TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

38th Pulses Scientists Meet 2020
(May 22, 2020)

Lead Centre
National Pulses Research Centre
Vamban – 622 303, Pudukottai District

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore – 641 003

2020

PROCEEDINGS

38th Pulses Scientists' Meet 2020
(May 22, 2020)

The 38th Pulses Scientist Meet was conducted on 22.5.2020 through webinar in Anna Auditorium involving 60 scientists off-line and more than 220 scientists on-line covering all college campuses, research stations and KVKs.

Dr. N. Kumar, Vice Chancellor, TNAU, set the stage for the meet. He highlighted the importance of pulses in nutritional security of Indian population who are predominantly vegetarians. Over the years, India became self-sufficient in pulses production of 23 million tonnes exacting meeting the requirement of the country and still demand increases with fast growing population. The State of Tamil Nadu registered 5.56 lakh tonnes in 2018-19 with a productivity of 687 kg ha^{-1} and there is a lot of scope and new avenue of opportunities to enhance productivity. TNAU has released **108 varieties** in pulses, helped the State in augmenting the production. He highlighted the importance of redgram transplanting, use of perennial redgram for grafting, viral diseases management, multiple resistance through gene pyramiding, agro-techniques for rice fallow pulses and special technique to screen pod borer resistance. He further insisted to evolve pulse genotypes with more nodules that will commensurate with N fixation and substantially reduce the fertilizer requirement of crops.

Dr. K.S. Subramanian, Director of Research flagged off issues such as resistance to yellow bean mosaic disease in greengram using agro-inoculation technique, nano-agri inputs for promoting pulses productivity, development of smart delivery system for the control of viral transmission and botanical (sweetflag) formulation to protect pulses from beetles.

Dr. S. Geetha, Director (CPBG), **Dr. V. Geethalakshmi,** Director (Crop Management and **Dr. K. Prabakar,** Director (CPPS), presented the research highlights, action taken on previous Pulses Scientists Meet and Action Plan for the year 2020-2021 of their respective directorates and departments involved. The Vice Chancellor offered concluding remarks and the Director of Research summarized the event.

The proceedings of the 38th Pulses Scientists meet are furnished below in the following headings:

1. CROP IMPROVEMENT

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

2. CROP MANAGEMENT

2.1. Technologies for adoption/OFT
2.2. Action plan projects
2.3. Research Projects and remarks

3. CROP PROTECTION

3.1. Technologies for adoption/OFT/Information
3.2. Action plan projects
3.3. Research Projects and remarks

4. REMARKS OF THE VICE CHANCELLOR

5. REMARKS OF THE DIRECTOR OF RESEARCH

6. PARTICIPANTS

1. CROP IMPROVEMENT

1.1. Entries identified for variety release/ART/OFT/MLT (2020-2021)

Cultures identified for variety release (2020-21)

Blackgram

No	Culture	Pedigree	Duration (Days)	Seed yield (kg/ ha)	*Per cent* increase over			Special features
					CO 6	VBN 6	VBN 8	
1.	COBG 10-05	VBN (Bg) 5 x *V. mungo*var.*silvestris*(22/10)	60-65	880	11.4	12.1	14.3	• Determinate plant type with synchronized maturity. • Resistant to Mungbean Yellow Mosaic disease (MYMV) and moderately resistant to leaf crinkle, stem necrosis diseases

No	Culture	Pedigree	Duration (Days)	Seed yield (kg/ ha)	*Per cent* increase over		Special features
					ADT 6	VBN 9	
2.	AD(TR) BG 14003	Mutant of ADT 3	65-70	735	22.1	18.0	• High yield • Suitable for rice fallow. • Moderately resistant to MYMV and Powdery mildew diseases

ART – (2020-21)

1. Blackgram (Rice Fallow)

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over ADT 6	Special features
VBG 13003	KU 2016 x VBN 3	65-70	742	16.9	High seed yield
Checks	ADT 6, VBN 9				

Locations:

Season	Rice Fallow
Districts	Cuddalore, Thiruvarur, Nagapattinam, Mayiladuthurai and Thanjavur (125 trials@ 25 locations per district **)**
KVK	Sirugamani, Virudhachalam, Needamangalam (15 trials - Five trials in each KVK)

*If sufficient seeds are available, simultaneous OFT may be conducted along with ART

2. Greengram (Rice Fallow)

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over ADT 3	Special features
COGG 13-39	CO 6 x SML 668	60-65	744	31.1	High yield
VGG 15-029	VBN(Gg) 2 x IPM 409-4	65-70	711	20.4	High yield
VGG 15-030	VBN(Gg) 2 x IPM 409-4	65-70	718	21.5	High yield
Checks	ADT 3				

Locations:

Season	Rice Fallow
Districts	Cuddalore, Thiruvarur, Nagapattinam, Mayiladuthurai and Thanjavur (125 trials@ 25 locations per district **)**
KVK	Sirugamani, Virudhachalam, Needamangalam (15 trials - Five trials in each KVK)

*If sufficient seeds are available, simultaneous OFT may be conducted along with ART

3. Greengram (Bold seed for sprouts)

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over			Special features
				CO 7	CO 8	VBN4	
VGG 18-002	EC 496839 x IPM 409-4	55-60	949	1.5	30.2	1.5	• Short duration • Bold seeded (5.8-6.0 g/100 seed) • High Vit C content (19.60 mg/100g) in sprouts • Highest acceptability for sprouts
Checks	CO 7, CO 8 and VBN 4						

Locations:

Season	Kharif , Rabi
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, Kallakurichi, Tenkasi, Chengalpattu, Tirupathur, Ranipet, Mayiladuthurai and Thirunelveli (170 Trials – five trials in each district)

KVKs	Vamban, Sirugamani, Kuntrakudi, Madurai, Virudhachalam, Tindivanam, Vrinjipuram, Santhiyur, Paparapatti and Tirur (40 trials - Four trials in each KVK)

