnan, AC&RI, Vazhavachanur

Information**Agricultural Entomology**

1. Maize inter and border cropping systems with sunflower, sesame, cowpea and brinjal registered maximum number of spiders, coccinellids, earwigs, rove beetles, dragonflies, Ichneumonid wasps and tachinids.

Plant Pathology**Sorghum**

1. Fourteen Land races *viz.*, Vilathikulam local, Kalugumalai, Ammapatti local 2, Kalikkampatti local 1, Chittayan kottai local 1, Kalingamudaiyanpatti local 1, Kalingamudaiyanpatti local 2, Keezhakunampati local 1, Muthiyampalayam local1, Muthiyampalayam local 4, Tenkasi local, TNAU-R-0040-2448, TNAU-R-0040-4416 and PYR-(TV)-16-03 showed resistance to ergot, grain mould, anthracnose, rust and downy mildew
2. Spraying of tebuconazole 5.36 W/W @1ml/l recorded 9.99% ergot incidence with maximum grain yield of 2009 kg/ha compared to the control (75.57% ; 1278 kg/ha)

Maize

1. A 'T'- shaped low cost and user friendly spore trap device to monitor the spore load of maydis and turcicum blight diseases in maize and the weather correlation revealed that the minimum temperature and dew deposit were positively correlated with development of above mentioned diseases
2. Seed treatment with Pf1 + spraying with Azoxystrobin (0.3%) was effective against both maydis and turcicum leaf blights
3. Application of FYM (12 ton/ha) + Seed treatment with *B. subtilis* @10g/kg + VAM @ 5gram/plant at Vegetative stage and soil application of *B. subtilis* + *T. viride* @ 2.5kg/ha at tasseling stage (VT) and milky stage (R3) effectively reduced charcoal rot incidence.
4. Among 1480 AICRP maize entries screened both in Rabi -2019 and kharif 2020, totally 116 entries showed resistance against charcoal rot

Pearl millet

1. Molecular confirmation of mycoparasite on rust was done which showed 89.85 per cent similarity with *Sphaerellopsis paraphysata*
2. Three TNAU entries viz., PT 6029, PT 6674 and PT 6676 were showing 1.4, 2.7 and 5.7 per cent downy mildew incidence under sick plot conditions
3. None of the entries were free from rust and the incidence ranged from 1.5 to 7.5 per cent.

Small millets

1. The entries viz., TNEc1302, GPU100 and VR1112 were showing resistance to leaf, neck and finger blast and brown spot diseases
2. The late sown crops faced leaf blast incidence during active tillering stage that is late October and early November months.
3. Similarly, neck and finger blast incidence was recorded during 16th August and 1st August respectively
4. Among 32 isolates of *Magnaporthe grisea*, 16 isolates were MAT1-1 mating type accounting to 50 per cent frequency and the remaining 16 isolates were positive for MAT1-2 mating type with 50 per cent frequency.

3.2. Action Plan			
<u>Agricultural Entomology</u>			
Action Plan 1: Insect pest complex of sorghum earhead and their management			
Theme Leader	Dr. S. Manimegalai, Professor (Agril. Entomology), TAU, Coimbatore		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables
Documenting the insect pest complex of sorghum earhead and evaluation of insecticides starting from milky stage T1 – Thiamethoxam 25 WG 0.4g/l T2 – Azadirachtin 1500 ppm (5 ml/l) T3 – Fipronil 5 SC (0.5ml/l) T4 – Untreated control Treatments: 4; Replication: 5 1. Design: RBD	Dr. S. Manimegalai, TNAU, CBE Dr. S. Suganyakanna, AC&RI, KDM Dr. K. Govindan, AC&RI, VVNR Dr. L. Allwin, AC&RI, KKM	Collection and identification of earhead infesting pest complex starting from milky stage to grain maturity stage Preparation of bulletin on earhead pests Pre-treatment observations on major earhead pest population will be recorded Post treatment observations after spraying at weekly intervals (7,14 days after spraying)	Documentation of the earhead infesting pests of sorghum. Bulletin on the earhead pests. Management of earhead infesting complex

