

## **PROCEEDINGS OF THE 36<sup>th</sup> CROP SCIENTISTS' MEET ON PULSES 2018**

The 36<sup>th</sup> Crop Scientists' Meet on Pulses was held on 18.04.2018 and 19.04.2018 at TNAU, Coimbatore. The Vice-Chancellor, Director of Research, Technical Directors, Deans and Special Officers, Scientists from different research stations attended the Crop Scientist Meet (Pulses). Review on progress of University Research Projects was taken up by the Technical Directors at respective directorates on 18.04.2018. Salient findings emanated from the results of the experiments conducted by the scientists were taken up for presentation and deliberation for the next day.

The Plenary session was held on 19.04.2018. The meeting began with a prelude by Dr. K. Ramaraju, Director of Research, Tamil Nadu Agricultural University, Coimbatore. Action taken report on the recommendations made during previous crop scientists meet on pulses and progress report of various projects were presented by the lead scientists of the respective disciplines.

Dr. N.Manivannan, Professor and Head, National Pulses Research Centre, Vamban made a presentation on the action taken report of 35<sup>th</sup> Pulses Scientist Meet. Dr. S.Marimuthu, Assistant Professor (Agronomy) made a presentation on the action taken report and salient findings pertaining to Crop Management. For Crop protection, Dr.V.R.Saminathan, Assistant Professor (Agricultural Entomology) made a presentation on the action taken report and salient findings pertaining to Agricultural Entomology followed by Dr. P.AhilaDevi, Assistant Professor (Plant Pathology) for Plant Pathology, respectively.

Action plan for the next two years for crop improvement, crop management and crop protection was presented by the Director (CPBG), Director (CM) and Director (CPPS), respectively. Finally, the meeting was concluded by the remarks of the Vice - Chancellor and Director of Research.

The proceedings of the 36<sup>th</sup> Crop Scientists Meet on Pulses 2018 are furnished under the following headings:

- I. CROP IMPROVEMENT
  - A. Decisions made on the entries for Variety Release Proposal/ART/OFT/MLT evaluation
  - B. Research projects on Pulses
  - C. Remarks on the ongoing university research projects/AICRP/Externally funded projects
  - D. General remarks
  - E. Action Plan 2016-2019
  - F. Work load of scientists as per action plan
- II. CROP MANAGEMENT
  - A. Decisions made on OFT
  - B. Research projects on Pulses
  - C. Remarks on the ongoing University Research projects/AICRP/Externally funded projects
  - D. General remarks
  - E. Action Plan 2016-2019
  - F. Work load of scientists as per action plan

- III. CROP PROTECTION
- A. Decisions made on OFT
  - B. Research projects on Pulses
  - C. Remarks on the ongoing university research projects/AICRP/Externally funded projects
  - D. General remarks
  - E. Action Plan 2016-2019
  - F. Work allocation of scientists as per action plan
- IV. HOME SCIENCE
- A. Research projects on Pulses
- V. CONTACT DETAILS OF SCIENTISTS PARTICIPATED IN THE CSM(P)

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### I. CROP IMPROVEMENT

#### A. DECISIONS MADE ON THE ENTRIES FOR VARIETY RELEASE PROPOSAL/ART/OFT/MLT EVALUATION

##### i) Cultures identified for variety release (2018-19)

##### a) Blackgram (Resubmission)

Culture	Pedigree	Duration (days)	Seed yield (kg/ha)			Yield increase over check (%)		Special features
			COBG 10-05	CO 6 (C)	VBN 6 (C)	CO 6 (C)	VBN 6 (C)	
COBG 10-05	VBN 5 x <i>V. mungo</i> var <i>silvestris</i> /22/10	60-65	880	800	785	10.0	12.1	Bold seeded; Resistant to MYMV, leaf crinkle, stem necrosis.

##### b) Greengram

Culture	Pedigree	Duration (days)	Seed yield (kg/ha)			Yield increase over check (%)		Special features
			VGG 10--008	VBN (Gg)3 (C)	CO 8 (C)	VBN (Gg)3 (C)	CO 8 (C)	
VGG 10-008	PDM 139 x BB 2664	65-70	973	853	802	12.3	17.6	High yield and moderate resistance to MYMV

**ii) Cultures identified for the evaluation under ART – (2018-19)**

**a) Blackgram**

Culture/check	Parentage	Duration (days)	Seed yield (kg/ha)	Yield increase over check (%)		Special features	Season
				VBN 6	VBN 8		
VBG 12-062 (N)	PU 31 x CO 6	65-70	935	20.0	19.1	High yield, MYMV resistant	<i>Kharif</i> (June-July) <i>Rabi</i> (Sep.-Oct.)
COBG 13-04 (N)	T 9 x ADT 5	65-70	908	17.2	16.7	High yield, MYMV resistant	<i>Kharif</i> (June-July) <i>Rabi</i> (Sep.-Oct.)
Checks	VBN 6, VBN 8						

**b) Greengram**

Culture/check	Parentage	Duration (days)	Seed yield (kg/ha)	Yield increase over check (%)		Special features	Season
				VBN (Gg)3	CO 8		
VGG 10-008 (R)	PDM 139 x BB 2664	65-70	973	12.3	17.6	High yield, Moderately resistant to MYMV	<i>Kharif</i> (June-July) <i>Rabi</i> (Sep.-Oct.)
COGG 13-19 (N)	CO 6 x COGG 912	60-65	815	4.0	14.4	Early duration, Moderately resistant to MYMV	<i>Kharif</i> (June-July) <i>Rabi</i> (Sep.-Oct.)
Checks	VBN (Gg)3, CO 8						

**ART 2018-19**

**Distribution of ARTs**

Trial	Blackgram (2018-19)		Greengram (2018-19)	
	<i>Kharif</i> (June-July)	<i>Rabi</i> (Sep.-Oct.)	<i>Kharif</i> (June-July)	<i>Rabi</i> (Sep.-Oct.)
Districts	Villupuram, Vellore, Kanchipuram, Tiruvallur, Thiruvannamalai, Cuddalore, Dharmapuri, Krishnagiri, Salem, Namakkal, Coimbatore, Tirupur, Erode, Trichy, Perambalur, Ariyalur, Karur, Pudukkottai, Madurai, Theni, Dindigul, Virudhunagar, Sivagangai, Thanjavur, Tiruvarur, Nagapattinam, Thoothukudi and Thirunelveli (140 Trials – five trials in each district)			
KVK	Vamban, Sirugamani, Kuntrakudi, Madurai, Virudhachalam, Tindivanam, Vrinjipuram, Santhiyur, Paparapatti and Tirur (40 trials - Four trials in each KVK)			

**iii) Cultures identified for the evaluation under OFT – 2018-19**

**a) On Farm Trial – Greengram (Summer Irrigated)**

S. No	Cultures / Check	Parentage	Grain yield (kg/ha)	Duration (days)	Yield increase over (%)		Special features
					VBN (Gg) 3	CO 8	
1	VGG 10-008	PDM 139 x BB 2664	973	65-70	12.3	17.6	High yield and moderate resistance to MYMV
2	VGG 15-030	VBN (Gg) 2 x IPM 409-4	1101	60-65	15.5	23.4	High yield, small seed and moderate resistance to MYMV
3	VGG 16-029	VBN (Gg) 2 x ML 2037	1253	55-60	14.6	23.2	High yield, early, medium bold seed and resistance to MYMV
Check		VBN (Gg) 2 ,VBN (Gg) 3 and CO 8					

OFT (60): OFT will be conducted at three districts viz., Thanjavur, Thiruvarur and Nagapattinam @ 20 locations per district during Summer 2018.

**b) On Farm Trial – Greengram (Rice fallow)**

S. No	Cultures / Check	Parentage	Grain yield (kg/ha)	Duration (days)	Yield increase over (%)		Special features
					VBN (Gg) 3	CO 8	
1	VGG 10-008	PDM 139 x BB 2664	973	65-70	12.3	17.6	High yield and moderate resistance to MYMV
2	VGG 05-009	VBN (Gg) 2 x VRM (Gg) 1	882	65-70	10.8	29.4	High yield and moderate resistance to MYMV
3	VGG 16-036	IPM 03-1 x SPS 5	1014	60-65	16.0	21.0	High yield and resistance to MYMV
4	VGG 15-029	VBN (Gg) 2 x IPM 409-4	1289	60-65	20.0	28.0	High yield and resistance to MYMV
5	VGG 15-030	VBN (Gg) 2 x IPM 409-4	1101	60-65	16.0	23.4	High yield and resistance to MYMV

6	COGG11-01	CO6 x VC 6040A	950	65-70	-	20.0	High yield and moderate resistance to MYMV
Check		ADT 3					

OFT (100): OFT will be conducted at three districts viz., Thanjavur, Thiruvarur, Nagapattinam and Cuddalore @ 25 locations per district during Rice fallow 2018-19 season.

**c) On Farm Trial – Mochai (Short duration)**

S. No	Culture / Check	Parentage	Grain yield (kg/ha)	Duration (days)	Yield increase over check (CO 2) (%)	Special features
1.	PYR 03-004 (R)	Selection from DL 2564	895	130	14.0	❖ High yield and drought tolerant ❖ 30 days earlier than CO 2
Check		CO 2 (C)				

OFT (50): OFT will be conducted at five districts viz., Dharmapuri, Krishnagiri, Salem, Vellore and Dindigul @ 10 locations per district during *kharif* 2018.

**d) On Farm Trial – Horsegram**

S. No	Culture / Check	Parentage	Grain yield (kg/ha)	Duration (days)	Yield increase over check (PYR 2) (%)	Special features
1.	PYR 15-01	Selection from Bendrahalli local	953	110	11.5	❖ 96% grain filling ❖ Stay green type ❖ Suitable for late sown condition
Check		Paiyur 2 (Ch)				

OFT (40): OFT will be conducted at four districts viz., Dharmapuri, Krishnagiri, Namakkal and Vellore and @ 10 locations per district during *Rabi* 2018.

**iv) Cultures identified for the evaluation under Multi location trial – 2018-19**

**a) Multilocation Trial – Redgram (Short duration)**

Design : RBD	No. of replications	:	Four
Plot size : 4 × 3 m <sup>2</sup> (6 rows)	Seed Quantity	:	250 g/entry/location
Spacing : 60 x 30 cm	Season	:	<i>Kharif</i> (1 <sup>st</sup> fortnight of September)

S. No.	Cultures / Checks	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	VRG 12-005(R)	VBN(Rg) 3 x CORG 9701	1259	120	High yield, resistant to SMD and Fusarium wilt
2.	CRG 2013-02 (R)	CO (Rg) 7 x AL 1734/2	1552	120	High yield SMD resistance 5-6 seeds per pod
3.	CRG 2013-12 (R)	ICPL 2052 x ICPL 86020	1509	120-130	High yield, SMD and wilt resistant
4.	CRG 14-07 (N)	CO (Rg) 7 x TAT 93-47	1593	120-130	High yield, SMD resistance
Checks		VBN(Rg)3, CO(Rg)7			
Locations (06)		Vamban, Coimbatore, Paiyur, Melalathur, Yethapur, Virinjipuram			

Note:

1. The photosensitivity of the short duration redgram cultures will be assessed during the first fortnight of June 2018 at Coimbatore and Paiyur
2. Artificial screening for the following insect pests and diseases will be carried out by NPRC, Vamban, Dept. of Pulses, Coimbatore and ARS, Virinjipuram.

Name of the centre	Pests	Diseases
NPRC, Vamban	Pod borer complex	SMD and wilt
Dept of Pulses, Coimbatore	Pod borer complex	SMD and wilt
ARS, Virinjipuram	Pod borer complex	SMD and wilt

#### b) Multilocation Trial – Redgram (Long duration)

Design : RBD	No. of replications	: Four
Plot size : 4 × 3 m <sup>2</sup> (6 rows)	Seed Quantity	: 250 g/entry/location
Spacing : 120 x 30 cm	Season	: <i>Kharif</i> (July 15 <sup>th</sup> – August 15 <sup>th</sup> )

#### Features of the redgram MLT cultures

S. No.	Cultures / Check	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	CRG 2013-01 (R)	Co 6 x JKM 198	1894	180	SMD and wilt resistant
2.	VRG 08-004 (R)	Vamban 2 x VRG 17	1359	180	High yield, resistant to SMD and wilt
3.	CRG 16-008(N)	CO(Rg) 7 x Richa	1667	175-180	High yield, resistant to SMD

4.	VRG 08-003 (N)	VRG 92 x Vamban 2	1378	175-180	High yield, resistant to SMD
Check		CO 8			
Locations		Vamban, Coimbatore, Paiyur, Melalathur, Yethapur, Virinjipuram			

Note: Artificial screening for the following insect pests and diseases will be carried out by NPRC, Vamban, Dept. of Pulses, Coimbatore and ARS, Virinjipuram.

Name of the centre	Pests	Diseases
NPRC, Vamban	Pod borer complex	SMD and wilt
Dept. of Pulses, Coimbatore	Pod borer complex	SMD and wilt
ARS, Virinjipuram	Pod borer complex	SMD and wilt

### c) Multilocation Trial – Blackgram

Design : RBD	No. of replications : Three
Plot size : 4 × 3 m <sup>2</sup>	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: <i>kharif, rabi</i> , rice fallow and summer irrigated

### Features of the proposed culture

Sl. No	Cultures / Checks	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	VBG 13-003 (R)	KU 2016 x Vamban 3	1013	65-70	High yield and MYMV resistant
2.	VBG 12-110 (N)	Mash 114 x Vamban 3	1105	60-65	High yield, synchronous maturity and MYMV resistant
3.	VBG 17-026 (N)	KUG 365 x MDU 1	1289	65-70	High yield and MYMV resistant
4.	VBG 17-029 (N)	VBN (Bg) 5 x TU 17-14	1416	65-70	High yield and MYMV resistant
5.	KKB-14-015 (N)	IPU 2006-01 x TNY local	1088	65	High yield, recommended for rice fallow, irrigated and resistant to YMV
6.	KKB-14-022 (N)	IPU 2006-01 x TNY local	1121	70	High yield, recommended for rice fallow, irrigated and resistant to YMV
7.	COBG 16-03 (N)	VBN 3 x PU 31	991	60-65	High yield, resistant to YMV, bold seeds

Checks		VBN 6, VBN 8, ADT 6 (Rice fallow) and ADT 5 (Summer irrigated)
Locations	<i>Kharif</i> (June-July)	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam
	<i>Rabi</i> (Sep.-Oct.)	Coimbatore, Vamban, Aruppukkotai, Kovilpatti, Madurai, Chettinad and Tindivanam
	Rice fallow (Jan. 19 – Feb.19)	Aduthurai; SWMRI, Thanjavur and Killikulam
	Summer Irrigated (March – April)	Aduthurai, Thanjavur, Pattukkottai, Vamban, Coimbatore, Eachangkottai and KVK, Needamangalam

Note: Artificial screening for the following insect pests and diseases will be carried out by NPRC, Vamban, Dept. of Pulses, Coimbatore and CPMB, Coimbatore.

Name of the centre	Pests	Diseases
NPRC, Vamban	Pod borers and white fly	MYMV, LCV, powdery mildew and root rot
Dept. of Pulses, Coimbatore	Pod borers and white fly	MYMV, LCV, powdery mildew and root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

#### d) Multilocation Trial – Greengram

Design : RBD	No. of replications : Three
Plot size : $4 \times 3 \text{ m}^2$	Seed Quantity : 200 g/entry/location
Spacing : $30 \times 10 \text{ cm}$	Season: <i>kharif</i> , <i>rabi</i> , rice fallow and summer irrigated

#### Features of the proposed cultures

Sl. No	Cultures / Checks	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	COGG 13-39 (R)	CO 6 x SML 668	990	60-65	Bold (100 seed wt.:5.0 to 5.5 g) and shiny seeds moderately resistant to MYMV
2.	VGG 15-013 (R)	VBN (Gg)2 x ML 1451	1064	65-70	High yield and MYMV resistant
3.	VGG 15-029 (R)	VBN (Gg)2 x IPM 409-4	1289	60-65	High yield, synchronous maturity and MYMV resistant
4.	VGG 15-030 (R)	VBN (Gg)2 x IPM 409-4	1101	60-65	High yield, synchronous maturity and MYMV resistant



5.	VGG 16-029 (N)	VBN (Gg)2 x ML 2037	1278	60-65	High yield, synchronous maturity and MYMV resistant
6.	VGG 16-047 (N)	VBN (Gg)2 x SM 47	1308	60-65	High yield, bold seed, synchronous maturity and MYMV resistant
7.	VGG 17-002 (N)	VBN (Gg) 2 x LGG 460	1518	70-75	High yield, with MYMV resistant
8.	VGG 17-048 (N)	VBN (Gg) 2 x Pusa EM 14-02	1563	60-65	High yield (kg/ha), synchronous maturity and MYMV resistant
9.	EGG017-001 (N)	VBN (Gg) 3 x Pusa bold	1446	60-65	High yield and moderate resistant to MYMV
10.	COGG 16-10 (N)	CO 6 x SML 668	946	60-65	High yield, Moderately resistant to YMV and shiny bold seeds
11.	TMGG 11 0 42 (N)	CO 6 x TM-96-2	1057	58-60	Early Duration High yielding, bold seeds (5.77g) and YMV resistant
Checks		VBN (G) 3, CO 8 and ADT 3 (Rice fallow)			
Locations	<i>Kharif</i> (June-July)	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam			
	<i>Rabi</i> (Sep.-Oc.t)	Coimbatore, Vamban, Aruppukkottai, Kovilpatti, Madurai, Chettinad and Tindivanam			
	Rice fallow (Jan.19 – Feb.19)	Aduthurai; SWMRI, Thanjavur and Killikulam			
	Summer Irrigated (March 19 – April 19)	Aduthurai, Thanjavur, Pattukkottai, Vamban, Coimbatore, Eachangkottai and KVK, Needamangalam			

Note: Artificial screening for the following insect pests and diseases will be carried out by NPRC, Vamban, Dept. of Pulses, Coimbatore and CPMB, Coimbatore.