*If sufficient seeds are available, simultaneous OFT may be conducted along with ART

4. Cowpea

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over		Special features
				VBN 3	COCP 7	
VCP 14-001	Vamban 1 x VCP 10-001	70-75	995	16.9	16.8	High seed yield
Checks	VBN 3 and COCP 7					

Locations:

Season	Kharif , Rabi
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 Kallakurichi, Tenkasi, Chengalpattu, Tirupathur, Ranipet, Mayiladuthurai and Thirunelveli (170 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)

*If sufficient seeds are available, simultaneous OFT may be conducted along with ART

5. Chickpea

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over		Special features
				CO 4	JG 11	
ICGV 181674	(Genesis 836 x GG 2) X (ICC 4958 TM x JG 11)	75-80	1346	13.3	13.4	High seed yield
Checks	CO 4, JG 11					

Locations:

Season	Rabi
Districts	Coimbatore, Thiruppur, Dharmapuri, Salem, Erode, Virudhunagar, Perambalur and Thoothukudi (40 Trials – five trials in each district)
KVKs	Thiruppur, Dharmapuri, Salem, Virudhunagar (20 trials - Five trials in each KVK)

*If sufficient seeds are available, simultaneous OFT may be conducted along with ART

On Farm Trials

1. Blackgram (Rabi)

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over		Special features
				VBN 6	VBN 8	
COBG 13-04	T 9 x ADT 5	60-65	908	17.2	16.7	• High seed yield • MYMV disease resistant
Checks	VBN 8, VBN 10, VBN 11					

OFT: 10 locations

2. Greengram (*Kharif* and Rabi)

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over		Special features
				CO 8	VBN 3	
COGG 13-19	CO 6 x COGG 912	60-65	785	7.2	8.3	Resistant to MYMV disease
Checks	CO 8, VBN 4					

OFT: 10 locations

3. Greengram (Rabi season)

Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	Per cent increase over		Special features
				VBN (Gg) 3	CO 8	
VGG 15-013	VBN(Gg) 2 x ML 1451	70-75	977	16.2	31.7	High seed yield Moderately resistant to MYMV
Checks	VBN 4					

OFT: 10 locations

Multi location trial – 2020-21

1. Redgram (Short duration)

Design : Non replicated	No. of replications	:	1
Plot size : 6 rows - 4 × 5.4 m^2	Seed Quantity	:	100 g/entry/location
Spacing : 90 x 30 cm	Season	:	Kharif and Rabi

No.	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	CRG 16-01 (R)	CO(Rg) 7 x AL 1738	120	1028	High yielder
Checks		VBN(Rg)3, CO(Rg)7, APK 1			
Locations (06)		Vamban, Coimbatore, Paiyur, Virinjipuram, Athiyanthal, Madurai			

Note: Artificial screening for the following 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

2. MLT : Redgram (Long duration)

Design : RBD	No. of replications	:	Four
Plot size : 6 rows- 4 × 7.2 m^2	Seed Quantity	:	150 g/entry/location
Spacing : 120 x30 cm	Season	:	Kharif

Features of the redgram MLT cultures

No.	Culture	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	CRG 16-011 (R)	CO(Rg) 7 x ICPL 7835	175-180	1646	Resistant to SMD
2.	CRG 16-002 (R)	CO 6 x ICPL 87119	175-180	1697	Resistant to SMD
3	CRG 17-008 (N)	CO 6 x ICP 11003	170-180	1632	Resistant to SMD, Moderate resistant to Maruca

Checks	CO 8, CO 9
Locations	Vamban, Coimbatore, Paiyur, Melalathur, Yethapur, Virinjipuram

Note: Artificial screening for the following 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

3. MLT : Blackgram

Design : RBD	No. of replications : Three
Plot size :6 rows- 4 × 1.8 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: *kharif and rabi*

Features of the proposed culture

No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	VBG 18-043 (N)	VBN(Bg) 4x Mash 114	65-70	1581	Glabrous pod, High yield and MYMV resistance
2.	VBG 18-052 (N)	VBN(Bg) 4x Mash 114	65-70	1734	Bold seed, High yield and MYMV resistance
3.	KKB 15-052 (N)	PU-06-20 x KKB-12-107	70	1064	Resistant to MYMV
4.	COBG 18-18 (N)	VBN(Bg) 4 x ADT 3	60-65	1339	High yield, Bold seeded, short duration, resistant to MYMV

Checks	VBN 8, VBN 11, VBN 10 (Rabi)
Kharif (Jun-Jul)	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam
Rabi (Sep-Oct)	Coimbatore, Vamban, Aruppukkotai, Kovilpatti, Madurai, Echankottai, Pattukkottai and Tindivanam

Note: Artificial screening for the following 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 borer and white fly	MYMV, ULCV, Powdery mildew, root rot
Dept of Pulses, Coimbatore	Pod borer and white fly	MYMV, ULCV, Powdery mildew, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

4. MLT : Blackgram (Rice fallows)

Design : RBD	No. of replications : Three
Plot size :6 rows- 4 × 1.8 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: *Rice fallows*

Features of the proposed culture

No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	KKB 14-015 ®	IPU 2006-01 x TNY local	65	1088	High yield, recommended for rice fallow, irrigated and resistant to YMV
2.	VBG 17-029®	VBN (Bg) 5 x TU 17-14	65-70	1416	High yield and MYMV resistant
3.	COBG 16-03®	VBN 3 x PU 31	60-65	991	High yield, resistant to YMV, bold seeds
4.	VBG 17-026®	KUG 365 x MDU 1	65-70	1289	High yield, resistant to YMV, bold seeds
5.	KKB 14-022®	IPU 2006-01 x TNY local	70	1121	High yield, recommended for rice fallow, irrigated and resistant to YMV
6.	VBG 18-043 (N)	VBN(Bg) 4x Mash 114	65-70	1581	Glabrous pod, High yield and MYMV resistance
7.	VBG 18-052 (N)	VBN(Bg) 4x Mash 114	65-70	1734	Bold seed, High yield and MYMV resistance
8.	KKB 15-052 (N)	PU-06-20 x KKB-12-107	70	1064	Resistant to MYMV
9.	COBG 18-18 (N)	VBN(Bg) 4 x ADT 3	60-65	1339	High yield, Bold seeded, short duration, resistant to MYMV