Action Plan 2: Survey on major pest and diseases on millets and development of disease prediction models			
Theme Leader	Dr. T. Srinivasan, Professor (Agrl. Entomology), TNAU, Coimbatore		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables
<p>Survey on major pests and diseases of millets</p> <p>Survey for occurrence of major pest and diseases (One on campus fixed plot and roving plot study at fortnightly interval in the District identified during the district specific crop season)</p>	<p>Maize, Sorghum & Pearl millet Location: Coimbatore, Tirupur Dr. T. Srinivasan & Dr. I. Johnson, CBE</p> <p>Maize, Sorghum & Pearl millet Location: Erode, Salem Dr. Sangeetha Panicker & Dr. Sheela Venugopal, ARS, BSR</p> <p>Maize Sorghum, Kudiraivali Location: Madurai, Virudhunagar Dr. K. Suresh, MDU Dr. Mareeswari, ARS, APK</p> <p>Maize, Sorghum, Pearl millet Location: Dindigul, Theni Dr. N.M. Arivudainambi & Dr. R. Radhajeyalakshmi, MRS, VGR</p> <p>Ragi, Tenai, Pearl millet, Samai Location: Tiruvannamalai, Vellore, Villupuram Dr. M. Rajesh, CEM, ATL Dr. K. Govindan, AC&RI, VVNR Vazavachanur</p>	<p>Fixed plot on/off campus</p> <p>Roving survey in millet growing regions</p> <p>Periodical recording of weather parameters and correlation of pest population and damage with weather parameters.</p> <p>Documentation of emerging pests and diseases.</p>	<p>Regression model for pest and diseases of millets</p> <p>Cumulative analysis of data recorded on ragi blast will be validated and a forewarning model will be developed (Action: Dr. M. Rajesh, CEM, Athiyandal; Dr. S. Kokilavani, ACRC, Coimbatore)</p>

	<p>Maize, pearl millet, Ragi, Varagu, Tenai Location: Cuddalore, Perambalur Dr. G. Senthilraja & Dr. S. Jayaprabhavathi, RRS, Vridhachalam</p> <p>Weather correlation Dr. S. Kokilavani, ACRC, TNAU, Coimbatore</p>		
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Action Plan 3: Extent of damage by avian fauna in Millets and measures for management			
Theme Leader	Dr. T. Srinivasan, Professor (Agrl. Entomology), TNAU, Coimbatore		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables
<p>Assessment of damage by birds in different millet crops</p> <ul style="list-style-type: none"> • Maize • Sorghum • Pearl millet <p>Treatments</p> <p>T1 - Reflective ribbons T2 – Bird scare tapes T3 – Scare crows T4 – Control</p> <p>Design: Macro-plot</p>	<p>Maize, Sorghum & Pearl millet</p> <ul style="list-style-type: none"> • Dr. T. Srinivasan, TNAU, CBE • Dr. P. Indiragandhi, RRS, VRI • Dr. K. Govindan, AC&RI, VVNR • Dr. K. Suresh, AC&RI, Madurai • Dr. J. Ramkumar, KVK, RMD 	<ul style="list-style-type: none"> • Recording No. of earheads/ cobs damaged by birds at 5 points in the field (4 corners & one at middle) @ 50 plants/ point • Expressed as % bird damage • Evaluating different management options under field conditions • Documenting other management options followed by farmers 	<p>Management of bird problem in millets</p>

PLANT PATHOLOGY**Action Plan 1: Management of sorghum downy mildew****Theme Leader** Dr. A. Sudha – Department of Millets, TNAU, Coimbatore

Action Plan	Name of the scientist(s) and centre	Activity	Deliverables/ expected out come
<p>Assess the downy mildew severity on fodder sorghum in Tamil Nadu</p> <p>Integrated Management of downy mildew disease</p>	<p>Dr.A.Sudha, Asst. Prof. (Pl. Path.), Dept. of Millets, TNAU, CBE</p> <p>Dr. Mareeswari, Asst. Prof. (Pl. Path.), ARS, Aruppukottai</p>	<p>Treatments</p> <ol style="list-style-type: none"> 1. ST with metalaxyl 6g/kg 2. ST with metalaxyl 6g/kg + spraying of Mancozeb 2.5g/litre on 45th day Followed by spraying of <i>Bacillus subtilis</i> (EPC 5) 2.0 g/litre on 60th day 3. ST with metalaxyl 6g/kg + spraying of mancozeb 2.5g/litre on 45th day 4. Spraying of mancozeb 2.5g/litre on 45th day Followed by <i>B. subtilis</i> (EPC 5) 2.0g/litre on 60th day 5. Foliar spraying of mancozeb 2.5g/litre on 45th day, if necessary on 60th day also 6. Foliar spraying of <i>B. subtilis</i> (EPC 5) 2.0g/litre on 45th day, if necessary on 60th day also 7. Control <p>Observation : PDI on vegetative stage before spraying and grain filling stage before imposing the treatment and Yield</p>	<p>Effective IDM will be developed</p>