Name of the centre	Pests	Diseases
NPRC, Vamban	Pod borers and white fly	MYMV, LCV, powdery mildew and, root rot
Dept. of Pulses, Coimbatore	Pod borers and white fly	MYMV, LCV, powdery mildew and, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

**d) Multilocation Trial – Cowpea**

Design : RBD	No. of replications : Four
Plot size : $4 \times 3 \text{ m}^2$	Seed Quantity : 250 g/entry/location
Spacing : $45 \times 15 \text{ cm}$	Season: <i>kharif, rabi</i>

**Features of the proposed culture**

S. No	Cultures	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	VCP 12-006 (N)	Vamban 1 x CO(CP) 7	2899	70-75	High yield, and resistant to rust
2.	VCP 14-001 (N)	Vamban 1 x VCP 10-001	2893	70-75	High yield, and resistant to rust
3.	VCP 14-005 (N)	CO(CP)7 x Vamban 1	2634	70-75	High yield, and resistant to rust
Checks	VBN 3 and CO(CP)7				
Locations	<i>Kharif</i> (Jul.-Aug.)	Vamban, Coimbatore, Paiyur, Madurai, Killikulam and Virinjipuram			
	<i>Rabi</i> (Sep.-Oct.)	Coimbatore, Vamban, Aruppukottai, Kovilpatti, Madurai, Perambalur and Trichy			

Note: Artificial screening for the following insect pests and diseases will be carried out by NPRC, Vamban and Dept. of Pulses, Coimbatore.

Name of the centre	Pests	Diseases
NPRC, Vamban	Aphids, pod borers	BCMV, root rot and rust
Dept of Pulses, Coimbatore	Aphids, pod borers	BCMV, root rot and rust

**f) Multilocation Trial – Mochai**

Design : RBD	No. of replications : Four
Plot size : $4 \times 3 \text{ m}^2$	Seed Quantity : 1.2kg/entry/location
Spacing : $30 \times 10 \text{ cm}$	Season: <i>kharif</i>

**Features of the proposed culture**

S. No	Cultures	Parentage	Grain yield (kg/ha)	Special features
1.	PYR 15 (MOC)-01	Selection from Denkanikotta local	809	Short duration, drought resistant, creamy white seeded, both grain and vegetable type
2.	PYR 15 (MOC)-02	Selection from Mecheri local	700	Drought resistant , creamy white seeded, both grain and vegetable
Checks	CO1, CO 2			
Locations	Vaigaidam, Yethapur, Paiyur, Coimbatore, Virinjipuram and Bhavanisagar			

### Important Dates in conduct of MLT and ART

Activities	Season	Last date for receipts	Date of Despatch
Seed material of the proposed ART entries at Vamban	<i>Kharif</i>	31.05.2018	15.06.2018
	<i>Rabi</i>	15.08.2018	05.09.2018
Seed material of the proposed MLT entries at Vamban	<i>Kharif</i>	31.05.2018	05.06.2018
	<i>Rabi</i>	15.08.2018	05.09.2018
	Rice fallow	30.11.2018	05.12.2018
	Summer Irrigated	30.12.2018	05.02.2019
Sowing report at Vamban	<i>Kharif</i>	30.07.2018	-
	<i>Rabi</i>	30.10.2018	
	Rice fallow	31.01.2019	
	Summer Irrigated	31.03.2019	
Visit of MLT/monitoring teams	<i>Kharif</i>	Sep. 2018	-
	<i>Rabi</i>	Dec. 2018	
	Rice fallow	Feb. 2019	
	Summer Irrigated	May. 2019	
	<i>Rabi</i>	Dec. 2018	
Date for receiving the results (trials) at Vamban for compilation	<i>Kharif</i>	15.12.2018	-
	<i>Rabi</i>	28.02.2019	
	Rice fallow	15.04.2019	
	Summer Irrigated	30.06.2019	

### v) Monitoring team to visit MLT 2018-19

Scientist	Crop	Season	Centres
Dr. P.Jayamani, Coimbatore Dr. S. Lakshmi Narayanan, Vamban Dr. A. Gobikrishnan, Virinjipuram Dr.M.Dhandapani, Paiyur	Redgram	Kharif 2018	Vamban, Coimbatore Virinjipuram, Paiyur, Melalathur, Yethapur
Dr. N.Manivannan, Vamban Dr. P.Jayamani, Coimbatore Dr. A. Muthuswamy, Coimbatore Dr.A.Mahalingam, Vamban	Blackgram Greengram	<i>Kharif</i> 2018	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam
		<i>Rabi</i> 2018-19	Coimbatore, Vamban, Aruppukottai, Kovilpatti, Madurai, Chettinad and Tindivanam
Dr. N.Manivannan, Vamban Dr. P.Jayamani, Coimbatore Dr. A. Muthuswamy, Coimbatore Dr.A.Mahalingam, Vamban Dr.K.Iyanar, Aduthurai	Blackgram Greengram	Rice fallow 2018-19	Aduthurai, Thanjavur, Killikulam
		Summer irrigated 2019	Aduthurai, Thanjavur, Pattukkottai, Vamban, Coimbatore, Eachangkottai and KVK Needamangalam

Dr. N.Manivannan, Vamban Dr.P.Anantharaju, Coimbatore Dr.K.Thangaraj, Madurai	Cowpea	<i>Kharif</i> 2018	Vamban, Paiyur, Madurai, Killikulam, Virinjipuram
		<i>Rabi</i> 2018- 19	Vamban, Coimbatore, Aruppukkottai, Kovilpatti, Madurai, Veppanthattai
Dr. P. Suthamathi, Paiyur Dr. M. Dhandapani, Paiyur	Mochai	<i>Kharif</i> 2018	Vaigaidam, Yethapur, Paiyur, Coimbatore, Virinjipuram and Bhavanisagar

## B.RESEARCH PROJECTS ON PULSES

Crop	Centre	URP	AICRP	EFP	Total (No.)
Redgram	Vamban	2	1	-	3
	Pulses, Coimbatore	3	1	-	4
	ARS, Virinjipuram	2	-	-	2
	ARS, Paiyur	1	-	-	1
	AC&RI, Eachangottai	1	-	-	1
Blackgram	NPRC, Vamban	2	1	-	3
	Pulses, Coimbatore	1	1	-	2
	TRRI, Aduthurai	1	1	-	2
	SWMRI, Thanjavur	2	-	-	2
	AC&RI, Killikulam	1	-	-	1
	AC&RI, Eachankottai	2	-	-	2
	CPMB, Coimbatore	1	-	-	1
	AC&RI, Madurai	1	-	-	1
	ARS, Bhavanisagar	1	-	-	1
ARS, Pattukkottai	1	-	-	1	
Greengram	NPRC, Vamban	1	-	-	1
	Pulses, Coimbatore	1	-	-	1
	AC&RI, Eachankottai	1	-	1	2
	TRRI, Aduthurai	1	-	-	1
	CPMB, Coimbatore	-	-	2	2
Cowpea	NPRC, Vamban	1	-	-	1
	Pulses, Coimbatore	1	-	-	1
	AC&RI, Madurai	1	-	-	1
Soybean	Pulses, Coimbatore	1	1	-	2
	CPMB, Coimbatore	-	-	1	1
Chickpea	Pulses, Coimbatore	1	1	-	2
Mochai	RRS, Paiyur	1	-	-	1
Horsegram	RRS, Paiyur	-	-	1	1
	<b>Total</b>	<b>32</b>	<b>7</b>	<b>5</b>	<b>44</b>

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

**C. REMARKS ON THE ONGOING UNIVERSITY RESEARCH PROJECTS/AICRP/EXTERNALLY FUNDED PROJECTS**

<b>Sl. No.</b>	<b>Project No. and Title</b>	<b>Project leaders</b>	<b>Duration</b>	<b>Remarks</b>
<b>UNIVERSITY RESEARCH SUB PROJECTS</b>				
<b>REDGRAM</b>				
1.	CPBG/VBN/PBG/RGR/2017/001 Evolution of high yielding redgram genotypes	Dr. S. Lakshmi Narayanan Assistant Professor (PBG)	April 2017 to March 2022	Project may be continued.
2.	CPBG/VMB/PBG/RGR/2015/002 Collection, maintenance and evaluation of germplasm in redgram	Dr. S. Lakshmi Narayanan Assistant Professor (PBG)	October 2015 to September 2020	Germplasm was submitted in gene bank and characterization has to be done. Hence, project may be continued.
3.	CPBG/CBE/PBG/RGR/2014/002 Evolution of high yielding short duration redgram varieties through recombination breeding	Dr. A. Thanga Hemavathy Assistant Professor (PBG)	October 2014 to September 2017	Completion report submitted to RPAC
4.	CPBG/CBE/PBG/RGR/2014/001 Evolution of high yielding medium duration redgram varieties through recombination breeding	Dr. A. Thanga Hemavathy Assistant Professor (PBG)	October 2014 to September 2017	Completion report submitted to RPAC.
5.	CPBG/CBE/PBG/RGR/2014/003 Development of high yielding short and medium duration Redgram hybrids using CGMS system	Dr. A. Thanga Hemavathy Assistant Professor (PBG)	October 2014 to September 2017	Completion report submitted to RPAC
6.	CPBG/VIJ/PBG/RGR/2016/001 Development of high yielding long duration redgram suitable for rainfed tract of Tamil Nadu	Dr. A. Gopikrishnan Assistant professor	June 2016 to May 2019	The AICRP pigeon pea project was shifted to ARS, Vrinjipuram. Project may be continued
7.	CPBG/VIJ/PBG/RGR/2014/001 * Development of high yielding short duration redgram suitable for rainfed tract of Tamil Nadu.	Dr. A. Gopikrishnan Assistant professor	Dec 2014 to Nov 2017	Project may be closed and a new project may be proposed.

Sl. No.	Project No. and Title	Project leaders	Duration	Remarks
8.	CPBG/PYR/PBG/RGR/2016/001 Development of long duration redgram varieties with efficient rhizosphere for yield maximization	M. Dhandapani Assistant Professor (PBG)	June 2016 to Dec 2020	Area under pigeon pea in northern zone of Tamil Nadu is high. Hence, Project may be continued
9.	CPBG/EKT/PBG /RGR/2017/001 Evaluation of short duration redgram ( <i>Cajanus cajan</i> L.) genotypes suitable for summer irrigated condition in new Cauvery delta zone	Dr. S. Arulselvi Assistant Professor (PBG)	July, 2017 to June, 2020	Project may be continued
<b>BLACKGRAM</b>				
10.	CPBG/VMB/PBG/BGR/2016/001 Evolution of high yielding MYMV resistant blackgram ( <i>Vigna mungo</i> (L.) genotypes and maintenance of germplasm.	Dr.N.Manivannan, Professor (PB&G) & Head	Jul 2016 to Jun 2021	Project may be continued
11.	CPBG/CBE/PBG/BGR/2016/001 Evolution of blackgram varieties with yellow mosaic disease resistance.	Dr. A. Muthuswamy Assistant Professor (PB&G)	October 2016 to November 2021	To replace blackgram variety CO 6 a new culture may be identified. Project may be continued
12.	CPBG/MDU/PBG/BGR/2015/002 Development of high yielding YMV disease resistant variety in blackgram. ( <i>Vigna mungo</i> (L).	Dr. G. Anand Assistant Professor (PBG)	Oct 2015 to Sep 2018	Project may be continued. Extension proposal may be sent for another two years.
13.	CPBG/VIJ/PBG/BGR/2013/001 * Evolution of Yellow Mosaic Virus resistant blackgram variety and identification of blackgram genotype with enhanced iron and zinc	Dr.M.Pandiyan, Professor and Head	January 2013 to December 2015	Project may be closed.
14.	CPBG/ADT/PBG/BGR/2013/001 * Development of blackgram cultures suitable for rice fallow condition of Cauvery Delta Zone	Dr. K. Iyyanar Asst. Professor (PBG)	April 2013 to March 2018	Project may be closed and a new project may be proposed

<b>Sl. No.</b>	<b>Project No. and Title</b>	<b>Project leaders</b>	<b>Duration</b>	<b>Remarks</b>
15.	CPBG/TNJ/PBG/BGR/2013/001* Development of blackgram cultures suitable for rice fallow condition of Cauvery Delta Zone	Dr. L. Subha Assistant Professor (PBG)	April 2013 to March 2018	Project may be closed and a new project may be proposed
16.	CPBG/KKM/PBG/BGR/2012/001 Development of high yielding black gram variety suitable for irrigated and rice fallow of southern districts of Tamil Nadu	Dr. D. Shoba, Asst. Professor (PB&G)	April 2013 to September 2019	Project may be continued
17.	CPBG/EKT/PBG/RIC/2016/001 Development of high yielding blackgram varieties through breeding approaches for new Cauvery Delta Zone	Dr. M. Sakila Asst. Prof. (PBG)	April 2017 to March 2019	Blackgram variety suitable for summer irrigated situation in Cauvery delta zone may be identified. Project may be continued
18.	CPMB/CBE/PBT/BGR/2015/001* Identification of MYMV resistant donors in black gram through agro inoculation and validation of linked marker(s)	Dr. M. Sudha, Assistant Professor (Biotech.)	April 2015 to March 2018	Project may be closed and a new project may be proposed.
19.	CPBG/VMB/PBG/BSP/2015/002 Maintenance breeding and breeder seed production in greengram, blackgram, redgram, cowpea and groundnut varieties	Dr. S. Lakshmi Naryananan, Assistant Professor (PBG)	Sep 2015 to Aug 2019	The target of breeder seed production is highly essential to produce the quality seeds. Project may be continued
20.	CPBG/PKT/PBG/BGR/2016/001 Breeder Seed Production in Pulses and groundnut	Dr. A. Bharathi, Assistant Professor (PBG)	April 2016 to March 2021	The blackgram varieties are released for summer irrigated/ rice fallow may be concentrated. Project may be continued

Sl. No.	Project No. and Title	Project leaders	Duration	Remarks
21.	CPBG/TNJ/PBG/BSP/2013/001 * Breeder seed production in paddy and pulses	Dr.L.Subha Assistant Professor (PBG)	April 2015 to March 2018	Project may be closed and a new project may be proposed
22.	CPBG/BSR/PBG/GGR/2016/001 Breeder seed production in green gram and black gram varieties and evaluation of pre released cultures under multi locational testing	Dr. D. Kavithamani, Assistant Professor (PB&G)	June 2016 to May 2021	This centre is a potential centre for seed production of pulse crops. Project may be continued
<b>GREENGRAM</b>				
23.	CPBG/VMB/PBG/GGR/2016/001 Evolution of high yielding and MYMV resistant greengram ( <i>Vigna radiata</i> (L.) Wilczek) genotypes with synchronized maturity and maintenance of its germplasm	Dr. A. Mahalingam, Assistant Professor (PBG)	July 2016 to June 2021	Project may be continued
24.	CPBG/CBE/PBG/GGR/2016/001 Evolution of greengram varieties with synchronized maturity and resistance to yellow mosaic disease	Dr. A. Muthuswamy Assistant Professor (PB&G)	October 2016 to November 2021	Developing a variety with YMV resistant is required. Project may be continued
25.	CPBG/VIJ/PBG/GGR/2013/001* Evolution and evaluation of greengram genotypes for developing Mungbean Yellow Mosaic Virus resistance	Dr. M. Pandiyan, Dean, AC&RI, ECK	January 2013 to December 2015	Project may be closed.
26.	CPBG/ADT/PBG/GGR/2017/001 Evolution of high yielding MYMV resistant greengram varieties suitable for rice fallow/summer irrigated conditions in CDZ	Dr. K.Iyanar Assistant Professor (PBG)	October 2017 to September 2022	To replace ADT 3 greengram variety, a new high yielding culture may be identified. Project may be continued
<b>COWPEA</b>				
27.	CPBG/VMB/PBG/COP/2015/003 Evolution of high yielding genotypes and germplasm maintenance in cowpea	Dr. N.Manivannan Professor (PBG) and Head	September 2015 to August 2020	Project may be continued



Sl. No.	Project No. and Title	Project leaders	Duration	Remarks
28.	CPBG/CBE/PBG/COP/001 Development of high yielding cowpea ( <i>Vigna unguiculata</i> (L.) Walp.) varieties superior than CO (CP) 7	P.Anantharaju Assistant Professor (PBG)	May 2016 to April 2021	Project may be continued
29.	CPBG/MDU/PBG/COP/2015/001 Development of short duration, determinate cowpea ( <i>Vigna unguiculata</i> L. ) variety suitable for southern districts of Tamil Nadu	Dr. K. Thangaraj Assistant Professor (PBG)	October 2015 to September 2018	Project may be continued. Extension proposal may be sent for another two years.
<b>SOYBEAN</b>				
30.	CPBG/CBE/PBG/SYB/2016/New Evolution of soybean varieties suited for diverse cropping conditions	Dr. R. Sudhagar, Asst. Professor (PB&G)	June 2016 to May 2019	Project may be continued
<b>CHICKPEA</b>				
31.	CPBG/CBE/PBG/CHP/001 Evolution of high yielding chickpea ( <i>Cicer arietinum</i> L.) varieties for biotic and abiotic stresses for Tamil Nadu zone.	Dr.P.Anantharaju Asst.Prof.(PB&G) Dr.T.K.S. Latha, Assistant Professor (Pathology)	Sept 2015 to August 2020	Project may be continued
<b>MOCHAI</b>				
32.	Evolution of short duration high yielding vegetable pea types of mochai	Dr.P.Suthamathi Associate Professor (PB&G)	Aug 2017- July 2022	Project may be continued
<b>AICRP PROJECTS</b>				
<b>REDGRAM</b>				
33.	AICRP/PBG/VBN/PIP/011 Evaluation and utilization of red gram genotypes under AICPIP	Dr. A. Gopikrishnan Assistant professor	April 2018 to March 2020	New project number may be obtained.. Project will be continued at ARS, Virinjipuram
34.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea -Evaluation of Redgram genotypes under All India Co-ordinated Pulses Improvement Project	Dr. P.Jayamanni Professor and Head	April 2018 to March 2020	Project may be continued