Checks	ADT 6 (RF), VBN 9 (RF)
Rice fallow	Aduthurai, SWMRI, Killikulam, Pattukkottai, Amabasamudram

Note: Artificial screening for the following 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 borer and white fly	MYMV, ULCV, Powdery mildew, root rot
Dept of Pulses, Coimbatore	Pod borer and white fly	MYMV, ULCV, Powdery mildew, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

5. MLT : Blackgram (Theme 3-Summer Irrigated)

Design : RBD	No. of replications : Three
Plot size : 6 rows- 4 × 1.8 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: Summer irrigated

No	Entry	Pedigree	Duration (days)	Seed yield (kg/ha)	Special features
1.	VBG 18081(R)	Mutant of ADT 5	70-75	1470	MYMV disease resistant
2.	VBG 18099(R)	Mutant of ADT 5	70-75	1910	MYMV disease resistant
3.	VBG 18108(R)	Mutant of ADT 5	70-75	1344	MYMV disease resistant
4.	VBG 18111(R)	Mutant of ADT 5	70-75	1548	MYMV disease resistant
5.	VBG 18116(R)	Mutant of ADT 5	70-75	1571	MYMV disease resistant
6.	VBG 18124(R)	Mutant of ADT 5	70-75	1868	MYMV disease resistant
7.	VBG 17026(R)	KUG 365 x MDU 1	65-70	1290	MYMV disease resistant
8.	VBG 17029(R)	VBN (Bg) 5 x TU 17-14	65-70	1416	MYMV disease resistant

Checks	VBN 6, VBN 8, VBN 11, ADT 5
Rice fallow	Aduthurai, SWMRI, Pattukkottai

Note: Artificial screening for the following 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 borer and white fly	MYMV, ULCV, Powdery mildew, root rot
Dept of Pulses, Coimbatore	Pod borer and white fly	MYMV, ULCV, Powdery mildew, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

6. MLT : Greengram

Design : RBD	No. of replications : Three
Plot size : 6 rows-4 ×1.8 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: kharif and rabi

Features of the proposed cultures

No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	VGG 17-019 ®	VBN (Gg) 2 x ML 818	60-65	1302	High yield, synchronous maturity and MYMV resistance
2.	COGG 18-17 (N)	SML 668 x Pusa Vishal	60-65	1179	Short duration, high yield, bold seed, resistant to MYMV
3.	VGG 17-004 (N)	VBN 2 X LGG 460	65-70	1595	High yield
4.	VGG 17-036 (N)	VBN(Gg) 3x PusaEm 14-01	55-60	1460	Extra early, high yield
5.	TMGG 11042(N)	CO 6 x TM 96-2	60-62	1078	Early with synchronized maturity, MYMV disease resistant, bold seed (5.2 g/100 seeds)

Checks	VBN 4, CO 8
(Kharif) Jun-Jul	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam
Rabi (Sep-Oct)	Coimbatore, Vamban, Aruppukkotai, Kovilpatti, Madurai, Chettinad and Tindivanam

Note: Artificial screening for the following 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 borer and white fly	MYMV, ULCV, Powdery mildew, root rot
Dept of Pulses, Coimbatore	Pod borer and white fly	MYMV, ULCV, Powdery mildew, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

7. MLT : Greengram (Rice fallows)

Design : RBD	No. of replications : Three
Plot size : 6 rows- 4 × 1.8 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: Rice fallows

Features of the proposed cultures

Sl. No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	VGG 17-019 (R)	VBN (Gg) 2 x ML 818	60-65	1302	High yield, Synchronous maturity

					and MYMV resistance
2.	VGG16-047 (R)	VBN (Gg)2 x SM 47	60-65	1308	High yield, bold seed, synchronous maturity and MYMV resistant
3.	VGG 16-029 (R)	VBN (Gg)2 x ML 2037	60-65	1278	High yield, synchronous maturity and MYMV resistant
4.	VGG 17-048 (R)	VBN (Gg) 2 x Pusa EM 14-02	60-65	1563	High yield (kg/ha), synchronous maturity and MYMV resistant
5.	COGG 18-17 (N)	SML 668 x Pusa Vishal	60-65	1179	Short duration, high yield, bold seed, resistant to MYMV
6.	VGG 17-004 (N)	(VBN 2 X LGG 460)	65-70	1595	High yield
7.	VGG 17-036 (N)	(VBN(Gg) 3x PusaEm 14-01)	55-60	1460	Extra early, high yield
8.	TMGG 11042(N)	CO 6 x TM 96-2	60-62	1078	Early with synchronized maturity MYMV disease resistant bold seed (5.2 g/100 seeds)
9.	ADGG 13009 (N) (Rice Fallow)	Mutant of CO 7-550 Gy	65-70	688	High yield, powdery mildew resistant

Check	ADT 3(RF)
Rice fallows	Aduthurai, SWMRI, Killikulam, Pattukkottai

Note: Artificial screening for the following 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 borer and white fly	MYMV, ULCV, Powdery mildew, root rot
Dept of Pulses, Coimbatore	Pod borer and white fly	MYMV, ULCV, Powdery mildew, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

8. MLT : Cowpea

Design : RBD	No. of replications : Four
Plot size : 6 rows-4 × 2.7 m^2	Seed Quantity : 250 g/entry/location
Spacing : 45 × 15 cm	Season: kharif, rabi

Features of the proposed culture

No	Cultures	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	VCP 15-006 (R)	VBN 1 x VCP11-006	70-75	2002	High yield, resistance to

					rust
2.	VCP 17-005 (N)	VBN 1 X CP 37	65-70	1619	High yield, resistance to rust
3.	VCP 17-019 (N)	VBN 3 x CP 25	65-70	1552	High yield, resistance to rust