Action Plan 2: Biological control of <i>Fusarium</i> post flowering stalk rot			
Theme Leader	Dr. R. Radhajeyalakshmi - MRS, Vagarai		
Action Plan	Name of the scientist(s) and centre	Activity	Deliverables/ expected outcome
Evaluation of antifungal properties of PGPRs from maize rhizosphere against PFSR of maize.	<ol style="list-style-type: none"> 1. Seed treatment (10g/kg) + Soil application (2.5kg/ha) with <i>Pseudomonas fluorescens</i> (Pf1) 2. Seed treatment (4g/kg) + Soil application (2.5kg/ha) with <i>Trichoderma asperellam</i> (Tv1) 3. Seed treatment (10g/kg) + Soil application (2.5 kg/ha) with <i>Bacillus subtilis</i> 4. Seed treatment (2g/kg) + Soil application with Carbendazim (0.2%) 5. Untreated control 	<p>Studying rhizosphere colonization and competitive saprophytic ability</p> <p><i>In vivo</i> experiments with PGPRs on maize crop & their impact will be analyzed in terms of disease reduction, plant growth promotion and yield</p> <p>*Two trials have to be conducted at different hot spot areas in Dindigul district</p>	Developing biological control methods for PFSR disease of maize using PGPRs with increased antifungal properties

Action Plan 3. Development of decision support system for foliar diseases in maize			
Theme Leader	Dr. V. Sendhilvel, Asst. Prof. (Pl. Path.,) Dept. of Millets, Coimbatore		
Action Plan	Name of the scientist(s) and centre	Activity	Deliverables/ expected out come
<ul style="list-style-type: none"> • To design the spore trap (T-shaped sampling) to ensure the spore load of foliar diseases • To study the spore load of <ul style="list-style-type: none"> • <i>Bipolaris maydis</i> • <i>Helminthosporium turcicum</i> • Correlation of spore load and occurrence of the disease • Development of decision support system (DSS) based on the output of for disease management 	<p>Coimbatore: Dr. V. Sendhilvel, Dept. of Millets, TNAU, CBE</p> <p>Dindigul: Dr. R. Radhajeyalakshmi, MRS, Vagarai</p> <p>Sivagangai: Dr. M. Paramasivam, DARS, Chetnad</p> <p>Thiruvannamalai: Dr. M. Rajesh, CEM, Athiyandal</p> <p>Perambalur: Dr. P. T. Sharavanan, ADAC&RI, Trichy</p> <p>Salem: Dr. M. Deivamani, TCRS, Yethapur</p> <p>Erode: Dr. Sangeetha Panicker ARS, Bhavanisagar</p> <p>Correlation studies Dr. S. Kokilavani, ACRC,Coimbatore</p>	<p>Installation of spore trap and final data compilation</p> <p>Observation to be recorded on</p> <ul style="list-style-type: none"> • Spore count • Age of crop • PDI for TLB • PDI for MLB <p>Weather parameters</p> <ul style="list-style-type: none"> • RH • Rainfall • Temperature • Dew fall 	<p>Disease forewarning model development for effective disease management</p>

Action Plan 4: Biological management of rust disease in pearl millet			
Theme Leader	Dr. I. Johnson, Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore		
Action Plan	Name of the scientist(s) and centre	Activity	Deliverables/ expected out come
<p><i>Sphaerellopsis paraphysata</i> Optimization of growth parameters Evaluation of mycoparasite Pf1 + <i>B. subtilis</i> EPC 5 each @ 0.2% <i>Sphaerellopsis paraphysata</i> culture filtrate @ 0.2% ⁵ <i>S. paraphysata</i> conidial suspension @ 10 spores/ml Control Foliar application on 30th and 45th day after sowing</p>	<p>Dr. I. Johnson, Asst. Prof. (Pl. Path), Dept. of Millets, TNAU, CBE</p>	<p>Mycelia growth, sporulation Percentage of parasitisation, PDI on 60th day after sowing</p>	<p>Effective mycoparasite for rust management</p>