Sl. No.	Project No. and Title	Project leaders	Duration	Remarks
<b>BLACKGRAM AND GREENGRAM</b>				
35.	AICRP/VBN/CBE/MUL/013 AICRP on MULLaRP	Dr. N.Manivannan Professor and Head	April 2018 to March 2020	Project may be continued
36.	AICRP/PBG/ADT/MUL/015	Dr. K. Iyanar, Assistant Professor (PBG)	April 2018 to March 2020	Project may be continued
<b>CHICKPEA</b>				
37.	AICRP / PBG / CHB / 012 AICRP on Chickpea	Dr.P.Anantharaju Assistant Professor (PBG)	April 2018 to March 2020	Project may be continued
<b>EXTERNALLY FUNDED PROJECTS</b>				
<b>GREENGRAM</b>				
38.	GOI-SERB/VRM/PUL/2013/R001* Development and validation of SNP marker platform for Vigna complexes to map the MYMV and bruchids resistance	Dr. M. Pandiyan , Professor (PB&G) & Head	November 2013 to October 2017	Project may be closed
39.	DST/CPMB/CBE/DPB/2016/R023 Understanding molecular basis of resistance against YMV in mungbean through transcriptome profiling	Dr. M. Sudha, Assistant Professor (Biotech)	May 2016 to May 2019	Project may be continued
40.	DBT/CPMB/CBE/PMB/2012/R002* Molecular marker assisted selection and identifying Resistance Gene Analog (RGAs) associated with resistance to MYMV in mungbean ( <i>Vigna radiata</i> L. Wilzeck) and rice bean ( <i>V. umbellata</i> ) interspecific crosses and identification of AFLP markers linked to MYMV resistance profiling	Dr. M. Sudha, Assistant Professor (Biotech)	May 2012 to May 2018	Project may be closed
41.	DBT/CPMB/CBE/PMB/ 2013/R005* Marker assisted selection for <i>Phytophthora</i> and powdery mildew resistance and effective nodulation in soy bean ( <i>Glycine max</i> L. Merr.).	Dr. J. Ramalingam, Professor and Head, DPMB&B	May 2013- Nov 2017	Project may be closed

Sl. No.	Project No. and Title	Project leaders	Duration	Remarks
<b>HORSEGRAM</b>				
42.	GOI/CPBG/CBE/PUL/2017/R002 Induced mutagenesis in horsegram ( <i>Macrotyloma uniflorum Lam. Verdc</i> ) using gamma rays for isolation of short duration and compact high yield mutants	Dr.R.Sudhagar, Dr.C.Vanniarajan	April 2017- March 2020	Project may be continued

**\* Submit the completion report for approval**

## E. ACTION PLAN (2016 – 2019)

The Action plan will be continued for the second year with identified scientists towards achieving the deliverables in Crop Improvement.

Theme No 1		Development of Redgram Varieties for Enhanced Yield With Resistance to Wilt and SMD				
Theme Leader		Dr. P. Jayamani, Professor and Head, Dept. of Pulses, CBE				
S.No	Activity	Name of the scientist and centre	2016-17	2017-18	2018-19	Deliverables/expected out come
1.	Field and Artificial screening for SMD	<b>Coimbatore</b> Dr.E.Rajeswari	Resistant donor identified	Resistant donor Identified	Resistant donor identified	Promising resistant donors
		<b>Vamban</b> Dr.P. Ahiladevi				
2	Field and Artificial screening for wilt	<b>Coimbatore</b> Dr.E.Rajeswari	Resistant donor identified	Resistant donor Identified	Resistant donor identified	Promising resistant donors
		<b>Vamban</b> Dr.P. Ahiladevi				
3	Developing high yielding genotypes resistant to SMD and wilt	<b>Coimbatore</b> Dr.P. Jayamani, Dr.A.Thangahemavathy	Promising high yielding long duration varieties crossed with available SMD and wilt resistant donors	<ul style="list-style-type: none"> <li>Promising high yielding long duration varieties crossed with identified SMD and wilt resistant donors</li> <li>Identification of true F<sub>1</sub>s and selection</li> </ul>	Selection of segregants with long duration high yield and resistant to SMD and Wilt in F <sub>2</sub> generation and forwarded to next generation	Promising long duration segregants for SMD and wilt resistance
		<b>Vamban</b> Dr.S.Lakshmi Narayanan				
		<b>Virinjipuram</b> Dr.A.Gopikrishnan				
		<b>Paiyur</b> Dr.M.Dhandapani				

<b>Theme No 2</b>		<b>Development of short duration, high yielding greengram and blackgram varieties with resistance to MYMV and identifying varieties suitable for rice fallow condition</b>				
<b>Theme Leader</b>		<b>Dr.N.Manivannan, Professor and Head, NPRC, Vamban</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
1	Artificial screening for MYMV	<b>Vamban</b> Dr.P. Ahiladevi <b>Coimbatore</b> Dr.T.K.S.Latha Dr. M. Sudha	Resistant donor identified	Resistant donor identified	Resistant donor identified	Promising resistant donors
2	Developing high yielding early maturing blackgram and greengram genotypes tolerant to MYMV	<b>Vamban</b> Dr.N.Manivannan Dr.A.Mahalingam <b>Coimbatore</b> Dr. A. Muthuswamy <b>Madurai</b> Dr. G. Anand <b>Eachangkottai</b> Dr. M. Sakila	<ul style="list-style-type: none"> <li>Promising high yielding short duration varieties crossed with MVMV resistant donors</li> <li>Hybridisation and evaluation of F<sub>1</sub>s</li> </ul>	<ul style="list-style-type: none"> <li>Identification of Transgressive segregants with earliness and MYMV resistance in F<sub>2</sub> and F<sub>3</sub> generations</li> </ul>	<ul style="list-style-type: none"> <li>Identification of promising F<sub>4</sub> and F<sub>5</sub> progenies with earliness and MYMV resistance and forwarded to next generation</li> </ul>	Promising genotypes with earliness and MYMV resistance
3	Developing high yielding blackgram and greengram genotypes suitable for rice fallow condition and tolerant to MYMV	<b>Aduthurai</b> Dr.K.Iyanar <b>Killikulam</b> Dr.D.Shoba <b>Thanjavur</b> Dr. L. Subha	<ul style="list-style-type: none"> <li>Hybridisation among diverse genotypes of blackgram and greengram using MYMV resistant donors</li> <li>Raising of F<sub>1</sub>s under rice fallow condition</li> </ul>	<ul style="list-style-type: none"> <li>Selection of high yielding MYMV resistant segregants under rice fallow condition in F<sub>2</sub> generation</li> </ul>	<ul style="list-style-type: none"> <li>Selection of high yielding MYMV resistant segregants under rice fallow condition in F<sub>3</sub> generation</li> </ul>	Promising segregants suited to rice fallow condition

<b>Theme No 3</b>		<b>Genetic improvement of cowpea for yield and quality</b>				
<b>Theme Leader</b>		<b>Dr.K.Thangaraj, Assistant Professor, AC&amp;RI, Madurai</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
1	Developing high yielding genotypes in cowpea	<b>Madurai</b> Dr.K.Thangaraj <b>Vamban</b> Dr.N.Manivannan <b>Coimbatore</b> Dr.P.Anantharaju	<ul style="list-style-type: none"> <li>Hybridisation among the high yielding and aphid tolerance genotypes of cowpea</li> <li>Raising F<sub>1</sub>s</li> </ul>	<ul style="list-style-type: none"> <li>Selection of promising segregants in F<sub>2</sub> and F<sub>3</sub> based on yield and quality</li> </ul>	Selection of high yielding segregants for yield and quality in F <sub>4</sub> and F <sub>5</sub>	Promising genotypes with high yield, bold seeded and high protein content

<b>Theme No 4</b>		<b>Genetic improvement of chickpea for yield with resistance to dry root rot</b>				
<b>Theme Leader</b>		<b>Dr.P.Anantharaju, Assistant Professor, Dept. of Pulses, Coimbatore</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
1	Artificial screening for dry root rot	<b>Coimbatore</b> Dr. T. K. S. Latha	<ul style="list-style-type: none"> <li>Identification of resistant donor</li> </ul>	<ul style="list-style-type: none"> <li>Identification of resistant donor</li> </ul>	<ul style="list-style-type: none"> <li>Identification of resistant donor</li> </ul>	Promising resistant donors
2	Developing high yielding genotypes in chickpea	<b>Coimbatore</b> Dr.P.Anantharaju	<ul style="list-style-type: none"> <li>Hybridisation involving high yielding genotypes agronomically superior and resistant donors of Chickpea</li> <li>Raising F<sub>1</sub>s</li> </ul>	<ul style="list-style-type: none"> <li>Selection of promising segregants in F<sub>2</sub> based on yield and resistance to dry root rot and forward to next generation</li> </ul>	<ul style="list-style-type: none"> <li>Selection of promising segregants in F<sub>3</sub> based on yield and resistance to dry root rot and forward to next generation</li> </ul>	Promising segregants with high yield and resistance to dry root rot

<b>Theme No 5</b>		<b>Evolution of high yielding photo-insensitive mochai varieties</b>				
<b>Theme Leader</b>		<b>Dr. P. Suthamathi, Associate Professor, RRS, Paiyur</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
1	Developing high yielding photo-insensitive genotypes in Mochai	<b>Paiyur</b> Dr.P.Suthamathi	•Hybridisation among photo insensitive and high yielding genotypes	•Raising F <sub>1</sub> s	• Selection of promising segregants in F <sub>2</sub> based on yield and photo-insensitivity	Promising segregants with high yield and photo-insensitivity

<b>Theme No 6</b>		<b>Genetic improvement of horsegram for high yield</b>				
<b>Theme Leader</b>		<b>Dr.M.Dhandapani, Assistant Professor, RRS, Paiyur</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
1	Developing high yielding genotypes in horsegram	<b>Paiyur</b> Dr.M.Dhandapani	Hybridisation among the photo insensitive and high yielding genotypes of horsegram	Raising F <sub>1</sub> s	Selection of promising segregants in F <sub>2</sub> based on yield, photo insensitivity and protein content and forwarding to next generation	Promising segregants with high yield, high protein content and photo insensitivity

<b>Theme No 7</b>		<b>Identification of clusterbean varieties suitable for Tamil Nadu</b>				
<b>Theme Leader</b>		<b>Dr. C.Vanniarajan, Professor, AC&amp;RI, Madurai</b>				
<b>S.No</b>	<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
1	Developing high yielding genotypes in cluster bean	<b>Madurai</b> Dr.C.Vanniarajan	<ul style="list-style-type: none"> <li>Hybridisation involving agronomically superior genotypes of cluster bean with guar varieties identified for gum purpose.</li> <li>Evaluation of F<sub>1</sub>s</li> </ul>	<ul style="list-style-type: none"> <li>Selection of promising segregants in F<sub>2</sub> and F<sub>3</sub> based on yield and gum quality</li> </ul>	Selection of high yielding segregants for yield and gum quality in F <sub>4</sub> and F <sub>5</sub>	Promising genotypes with high yield and gum quality



Theme No 8		Characterization and documentation of germplasm using crop specific descriptors				
S.No	Activity	Name of the scientist and centre	2016-17	2017-18	2018-19	Deliverables/ expected out come
1.	Redgram	Dr. P. Jayamani, Dr. A.Thangahemavathy Dept. of Pulses, Coimbatore	Characterization of 100 accessions based on 21 crop specific descriptors	Characterization of 100 accessions based on 21 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits
2.	Blackgram and greengram	Dr. N. Manivannan Dr. A. Mahalingam NPRC, Vamban Dr.A. Muthuswamy Dept. of Pulses, Coimbatore	Characterization of 100 accessions based on 24 crop specific descriptors	Characterization of 100 accessions based on 24 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits
3.	Cowpea	Dr. N. Manivannan NPRC, Vamban Dr.K.Thangaraj AC&RI, Madurai	Characterization of 100 accessions based on 21 crop specific descriptors	Characterization of 100 accessions based on 21 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits
4.	Chickpea	Dr. P. Anantharaju Dept. of Pulses, Coimbatore	Characterization of 100 accessions based on 20 crop specific descriptors	Characterization of 100 accessions based on 20 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits
5.	Soybean	Dr. Thangahemavathy Dept. of Pulses, Coimbatore	Characterization of 100 accessions based on 22 crop specific descriptors	Characterization of 100 accessions based on 22 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits
6.	Horsegram	Dr. P. Suthamathi Dr. M. Dhandapani ARS, Paiyur	Characterization of 100 accessions based on 19 crop specific descriptors	Characterization of 100 accessions based on 19 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits
7.	Mochai	Dr. P. Suthamathi Dr. M. Dhandapani ARS, Paiyur	Characterization of 100 accessions based on 20 crop specific descriptors	Characterization of 100 accessions based on 20 crop specific descriptors	Cataloguing and documentation	Identification of genotypes for different traits

## F. WORK LOAD OF THE SCIENTISTS AS PER ACTION PLAN

### Crop Improvement

Sl. No	Scientists	THEME 1			THEME 2			THEME 3
		Development of redgram varieties for enhanced yield with resistance to wilt and SMD			Development of short duration, high yielding greengram and blackgram varieties with resistance to MYMV and identifying varieties suitable for rice fallow condition			Genetic improvement of cowpea for yield and quality
		Field and Artificial screening for SMD	Field and Artificial screening for Wilt	Developing high yielding genotypes resistant to SMD and Wilt	Artificial screening for MYMV	Developing high yielding early maturing blackgram and greengram genotypes tolerant to MYMV	Developing high yielding blackgram and greengram genotypes suitable for rice fallow condition and tolerant to MYMV	Developing high yielding genotypes in cowpea
1	Dr. P. Jayamani			√				
2	Dr.A.Thangahemavathy			√				
3	Dr.E.Rajeswari	√	√					
4	Dr.N.Manivannan					√		√
5	Dr.S.Lakshmi Narayanan			√				
6	Dr.P. Ahiladevi	√	√		√			
8	Dr.A.Gopikrishnan			√				
9	Dr.M.Dhandapani			√				
10	Dr.A.Mahalingam					√		
11	Dr. A. Muthuswamy					√		
12	Dr.T.K.S.Latha				√			
13	Dr.K.Iyanar						√	
14	Dr.D.Shoba						√	
15	Dr. G. Anand					√		
16	Dr L.Subha						√	
17	Dr. M. Sakila					√		
18	Dr. M. Sudha				√			
19	Dr.K.Thangaraj							√
20	Dr.P.Anantharaju							√

Sl. No		THEME 4		THEME 5	THEME 6	THEME 7	THEME 8
		Genetic improvement of chickpea for yield with resistance to dry root rot		Evolution of high yielding photo-insensitive mochai varieties	Genetic improvement of horsegram for yield	Identification of clusterbean varieties suitable for Tamil Nadu	Characterization and documentation of germplasm using crop specific descriptors
		Artificial screening for Dry root rot	Developin g high yielding genotypes in chickpea	Developin g high yielding photo-insensitive genotypes in Mochai	Developin g high yielding genotypes in horsegram	Developin g high yielding genotypes in cluster bean	Redgram Blackgram Greengram Cowpea Soybean Horsegram Mochai
1	Dr. P. Jayamani						√
2	Dr.A.Thangahemavathy						√
3	Dr.N.Manivannan						√
4	Dr.S.Lakshmi Narayanan						√
5	Dr.M.Dhandapani				√		
6	Dr.A.Mahalingam						√
7	Dr. A. Muthuswamy						√
8	Dr.T.K.S.Latha	√					
9	Dr.P.Anantharaju		√				√
10	Dr.P.Suthamathi			√			√
11	Dr.C.Vanniarajan					√	

### G. ABSTRACT OF VARIOUS ACTIVITIES WITH TIME SCHEDULE

Activities	June- August 2018	September – November 2018	December 2018 – February 2019	March –May 2019
Seed dispatch for ART/MLT and Field preparation, layout and sowing				
<i>    Kharif – 2018</i>	√√			
<i>    Rabi 2018-19</i>		√√		
Rice fallow 2019			√√	
Summer 2019				√√
Field observation				
<i>    Kharif – 2018</i>	√√			
<i>    Rabi 2018-19</i>		√√		
Rice fallow 2019			√√	
Summer 2019				√√
Front Line Demonstration	√√	√√	√√	
Conducting of OFT (Crop Management and Crop Protection)	√√	√√	√√	√√
Pest and disease monitoring	√√	√√	√√	√√
Proposing cultured COBG 10-05 and VGG 10-008 for release during 2018		√√	√√	
Compilation and preparation of report for CSM – 2019				√√
AICRP - Annual group Meet 2019 participation				√√

## **I. CROP MANAGEMENT**

### **a. Decisions made on OFT**

#### **For Adoption**

##### **1. Conservation tillage and supplemental irrigation for rainfed blackgram**

For blackgram cultivation, minimum tillage combined with application of crop residue @ 5t/ha and two supplemental irrigation *viz.*, at flowering and pod formation stage is recommended.

##### **2. Evaluation of mechanical sowing with primed seeds intervened with foliar spray on productivity of rainfed horsegram**

Sowing of primed seed with 100ppm ZnSO<sub>4</sub> using seed drill and foliar spray of 0.5 % ZnSO<sub>4</sub> at 50 % flowering is recommended to increase the productivity of rainfed horsegram

#### **For OFT**

##### **1. Plant density and method of irrigation on blackgram productivity in summer irrigated condition**

###### **Centres:**

- Dr. S. Vallalkannan, AP(Agronomy) AEC & RI, Kumulur.
- Dr. C.Umamaheshwari, AP (Agronomy), TRRI, Aduthurai.
- Dr. S.Porpavai, Professor and Head, SWMRI, Thanjavur.