Checks	VBN 3 and CO(CP)7	
Locations	Kharif (Jul-Aug)	Vamban, Coimbatore, Paiyur, Madurai, Killikulam and Virinjipuram
	Rabi (Sep-Oct)	Coimbatore, Vamban, Aruppukottai, Kovilpatti, Madurai, Perambalur and Trichy

Note: Artificial screening for the following 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 borer	BCMV, root rot and rust
Dept of Pulses, Coimbatore	Aphids, pod borer	BCMV, root rot and rust

9. MLT : Chickpea

Design : RBD	No. of replications : Four
Plot size : 6 rows-4 × 1.8 m^2	Seed Quantity : 250g /entry/location
Spacing : 30 × 10 cm	Season: Rabi

Features of the proposed culture

S. No	Cultures	Parentage	Seed yield (kg/ha)	Special features
1.	ICGV 181674 ®	(Genesis 836 x GG 2) X (ICC 4958 TM x JG 11)	1346	High seed yield
2.	COC 18-01 (N)	ICGV 05103 x NBeG 28	1137	Bold seeded, High yield
3.	COC 18-02 (N)	ICGV 05103 x JG 11	1099	Bold seeded, High yield
Checks	JG 11, CO 4			
Locations	Coimbatore, Paiyur, Veppanthattai, Kovilpatti and KVK Papparapatti			

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

Name of the centre	Pests	Diseases
Dept of Pulses, Coimbatore	Aphids, pod borer	Root rot

10. MLT : Rice bean

Design : RBD	No. of replications : Three
Plot size : 4 x 2.7 m2	Seed Quantity : 100g /entry/location
Spacing : 45 x 15 cm	Season: Rabi

Features of the proposed culture

No	Cultures	Parentage	Duration	Seed yield (kg/ha)
1.	CORB 1	RRB 18	78	575
2.	CORB 2	LRB 324	77	781
3.	CORB 3	LRB 556	79	709
4.	CORB 4	LRB 559	79	649
5.	CORB 5	LRB 576	79	614
6.	CORB 6	LRB 583	78	747
Checks	RBL 35			
Locations	Coimbatore, Paiyur, Vrinjipuram, Aruppukottai, Kovilpatti, Vazhavachanur, Vamban			

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

Name of the centre	Pests	Diseases
Department of Pulses	Sucking pests, stem fly, *Maruca*, bruchid	YMD, Leaf crinckle, Powdery mildew
NPRC, Vamban	Sucking pests, stem fly, *Maruca*, bruchid	YMD, Leaf crinckle, Powdery mildew

Important Dates in conduction of MLT and ART			
Activities	Season	Receipts	Date of Dispatch
Seed material of the proposed ART entries at Vamban	Kharif	31.05.2020	15.06.2020
	Rabi	15.08.2020	05.09.2020
Seed material of the proposed MLT entries at Vamban	Kharif	31.05.2020	05.06.2020
	Rabi	15.08.2020	05.09.2020
	Rice fallow	30.11.2020	05.12.2020
	Summer Irrigated	30.12.2020	05.02.2021
Sowing report at Vamban	Kharif	30.07.2020	-
	Rabi	30.10.2020	
	Rice fallow	31.01.2021	
	Summer Irrigated	31.03.2021	
Visit of MLT/monitoring teams	Kharif	Sep. 2020	-
	Rabi	Dec. 2020	
	Rice fallow	Feb. 2021	
	Summer Irrigated	May. 2021	

	Rabi	Dec. 2020	
Date for receiving the trials results at Vamban for compilation	Kharif	15.12.2020	-
	Rabi	28.02.2021	
	Rice fallow	15.04.2021	
	Summer Irrigated	30.06.2021	

Monitoring team to visit MLT 2020-21		
Scientists	**Crop**	**Season**
Dr. C. Vanniarajan, Madurai Dr. P.Jayamani, Coimbatore Dr. N.Manivannan, Vamban Dr. L. Karthiba Assistant Professor (Plant Pathology) Dr. T.S. Shanmugam, Asst. Professor (Agrl. Entomology)	Redgram-Short duration	Kharif and Rabi
Dr. P.Jayamani, Coimbatore Dr. P. Thangahemavathy, Coimbatore Dr. A. Gobikrishnan , Virinjipuram Dr. L. Karthiba Assistant Professor (Plant Pathology) Dr. T.S. Shanmugam, Asst. Professor (Agrl. Entomology)	Redgram – long duration	Kharif
Dr. N.Manivannan, Vamban Dr. P.Jayamani, Coimbatore Dr. A. Muthuswamy, Coimbatore Dr. P. Ahila Devi Assistant Professor (Plant Pathology) Entomologist from Vamban	Blackgram Greengram	Kharif 2020 Rabi 2020-21
Dr. N.Manivannan, Vamban Dr. P.Jayamani, Coimbatore Dr. A. Muthuswamy, Coimbatore Dr.D.Manimaran, Aduthurai Dr. P. Ahila Devi Assistant Professor (Plant Pathology) Entomologist from Vamban	Blackgram Greengram	Rice fallow 2020-21
Dr. N.Manivannan, Vamban Dr.P.Anantharaju, Coimbatore Dr.K.Thangaraj, Madurai Dr. K. Bharathi Kumar, Vamban Dr. P. Ahila Devi Assistant Professor (Plant Pathology) Entomologist from Vamban	Cowpea	Kharif 2020 Rabi 2020-21
Dr. P. Anantharaju Dr. P.Jayamani, Coimbatore Dr. T.K.S. Latha Assistant Professor (Plant Pathology) Dr. T.S. Shanmugam, Asst. Professor (Agrl. Entomology)	Chickpea	Rabi 2020-21