Action Plan 5: Documentation on diseases of small millets (Varagu, Tenai, Ragi & Kudiraivali)			
Theme Leader	Dr. G. Senthilraja, Asst. Professor (Pl. Path), RRS, Vriddhachalam		
Action Plan	Name of the scientist(s) and centre	Activity	Deliverables/ expected out come
<p>Survey and documentation of diseases of small millets Collection of weather parameters Development of disease prediction model for effective forewarning</p>	<p>Vilupuram & Perambalur: • Dr. G. Senthilraja, RRS, Vriddhachalam Thiruvannamalai & Vellore: • Dr. M. Rajesh, CEM, Athiyandal Dharmapuri & Krishnagiri: • Dr. N. Indira, RRS, Paiyur Tindivanam and Cuddalore • Dr. S. Thangeshwari, ORS, Tindivanam Sivagangai & Ramnad • Dr. M. Paramasivam, DARS, Chetnad</p>	<ul style="list-style-type: none"> • Survey and document the occurrence of diseases in major small millets growing regions of Tamil Nadu • Identification of the pathogens involved with their characterization 	<ul style="list-style-type: none"> • Geographical distribution of diseases of small millets • Influence of epidemiological factors on the occurrence of diseases in small millets • Compendium of small millet diseases will be developed

Action Plan 6: Management of leaf blight in barnyard millet			
Theme Leader	Dr. M .Paramasivan, Asst. Prof. (Pl. Path.), DARS, Chettinad		
Action Plan	Name of the scientist(s) and centre	Activity	Deliverables/ expected out come
<p>Nonchemical methods</p> <p>Biological control</p> <ul style="list-style-type: none"> • Seed treatment (10g/kg)+ Foliar spray of <i>Pseudomonas fluorescens</i> (Pf1) 10gm/lit • Seed treatment (10g/kg)+ Foliar spray of <i>B. subtilis</i> @10 gm/lit <p>Botanicals</p> <ul style="list-style-type: none"> • 10% of <i>Nerium oleander</i> & Neem cake extract <p>Chemicals</p> <ul style="list-style-type: none"> • Carbendazim + Mancozeb (0.2%) • Copper oxychloride (0.25%) <p>Foliar Spray on 30th and 45th DAS</p>	Dr. M .Paramasivan, DARS, Chettinad	PDI on 30 th and 45 th DAS	Effective method of management of leaf blight

3.3. Research Projects and remarks

Research Projects : Millets

Crop	Centre	URP	Core	AICRP	Ext. funded	Total
Agri. Entomology						
Sorghum	Dept. of Millets, Coimbatore	-	-	-	-	-
Maize	Dept. of Millets, Coimbatore	1	1	1	-	3
	MRS, Vagarai	2	-	-	-	2
	AC&RI, Madurai	2	-	-	-	2
Plant Pathology						
Sorghum	Dept. of Millets, Coimbatore	1	-	1	-	2
Maize	Dept. of Millets, Coimbatore	1	-	1	-	2
	MRS, Vagarai	2	-	-	-	2
Pearl millet	Dept. of Millets, Coimbatore	1	-	1	-	2
Ragi and Small millet	CEM, Athiyandal	2	-	1	-	3
	RRS, Vriddhachalam	-	-	-	1	1
Total		12	1	5	1	19

URP / AICRP / Externally funded projects

Agricultural Entomology

No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
University Research Project				
MAIZE				
1.	CPPS/CBE/ENT/MAZ/2019/001 Pest Succession and documentation of insect pests and natural enemies fauna in maize ecosystem	Dr. T. Srinivasan, Asst. Professor (Agrl. Entomology), Dept. of Millets, TNAU, CBE-3	Aug, 2019 – Sept, 2021	The research work has to be intensified. An information brochure on the pest and natural enemy scenario should be prepared