###### **Treatment details:**

- T<sub>1</sub> - Farmers practice (Broadcasting of seed @ 20 kg/ha, conventional method of cultivation).
- T<sub>2</sub> - Machine sowing @ 25 kg/ha and sprinkler method of irrigation along with agronomic practices.

###### **Observations to be recorded:**

###### **a. Growth and yield parameters**

Population (No/m<sup>2</sup>)  
Establishment (%)  
No. of branches  
No. of pods/plant  
No. of seeds/pod  
Test weight (g)  
Seed yield(kg/ha)  
Haulm yield (kg/ha)

###### **b. Irrigation parameters**

No. of irrigation  
Quantity of irrigation (mm)  
Water use efficiency

c. **Economics**

Cost of cultivation (Rs./ha)

Gross income (Rs./ha)

Net income (Rs./ha)

BCR

**2. Biochar and phosphobacteria on carbon buildup, phosphorous availability and blackgram yield in rainfed alfisol.**

**Centres:**

- Dr. P. Kannan, AP(SS&AC), DARS, Chettinad
- Dr. S. Marimuthu, AP (Agronomy), NPRC, Vamban
- Dr. V. Babu Rajendara Prasad, AP( CRP), NPRC, Vamban

**Treatment details:**

- T<sub>1</sub> - Control ( STCR-P)
- T<sub>2</sub> - Redgram stalk biochar @5t/ha + Phosphobacteria @ 2kg/ha
- T<sub>3</sub> - Mankathuvel biochar @5t/ha + Phosphobacteria @2kg/ha

**Observations to be recorded:**

**a. Plant biometrics**

- Plant height (cm)
- No. of pods/5plants
- Test weight(g)
- Seed yield(kg/ha)
- Haulm yield (kg/ha)

**b. Physiological parameters**

- a) Relative water content (%)
- b) Leaf area (cm<sup>2</sup>)
- c) Stomatal conductance S/cm)
- d) Leaf temperature (°C)

**c. Soil Parameters**

- e) Soil moisture (%)
- f) Soil compaction (kPa)
- g) Soil temperature(°C)
- h) Soil organic carbon(g/kg)
- i) Soil biomass carbon (mg/kg)
- j) Available P (kg/ha)
- k) P uptake (kg/ha)

### **3. Effect of growth regulating substances in improving crop establishment and harvest Index in blackgram and greengram under sodicity.**

#### **Centres:**

- Dr. S. Nithila, AP (CRP), ADAC&RI, Trichy
- Dr.R.Anitha, AP (CRP) SRS, Cuddalore
- Dr.K.Krishna surendar, AP (CRP), TNAU, Coimbatore

#### **Treatment details:**

- T1: Control (without any seed treatment)
- T2: Seed treatment with cowpea sprouts extract (2 %) + foliar spray of Panchagavya (1 %) at flower initiation and pod initiation stages
- T3: Seed treatment with GA<sub>3</sub> (50 ppm) + foliar spray of Panchagavya (1 %) at flower initiation and pod initiation stages

**Variety:** Greengram - VBN (Gg) 2; Blackgram - VBN 6

#### **Observations to be recorded:**

- a) Leaf Area Index at different stages (30, 45 & 60 DAS)
- b) Plant height at harvest
- c) No of branches at harvest
- d) No. of clusters/plant
- e) No. of pods/plant
- f) No. of seeds /pod
- g) 100 seed weight
- h) Grain yield
- i) Biological yield
- j) Harvest index
- k) Plant leaf -Na/ K ratio
- l) Proline content
- m) *Catalase* enzyme activity

### **4. Evaluation of water soluble seed coat formulation of *Rhizobium* and AM fungi in blackgram**

#### **Centres:**

- AC & RI, Madurai – Dr K. Kumutha
- AC & RI, Killikulam – Dr M. Gomathi
- TRRI, Aduthurai – Dr P. Jeya bharathi

#### **Treatment details:**

- T<sub>1</sub> – Uninoculated control + 100 % RDF
- T<sub>2</sub> – Carrier based formulation of *Rhizobium* and AM Fungi + 75 % RDF
- T<sub>3</sub> – Water soluble seed coat formulation of *Rhizobium* and AM fungi + 75 % RDF

**Observations to be recorded:**

- Plant biometrics
- Nodules/plant
- Nitrogen fixation
- % AM infection/ root colonization
- Dehydrogenase
- Phosphatase
- Plant analysis for total N, P & Fe
- Grain yield (kg/ha)

**5. Effect of *Rhizobium* & AM fungi in red gram****Centres:**

1. Dr.E.Jamuna, AP(AGM) -AC&RI, Vazhavachanur
2. Dr.Vijayakumar, AP (SS &AC), RRS, Paiyur
3. Dr.S.Thenmozhi, AP (SS &AC), ARS, Bhavanisagar

**Treatment details:**

- T1- Uninoculated Control
- T2 -*Rhizobium* (Sd trmt)+ AM (soil application)
- T3 -*Rhizobium* (WSF @ 10g/ac seed) + AM spore (WSF seed) 10 g /ac

**Observations to be recorded:**

- Plant biometrics
- Nodules/plant
- % AM infection/ root colonization
- Uptake of N, P & Fe
- Proline content
- No. of pods /plant
- Grain yield

**6. Effect of *Rhizobium* mutant (VM1) in enhancing nodulation and yield in blackgram grown under acid soils****Centres:**

1. NPRC, Vamban - Dr.M.Gnanachitra, AP (AGM)
2. AC&RI, Madurai - Dr. T.Sivasankari devi, AP (AGM)
3. ARS, Vridhachalam - Dr.Porkodi, AP (SS &AC)

**Treatment details:**

- T1- Uninoculated Control
- T2 - *Rhizobium* Standard (BMBS 47)
- T3 - *Rhizobium* VM1(Mutant)



**Observations to be recorded:**

- Plant biometrics
- Nodules/plant
- Uptake of N, P & K
- No. of pods /plant
- Grain yield

**7. Development of organic seed invigouration technique for enhancing various vigour lots of blackgram seeds.****Centres:**

1. Dr. C. Vanitha, A. P. (SS&T), NPRC, Vamban
2. Dr. K. Malarkodi, A. P. (SS&T), ARS, Bhavanisagar
3. Dr. G. Mani, A. P. (SS&T), ARS, Vaigai Dam

**Treatment details:**

- T<sub>1</sub>- Control (Untreated)
- T<sub>2</sub> - Soaking of seed in gunny bag for 2h & Incubation for 4h in water
- T<sub>3</sub> - Soaking of seed in gunny bag for 2h & Incubation for 4h in Nutrigold @ 0.5 %

**Observations to be recorded:**

- a) Field emergence (%)
- b) Plant height (cm)
- c) Days to 50% flowering
- d) No of branches per plant
- e) No of clusters per plant
- f) No of pods per plant
- g) No of pods per cluster
- h) Seed yield (kg/ha)
- i) 100 seed weight (g)

**b. Research projects on pulses**

Crop	Centre	URP	AICRP	EFP	Total
<b>Agronomy</b>					
Redgram	NPRC, Vamban	-	1	-	1
	Pulses, Coimbatore	1	1	-	2
	RRS, Paiyur	-	-	-	-
Blackgram	NPRC, Vamban	1	1	-	2
	AEC&RI, Kumulur	1	-	-	1
	ARS, Kovilpatti	1	-	-	1
	TRRI, Aduthurai	1	1	-	2
	ARS, Virinjipuram	-	-	-	-
	Pulses, Coimbatore	-	1	-	1
Greengram	NPRC, Vamban	1	1	-	2
	Pulses, Coimbatore	1	1	-	2
	AC&RI, Killikulam	1	-	-	1
Soybean	Pulses, Coimbatore	-	1	-	1
Horsegram	RRS,Paiyur	1	-	-	1
Bengalgram	Pulses, Coimbatore				
<b>Total</b>		<b>9</b>	<b>8</b>	<b>0</b>	<b>17</b>

<b>Crop Physiology</b>					
Blackgram	NPRC, Vamban	2	-	-	2
	Dept. of CRP, TNAU Coimbatore	1	-	-	1
Greengram	NPRC, Vamban	-	-	1	1
	AC&RI, Madurai	1	-	-	1
<b>Total</b>		<b>4</b>	<b>0</b>	<b>1</b>	<b>5</b>
<b>Soil Science and Agricultural Chemistry</b>					
Redgram	Aruppukkottai	1	-	-	1
Blackgram	DARS, Chettinad	1	-	-	1
Others	Pulses, Coimbatore	1	-	-	1
<b>Total</b>		<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Agricultural Microbiology</b>					
Redgram	NPRC, Vamban	1	1	-	2
	Pulses, Coimbatore	-	1	-	1
Blackgram	NPRC, Vamban	1	1	-	2
	Pulses, Coimbatore	1	1	-	2
	AC&RI, Madurai	1	-	-	1
Greengram	NPRC, Vamban	-	1	-	1
	Pulses, Coimbatore	-	1	-	1
	AC&RI, Killikulam	1	-	-	1
<b>Total</b>		<b>5</b>	<b>6</b>	<b>0</b>	<b>11</b>
<b>Seed Science and Technology</b>					
Redgram	NPRC, Vamban	1	-	-	1
	ARS, Bhavanisagar	1	-	-	1
Blackgram	NPRC, Vamban	1	-	-	1
	Pulses, Coimbatore	1	-	-	1
Greengram	Pulses, Coimbatore	1	-	-	1
	ARS, Bhavanisagar	1	-	-	1
	ARS, Vaigaidam	1	-	-	1
Horsegram	RRS, Paiyur	1	-	-	1
Mochai	RRS, Paiyur	1	-	-	1
<b>Total</b>		<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>

**c. Remarks on the ongoing university research subprojects/AICRP/externally funded projects**

**1. AGRONOMY**

Sl. No.	Project No. and Title	Remarks
<b>University Research Projects</b>		
<b>Redgram</b>		
1.	DCM/CBE/AGR/RGR/2016/001 Study on redgram based crop intensification under different land configuration with supplemental irrigation to achieve sustainability in rainfed ecosystem. (June 2016 to May 2019)	<ul style="list-style-type: none"> <li>The field trails were completed during march 2018. Processing and data analysis are yet to be completed.</li> </ul>

	<p><b>TNAU, Coimbatore -(Coordinating Centre)</b>  Dr.K.Kalaiselvi A. P. (Agron.)  Dr. K. Sathiyabama, A. P. (SS&amp;AC)  Dr. K. Krishna Surendar, A. P. (CRP)  <b>RRS, Paiyur</b>  Dr.N.Tamilselvan, Prof.&amp; Head  Dr. R. Sivakumar, A.P. (CRP)  Dr. M. Vijayakumar, A. P. (SS&amp;AC)  <b>ARS, Virinjipuram *</b>  (* - Trial was conducted by Ph.D., Scholar,  Department of Agronomy, TNAU, Coimbatore)</p>	<ul style="list-style-type: none"> <li>• All the sub centers are requested to send the completion report as per the technical programme to the Co-ordinating centre with a copy marked to Director, Crop Management.</li> <li>• Completion report should cover all the observations including weather data for the cropping period.</li> <li>• Completion report should be submitted by Co-ordinating centre.</li> </ul>
<b>Blackgram</b>		
2.	<p>DCM/KUM/AGR/RGR/2014/001*  Effect of plant density and method of irrigation on blackgram productivity.  (March 2015 to March 2018)  Dr. S. Vallal Kannan,A. P. (Agron.)  AEC&amp;RI, Kumulur</p>	<ul style="list-style-type: none"> <li>• Results revealed that machine sowing with raised bed, increased seed rate with sprinkler irrigation found to be the best for obtained higher yield and water saving.</li> <li>• The experiment was conducted at three years and can be proposed for OFT.</li> <li>• Completion report has to be submitted as per the technical programme covering all the data including weather.</li> </ul>
3.	<p>DCM/VMB/AGR/BGR/2016/001*  Response of blackgram to phosphorus and bio-resources in acidic soil.  (June 2016 to March 2018)  Dr.S.Marimuthu,,A. P. (Agron.)  Dr.M.Gnanachitra, A. P. (Agrl. Micro.)  NPRC, Vamban</p>	<ul style="list-style-type: none"> <li>• The integrated application of redgram biochar @ 5.0 t/ha and phosphobacteria @ 2 kg/ha recorded maximum organic carbon content buildup.</li> <li>• The project may be closed and result can be given for OFT.</li> <li>• Completion report has to be submitted as per the technical programme.</li> </ul>

4	DCM/KPT/AGR/BGR/2016/001 Integrated Drought Mitigation Technology (IDMT) for blackgram. (June 2016 to May 2019) <b>ARS, Kovilpatti</b> Dr. S. Subbulakshmi A. P. (Agron.) Dr. V. Sanjiv Kumar A. P. (SS&AC) Dr. C. Raja Babu, A. P. (CRP) <b>AC &amp; RI, Killikulam</b>	<ul style="list-style-type: none"> <li>• The rainfall distribution pattern at different growth stages of the crop has to be given.</li> <li>• Verify the time of 1% PPFM spray on 30 and 40 DAS</li> <li>• The project may be continued to obtain concurrent results.</li> </ul>
5	DCM/ADT/AGR/BGR/2016/001 Yield maximization in rice fallow blackgram. <b>TRRI, Aduthurai</b> (June 2016 to May 2019) Dr. C. Umamaheswari, AP (Agron.) Dr. K. Raja, Assoc. Prof. (SST) Dr. K. Vanitha, AP (CRP) Dr. A.P. Mohan kumar, AP (FMP), AEC & RI, Kumulur.	<ul style="list-style-type: none"> <li>• Identification of superior treatment can be done based on grain yield rather than BC ratio.</li> <li>• The project may be continued to get confirmative results.</li> </ul>
<b>Greengram</b>		
6	DCM/KKM/AGR/GGR/2014/001* Effect of foliar nutrition in rice fallow greengram in Tamiraparani delta region. (Feb 2015 to May 2018) Dr. S. Manoharan, A. P. (Agron.) AC&RI, Killikulam	<ul style="list-style-type: none"> <li>• The maximum BC ratio was recorded with foliar spray of TNAU pulse wonder at flowering stage.</li> <li>• The project may be closed and completion report has to be submitted as per the remarks given during the CSM.</li> </ul>
7	DCM/VMB/AGR/CGR/2016/001 Integrated Drought Mitigation Technology (IDMT) for greengram. (June 2016 to May 2019) <b>NPRC, Vamban (Coordinating Centre)</b> Dr. S. Marimuthu, A.P. (Agron.) Dr. V. Babu Rajendra Prasad, A. P. (CRP) Dr. P. Kannan, A. P. (SS&AC), DARS, Chettinad <b>DARS, Chettinad</b> Dr. C. Udayasoorian, Prof. (ENS) Dr. P. Kannan, A. P. (SS&AC) Dr. V. Babu Rajendra Prasad, A. P. (CRP), <b>NPRC, Vamban</b>	<ul style="list-style-type: none"> <li>• Compartmental bunding was found to be better than flat bed method with pusa hydrogel at 5 kg/ha.</li> <li>• The project may be continued to get confirmative results.</li> </ul>

8	<p>DCM/CBE/AGR/GGM/2016/001 Evaluation of improved management practices for greengram under irrigated condition. (June 2016 to May 2019)</p> <p><b>TNAU, Coimbatore (Coordinating Centre)</b> Dr. M. Senthivelu, A. P. (Agron.) Dr. A. Surendra Kumar, Prof. (FMP), AMRC Dr. S. Kavitha, A. P. (SS&amp;T) Dr. K. Krishna Surendar, A. P. (CRP)</p> <p><b>NPRC, Vamban</b> Dr. S. Marimuthu, A. P. (Agron.) Dr. C. Vanitha, A. P. (SS&amp;T) Dr. V. Babu Rajendra Prasad, A. P. (CRP)</p>	<ul style="list-style-type: none"> <li>• Instead of blanket application STCR based fertilizer application may be adopted.</li> <li>• As per the technical programme harvesting has to be taken with combined harvester.</li> <li>• The project may be continued to obtain concurrent results.</li> </ul>
<b>Other Pulses</b>		
9	<p>DCM/CBE/AGR/PUL/2016/001 Relook on sowing time and sowing method for enhancing the winter pulses productivity in rainfed ecosystem. (June 2016 to May 2019)</p> <p><b>TNAU, Coimbatore (Co - ordinating Centre)</b> Dr. S. Sanbagavalli, Assoc. Prof. (Agron.) Dr. S. Panneerselvam, Prof. &amp; Head, ACRC Dr. A. Surendra kumar Prof. (FMP), AMRC</p> <p><b>RRS, Paiyur</b> Dr. N. Tamilselvan, Professor (Agronomy) Dr. R. Thiyagarajan, Asst. Prof. (FMP)</p>	<ul style="list-style-type: none"> <li>• For bengal gram, November 1<sup>st</sup> week and for horse gram October last week of sowing was found to be the best.</li> <li>• Number of dew days for horsegram and bengalgram may be included.</li> <li>• To get confirmatory results the project has to be continued.</li> </ul>
<b>AICRP Projects</b>		
<b>Redgram</b>		
10	<p>AICRP/PBG/CBE/PIP/010 Standardization of sowing schedule for pigeonpea during late onset of monsoon in Tamil Nadu. Dr. K. Kalaichelvi, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore</p>	<ul style="list-style-type: none"> <li>• Report was not submitted.</li> <li>• Report may be submitted in time.</li> <li>• The project may be continued</li> </ul>
11	<p>AICRP/PBG/CBE/PIP/010 Square method of drill and manual sowing for facilitating two way operation of power operated weeder in pigeonpea. (June 2016 to May 2018) Dr. K. Kalaichelvi, A. P. (Agron.) Dept. of Pulses, TNAU, Coimbatore</p>	<ul style="list-style-type: none"> <li>• Report was not submitted.</li> <li>• Report may be submitted in time.</li> <li>• The project may be continued</li> </ul>
12	<p>AICRP/PBG/CBE/PIP/010 Response of pigeonpea to drip irrigation. (June 2016 to May 2018)</p>	<ul style="list-style-type: none"> <li>• Report was not submitted.</li> <li>• Report may be submitted in time.</li> </ul>

	Dr. K. Kalaichelvi, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore	• The project may be continued
13	AICRP/PBG/CBE/PIP/010 Drought mitigation strategies for pigeonpea. (June 2016 to May 2018) Dr. K. Kalaichelvi, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore	• Report was not submitted. • Report may be submitted in time. • The project may be continued
14	AICRP/PBG/VBN/PIP/011 Drought mitigation strategies for redgram. (June 2014 to May 2018) Dr. S. Marimuthu, A. P. (Agronomy) NPRC, Vamban	• Since the AICRP on pigeonpea scheme was closed at NPRC, Vamban, the project may be closed
15	AICRP/PBG/VBN/PIP/011 Standardization of sowing schedule for redgram during late onset of monsoon in Tamil Nadu. (June 2016 to May 2018) Dr. S. Marimuthu, A. P. (Agronomy) NPRC, Vamban.	• Since the AICRP on pigeonpea scheme was closed at NPRC, Vamban, the project may be closed
<b>Blackgram</b>		
16	AICRP/PBG/VBN/MUL/013 Herbicidal weed management in blackgram and its carry over effect on succeeding <i>rabi</i> (sunflower) crop. (June 2016 to May 2018) Dr. S. Marimuthu, A. P. (Agronomy) NPRC, Vamban.	• Residual effect may be studied and the project may be continued.
17	AICRP/PBG/VBN/MUL/013 Foliar nutrition on blackgram productivity. (June 2015 to May 2018) Dr. S. Marimuthu, A. P. (Agronomy) NPRC, Vamban.	The project may be closed.
18	AICRP/PBG/VBN/MUL/013 Effect of fertilizer doses, organic manure and biofertilizers for yield maximization for blackgram. (June 2017 to May 2020) Dr. S. Marimuthu, A. P. (Agronomy) NPRC, Vamban.	The project may be continued.
19	AICRP/PBG/CBE/MUL/014 Foliar nutrition on blackgram productivity. (June 2015 to May 2018) Dr. M. Senthivelu, A. P. (Agron.), Dept. of Pulses, TNAU, Coimbatore.	• Since the AICRP on MULLaRP scheme was closed at Department of pulses, TNAU, Coimbatore the project may be closed.