1.2. ACTION PLAN PROJECTS

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

Theme No 1	**Fast track release of short duration (120 – 130 days) redgram variety**				
Theme Leader	**Dr. P. Jayamani, Professor and Head, Dept. of Pulses, Coimbatore**				
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Deliverables/expected out come**
Dr. K. Bharathikumar, Vamban Dr.A.Thangahemavathi, Coimbatore Dr. A. Gopikrishnan, Virinijipuram Dr. D. Malarvizhi, Bhavanisagar Dr. K. Geetha, Paiyur Dr. Venkatachalam, Yethapur	MLT (May-Sep)	Confirmation of the performance of CRG 16-01 (Jun- Sep)	Seed multiplication (Jan-May)	Seed multiplication (Jan-May)	Release of short duration (120-130 days) redgram variety
	MLT (Sep-Jan)	Confirmation of the performance of CRG 16-01 (Sep – Jan)	ART/OFT (Sep-Jan)	Submission of variety release proposal (Oct – Nov.)	

<table>
<tr><td>Theme No 2</td><td colspan="4">Fast track release of bold seeded greengram varieties suitable for sprout</td></tr>
<tr><td>Theme Leader</td><td colspan="4">Dr. N. Manivannan, Professor and Head, NPRC, Vamban</td></tr>
<tr><td>Name of the scientists and centre</td><td>2019-20</td><td>2020-21</td><td>2021-22</td><td>Deliverables/expected out come</td></tr>
<tr><td rowspan="3">Dr. K.Bharathikumar, Vamban
Dr. A. Muthuswamy, Coimbatore
Dr. R. Chandirakala, Madurai
Dr. D. Malarvizhi, Bhavanisagar
Dr. D. Shoba, Killikulam
Dr. G. Hemalatha, Prof. (FSN), CSC&RI, Madurai
Dr. K. Geetha, AP (FSN), ADAC&RI, Trichy</td><td>Collection of seeds from nominating centres (May 3rd week)
Despatch of seeds (May 4th week)</td><td>Evaluation of VGG 18-002 under ART/OFT (June-Sep)

Sprout Quality analysis</td><td>Seed multiplication</td><td rowspan="3">Release of bold seeded greengram varieties suitable for sprout</td></tr>
<tr><td>MLT (June-Sep)</td><td>Evaluation of VGG 18-002 under ART/OFT (Sep-Oct)
Sprout Quality analysis</td><td>Submission of variety release proposal</td></tr>
<tr><td>MLT (Sep-Oct)</td><td>Seed multiplication</td></tr>
</table>

Theme No 3	**Fast track release of blackgram variety suitable for summer irrigated area of delta districts to replace ADT 5**			
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathikumar, Vamban Dr. A. Bharathi, Pattukkottai, Dr. L.Subha, Thanjavur Dr. R. Manimaran, Aduthurai	MLT (April-June)	Repeat of MLT (April-June)	ART / OFT (April-June) Seed multiplication and Quality analysis	Release of blackgram variety suitable for summer irrigated area of delta districts to replace ADT 5
	Seed multiplication	Seed multiplication	Submission of variety release proposal	

Theme No 4	**Fast track release of new chickpea variety**			
Theme Leader	**Dr. P. Anantharaj, Assistant Professor (PBG), Dept. of Pulses, Coimbatore**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. P.Anatharaj, Coimbatore Dr. K. Sakthivel, Veppanthattai Dr. S. Hari ramakrishnan, Kovilpatti Dr. P.S. Shanmugam, Programme Coordinator, KVK, Dharmapuri	MLT (Oct-Feb) Seed multiplication	Seed multiplication of ICGV 181674 at Wellington during off season	Seed multiplication and Quality analysis	Release of chickpea variety to replace CO 4.
		Evaluation of ICGV 181674 in ART/OFT (Oct-Feb)	Submission of variety release proposal	

Theme No 5	**Pyramiding of resistant genes for viral diseases (MYMV, ULCV) and powdery mildew diseases and bruchid resistance in blackgram**			
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathikumar, Vamban Dr. A. Muthuswamy, Coimbatore Dr. R. Manimaran, Aduthurai Dr. P. Ahila devi, Vamban Dr. P.Preethep kumar, Vamban Dr. Thilagavathy, Aduthurai Dr. L. Karthiba, Coimbatore Dr M. Sudha, CPMB&B, Coimbatore	Crossing block to develop F_1 of a) MDU 1 x Mash 1008 b) VBN(Bg) 4 x LBG 17 c) MDU 1 x TU 68A d) DT 3 x TU 68 e) VBN(Bg) 4 x LBG 17 f) VBN(Bg) 4 x CO 5	Evaluation of F_1 of double cross (Summer) <u>Set 1</u>: (MDU 1 x Mash 1008) x (VBN(Bg) 4 x LBG 17) <u>Set 2</u>: (MDU 1 x TU 68) x (VBN(Bg) 4 x LBG 17) <u>Set 3</u>: (ADT 3 x TU 68) x (VBN(Bg) 4 x LBG 17) <u>Set 4</u>: (VBN(Bg) 4 x CO 5) x ((MDU 1 x TU 68) <u>Set 5</u>: (MDU 1 x Mash 1008) x (ADT 3 x TU 68)	Evaluation of F_4 of DC for MYMV at Vamban	Promising genotypes with multiple resistance to MYMV, UCLV and powdery mildew diseases and bruchid resistance
	Evaluation of F_1s in crossing block (Rabi)	Evaluation of F_2 of DC (Kharif)	Evaluation of promising lines F_5 for UCLV (Vamban), Powdery mildew (Coimbatore) and Powdery mildew (Aduthurai) Confirmation of MYMV at CPMB and for bruchid resistance at NPRC, Vamban	

		Evaluation of F_3 of DC (Rabi)	Evaluation for seed yield Seed multiplication of promising entries for MLT	