URP / AICRP / Externally funded projects

Agricultural Entomology

No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
2.	CPPS/MDU/ENT/MAZ/2019/002 Development of botanical formulation for the management of fall army worm (<i>Spodoptera frugiperda</i>) in maize	Dr. M. Shanthy Professor and Head (Agrl. Entomology), Dr. K. Senthil Assistant Professor (Agrl. Chemicals) AC&RI, Madurai	Nov, 2019 – Oct, 2021	Botanical formulation suitable for first, second and third windows should be developed. Ecotoxicity data should be generated
3.	CPPS/MDU/ENT/MAZ/2019/001 Monitoring and Management of Maize Fall Army Worm, <i>Spodoptera frugiperda</i> (J.E.Smith) with Plant Based Insecticides.	Dr. Zadda Kavitha Assistant Professor (Agrl. Entomology), Dr. K. Senthil Assistant Professor (Agrl. Chemicals), Dept. of Soils and Environment, AC&RI, Madurai	Sept, 2019 – Aug, 2022	Large-scale screening of botanicals in consultation with Professor and Head (Entomology), CPPS, TNAU should be done
4.	CPPS/VGI/ENT/MAZ/2019/001 Influence of Organics on the management of Fall Army Worm in maize under irrigated condition	Dr.N.M.Arivudainambi Assistant Professor (Agrl. Entomology), MRS, Vagarai	Oct, 2019 - Sept, 2022	The project may be continued
5.	CPPS/VGI/ENT/MAZ/2019/002 Eco-friendly management of Fall Army worm in maize under irrigated condition	Dr.N.M.Arivudainambi Assistant Professor (Agrl. Entomology) Dr.M.M.Amanullah Professor(Agronomy), MRS, Vagarai	Oct, 2019 - Sept, 2022	The project may be continued

Core project				
Maize				
6.	CPPS/CBE/ENT/MAZ/2018/CP073 Management strategies for fall armyworm, <i>Spodoptera frugiperda</i> in maize	Dr. N.Muthukrishnan , Professor (Entomology), Dept. of Agrl. Entomology, Coimbatore	19.11.2018- 30.09.2020	Extension proposal for the project is to be submitted and to be completed on 30.09.2020
AICRP				
Maize				
7.	AICRP/PBG/CBE/MAZ/004 AICRP on Maize Improvement Screening Evaluation of maize lines against major pests of maize and development of management strategies	Dr. T. Srinivasan , Asst. Prof. (Entomology), Dept. of Millets, Coimbatore	Continuous project	The project may be continued as per AICRP technical programme

PLANT PATHOLOGY				
University Research Project				
SORGHUM				
1	CPPS/CBE/PAT/SOR/2019/001 Management of Sorghum ergot disease caused by <i>Claviceps sorghi</i> by biocontrol agents and fungicides	Dr.A.Sudha , Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore	June, 2019 to May, 2022	Action may be taken to create maximum infection of ergot. This project may be continued.
MAIZE				
2.	CPPS/CBE/PAT/MAZ/2018/001 Biointensive management of charcoal rot in Maize	Dr. V. Sendhilvel , Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore	March 2018 To April 2021	Generate data and go for OFT. The project may be continued.
3.	CPPS/VGI/PAT/MAZ/2017/001 Management of Maize Banded Leaf and sheath Blight (BLSB) caused by <i>Rhizoctonia solani</i> f. sp. <i>sasakii</i> with biocontrol agents and fungicides	Dr.R.Radhajeya - lakshmi Asst. Prof. (Pl. Path.) MRS, Vagarai	July 2017 to June 2020	The project may be closed and the completion report may be submitted immediately
4.	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).	Dr.R.Radhajeya-lakshmi Asst. Prof. (Pl. Path.) MRS, Vagarai	July 2016 To June 2019	The project may be closed and the completion report may be submitted immediately