20	AICRP/PBG/CBE/MUL/014 Effect of fertilizer doses, organic manure and bio-fertilizer for yield maximization of blackgram. (June 2017 to May 2018) Dr. M. Senthivelu, A. P. (Agron.), Dept. of Pulses, TNAU, Coimbatore.	<ul style="list-style-type: none"> <li>• Since the AICRP on MULLaRP scheme was closed at Department of pulses, TNAU, Coimbatore the project may be closed.</li> </ul>
21	AICRP/ PBG/ ADT/ MUL/ 015 Conservation technology and weed management for rice fallow blackgram. (April 2015 to March 2018) Dr. C. Umamageswari, A. P. (Agronomy) TRRI, Aduthurai	<ul style="list-style-type: none"> <li>• Field photographs may documented properly and the project to be continued.</li> </ul>
22	AICRP/ PBG/ ADT/ MUL/ 015 Efficacy of post emergence herbicides to manage weeds for higher productivity of summer urdbean. (April 2017 to March 2019) Dr. C. Umamageswari, A. P. (Agronomy) TRRI, Aduthurai	The project may be continued.
23	AICRP/ PBG/ ADT/ MUL/ 015 Effect of foliar nutrition on productivity of summer urdbean. (April 2017 to March 2018) Dr. C. Umamageswari, A. P. (Agronomy) TRRI, Aduthurai.	The project may be continued.
24	AICRP/ PBG/ ADT/ MUL/ 015 Performance of urdbean AVT- 2 genotypes under varied plant population for yield maximization in rice fallow situation. (April 2017 to March 2018) Dr. C. Umamageswari, A. P. (Agronomy) TRRI, Aduthurai.	The project may be continued.
25	AICRP/ PBG/ ADT/ MUL/ 015 Frontline demonstration on improved technologies in rice fallow blackgram. (April 2017 to March 2018) Dr. C. Umamageswari, A. P. (Agronomy) TRRI, Aduthurai.	The project may be continued.
<b>Greengram</b>		
26	AICRP/PBG/VBN/MUL/013 Effect of fertilizer doses, organic manure and biofertilizers for yield maximization for greengram. (June 2017 to May 2021) Dr. S. Marimuthu, A. P. (Agronomy) NPRC, Vamban.	The project may be continued.
27	AICRP/PBG/CBE/MUL/014 Herbicidal weed management in greengram and its carry over effect on succeeding <i>rabi</i>	<ul style="list-style-type: none"> <li>• Salient findings may be given for information.</li> <li>• Since the AICRP on</li> </ul>

	(sunflower) crop. (June 2016 to May 2018) Dr. M. Senthivelu, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore.	MULLaRP scheme was closed at Department of pulses, TNAU, Coimbatore and the project may be closed.
28	AICRP/PBG/CBE/MUL/014 Foliar nutrition on greengram productivity. (June 2015 to May 2018) Dr. M. Senthivelu, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore.	<ul style="list-style-type: none"> <li>• Since the AICRP on MULLaRP scheme was closed at Department of pulses, TNAU, Coimbatore and the project may be closed.</li> </ul>
29	AICRP/ PBG/ ADT/ MUL/ 015 Effect of land configuration and weed management on mungbean productivity. (June 2017 to May 2019) Dr. M. Senthivelu, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore.	<ul style="list-style-type: none"> <li>• Since the AICRP on MULLaRP scheme was closed at Department of pulses, TNAU, Coimbatore and the project may be closed.</li> </ul>
30	AICRP/ PBG/ ADT/ MUL/ 015 Fertilizer dose, organic manure and biofertilizer for yield maximization of mungbean. (June 2017 to May 2019) Dr. M. Senthivelu, A. P. (Agronomy) Dept. of Pulses, TNAU, Coimbatore.	<ul style="list-style-type: none"> <li>• Since the AICRP on MULLaRP scheme was closed, the project may be closed.</li> </ul>
<b>Soybean</b>		
31	AICRP /PBG / CBE / SOY / 016 Sustainable soybean production through crop diversification and tillage. (June 2015 to May 2018) Dr. S. Sanbagavalli, Assoc. Prof. (Agronomy) Department of Pulses, TNAU, Coimbatore	<ul style="list-style-type: none"> <li>• The project may be closed due to closure of the AICRP on Soybean scheme at Department of pulses, TNAU, Coimbatore.</li> </ul>
32	AICRP /PBG / CBE / SOY / 016 Application of foliar nutrition on Soybean productivity. (June 2015 to May 2017) Dr. S. Sanbagavalli, Assoc. Prof. (Agronomy) Department of Pulses, TNAU, Coimbatore	<ul style="list-style-type: none"> <li>• The project may be closed due to closure of the AICRP on Soybean scheme at Department of pulses, TNAU, Coimbatore.</li> </ul>
33	AICRP /PBG / CBE / SOY / 016 Bridging yield gap of soybean through site specific nutrient management (SSNM). (June 2017 to May 2020) Dr. S. Sanbagavalli, Assoc. Prof. (Agronomy) Department of Pulses, TNAU, Coimbatore	<ul style="list-style-type: none"> <li>• The project may be closed due to closure of the AICRP on Soybean scheme at Department of pulses, TNAU, Coimbatore.</li> </ul>



## 2. CROP PHYSIOLOGY

Sl.No.	Project No. and Title	Remarks
<b>University Research subprojects</b>		
<b>Blackgram</b>		
1	DCM / CBE/ CRP / BGR / 2016 / 001 Impact of PGRs and nutrients on mitigation of salinity stress effect in blackgram (May 2016 to Mar 2018) Dr. K. Krishna Surendar,A. P. (CRP) Dr. S. Kavitha, A. P. (SST) TNAU, Coimbatore	<ul style="list-style-type: none"> <li>• The treatment may be modified and conduct the field trial with Brassinolide and TNAU- Pulse wonder alone may be tried to confirm the results.</li> <li>• A new project may be proposed with modified treatments based on salinity induced biochemical changes in the crop.</li> </ul>
2	DCM/VBN/CRP/BGR/2015/001 Impact of high temperature and moisture stress on photosynthesis, flowering and yield of blackgram genotypes. (April 2015 to Mar 2018) Dr. V. Babu Rajendra Prasad, A. P. (CRP) NPRC, Vamban	<ul style="list-style-type: none"> <li>• Among the ten blackgram cultures tested VBN (Bg) 4, VBN 8 and VBG11062 performed better under drought and high temperature condition.</li> <li>• The results may be communicated to pulse breeder with due recognition to crop physiologist at NPRC Vamban and the project may be closed.</li> </ul>
3	DCM/VBN/CRP/BGR/2014/002 Physiological and Biochemical evaluation of blackgram genotypes for drought tolerance. (May 2016 to April 2019) Dr. V. Babu Rajendra Prasad, A P (CRP) NPRC, Vamban	<ul style="list-style-type: none"> <li>• The blackgram varieties VBN 6, VBN 8, ADT 5 and its cultures viz., VBG 1704, VBG 707, VBG 1711, VBG 1727 and VBG 1730 were more tolerant for drought.</li> <li>• Flowering phenotype may be studied.</li> <li>• To confirm the results, the project may be continued.</li> </ul>

<b>Greengram</b>		
4	DCM/MDU/CRP/GGR/2017/001 Management of drought by osmolytes in greengram under deficit irrigation. (Oct 2017 to Sep 2020) R. Amutha, Professor (CRP) AC &RI, Madurai	<ul style="list-style-type: none"> <li>• The project has been initiated during Jan. 2018.</li> <li>• The concentration of treatment and time of application has to be specified. The project may be continued.</li> </ul>
<b>Externally funded project</b>		
5	DST/DCM/VBN/CRP/2017/003 Physiological and Molecular dissection of greengram ( <i>Vigna radiata</i> (L.) Wilczek) genotypes for drought and high temperature stress tolerance. (May 2017 to April 2020) PI: Dr. V. Babu Rajendra Prasad AP(CRP), NPRC, Vamban Co-PI: Dr. A. Senthil, Assoc. Prof. (CRP),	<ul style="list-style-type: none"> <li>• The 50 % mortality was observed in -4 bars of water potential at germination stage. This level of stress will be used to screen and identify the drought tolerant genotypes.</li> <li>• Physiological observations viz., leaf area, root length etc., may be recorded.</li> <li>• To screen and evaluate greengram genotypes, the project may be continued.</li> </ul>

### 3. SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

Sl. No.	Project No. and Title	Remarks
<b>University Research subprojects</b>		
<b>Redgram</b>		
1	NRM/APK/SAC/SMM/2016/001* Effect of Integrated nutrient management practices on growth and yield of red gram (APK I) and barnyard millet Co(kv) 2 in rainfed black soils of Virudunagar district. (Oct 2016 to May 2018) Dr.B.Bhakiyathu saliha, A. P. (SS&AC) RRS, Aruppukottai	The project is kept in abeyance due to the transfer of Project Leader.

<b>Blackgram</b>		
2	NRM/CTN/SAC/BGR/2015/001* Effect of biochar and phosphobacteria on carbon build-up, phosphorous availability and blackgram yield in rainfed Alfisol. (April 2015 to Mar 2018) Dr. P. Kannan, A. P. (SS&AC) DARS, Chettinad	The project may be closed and proposed for OFT

#### 4. AGRICULTURAL MICROBIOLOGY

Sl. No	Project No. and Title	Remarks
<b>University Research Projects</b>		
<b>Redgram</b>		
1.	NRM/VMB/AGM/RGR/2015/001* Arbuscular Mycorrhizal mediated nodulation and nitrogen fixation in redgram. (April 2015 to March 2018) Dr. M. Gnanachitra, A.P.(Agrl. Micro.) NPRC, Vamban	The project may be closed and proposed for OFT
<b>Blackgram</b>		
2.	NRM/CBE/AGM/BGR/2015/002* Enhancing root nodulation in blackgram grown in acid soils using <i>Rhizobium</i> mutants and helper bacterium <i>Exiguobacterium</i> sp. (Aug' 2015 to April 2018) Dr. M. Gnanachitra, A.P.(Agrl. Micro.) NPRC, Vamban.	The project may be closed and proposed for OFT
3.	NRM/MDU/AGM/PUL/2016/001* Shelf life studies of the newer (water soluble) formulation of <i>Rhizobium</i> and AM fungi for seed coating of pulses. (Sep' 2016 to Aug' 2018) Dr. K. Kumutha, Prof. & Head AC & RI, Madurai Dr. R. Parimala devi, Asst. Prof. (Micro.) TNAU, Coimbatore	<i>Rhizobium</i> population in the formulation may be checked for every three months. The project may be proposed for OFT.

<b>Greengram</b>		
4.	NRM / KKM / AGM / GGR / 2015 / 001* Evaluating the efficiency of AM fungal inocula in combination with <i>Rhizobium</i> on the growth of green gram. (April' 2015 to Mar' 2018) Dr. M.Gomathy,A. P. (Agrl. Micro.) AC& RI, Killikulam	<ul style="list-style-type: none"> <li>• One field trial may be raised based on the pot culture experiment</li> <li>• The project may be continued for one year</li> </ul>
<b>Chickpea</b>		
5.	<b>NRM/CBE/AGM/2015/003*</b> Screening of symbiotic efficiency of <i>Rhizobium</i> in Chickpea. (January 2015 to January 2018) Dr. J. Ejilane, AP(Ag.Micro) ADAC&RI, Trichy	Due to the transfer of the project leader, the project is kept in abeyance.
<b>AICRP projects</b>		
<b>Redgram</b>		
6.	AICRP/PBG/CBE/PIP/010 Arhar Micro - I: Isolation and screening of <i>Rhizobium</i> strains for tolerance to high temperature (June 2016 to March 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The project may be closed due to the closure of AICRP-Pigeonpea scheme
7.	AICRP/PBG/CBE/PIP/010 Arhar Micro-II : Performance of <i>Rhizobium</i> strains under different agro ecological conditions in pigeonpea (June 2016 to March 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The project may be closed due to the closure of AICRP-pigeonpea scheme
8.	AICRP/PBG/CBE/PIP/010 Arhar Micro III: Evaluation of endophytic rhizobacteria for improving the yield of Pigeonpea (June 2016 to March 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The project may be closed due to the closure of AICRP-Pigeonpea scheme
9.	AICRP/PBG/CBE/PIP/010 Arhar Micro - IV: Efficacy of nutrient mobilizing rhizobacteria along with <i>Rhizobium</i> for improving Pigeonpea productivity (June 2016 to March 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The project may be closed due to the closure of AICRP-Pigeonpea scheme

10.	AICRP/PBG/VBN/PIP/011 Arhar Micro - I: Isolation and screening of <i>Rhizobium</i> strains for tolerance to high temperature. (June'2016 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The project may be closed due to the closure of AICRP-Pigeonpea scheme
11	AICRP/PBG/VBN/PIP/011 Arhar Micro - IV: Efficacy of nutrient mobilizing rhizobacteria along with <i>Rhizobium</i> for improving Pigeon pea productivity (June'2016 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be closed due to the closure of AICRP-Pigeonpea scheme
12	AICRP/PBG/VBN/PIP/011 Arhar Micro-VI: Evaluation of PGPR strains for improving the efficiency of <i>Rhizobium</i> inoculants (June'2015 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be closed due to the closure of AICRP-Pigeonpea scheme
<b>Blackgram</b>		
13	AICRP/PBG/VBN/MUL/013 Urd Micro I: Screening of <i>Rhizobium</i> strains for tolerance to acidity (June'2015 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be continued
14	AICRP/PBG/VBN/MUL/013 Urd Micro III: Evaluation of endophytic rhizobacteria for improving the yield of Urd bean (June'2015 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be continued
15	AICRP/PBG/VBN/MUL/013 Urd Micro IV: Efficacy of nutrient mobilizing rhizobacteria along with <i>Rhizobium</i> for improving urdbean productivity (June'2016 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be continued

16	AICRP/PBG/VBN/MUL/014 Urd Micro-I : Isolation and Screening of <i>Rhizobium</i> strains tolerant to /Temperature. (June'2016 to May 2019) Dr.R.Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.
17	AICRP/PBG/VBN/MUL/014 Urd Micro-II : Multilocation testing of <i>Rhizobium</i> strains for urdbean (June'2015 to May 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.
18	AICRP/PBG/VBN/MUL/014 Urd Micro-III Evaluation of endophytic rhizobacteria for improving the yield of Urdbean (June'2015 to May 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.
<b>Greengram</b>		
19	AICRP/PBG/VBN/MUL/013 Mung Micro II B: Evaluation of new acid tolerant <i>Rhizobium</i> for improving yield in mung bean. (June'2015 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be continued
20	AICRP/PBG/VBN/MUL/013 Mung Micro III - Multilocation testing of <i>Rhizobium</i> strains for Mungbean (June'2015 to May 2019) Dr. M. Gnanachitra, AP(Agrl. Micro.) NPRC, Vamban	The Project may be closed
21	AICRP/PBG/VBN/MUL/014 Mung Micro-I - Isolation and Screening of <i>Rhizobium</i> strains tolerant to Temperature (June'2015 to May 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.
22	AICRP/PBG/VBN/MUL/014 Mung Micro-II B- Evaluation of new acid tolerant <i>Rhizobium</i> for improving yield in mungbean	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.