Theme No 6	**Identification of genotypes for salinity tolerance in greengram and blackgram**				
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**				
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Deliverables/expected out come**
Dr.K.Bharathikumar, AP(PBG), Vamban Dr.V. Babu Rajendra Prasad, AP(CRP), Coimbatore Dr. P. Kannan, AP(SS&AC), Madurai	Screening of germplasm / genetic stock for salinity at Laboratory (100 Nos. each)	Evaluation of promising genotypes at target location	Evaluation of promising genotypes at target location	Evaluation of promising cultures under OFT / ART at target locations	Release of blackgram/ greengram varieties with salinity tolerance
	Confirmation of salinity tolerance of selected entries	Seed multiplication of selected entries	Seed multiplication of selected entries	Seed multiplication Submission of variety release proposal	

Theme No 7	**Development of pre breeding population in blackgram and greengram**			
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathi kumar, Vamban Dr. A. Muthusamy, Coimbatore	Crossing block for the following crosses: Greengram cv VBN(Gg) 2 x *Vigna umbellata)*	Evaluation of segregating populations	Evaluation of segregating populations	Development of promising genotypes in greengram and blackgram for breeding programme
	Evaluation of F_1s. Evaluation of interspecific derivatives: Blackgram cv VBN 8 x *Vigna mungo* var. *silvestris* (F4) Greengram cv VBN(Gg) 3 x *Vigna sublobata* (F4) Greengram cv VBN 4 x (Interspecific derivative of Greengram x *Vigna umbellata)* (F3) Greengram cv VBN(Gg) 2 x Blackgram cv Mash 114 (F7)	Evaluation of segregating populations Evaluation of stabilised lines for MYMV	Evaluation of progenies for yield traits, pest and disease resistance	
		Evaluation of segregating populations Evaluation of stabilised lines for Powdery mildew	Seed multiplication of promising progenies	

Theme No 8	**Whole genome sequencing of blackgram (CO 5)**		
Theme Leader	Dr. M. Jayakanathan, Assistant Professor (Bioinformatics), CPMB, Coimbatore		
Name of the scientist and centre	**2019-20**	**2020-21**	**Deliverables/expected out come**
Dr. M. Jayakanathan, Coimbatore	Whole genome sequencing of blackgram (CO 5) using next generation sequencing technologies, and characterization of genes and repeat content	Development of genome based web resources on genes and markers in blackgram	Development of promising genotypes in greengram and blackgram for breeding programme

New Action plan:				
Theme 9	**Evaluation and Introduction of ricebean in Tamil Nadu**			
Theme leader	**Dr. P. Jayamani, Professor (PBG) and Head, Department of Pulses**			
Name of the scientist and centre	**2020-21**	**2021-22**	**2022-23**	**Expected outcome**
Coimbatore Paiyur Vrinijipurm Aruppukkottai Kovilpatti Vazavachanur Vamban	MLT (June to Aug)	Seed Multiplication (Jun – Aug)	Seed multiplication (June – Sep)	Release of High yielding ricebean variety
	MLT (Sep – December)	ART/OFT (Sep- Dec) Agronomy –Spacing trial	Seed multiplication Submission of variety release proposal (Oct – Nov)	
	Seed Multiplication (Jan – May)	Grain quality analysis (Jan – May)		

1.3. Research Projects and remarks

Research Projects

Crop	Centre	URP	AICRP	EFP	CP	Total	No.of Scientists
Redgram	NPRC, Vamban	-	-	-	1	1	1
	Pulses, Coimbatore	2	1	-	1	4	2
	ARS,Virinjipuram	1	1	-	1	3	2
	AC&RI, Eachangottai	1	-	-	-	1	1
	CPMB, Coimbatore	-	-	1	-	1	1
Blackgram	NPRC, Vamban	1	1	-	1	3	1
	Pulses, Coimbatore	1	1*	1	-	3	1
	TRRI, Aduthurai	1	1	-	-	2	1
	AC&RI, Madurai	1	-	-	-	1	1
	AC&RI, Killikulam	1	-	-	-	1	1
	ARS, Pattukkottai	1	-	-	-	1	1
	CPMB, Coimbatore	-	-	-	1	1	1
Greengram	NPRC, Vamban	-	-		2	2	1
	Pulses, Coimbatore	1	-	-	-	1	1
	TRRI, Aduthurai	1	-	-	-	1	1
	CPMB, Coimbatore	-	-	1	-	1	1
	ARS,Bhavanisagar	-	-	1	-	1	1
Cowpea	NPRC, Vamban	1	1*	-	-	2	1
	Pulses, Coimbatore	1	1*	-	-	2	-
	AC&RI, Madurai	1	-	1	-	2	1
Chickpea	Pulses, Coimbatore	1	1	-	-	2	1
Mochai	RRS, Paiyur	1	-	-	-	1	1
Horsegram	Pulses, Coimbatore	-	-	1	-	1	-
	RRS, Paiyur	-	1*	-	1	2	1
Breeder Seed Production	NPRC,Vamban	-	-	-	-	1	1
	ARS, Bhavanisagar	-	-	-	-	1	1
	ARS, Pattukottai	-	-	-	-	1	-
	Total	**17**	**9**	**6**	**8**	**43**	**-**

URP: University Research Project, AICRP: ICAR funded AICRP projects,*AICRP -Voluntary centre, EFP: Externally funded projects, CP-Core Research Projects

Remarks on the ongoing URPs / AICRPs / Externally funded projects				
1. University Research Sub projects (URPs)				
S.No	**Project No. and Title**	**Project leaders**	**Duration**	**Remarks**
Redgram				
1.	CPBG/CBE/PBG/RGR/2018/001 Evolution of high yielding short duration photo-insensitive Redgram varieties	**Dr. P.Jayamani** Professor (PBG) and Head	May 2018-April 2023	The Project may be continued.
2.	CPBG/CBE/PBG/RGR/2018/002 Evolution of high yielding grain and dual purpose long duration varieties in redgram	**Dr.A.Thanga Hemavathy** Assistant Professor (PBG)	May 2018-April 2023	The project may be continued.
3.	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 (PBG)	June 2016 to May 2019	More progress should be realized in subsequent years. Selfing of the selected progenies and the advanced cultures should be scrupulously followed. The project may be continued.
4.	CPBG/EKT/PBG/RGR/2017/001 Evaluation of short duration Redgram (*Cajanuscajan* L.) genotypes suitable for Summer irrigated condition in New Cauvery Delta Zone	**Dr. S. Arulselvi** Assistant Professor (PBG)	July, 2017 to June, 2020	The identified segregants should be carefully selfed for further evaluation. The experiment should be conducted for two seasons per year. The project may be continued. Besides duration, yield attributes should also be recorded. The Project may be continued.