Pearl Millet				
5.	CPPS/CBE/PAT/SMM/2018/001 Biological management of pearl millet rust disease using mycoparasite, <i>Sphaerellopsis filum</i> (Biv.) B.Sutton	Dr. I. Johnson, Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore	April 2018- March 2021	The effect of <i>S. paraphysata</i> on pearl millet rust may be studied and compared with the effect of available biocontrol agents on rust. The project may be continued
Small Millets				
6.	CPPS/ATL/PAT/SMM/2020/001 Integrated disease management of finger millet blast with bio-agents, new molecule fungicides and antibiotics	Dr. M. Rajesh, Asst. Prof. (Pl. Path.), CEM, Athiyandal	June 2019 to May 2021	The data collected on ragi blast and the weather parameters for the past 10 years may be compiled and a forewarning model may be developed in consultation with Dept. of ACRC, TNAU, Coimbatore. The project may be continued
7.	CPPS/ATL/PAT/SMM/2020/NEW Assessment of fungal seed borne pathogens and field infection of major fungal diseases incidence on tenai/foxtail millet and its management	Dr. M. Rajesh, Asst. Prof. (Pl. Path.), CEM, Athiyandal	July 2019 to June 2021	Management strategy may be developed for minor millet. The project may be continued
AICRP				
Sorghum				
8.	AICRIP/PBG/CBE/SOR/006 Evaluation of AICRP trials in sorghum Performance of sorghum entries against major diseases under sick plot conditions	Dr. A. Sudha, Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore	Continuous project	The project may be continued as per AICRP technical programme

Maize				
9.	AICRP/PBG/CBE/MAZ/004 AICRP on Maize Improvement Performance of maize entries against major diseases under sick plot conditions	Dr. V. Sendhilvel, Asst. Prof. (Pl. Path.), Dept. of Millets, Coimbatore	Continuous project	The project may be continued as per AICRP technical programme
Pearl Millet				
10.	AICRP/PBG/CBE/PEM/009 Evaluation of AICRP trials in Pearl millet Performance of pearl millet entries against major diseases under downy mildew sick plot conditions and management of Pearl millet downy mildew	Dr. I. Johnson, Asst. Prof.(Pl. Path.), Dept. of Millets, Coimbatore	Continuous project	The project may be continued as per AICRP technical programme
Small Millet				
11.	AICRP/PBG/ATL/SMM/008 AICRP on Small Millets	Dr. M. Rajesh, Asst. Prof. (Pl. Path.), CEM, Athiyandal	Continuous project	The project may be continued as per AICRP technical programme. A copy of the completion report may be submitted to the Director (CPPS)
Externally Funded Projects				
Small Millet				
12.	DST/CPPS/ATL/PAT/2016/R003 Population biology of <i>Magnaporthe grisea</i> and analysis of host plant resistance in foxtail millet against blast disease	Dr. G. Senthilraja, Asst.Professor (Pl. Pathology), RRS, Vriddhachalam	01.04.2017 to 31.3.2020	The completion report has to be submitted on time. Important findings from the project and a copy of completion report may be communicated to the Director (CPPS)

5. REMARKS OF THE VICE CHANCELLOR

CROP IMPROVEMENT

1. Research on special traits needs to be focused in red sorghum varieties, basic studies in BMR lines in forage sorghum, ethanol production in sweet sorghum and mechanism for drought tolerance in maize through inter disciplinary approach
2. Possibility of exploiting potential trait specific lines from the germplasm with available data base may be explored.
3. Focus should be given to develop synthetics in the cross pollinated crops so as to strengthen seed chain and replacement of hybrids and old varieties.
4. More attention should be given for evolving single cross hybrids in maize
5. Sharing of genotypes to other research stations for screening of biotic and abiotic stress in the epidemic/natural system has to be indicated.
6. Farmer participatory approach for evaluation of new varieties/technologies has to be exploited for all crops.
7. Evaluation of sweet sorghum cultures may be taken up including cultures from ICRISAT
8. Evaluation of varieties by farmers participation may be done through colours like red, blue, white in all crops
9. Evaluation of the underutilized crop of grain amaranthus for the suitability be taken up at centre of excellence in millets at Athiyandal.
10. Animal-man conflict has to be resolved through the development of self sown system of forage crops/millets varieties/technology
11. Commercialization of forage varieties is to be done through ABD

CROP MANAGEMENT

1. System of Millet Intensification (SMI) through integration of best possible and novel crop management technologies are to be experimented to maximize the nutri-cereals productivity under changing climatic scenario
2. Economically viable and technologically feasible Micro Irrigation (MI) cum Fertigation technology be explored for augmenting the productivity of major and minor millet crops
3. Organic package of practices for all the millets crops is to be developed with best management practices involving green manures, organic manures and bio-fertilizers.
4. Exploration study on beneficial microorganism present in the rhizosphere of the nutri-cereal crops is to be conducted
5. Sodicty tolerance of sorghum crop is to be studied under field condition.