	(June'2015 to May 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	
23	AICRP/PBG/VBN/MUL/014 Mung Micro-III : Multilocation testing of <i>Rhizobium</i> strains for mungbean. (June'2015 to May 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.
24	AICRP/PBG/VBN/MUL/014 Mung Micro-IV: Evaluation of endophytic rhizobacteria for improving the yield of mungbean (June'2015 to May 2019) Dr.R. Raghu, Asst. Prof. (Agrl. Microbiology) Department of Pulses, TNAU, Coimbatore	The Project may be closed due to the closure of AICRP-Pigeonpea scheme and transfer of the scientist.

\* Submit completion report for approval

## 5. SEED SCIENCE AND TECHNOLOGY

Sl. No	Project No & Title	Remarks
<b>University Research Projects</b>		
<b>Redgram</b>		
1.	SEED/BSR/SST/RGR/2016/001* Standardization of seed production and storage techniques for enhanced seed yield and quality in perennial redgram cv.BSR.1. (Dec'2016 to Nov' 2018) Dr. R. Jerlin, Professor (SST)	<ul style="list-style-type: none"> <li>The first two objectives of study on seed development and maturation pattern and standardization of optimum spacing for enhancing seed yield may be combined.</li> <li>An agronomist may be included.</li> <li>The project may be continued for one more year, to complete the storage studies.</li> </ul>
<b>Blackgram</b>		
2.	SEED/VMB/SST/BGR/2014/001* Development of organic seed invigouration technique for enhancing various vigour status of blackgram seeds. (Oct'2014 to Sep' 2017) Dr. C. Vanitha, A.P. (SS&T) NPRC, Vamban	<ul style="list-style-type: none"> <li>Blackgram VBN 6 seeds invigourated with nutrigold (0.5%) increased the seed yield (1155kg/ha) with maximum 100 seed weight (5.69g) than hardening treatment (1030 kg/ha &amp; 5.58g, respectively).</li> <li>The finding was proposed for OFT.</li> </ul>
3.	SEED/VMB/SST/BGR/2014/001 Response of blackgram to seed coating and fertilizer intervention on seed quality and yield potential.	<ul style="list-style-type: none"> <li>To conduct the field experiment during <i>Kharif</i> 2018 and to continue the storage studies the project may be continued.</li> </ul>

	(Nov'2017 to Dec' 2020) Dr. C. Vanitha, A.P. (SS&T) NPRC, Vamban.	
4.	SEED/CBE/SST/BGR/2016/001* Study on influence of seed priming with micro nutrients on seed vigour, field emergence and seed yield in blackgram and redgram. (Mar'2016 to Feb' 2018) Dr. S. Kavitha, A.P. (SS&T)	<ul style="list-style-type: none"> <li>• Seed priming with 0.5% ZnSO<sub>4</sub> at 1:0.3 seed to solution ratio for 3 hours recorded maximum seed quality characteristics.</li> <li>• For evaluating the seed priming technique under field condition, the project may be continued.</li> </ul>
5.	SEED/KDM/SST/BGR/2016/001* Development of hydrophilic polymer seed coating technique for rainfed blackgram( <i>Vigna mungo</i> L.). (June'2016 to May' 2018) Dr. V. Viayalakshmi, A.P. (SS&T)	<ul style="list-style-type: none"> <li>• To carry out the evaluation of hydrophilic polymer seed coating technique under field condition and to evaluate the storage potential of coated seeds the project may be continued.</li> <li>• Extension Proposal may be submitted.</li> </ul>
6.	SEED/ADT/SST/BGR/2016/001 Seed invigouration studies to improve seedling vigour in blackgram seeds under rice fallow condition. (Dec'2016 to Jan' 2019) Dr. K. Raja, Assoc. Prof. (SST) TRRI, Aduthurai	<ul style="list-style-type: none"> <li>• Seed hardening with 100 ppm ZnSO<sub>4</sub> + 100 ppm MnSO<sub>4</sub> and seed pelleting with sodium molybdate @ 300 mg/kg + <i>Rhizobium</i> @ 30 g/kg recorded the maximum yield attributing characters.</li> <li>• For confirmation of the findings the project may be continued.</li> </ul>
<b>Greengram</b>		
7.	SEED/ CBE/ SST/ GGR/ 2016/ 001 Early foliar spray intervention to arrest flower drop and increase seed filling in greengram. (Jun'2016 to May' 2019) Dr. K. Sundaralingam, Professor (SST) TNAU, Coimbatore.	<ul style="list-style-type: none"> <li>• The effect of foliar spray with nutrigold was already confirmed hence the project may be deleted.</li> </ul>
8.	SEED/VGD/SST/GGR/2015/001* Performance evaluation of the primed green gram seeds under storage conditions. (Nov'2015 to Oct' 2017) Dr. G. Mani, A. P. (SST) ARS, Vaigai Dam	<ul style="list-style-type: none"> <li>• Hydro-primed green gram seeds retained better germination, field emergence, seedling attributes and vigour over 21 months of storage.</li> <li>• The project may be closed.</li> </ul>
9.	SEED/BSR/SST/GGR/2015/001* Assessment of seed vigour for crop productivity of fresh validated and revalidated seeds of greengram. (Mar'2015 to Nov' 2017) Dr. K. Malarkodi, A. P. (SST) ARS, Bhavanisagar	<ul style="list-style-type: none"> <li>• Fresh seeds performed better under field condition when compared to validated and revalidated seeds.</li> <li>• Seeds treated with chlorpyrifos 20% EC @ 4 ml/kg +</li> </ul>



		<p>carbendazim 2gm/kg recorded 10.46% increased yield when compared to untreated seeds.</p> <ul style="list-style-type: none"> <li>• The findings were given for information and the project may be closed.</li> </ul>
10.	<p>SEED/BSR/SST/GGR/2017/001 Study on impact of seed priming and seed coating techniques on resistance to water stress in greengram. (Jun'2017 to May' 2019) Dr. K. Malarkodi, A. P. (SST) ARS, Bhavanisagar</p>	<ul style="list-style-type: none"> <li>• The greengram seeds imposed with seed priming + seed coating with TNAU nutricoat polymer (4 g/kg) recorded maximum yield attributing characters and to confirm the findings the project may be continued.</li> </ul>

<b>Other Pulses</b>		
11.	<p>SEED/PAI/SST/HGR/2014/001* Standardization of seed priming to improve germination and productivity in horsegram under rainfed condition. (Oct'2014 to Oct' 2017) Dr. P. Srimathi, Professor (SS&amp;T) RRS, Paiyur</p>	<ul style="list-style-type: none"> <li>• Seeds primed with 100 ppm ZnSO<sub>4</sub> (Soaking duration of 3 hours with seed to solution ratio of 1:1) recorded higher productivity both under line sowing and under seed drill sowing compared to unprimed and hydro-primed seeds.</li> <li>• The findings were given for adoption.</li> <li>• The project may be closed.</li> </ul>
12.	<p>SEED/PAI/SST/FIB/2016/001 Standardization of seed crop management and storage techniques in mochai (<i>Lablab purpureus</i> var <i>Lignosus</i> (L.) genotype PYR-03-004 the pre released culture for rainfed condition. (Dec'2016 to Mar' 2020) Dr. P. Srimathi, Professor (SS&amp;T) Dr. P. Suthamathi, Assoc., Prof. (PB&amp;G) RRS, Paiyur</p>	<ul style="list-style-type: none"> <li>• The optimum plant spacing was 90 x 60 cm and pre-harvest spray with emamectin benzoate enhances the seed yield and seed quality.</li> <li>• To confirm the findings and to continue the storage study the project may be continued for another two years.</li> </ul>

**\* Submit completion report for approval**

**d. General remarks: Nil**

e. Action Plan 2016-19

Theme No. 1	<b>Integrated Drought Mitigation Technology (IDMT) for blackgram and greengram</b>				
Theme Leader	<b>Blackgram: Dr.S. Subbulakshmi, Assistant Professor (Agronomy), ARS, Kovilpatti</b> <b>Greengram: Dr. S.Marimuthu, Assistant Professor (Agronomy), NPRC, Vamban</b>				
Activity	Name of the scientist and centre	2016-17	2017-18	2018-19	Deliverables/ expected out come
<ul style="list-style-type: none"> <li>To find out suitable land configuration for rainfed greengram and blackgram cultivation</li> <li>To assess the influence of drought mitigation measures on water conservation and yield of greengram and blackgram</li> </ul>	<p><b>NPRC, Vamban (Coordinating Centre)</b> Dr. S. Marimuthu, A. P. (Agron.) Dr. V. Babu Rajendra Prasad A. P. (CRP) Dr. P. Kannan, A. P. (SS&amp;AC) DARS, Chettinad</p> <p><b>DARS, Chettinad</b> Dr. C. Udayasoorian, Prof. (ENS) Dr. P. Kannan, A. P. (SS&amp;AC) Dr. V. Babu Rajendra Prasad, A. P. (CRP) NPRC, Vamban</p> <p><b>ARS, Kovilpatti</b> Dr. S. Subbulakshmi A. P. (Agron.) Dr.V. Sanjiv Kumar A. P. (SS&amp;AC) Dr. C. Raja Babu, A. P. (CRP) AC &amp; RI, Killikulam</p>	<ul style="list-style-type: none"> <li>Project proposal and approval</li> <li>Experiment layout and sowing</li> <li>Crop management, monitoring and observation</li> <li>Harvest and data Processing</li> </ul>	<ul style="list-style-type: none"> <li>Confirmative trial</li> </ul>	<ul style="list-style-type: none"> <li>On-Farm Trial (OFT)</li> <li>Report preparation</li> </ul>	<ul style="list-style-type: none"> <li>Efficient moisture conservation and utilisation under rainfed condition</li> <li>Improved moisture use efficiency and enhanced yield</li> </ul>

Theme No. 2	Best Management Practices (BMP) for greengram under irrigated condition				
Theme Leader	Dr. M. Senthivelu, Asst. Professor (Agron), Dept. of Pulses, TNAU, Coimbatore				
Activity	Name of the scientist and centre	2016-17	2017-18	2018-19	Deliverables/expected out come
<ul style="list-style-type: none"> <li>To develop mechanized package of practices for greengram</li> </ul>	<p><b>Coimbatore</b>            Dr. M. Senthivelu            A. P. (Agron.)            Dr. A. Surendra Kumar            Prof. (FMP)            Dr. K. Krishna Surendar            A. P. (CRP)            Dr. S. Kavitha            A. P. (SS&amp;T)</p> <p><b>Vamban</b>            Dr. S. Marimuthu            A. P. (Agron.)            Dr. C. Vanitha            A. P. (SS&amp;T)            Dr. V. Babu Rajendra Prasad            A. P. (CRP)</p>	<ul style="list-style-type: none"> <li>Project proposal and approval</li> <li>Experiment layout and sowing</li> <li>Crop management, monitoring and observation</li> <li>Harvest and data processing</li> </ul>	<ul style="list-style-type: none"> <li>Confirmative trial</li> </ul>	<ul style="list-style-type: none"> <li>On-Farm Trial (OFT)</li> <li>Report preparation</li> </ul>	<ul style="list-style-type: none"> <li>Cost effective production technology</li> <li>Reduction in labour requirement</li> <li>Higher yield and return</li> </ul>

Theme No. 3	Yield maximization in rice fallow blackgram				
Theme Leader	Dr. C. Umamageswari, Assistant Professor (Agronomy), TRRI, Aduthurai				
Activity	Name of the scientist and centre	2016-17	2017-18	2018-19	Deliverables/expected out come
<ul style="list-style-type: none"> <li>To develop suitable package of practices for yield enhancement in rice fallow blackgram</li> </ul>	<p><b>Aduthurai</b>            Dr. C. Umamageswari            A.P. (Agron.)            Dr. K. Raja,            Assoc. Prof. (SST)            Dr. K. Vanitha</p>	<ul style="list-style-type: none"> <li>Project proposal and approval</li> <li>Experiment layout and sowing</li> <li>Crop</li> </ul>	<ul style="list-style-type: none"> <li>Confirmative trial</li> </ul>	<ul style="list-style-type: none"> <li>On-Farm Trial (OFT)</li> <li>Report preparation</li> </ul>	<ul style="list-style-type: none"> <li>Optimum time of sowing and seed rate, terminal drought mitigation through mobile sprinkler, yield enhancement and economic return</li> </ul>

	A. P. (CRP) Dr. A.P. Mohan Kumar A. P. (FMP) AEC&RI, Kumulur	management, monitoring and observation • Harvest and data Processing			
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<b>Theme No. 4</b>	Study on redgram based crop intensification under different land configuration with supplemental irrigation to achieve sustainability in rainfed ecosystem				
<b>Theme Leader</b>	<b>Dr.K.Kalaichelvi, Asst. Professor (Agronomy), Dept. of Pulses, TNAU, Coimbatore</b>				
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/ expected out come</b>
<ul style="list-style-type: none"> <li>To evaluate the suitable redgram based strip cropping under rainfed condition.</li> <li>To study the nutrient uptake and nutrient balance in different redgram based strip cropping systems.</li> <li>To study the dynamics of weed, insect pests and diseases in redgram strip cropping system.</li> </ul>	<p><b>Coimbatore</b> Dr.K.Kalaiselvi A. P. (Agron.) Dr. K. Sathiyabama A. P. (SS&amp;AC) Dr. K. Krishna Surendar A. P. (CRP)</p> <p><b>RRS, Paiyur</b> Dr. N. Tamilselvan Prof &amp; Head Dr. R. Sivakumar A. P. (CRP) Dr. M. Vijayakumar A. P. (SS&amp;AC)</p> <p><b>ARS, Virinjipuram *</b> (* - Trial was conducted by Ph.D., Scholar, Department of Agronomy, TNAU, Coimbatore)</p>	<ul style="list-style-type: none"> <li>Project proposal and approval</li> <li>Experiment layout and sowing</li> <li>Crop management, monitoring and observation</li> <li>Harvest and data Processing</li> </ul>	<ul style="list-style-type: none"> <li>Confirmative trial</li> </ul>	<ul style="list-style-type: none"> <li>On-Farm Trial (OFT)</li> <li>Report preparation</li> </ul>	<ul style="list-style-type: none"> <li>Risk management system under rainfed condition.</li> <li>Even one crop fails, the farmer get income from other crops.</li> <li>Able to identify better system that could able to thrive under rainfed condition</li> </ul>

<b>Theme No. 5</b>	<b>Relook on sowing time and sowing method for enhancing the winter pulses productivity in rainfed ecosystem</b>				
<b>Theme Leader</b>	<b>Dr.S.Sanbagavalli, Assistant Professor (Agronomy), Department of Agronomy, TNAU, Coimbatore</b>				
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/ expected out come</b>
<ul style="list-style-type: none"> <li>To standardize the sowing time for enhancing the yield of winter pulses viz., Bengalgram &amp; Horsegram</li> <li>To study the influences of heat units and relative humidity on growth and yield of Bengalgram and Horsegram</li> <li>To assess the yield potential of Bengalgram and Horsegram under different sowing methods</li> </ul>	<p><b>Coimbatore</b> Dr.S.Sanbagavalli Assoc. Prof. (Agron.) Dr. S.Panneerselvam Prof.&amp; Head, ACRC Dr.A.Surendrakumar Prof. (FMP), AMRC</p> <p><b>Paiyur</b> Dr.N.Tamilselvan, Professor (Agronomy) Dr. R.Thiyagarajan, Asst. Prof. (FMP)</p>	<ul style="list-style-type: none"> <li>Project proposal and approval</li> <li>Experiment layout and sowing</li> <li>Crop management, monitoring and observation</li> <li>Harvest and data Processing</li> </ul>	<ul style="list-style-type: none"> <li>Confirmative trial</li> </ul>	<ul style="list-style-type: none"> <li>On-Farm Trial (OFT)</li> <li>Report preparation</li> </ul>	<ul style="list-style-type: none"> <li>Standardize the sowing time and sowing method</li> <li>Increasing the rainfall use efficiency &amp; yield</li> </ul>

<b>Theme No. 6</b>	<b>Mapping of Zn deficiency in pulse growing soils of various districts in Tamil Nadu and its management</b>				
<b>Theme Leader</b>	<b>Dr.D.Jegadeeswari, Asst. Professor, Dept.of SS&amp;AC, TNAU, Coimbatore</b>				
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
<ul style="list-style-type: none"> <li>To prepare block level thematic maps for Zn deficiency in Pulse growing areas using the delineation data of remaining 10 districts</li> <li>To suggest suitable package of recommendations to alleviate Zn deficiency in the soils of Pulse growing tracts</li> </ul>	<b>Coimbatore</b> Dr.R.Jagadeeswaran Asst. Prof. (SS&AC)	Assessment of zinc deficiency in Trichy, Thiruvallur and Dindigul districts.	Assessment of zinc deficiency in Ariyalur, Perambalur, Thiruppur and Karur districts.	Assessment of zinc deficiency in the remaining districts like Nilgiris, Kancheepuram, Thiruvallur and Thanjavur districts will be covered and recommendations will be given for the deficient areas.	<ul style="list-style-type: none"> <li>In the identified zinc deficient areas, application of 25 kg ZnSO<sub>4</sub> per ha is required along with recommended NPK to maximize the pulse production in Tamil Nadu</li> </ul>