Blackgram				
5.	**CPBG/VMB/PBG/BGR/ 2016/001** Evolution of high yielding MYMV resistant blackgram (*Vigna mungo* (L.) Wilczek) genotypes and maintenance of germplasm.	**Dr.N.Manivannan,** Professor (PB&G) & Head	Jul 2016 to Jun 2021	The project may be continued.
6	**CPBG/CBE/PBG/BGR/2 016/001** Evolution of blackgram varieties with yellow mosaic disease resistance.	**Dr. A. Muthuswamy** Assistant Professor (PB&G)	October 2016 to November 2021	The project may be continued with limited crosses with chosen parents.
7.	**CPBG/ADT/PBG/BGR/2 013/001** Development of blackgram cultures suitable for rice fallow condition of Cauvery Delta Zone	**Dr.R.Manimaran,** Assoc. Professor (PBG)	April 2013 to March 2018	The project may be continued.
8.	**CPBG/MDU/PBG/BGR/ 2015/002** Development of high yielding YMV disease resistant variety in black gram. (*Vigna mungo* (L). Hepper)	**Dr. G. Anand** Assistant Professor (PBG)	Oct 2015 to Sep 2020	As it has been decided to close this project, seed multiplication of the identified elite genotypes should be taken care off. The unique trait cultures may be registered under NBPGR. The project may be continued.
9.	**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	The seed multiplication of elite genotypes generated through this project should be multiplied to be available for the MLT/ART needs. Unique entries may be registered under NBPGR.

10.	**CPBG/PKT/PBG/PGR/2018/001:** Development of high yielding black gram variety with resistance to MYMD suitable for summer irrigated condition of Cauvery Delta region.	**Dr. A. Bharathi,** Asst. Professor (PBG)	June 2018 to May 2023	The check should be ADT5 and not CO5. The latter is only for YMV resistance screening. The project may be continued.
Greengram				
11	**CPBG/CBE/PBG/GGR/2016/001** Evolution of greengram varieties with synchronized maturity and resistant to yellow mosaic disease	**Dr. A. Muthuswamy** Assistant Professor (PBG)	October 2016 – November 2021	The project may be continued.
12	**CPBG/ADT/PBG/GGR/2017/001** Evolution of high yielding MYMV resistant Greengram varieties suitable for rice fallow/summer irrigated conditions in CDZ	**Dr.R.Manimaran,** Assoc. Professor (PBG)	October 2017-September 2022	A fast track approach of release of a green gram variety substituting ADT3 for rice fallow conditions is required. Top priority to be given for finding an alternate variety for ADT3 greengram. The project may be continued.
Cowpea				
13	**CPBG/VMB/PBG/COP/2015/003** Evolution of high yielding genotypes and germplasm maintenance in cowpea	**Dr.K.Bharathi Kumar** Assistant Professor (PBG)	September 2015 to August 2020	Efforts may be made to screen the available genotypes for resistance for aphids as well as for low anti nutritional factors. Highly determinate types may be isolated and

				breeding efforts may be put out for the same. The project may be continued.
14	**CPBG/CBE/PBG/COP/ 001** Development of high yielding cowpea (*Vigna unguiculata*(L.) Walp.) Varieties superior than CO (CP) 7	**P.Anantharaju** Assistant Professor (PBG)	May 2016 to April 2021	The project may be continued.
15.	**CPBG/MDU/PBG/COP /2019 / NEW** Development of short duration, determinate cowpea (*Vigna unguiculata* L.) variety suitable for southern districts of Tamil Nadu	**Dr. K. Thangaraj** Assistant Professor (PBG)	Sept. 2019-Aug. 2022	The crop should be raised for two seasons for rapid development of new genotypes. The parent CP152 amy also be used. The project may be continued.
Chickpea				
16.	**CPBG/CBE/PBG/CHP/ 001** Evolution of high yielding chickpea (*Cicer arietinum* L.) varieties for biotic and abiotic stresses for Tamil Nadu zone.	**Dr.P.Anantharaju** Asst.Prof.(PB&G)	Sept 2015 to August 2020	Efforts should be taken to raise the off season crop in Wellington regularly during Kharif seasons. The project may be continued.

Mochai				
17	**CPBG/PAI/PBG/MOC /2017/001** Development of short duration high yielding photoinsensitive dual types of mochai (*Lablab purpureus var lignosus*L	**Dr.P.Sudamathi,** Assoc. Professor (PB&G),	Aug 2017-July 2022	Shuttle breeding should be employed for early generation of genetic material. The project may be continued.
2.AICRPs				
Redgram				
18	**AICRP/PBG/CBE/PIP/ 010** AICRP on Pigeonpea-Evaluation of redgram genotypes under All India	**Dr. P.Jayamani** Professor(PBG) and Head	Continuous	The project may be continued.