6. Development of suitable machinery/combined harvester for harvesting of nutri-cereal crops and de-huller for millet processing is to be taken up.
7. A Millet Cafeteria may be establish in Navarai season as demonstration plots in Tirur, Rice Research Station to study the feasibility as an alternate crop for rice
8. A demonstration unit of low cost hydroponic fodder production may be established.
9. Suitable irrigation management strategy to be evolved for CN hybrid grass to reduce the water use without sacrificing the green fodder yield.
10. Research work on endophytic bacterial association in millet crops needs to be strengthened. Identification of beneficial microorganism from root zone for developing effective bioinoculants.
11. Possibility of making combined product formulation of Fe and Zn spray for effective use in maize crop grown in deficient soils for growth stimulation and fortification of elements like Maize Maxim.
12. Work on bioherbicides needs to be intensified to come out with product like biomineraliser
13. In forage crops, horizontal planting and single nodal cuttings of cumbu napier hybrid needs to be investigated

CROP PROTECTION

1. Developing organic amendments /biomolecules for control of pest and diseases
2. Forewarning models needs to be developed for pest and diseases in millet crops
3. Scientists from RRS, Arupukottai and DARS, Chetnad should be involved in screening and identification of bioinoculants for rainfed zone.

REMARKS OF THE DIRECTOR, CPPS

1. All the scientists are instructed to monitor the insect pests, diseases and nematodes of millets in their districts regularly. If any outbreak of existing pests, disease and nematodes or occurrence of new insect pests, diseases and nematodes of millets are noticed report to the Director (CPPS) immediately.
2. Monthly pest and disease surveillance report should be submitted to the Professor and Head, Department of Agrl. Entomology, CPPS on or before 25th of every month without fail in the Google Forms for consolidation.
3. Basic work on mechanism of resistance, effect of cropping systems on pests and diseases and their natural enemies, insect plant interaction, host pathogen interaction and induced systemic resistance should be taken up using PG and Ph.D. students.
4. The results pertaining to experiments involving screening of germplasms/ accessions/ inbred lines/ hybrids are to be submitted to the Head of the concerned Departments,

simultaneously marking a copy to the Director (CPBG), Director (CPPS) and Professor & Heads (Pl. Pathology/ Dept. of Agrl. Entomology).

5. Impact of short duration red gram as a border crop in maize ecosystem against FAW may be assessed.
6. Screening for varietal resistance can be done under the Govt. of TN project and systematic studies on FAW with multidisciplinary approach shall be encouraged under the project.
7. The conventional bird scaring device designed by ARS, Aruppukottai may be evaluated in different millet in collaboration with KVK Ramanathapuram centre.
8. Quantification of aflatoxin in maize and sorghum during storage may be studied

REMARKS OF THE DIRECTOR OF RESEARCH

1. Speed breeding needs to be initiated for millet crops to accelerate research activities and screening of genetic materials with involvement of physiologist and molecular biologist by altering the light, RH and temperature in the controlled condition.
2. Bitter principles in kudiraivalli, developing a model system of millet intensification, artificial induction of sodicity in screening trials in sorghum has to be investigated.
3. Drought tolerant endobiome and metabolomic studies need to be strengthened in finger millet and research on nano ceria in sorghum has to be highlighted.
4. Development of novel pheromone to monitor FAW, early warning system for FAW using AI are to be studied.
5. Pellatization of small millet crops to suite sowing through mechanized seed drill operation and feasibility of utilizing multicrop harvester for mechanization in millet crops are to be further investigated.
6. Based on the thrust area identified new URP should be submitted by the concerned scientists immediately. All proposals should be presented before the RPAC convened by the Director (CPPS) before getting final approval.
7. The dates given for sending the closure proposal / deletion proposal should be strictly adhered.

DIRECTOR OF RESEARCH

6. PARTICIPANTS

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