<b>Theme No. 7</b>	<b>Early foliar spray nutrient to arrest flower drop and increase seed yield in greengram</b>				
<b>Theme Leader</b>	<b>Dr.K.Sundaralingam, Prof. (SST), Seed Centre, TNAU, Coimbatore</b>				
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>Deliverables/expected out come</b>
<ul style="list-style-type: none"> <li>To reduce flower drop, increase pod set and seed filling for enhancing the seed yield and quality of greengram through</li> </ul>	<b>Seed Centre</b> Dr.K.Sundaralingam Professor (SS&T) Dr.M.Senthivelu A. P. (Agro.) Dr.P.Jeyakumar	<ul style="list-style-type: none"> <li>Project proposal and approval</li> <li>Experiment layout and sowing</li> <li>Crop management, monitoring and</li> </ul>	<ul style="list-style-type: none"> <li>Confirmative trial</li> </ul>	<ul style="list-style-type: none"> <li>On-Farm Trial (OFT)</li> <li>Report preparation</li> </ul>	<ul style="list-style-type: none"> <li>The outcome of research will help to overcome the flower drop and improve the</li> </ul>

foliar nutrition.	Prof. & Head, (CRP)  <b>NPRC, Vamban</b> Dr.C.Vanitha A. P. (SS&T) Dr.V.Babu Rajendra Prasad A. P. (CRP) Dr.S.Marimuthu A. P. (Agro.)  <b>AC&amp;RI, Killikulam</b> Dr. B. Venudevan, A. P. (SS&T) Dr. N. Senthilkumar, A. P. (Agro.) Dr. A. Senthil, Assoc. Prof. (Agro.)	observation • Harvest and data Processing			seed set and seed yield by 15 to 20 %.
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<b>Theme No. 8</b>		<b>Shelf life of new (water soluble) formulations of <i>Rhizobium</i> and AM fungi for seed coating of pulses</b>			
<b>Theme Leader</b>		<b>Dr. K.Kumutha, Professor &amp; Head (Agrl. Microbiology), AC&amp;RI, Madurai</b>			
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2016-17</b>	<b>2017-18</b>	<b>Deliverables/expected out come</b>	
<ul style="list-style-type: none"> <li>To study the survival of <i>Rhizobium</i> and AM fungi in formulation as well as coated seeds of blackgram and redgram</li> <li>To assess the viability of</li> </ul>	<b>Madurai</b> Dr. K.Kumutha Prof. &Head (AGM) <b>Coimbatore</b> Dr. R. Parimaladevi A. P. (AGM)	<ul style="list-style-type: none"> <li>The newer (water soluble) formulations of <i>Rhizobium</i> and AM fungi inoculums will be coated in pulse seeds (Big and small size) viz., Blackgram / Greengram &amp; Red gram</li> </ul>	<ul style="list-style-type: none"> <li>The newer (water soluble) formulations of <i>Rhizobium</i> and AM fungi inoculums will be coated in pulse seeds (Big and small size) viz., Blackgram / Greengram &amp; Red gram and will be kept for shelf life studies under</li> </ul>	<ul style="list-style-type: none"> <li>If the survival (shelf life) of the inoculum in coated pulse seed is more (one year) , we</li> </ul>	

<p>the coated seeds under storage</p>		<p>and will be kept for shelf life studies under room temperature condition.</p> <ul style="list-style-type: none"> <li>• The survival of the inoculums viz., <i>Rhizobium</i> (population /g) and AM fungi (Spore load /g) will be evaluated both in the formulation and in the coated seeds at monthly intervals.</li> </ul>	<p>room temperature condition.</p> <ul style="list-style-type: none"> <li>• The survival of the inoculums viz., <i>Rhizobium</i> (population /g) and AM fungi (Spore load /g) will be evaluated both in the formulation and in the coated seeds at monthly intervals.</li> </ul>	<p>could supply the coated seeds to the farmer</p> <ul style="list-style-type: none"> <li>• Long term storage (one year) of the inoculum under room temperature itself.</li> </ul>
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### Work load of the individual scientists as per action plan

Sl.No.	Scientist/Action plan	Theme 1A	Theme 1B	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Theme 7	Theme 8
		Integrated Drought Mitigation Technology (IDMT) for blackgram	Integrated Drought Mitigation Technology (IDMT) for greengram	Best Management Practices (BMP) for greengram under irrigated condition	Yield maximization in rice fallow blackgram	Evaluation of different redgram based strip intercropping systems under rainfed condition	Relook on sowing time and sowing method for enhancing the winter pulses productivity in rainfed ecosystem	Mapping of Zn deficiency in pulse growing soils of various districts in Tamil Nadu and its management	Early foliar spray nutrient to arrest flower drop and increase seed yield in greengram	Shelf life of new (water soluble) formulations of <i>Rhizobium</i> and AM fungi for seed coating of pulses
1	Dr. S. Subbulakshmi, Asst.Prof. (Agronomy)	√								
2	Dr. V. Sanjiv Kumar, Asst.Prof. (SS&AC)	√								
3	Dr. C. Raja Babu Assoc. Prof. (CRP),	√								
5	Dr. S. Marimuthu, Asst. Prof. (Agron.)		√	√					√	
6	Dr. C. Vanitha, Asst.Prof. (SS&T)			√					√	
7	Dr. V. Babu Rajendra Prasad, Asst. Prof. (CRP)		√	√					√	
8	Dr. C. Udayasoorian, Prof. (ENS)		√							
9	Dr. P. Kannan, Asst.Prof. (SS&AC)		√							
10	Dr. M. Senthivelu, Asst. Prof (Agron.)			√					√	
11	Dr. A. Surendra Kumar, Prof. (FM&P)			√			√			
12	Dr. K. Krishna Surendar Asst. Prof. (CRP)			√						
13	Dr. S. Kavitha, Asst. Prof. (SS&T)			√						

14	Dr. C. Umamageswari, Asst. Prof. (Agronomy)				√					
15	Dr. K. Raja, Assoc. Prof. (SST)				√					
16	Dr. K. Vanitha, Asst. Prof. (CRP)				√					
17	Dr. A. P. Mohankumar, Asst. Prof.(FM&P)				√					
18	Dr. K. Kalaiselvi, Asst.Prof. (Agron.)					√				
19	Dr. K. Sathiyabama, Asst. Prof. (SS & AC)					√				
20	Dr. R. Sivakumar, Asst. Prof. (CRP)					√				
21	Dr.N.Tamilselvan, Prof.& Head, RRS, Paiyur					√	√			
22	Dr. M. Vijayakumar, Asst. Prof. (SS & AC)					√				
23	Dr. K. Krishna Surendar, Asst. Prof. (CRP)					√				
24	Dr. S. Sanbagavalli Assoc.Prof. (Agron.)						√			
25	Dr. S. Pannerselvam Prof. & Head (ACRC)						√			
26	Dr. R. Thiyagarajan Asst.Prof. (FM&P)						√			
27	Dr. D. Jegadeeswari, Asst. Prof. (SS&AC)							√		
28	Dr. P. Malathi, Asst. Prof. (SS&AC)							√		
29	Dr. R. Jagadeeswaran, Asst. Prof. (SS&AC)							√		
30	Dr.K.Sundaralingam, Professor.(SST)								√	
31	Dr.P.Jeyakumar, Prof & Head (CRP)								√	
									√	

32	Dr.B.Venudevan, Asst. Prof.(SST)									
33	Dr.N.Senthilkumar, Asst.Prof. (Agronomy)								√	
34	Dr.A.Senthil, Assoc. Prof. (CRP)								√	
35	Dr.K.Kumutha, Prof. & Head (AGM)									√
36	Dr.R.Parimaladevi, Asst. Prof. (AGM)									√

## CROP PROTECTION

### AGRL. ENTOMOLOGY

#### A. For OFT

**Evaluation of *Pongamia* oil derived formulation against pulse beetle, *Callosobruchus maculatus* (Fabricius) for long term pulses seed storage.**

#### Objective

- ❖ To evaluate the *Pongamia* oil derived formulation against pulse beetle and seed viability

#### Treatments

- T<sub>1</sub> – *Pongamia* oil derived formulation @ 10 ml/kg of seed
- T<sub>2</sub> – Pungam oil @ 10 ml/kg of seed
- T<sub>3</sub> – Malathion 5 D @ 10g/kg of seed
- T<sub>4</sub> – Untreated control

**Replication:** Five

**Design:** CRD

#### Methodology

1. One kg of untreated blackgram seed with very high percentage of germination (> 95%) will be taken for each treatment.
2. *Pongamia* oil derived formulation, pungam oil and malathion dust will be treated directly with the seeds. Treated seeds will be packed in gunny bags and kept in room under ambient conditions. Untreated control will be maintained.
3. At three, six and nine months after storage, natural insect infestation and number of eggs laid will be counted.
4. Simultaneously 100 g of seeds will be taken in a container and 10 numbers of freshly emerged *Callosobruchus maculatus* adults will be released. Mortality count will be taken on third and seventh day after release.
5. The effect of different treatments on seed viability, germination will be carried out by taking undamaged seeds during three, six and nine months after storage.

#### Participating Centres:

- ❖ NPRC, Vamban (Dr. Zadda Kavitha)
- ❖ Seed Centre, TNAU, Coimbatore (Dr. R.Arulprakash)
- ❖ ADAC&RI, Trichy (Dr. Sheeba Joice Rosleen)

#### A. RESEARCH PROJECTS ON PULSES

Crop	Centre	URP	AICRP	EFP	Total No.
<b>Agri. Entomology</b>					
Redgram	NPRC, Vamban	2	1	-	3
	Dept. of Pulses, TNAU, Coimbatore	-	1	-	1
	Seed Centre, TNAU, Coimbatore	-	1	-	1
	AC & RI, Madurai	1	-	-	1
Blackgram and	NPRC, Vamban	2	1	-	3
	Dept. of Pulses, TNAU, Coimbatore	-	1	-	1
	Seed Centre, TNAU, Coimbatore	-	1	-	1
	AC & RI, Madurai	1	-	-	1

Greengram	AC & RI, Killikulam	1	-	-	1
Other pulses	ARS, Paiyur	1	-	-	1
<b>Plant Pathology</b>					
Redgram	NPRC, Vamban	-	1	-	1
	Dept. of Pulses, TNAU, Coimbatore	-	1	-	1
Blackgram and Greengram	NPRC, Vamban	1	1	1	3
	Dept. of Pulses, TNAU, Coimbatore	-	1	-	1
Chickpea	Dept. of Pulses, TNAU, Coimbatore	-	1	-	1
<b>Plant Nematology</b>					
Redgram	Coimbatore	-	1	-	1
Total		9	12	1	22

### C. REMARKS ON THE ONGOING UNIVERSITY RESEARCH PROJECTS/ AICRP/ EXTERNALLY FUNDED PROJECTS

#### 1. Agrl. Entomology

S. No	Project Number and Title	Remarks
1.	<b>CPPS/VBN/ENT/RGR/2016/002</b> Management of pod fly <i>Melanagromyza obtusa</i> (Malloch) in redgram (July 16 to June 19) <b>Dr. Zadda Kavitha</b>	Project may be continued.
2.	<b>CPPS/VBN/ENT/RGR/2016/001</b> Development of an IPM module for the management of the legume pod borer <i>Maruca vitrata</i> (Geyer) in redgram (July 16 to June 19) <b>Dr. Zadda Kavitha</b>	Project may be continued.
3.	<b>ACMD-MDU-AEN-14-004*</b> Diversity, seasonal abundance and development of IPM module for major pests of transplanted pigeonpea under precision farming system (June 14 to May 17) <b>Dr. M. Shanthi</b>	Even after one year of closure, completion report has not been submitted. The available data may be published soon and the completion report should be submitted on or before 31.05.18. The scientist has been requested to send a new URP / proposal for external funded project.
4.	<b>CPPS/VMB/ENT/BGR/2016/002*</b> Exploration of resistant sources of bruchids and their management in blackgram. (Jan.16 to Dec.18) <b>Dr. V.R. Saminathan</b>	Project may be continued. The results should be published in peer reviewed journals.
5.	<b>CPPS/VMB/ENT/BGR/2016/003*</b> Development of a forewarning system for the key pests infesting Blackgram. (Jan.16 to Dec.18) <b>Dr. V.R. Saminathan</b>	Project may be continued. The observations on the occurrence of pests need to be correlated with weather parameters.

S. No	Project Number and Title	Remarks
6.	<b>CPPS/MDU/AEN/BGR/2014/005*</b> Eco-friendly management of pulse beetle, <i>Callosobruchus</i> spp. in blackgram under field and storage conditions. (Apr.14 to Mar.17) <b>Dr. J. Jayaraj</b>	In spite of the time lapse for the closure, the reason for not submitting the closure proposal needs to be explained. The scientist has also not submitted any URP for the last one year. The work load needs to be substantiated for the reporting period. The scientist has been requested to fix the treatments after getting expert opinion. Design of the storage container needs to be checked. A new URP should be prepared and sent for RPAC remarks.
7.	Studies on the ecology and management of bruchids in pulses of South Tamil Nadu.( 2017 to 2019) <b>Dr. L. Allwin</b>	Why this project has not been numbered so far; needs to be explained and follow up action suggested. If this work does not fall under priority area of research, it may be withheld and a new URP in priority area of research should be submitted on or before 31.05.18.
8.	<b>CPPS/PAI/ENT/VEG/2015/001</b> Population dynamics of major pests of field bean and bio-intensive pest management. (Aug 15 to Jul. 17) <b>Dr.S.Mohamed Jalaluddin</b>	The scientist has been advised to present the findings of this project during Horticulture Crop Scientists Meet-2018.
<b>AICRP Projects</b>		
9.	<b>AICRP/PBG/VBN/PIP/011</b> AICRP on Pigeonpea (Entomology) (Jan.15 to Dec.19) <b>Dr. Zadda Kavitha</b>	It has been suggested to present the results of URP only during CSM. The project may be closed as AICRP (Pigeonpea) sub-centre has been shifted to ARS, Virinjipuram from NPRC, Vamban.
10.	<b>AICRP/PBG/CBE/PIP/010</b> AICRP on Pigeonpea (Entomology) (Jan.15 to Dec.19) <b>Dr. D.Rajabaskar</b>	It has been suggested to present the results of URP only during CSM. AICRP Project work may be presented separately. The scientist has been requested to propose a new URP on or before 31.05.18.
11.	<b>AICRP/STR/CBE/SEP/001</b> Study on efficacy of CO <sub>2</sub> treatment for management of insect pests of stored seeds in large capacity storage bin (2017 – 18) <b>Dr. R. Arulprakash</b>	It has been suggested to present the results of URP only during CSM. Project as per AICRP treatment may be continued and the results are to be discussed separately. The scientist has been requested to propose a new URP on or before 31.05.18.
12.	<b>AICRP/PBG/VBN/MUL/013</b> AICRP on MULLaRP (Entomology) (Jan.15 to Dec.19) <b>Dr. V.R. Saminathan</b>	AICRP programme may be continued. The scientist should submit a new URP based on theme area identified on or before 31.05.18

S. No	Project Number and Title	Remarks
13.	<b>AICRP/PBG/CBE/MUL/014</b> AICRP on MULLaRP (Entomology) (Jan.15 to Dec.19) <b>Dr. D.Rajabaskar</b>	AICRP programme may be continued. After justifying the workload, a new URP may be proposed on priority theme. The proposal should be submitted on or before 31.05.18.
14.	<b>AICRP/STR/CBE/SEP/001</b> Evaluation of pre-harvest spraying of insecticides for the management of pulse beetle ( <i>Callosobruchus maculatus</i> ) – (2017 – 18) <b>Dr. R. Arulprakash</b>	AICRP programme may be continued. After justifying the workload, a new URP may be proposed on priority theme area of research. The time line for submission of new URP is 31.05.18.
15.	<b>AICRP/PPS/CBE/ 003</b> AICRP on Nematode Management in cropping system (Apr.16-Mar.18) <b>Dr. N. Swarnakumari</b>	It has been suggested to present the results of URP only during CSM. In the objective to screen nematode resistant entries, MLT/ART entries of TNAU may also be included.

## 2. Plant Pathology

S. No	Particulars	Remarks
1.	<b>CPPS/VBN/PAT/PAT/2018/001</b> Exploitation of endo phytic biocontrol consortia against powdery mildew of blackgram (April 2018 to March 2021) <b>Dr. P.Ahila Devi</b>	The project number has been obtained without CPPS – RPAC remarks. Hence, it is suggested that the project may be presented once again in the next CPPS – RPAC and modification suggested if any, need to be included before starting the project.
2.	<b>CPPS/VMB/PAT/BGR/2014/001</b> Probing of causal agent, transmission nature and evaluation for resistance in blackgram entries against leaf crinkle disease. (Sep.14 to Aug.17) <b>Dr. V.K. Sathya</b>	As the objectives of the project has been completed the closure proposal may be sent on or before 31.05.2018.
3.	<b>AICRP/PBG/VBN/PIP/011</b> AICRP on Pigeonpea (Plant Pathology) (Jan.15 to Dec.19) <b>Dr. P.Ahila Devi</b>	It has been suggested to present the results of URP only during CSM. This project may be closed immediately due to the shift of AICRP (Pigeonpea) sub-centre from NPRC, Vamban to ARS, Virinjipuram.
4.	<b>AICRP/PBG/CBE/PIP/010</b> AICRP on Pigeonpea (Plant Pathology) (Jan.15 to Dec.19) <b>Dr. E. Rajeswari,</b> Survey, Identification of resistant sources for SMD and root rot, Epidemiology of SMD, powdery mildew and root rot	The project may be continued as per the technical programme of AICRP. It has been suggested to present the results of URP only during CSM. The AICRP results may be presented separately.  The mite population may also be counted in the resistant and susceptible entries.

		GPS data needs to be included in all experiments related to survey. The disease incidence should be correlated with local weekly weather parameters. The scientist has been advised to propose a new URP on or before 31.05.18.
5.	<b>AICRP/PBG/VBN/MUL/013</b> AICRP on MULLaRP (Plant Pathology) (Jan.15 to Dec.19) <b>Dr. P.Ahila Devi</b> Identification of resistant sources for major diseases in greengram and blackgram	The project may be continued as per the technical programme of AICRP. It has been suggested to present the results of URP only during CSM.  The Vector population may also be recorded.
6.	<b>AICRP/STR/CBE/SEP/001</b> Impact of different storage conditions and longevity on seed associated mycoflora of greengram / blackgram. (Apr.17- Mar.19) Standardization of detection methods for seed borne pathogens of significance(Apr.17- Mar.-19) <b>Dr. N. Indra</b>	AICRP scheme results need not be presented in the CSM. The programme may be continued as per AICRP treatments. The scientist is advised to submit URP as per priority / theme area of research on or before 31.05.18. The work load of the scientist may be justified.
7.	<b>AICRP / PBG / CHP / 012</b> AICRP on Chickpea – Pathology (Apr.17- Mar.19) <b>Dr. T.K.S. Latha</b> Identification of resistant sources for root rot and the influence of time of sowing on root rot incidence	AICRP scheme results need not be presented in the CSM. The programme may be continued as per AICRP treatments. The scientist is advised to submit URP as per priority / theme area of research on or before 31.05.18. The work load of the scientist may be justified.

**\* Submit completion report for approval**

#### **D. GENERAL REMARKS**

- ❖ Estimation of phenols, lignins and tannins may be included in the biochemical analysis of plant parts of the insect resistant entries.
- ❖ Estimation of pod wall thickness, trichome density, trichome size, bore hole size may be included with clear visible labelled photographs may be included during the investigations on biophysical mechanisms of resistance of insect resistant entries.
- ❖ All survey and surveillance data on pests and diseases should be recorded along with GPS co-ordinates.
- ❖ Enough samples should be collected to record the observations related to grading or per cent incidence / infection
- ❖ All the plant protection scientists should join together to record the pest/disease incidence/intensity more specifically vector populations in case of virus diseases.

#### **E. ACTION PLAN 2017-2020**

##### **a) Agricultural Entomology**

##### **Thrust Areas**

- ❖ Pod borer complex in pulses
- ❖ Bruchids in field and storage
- ❖ Eco-friendly management - Habitat manipulation techniques



## Crop Protection

### Agricultural Entomology

#### Thrust Areas :

#### Action Plan 1: Monitoring of incidence of major insect pests of redgram and blackgram

Theme leader	Dr. V.R. Saminathan, Asst. Professor (Agrl. Entomology), NPRC, Vamban		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables/ expected out come
Monitoring of incidence of important insect pests	<b>Vamban</b> Dr.V.R. Saminathan (Blackgram) Dr. Zadda Kavitha (Redgram)	<ul style="list-style-type: none"><li>Incidence of sucking pests, pod borers, pod fly and pod bugs has to be monitored throughout the crop period in both <i>Kharif</i> and <i>Rabi</i> seasons.</li><li>Insect incidence levels have to be correlated with the weather parameters.</li></ul>	Forecasting of the time of maximum incidence levels of important insect pests of redgram, and blackgram
	<b>Coimbatore</b> Dr.D.Rajabaskar (Redgram)		
	<b>Virinjipuram</b> Dr. P. Thilagam (Redgram)		

#### Action Plan 2: Identification of resistant sources for major insect pests in redgram, greengram and blackgram

Theme Leader	Dr. V.R. Saminathan, Asst. professor (Agrl. Entomology), NPRC, Vamban		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables/expected out come
Field screening of TNAU, AICRP, AVT, IVT, MLT and ART entries	<b>Vamban</b> Dr.V.R. Saminathan	<ul style="list-style-type: none"><li>Observations have to be taken in the field on the incidence of pod borers from flowering in the genotypes of redgram, blackgram and greengram under screening.</li><li>In the harvested pods, per cent damage due to pod borers has to be recorded separately for each insect.</li><li>Based on the standard scoring system entries have to be fitted in different categories of resistance.</li></ul>	Promising resistant entries to major insect pests in redgram, greengram and blackgram
	<b>Coimbatore</b> Dr. D.Rajabaskar <b>Virinjipuram</b> Dr. P. Thilagam		

**Action Plan3: Evaluation of habitat manipulation methods for the management of insect pests in blackgram and redgram**

Theme leader	Dr. V.R. Saminathan, Asst. Professor (Agrl. Entomology), NPRC, Vamban				
Activity	Name of the Scientist and Centre	2018-19	2019-20	2020-21	Deliverables/ expected outcome
Management of insect pests in blackgram, greengram and redgram through habitat manipulation	<b>Vamban</b> Dr. V.R. Saminathan (Blackgram) Dr. Zadda Kavitha (Redgram)	Evaluation of the following organic amendments in blackgram, greengram and redgram on insect pest incidence and abundance of natural enemies. 1.Decomposed farm yard manure (12 t/ha) 2.Vermicompost (2.5 t/ha) 3.Neem cake (250 Kg/ha) 4.Recommended NPK 5. Untreated control	The best habitat manipulation methods identified in first and second years will be integrated with IPM module and validated.	The result of the integrated trial of best habitat manipulation methods validated during 2019-20 will be reconfirmed.	Best border crop and organic amendment combination that suppresses the insect pest population and increases the natural enemy population
	<b>Coimbatore</b> Dr. D.Rajabaskar (Redgram)				
	<ul style="list-style-type: none"> <li>• Observations on pest incidence from vegetative stage to harvest</li> <li>• Observations on natural enemies</li> <li>• At harvest per cent damage due to pod borers has to be recorded separately for each insect.</li> <li>• Pest defender ratio, preference ratio of pests and occurrence ratio of natural enemies have to be estimated.</li> </ul>				

#### Action Plan 4: Studying mechanisms of resistance in resistant lines

Theme leader	Dr. V.R. Saminathan, Asst. Professor (Agrl. Entomology), NPRC, Vamban				
Activity	Name of the Scientist and Centre	Year 2018-19	Year 2019-20	Year 2020-21	Deliverables
Exploring mechanisms of resistance in the identified resistant entries of redgram/blackgram for <i>Maruca</i> , <i>Helicoverpa</i> and pod fly, <i>M. obtusa</i> .	<b>Vamban</b> Dr. V.R. Saminathan Dr. Zadda Kavitha (Biophysical mechanisms of resistance)	Study of mechanisms of resistance in pod fly resistant lines of redgram and <i>Maruca</i> resistant lines of blackgram.	Study of mechanisms of resistance in the identified redgram and blackgram resistant lines.	Study of mechanisms of resistance in the identified redgram and blackgram resistant lines.	Mechanisms of resistance to important insect pests of pulses
	<b>Coimbatore</b> Dr. D.Rajabaskar (Biochemical mechanisms of resistance)	<ul style="list-style-type: none"> <li>• Trichome length, trichome density, pod length, pod width and pod wall thickness have to be measured in the resistant entries to pod borers and pod fly.</li> <li>• Biochemical parameters i.e., phenols, tannins and lignins have to be estimated in the identified resistant entries.</li> </ul>			

#### b)Plant Pathology

##### Thrust Areas

- ❖ Identification of resistance sources for major diseases
- ❖ Etiology and mode of spread of leaf crinkle disease in blackgram and greengram
- ❖ Integrated disease management
- ❖ Evaluation of new molecules

**Action Plan 1 : Identification of resistant sources for major diseases in redgram, blackgram, greengram and chickpea**

<b>Theme leader</b>	Dr. P.Ahila Devi		
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>Observation to be recorded</b>	<b>Deliverables/ expected out come</b>
Field screening of TNAU entries , AICRP entries, AVT, IVT, MLT, ART entries	<b>Vamban</b> Dr. P.Ahila devi	<ul style="list-style-type: none"> <li>• Incidence of all the diseases</li> <li>• Correlation analysis of diseases with weather parameters</li> </ul>	Identification of multiple disease resistant donors
	<b>Coimbatore</b> Dr. E. Rajeswari Dr.T.K.S.Latha		

**Action Plan 2 : Confirmation of resistance in field screened entries through artificial screening – Blackgram, greengram,redgram and chickpea**

<b>Theme leader</b>	Dr. P.Ahila Devi, Asst. Professor (Plant Pathology), NPRC, Vamban		
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>Observation to be recorded</b>	<b>Deliverables/ expected out come</b>
Artificial screening of field resistant TNAU entries , AICRP entries, AVT, IVT, MLT, ART entries	<b>Vamban</b> Dr.P. Ahila Devi <b>Coimbatore</b> Dr. E. Rajeswari Dr.T.K.S. Latha	<ul style="list-style-type: none"> <li>• Per cent disease incidence</li> <li>• Type of symptom</li> </ul>	Identification of resistant donors against viral diseases

**Action Plan 3 : Identification of the etiological agent and spread of leaf crinkle disease in blackgram and greengram**

<b>Theme leader</b>	Dr. T.K.S.Latha, Asst. Professor (Plant Pathology), Department of Pulses, TNAU, Coimbatore			
	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>2019-20</b>	<b>Deliverables/expected out come</b>
Identificati on of virus and mode of spread	<b>Vamban</b> Dr. P.Ahila Devi <b>Coimbatore</b> Dr. T.K.S. Latha <b>Advisor</b> Dr. V.G.Malathi	Molecular characterization of virus through NGS and PCR	Identification of vector for leaf crinkle disease	Virus identified for leaf crinkle disease

**Action Plan 4 : Characterization of causal agent of pigeonpea sterility mosaic disease in Tamil Nadu**

<b>Theme leader</b>	Dr. E. Rajeswari, Dept. of Pulses, TNAU, Coimbatore				
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-2021</b>	<b>Deliverables</b>
Characterization of pigeonpea sterility mosaic virus	<b>Coimbatore</b> Dr. E. Rajeswari <b>Advisor</b> Dr.V.G.Malathi	Characterization of the virus isolate either by deep sequencing of RNA or by PCR	Development of diagnostics to identify and detect new variants or new viruses	Molecular confirmation of virus through nucleo diagnostics	Virus identified for pigeonpea sterility mosaic disease

**Action Plan 5 : Monitoring of major diseases of chickpea at different crop growth stages**

<b>Theme leader</b>	Dr. T.K.S. Latha Dept. of Plant Pathology, TNAU, Coimbatore		
<b>Activity</b>	<b>Name of the scientist and centre</b>	<b>Observation to be recorded</b>	<b>Deliverables/ expected out come</b>
Monitoring of major diseases of chickpea at different crop growth stages	<b>Coimbatore</b> Dr.T.K.S.Latha	<ul style="list-style-type: none"> <li>• Per cent incidence of major diseases</li> <li>• Morphological and molecular variability of wilt pathogen</li> </ul>	Cataloguing of newly emerging diseases

## F.WORK LOAD OF SCIENTISTS AS PER ACTION PLAN

### a)Agricultural Entomology

Name of the Scientist	Theme 1		Theme 2			Theme 3		Theme 4		OFT
	Monitoring of incidence of major insect pests of redgram and blackgram		Identification of resistant sources for major insect pests in redgram, greengram and blackgram			Evaluation of habitat manipulation methods for the management of insect pests in blackgram and redgram		Studying mechanisms of resistance in resistant lines		Evaluation of <i>Pongamia</i> oil derived formulation against pulse beetle, <i>Callosobruchus maculatus</i> (Fabricius) for long term pulses seed storage.
	Redgram	Blackgram	Redgram	Blackgram	Greengram	Redgram	Blackgram	Biophysical mechanisms of resistance	Biochemical mechanisms of resistance	
Dr.V.R. Saminathan		✓		✓	✓		✓	✓		
Dr. Zadda Kavitha	✓					✓		✓		✓
Dr.D.Rajabaskar	✓		✓			✓			✓	
Dr. P. Thilagam	✓		✓							
Dr. R.Arulprakash										✓
Dr. Sheeba Joice Rosleen										✓

**b)Plant Pathology**

Sl. No	Scientists	THEME 1		THEME 2	THEME 3		THEME 4			THEME 5
		Identification of resistant sources for major diseases in redgram, Blackgram and greengram		Confirmation of resistance in field screened entries against MYMV	Identification of the etiological agent and spread of leaf crinkle disease		Characterization of causal agent of pigeonpea sterility mosaic disease in Tamil Nadu			Monitoring of major diseases of chickpea at different crop growth stages
		Identification of resistant sources for major diseases in redgram	Identification of resistant sources for major diseases in Blackgram and greengram	Artificial screening through whitefly transmission in blackgram and greengram	Molecular characterization by PCR and NGS	Identification of vector for leaf crinkle disease	Characterization of causal agent of pigeonpea sterility mosaic disease	Development of diagnostics to identify and detect new variants or new viruses	Molecular confirmation of virus through nucleio diagnostics	Monitoring of major diseases of chickpea at different crop growth stages
1.	Dr.E. Rajeswari	✓					✓	✓	✓	
2.	Dr.P.Ahila Devi	✓	✓	✓	✓	✓				
3	Dr.T.K.S.Latha		✓		✓	✓				✓



## IV) HOME SCIENE

### A. RESEARCH PROJECTS ON PULSES

Crop	Centre	URP	AICRP	EFP	Total
Home Science					
Horsegram	CSCRI, Madurai	1	-	-	1
Pulses	CSCRI, Madurai	1	-	1	2
<b>Total</b>					<b>3</b>

Sl. No	Project No. and Title	Project leaders	Duration	Remarks
<b>UNIVERSITY RESEARCH SUB PROJECTS</b>				
<b>REDGRAM</b>				
1.	HSCRI/ MDU/ FSN/2017/001 Quality evaluation and value addition of Horse gram ( <i>Dolichos biflorus</i> L.)	Dr. G. Hemalatha, Professor and Head (FSN)	April 2017 to March 2020	Project may be continued
2.	HSCRI/MDU/HSC/2015/017* Effect of Processing on anti-nutritional factors and assessing the bioactive components of proteins in selected TNAU pulse varieties.	Dr.S.Kamalasundari Assistant Professor (FSN)	Dec 2015 to Dec 2017	Submit completion report for approval  Project may closed and a new project may be proposed
<b>EXTERNALLY FUNDED PROJECTS</b>				
3.	SPDB/HSCRI/MDU/FSN/2015/R011 Development of Innovative High Value Pulse based Food Products with Enhanced Functional and Nutraceutical properties for Potential Utilization	Dr. G. Hemalatha, Professor and Head (FSN)	December 2015 – November 2018	Project may be continued.

\* Submit completion report for approval

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## TAMIL NADU AGRICULTURAL UNIVERSITY

### 36<sup>th</sup> Pulses Scientists Meet'2018

**Date : 19<sup>th</sup> April 2018**

#### **General Remarks:**

- Establishment of sick plots for artificial screening of pulses entries for resistance against wilt and root rot diseases (Director, CPPS; Prof. & Head, NPRC Vamban and Coimbatore).
- Large scale 5 to 10 acres continuous area demonstration of latest/newly released TNAU pulses (Redgram/greengram/blackgram) varieties for easy visit by farmers, extension and department officials (Prof. & Head, NPRC, Vamban/Aruppukottai/Ramnad/Virinjipuram).
- Exact reasons may be studied for low pulse production during 2017-18 despite increase in cultivation area (Director, CPBG/Director, CARDS).
- Scientists should hand over the breeding materials to their successor through proper official procedure in the event of transfer (Director, CPBG).
- Materials available at IIRR, Kanpur and World Vegetable Centre, Thailand may be explored for resistance sources (Director, CPBG/Director, CPPS)
- Availability of seed materials has to be ensured and improved further (Director, CPBG/SO,Seed)
- Other crop improvement methods like mutation studies (Gamma irradiation) may be revived to fasten the varietal improvement process based on necessity (Director, CPBG/Director, CPMB)
- Also, farmers preferred old varieties may also be improved by incorporating desirable traits of interest (Director, CPBG/Director, CPMB)
- Studies on mochai may be brought under Horticulture in future (Director, CPBG)
- Vegetable soybean materials may be handed over to Dept. of Vegetables (Action: Dept. of Pulses, Coimbatore)
- In horse gram promising cultures and its production techniques may be evolved to meet the present day demand (Director, Crop Management)
- Biofortification of Zn and Fe studies on horse gram varieties, to suit agro climatic requirement may be taken up (RRS, Paiyur)
- Studies on pollen viability or locule filling problems may be undertaken through PG Student research work (Director, CPBG)
- Studies on broad bed/raised bed methods of irrigation may be further strengthened (Director, Crop Management)
- Steps may be taken to establish crop cafeteria in all research stations with latest released varieties and crops of local importance (All Research Stations)

- Biochar usage may be restricted on need base usually in organic acid rich, acidic soil (SO, NRM)
- Usage of herbicides in pulses may be relooked considering its ecological impacts (Director, Crop Management)
- Interventions on the moulting inhibitions in pod borers of pulses may be explored for its management (Director, CPPS)
- HPR studies on management of MYMV and podborer complex may be intensified (Director, CPPS/Director, CPBG)
- Usefulness of Habitat manipulation concepts in short duration crops like pulses may be relooked into (Director, CPPS)
- Usefulness of nonpulse crops like maize, bajra, sorghum and flowers in supporting natural enemies to combat the pulse pests needs justification (Director, CPPS)
- Training on the habitat manipulation concepts to all entomologists of TNAU by Department of Agricultural Entomology, Coimbatore may be taken up considering the importance of this non-chemical means of pest management (Director, CPPS)
- Biological control work has to be strengthened and revived (Director, CPPS)
- Organize two days trainings on whitefly biology and YMV transmission studies for all scientists working on this aspect. (Director, CPPS)
- Nutrigold may be deleted from treatments of all related studies, as it has been sold to other firm (SO, Seed)
- Good Agricultural practices for all crops have to be developed at the Directorate of Crop Management
- Technique to detect the presence of pesticide residue using cholinestrace enzyme derived from Housefly has to be standardized at Directorate of CPPS.
- Studies may be taken upto confirm the taxonomic identity of *Trichoderma*, *Pseudomonas* and *Basillus* cultures of TNAU at Directorate of CPPS.
- New project proposals to study the effect or impact of soil volatiles on insects/microbes and pathogens have to be made (Director, CPPS/SO, NRM)
- Field visit can be arranged during October 2018 to inspect the performance of MLT/OFT/ART cultures by all Technical Directors (Director, CPBG)
- Submission of URP completion report along with RPAC remarks for final approval on time (Technical Directors/Deans/DR)