	Co-ordinated Crop Improvement Project			
19	**AICRP/PBG/VRM/PIP /011** All India Co-ordinated Research Project on Pigeonpea	**Dr. A.Gopikrishnan,** Assistant professor (PBG)	April 2018 to March 2020	The project may be continued.
Blackgram and Greengram				
20	**AICRP/PBG/VBN/MUL /013** All India Coordinated Research Project on MULLaRP	**Dr. N.Manivannan** Professor (PBG) and Head	Jan 2015 to March 2020	The project may be continued.
21	**AICRP/PBG/ADT/MUL /015** All India Coordinated Research Project on MULLaRP	**Dr.R.Manimaran,** Assoc. Professor (PBG) Dr.K. Iyanar, Assoc. Prof. (PBG)	April 2018 - March 2020	The project may be continued.
Chickpea				
22	**AICRP / PBG / CHB / 012** AICRP on Chickpea - Breeding	**Dr.P. Anantharaju,** Asst.Prof.(PB&G)	Sept 2015 to Aug 2020	The project may be continued.
AICRP MULLaRP Voluntary Centre				
23	**AICRP-VC/ PBG/ CBE/PUL/001** Evaluation of mungbean and urdbean coordinated trials on breeding	**Dr. A. Muthuswamy** Assistant Professor (PBG)	2019-20	The project may be continued.
AINRP Arid Legumes (Voluntary centres)				
24	**AINRP-VC/ PBG/ VBN/PUL/001** Voluntary centre under AINRP on Arid Legumes 2019-20	**Dr. N.Manivannan** Professor (PBG) and Head **Dr.K. Bharathi Kumar** Asst.Prof.(PB&G)	2019-20	The project may be continued.
25	**AINRP-VC/PBG/CBE/PUL/001** Voluntary centre under	**Dr.P. Anantharaju,** Asst.Prof.(PB&G)	2019-20	The project may be continued.

	AINRP on Arid Legumes 2019-20			
26	**AINRP on horsegram** Voluntary centre under AINRP on Arid Legumes 2019-20	**Dr. K.Geetha,** Professor (PB&G)	2019-20	The project may be continued.
3.Externally Funded Schemes				
27	**DBT/CPBG/BSR/PBG/ 2017/R004** "Introgression of Bruchid Resistant Gene(s) from *Vigna* genotypes into popular Mung bean (*Vigna radiata* L.) variety through Marker Assisted Backcross Breeding".	**Dr.D.Malar*vizh*i,** Assistant Professor (PBG), ARS, Bhavanisagar **Dr.A.Thanga - Hemavathy,** Assistant Professor (PBG), Dept. of Pulses, CPBG, TNAU. **Dr.D.Kavithamani,** Assistant Professor (PBG), Dept. of Millets, CPBG, TNAU.	Jun,2017 to Jun , 2020	Suggested to identify the phyto constituents responsible for bruchid resistance during DCPBG visit to ARS, Bhavanisagar on 04.09.2019 and the same has been carried out. May be published in a reputed journal. The project may be continued.
28.	**BRNS/PBG/CBE/PUL/ 2018/R003.** Isolation and characterization of mutants for durable resistance to powdery mildew in blackgram	**Dr. D. Kumaresan,** Assoc.Prof& Head **Dr.V. Thiruvengadam**, Asst.Prof (PBG) **Dr. TKS. Latha**, Asst. Prof (Pl.Path)	2018-2021	Satisfactory. The project may be continued.
29.	**GoI/CPBG/CBE/PUL/2 017/R002** Induced mutagenesis in horsegram (*Macrotylomauniflorum* Lam. Verdc.) using gamma rays for isolation of short duration and compact high yield mutants	**PI : Dr. R. Sudhagar** Assistant Professor (PBG), Co-PI : **Dr. C.Vanniarajan** Professor and Head	Apr,2017 – Mar,.2020	Satisfactory. The project may be continued.

30	**DST/CPMB/CBE/DPB/ 2016/R023** Understanding molecular basis of resistance against YMV in mung bean through transcriptome profiling	**Dr. M. Sudha** (PI), Asst. Prof., DPB, CPMB&B, TNAU, Coimbatore,	2016-2019	The project may be continued.
31	**E28ADQ** Understanding the molecular mechanism of defense in pigeon pea (*Cajanuscajan)* due to infestation by *Helicoverpaarmigera, (*DBT-NER-GOI, New Delhi)	**Dr. E.Kokiladevi** Associate Professor	2018-21	*Helicoverpa* resistant donor line LRG 41 may be included in the study along with the proposed ICPL 332. The Project may be continued.
32	**BRNS** Development of a cowpea (*Vigna unguiculata* (L.) Walp) variety with terminal flowering habit suitable for mechanical harvest through gamma irradiation.	**Dr. K. Thangaraj,** (PI), Assistant Professor (PB&G)	April 2018-March 2021	Satisfactory. The project may be continued.
4.Core Project				
33	**CPBG/ VMB/ PBG/ BGR/ 2018 /CP 112** Development of blackgram variety with multi bloom nature, high yield and MYMV disease resistance better than ADT 5 for Cauvery Delta Zone of Tamil Nadu	**Dr. N.Manivannan,** Professor (PBG) and Head, NPRC, Vamban CO-Project Leaders **Dr. R. Manimaran,** Assoc. Professor(PBG), TRRI, Aduthurai **Dr. L.Subha**, Asst. Professor (PBG), SWMRI, Thanjavur **Dr. A.Bharathi.** Asst. Professor (PBG), ARS, Pattukottai	April 2018 to September 2020	The project may be continued and completed on 30.09.2020

34	**CPBG/ VMB/ PBG/ GGR/ 2018/ CP 050** Development of new Greengram variety better than ADT 3 suitable for rice fallow cultivation in delta district in Tamilnadu	**Dr. A. Mahalingam,** Assistant Professor (PBG) CO-Project Leader **Dr. R. Manimaran**, Assoc. Professor (PBG), TRRI, Aduthurai	April 2018 to September 2020	The project may be continued and completed on 30.09.2020
35	**CPBG/ VMB/ PBG/ GGR/ 2018/ CP 177** Identification of high yielding bold seeded greengram genotype through farmers participatory varietal selection	**Dr. A. Mahalingam,** Assistant Professor (PBG)	April 2018 to September 2020	The project may be continued and completed on 30.09.2020
36	**CPBG/PAI/PBG/HRM/ 2018/CP175** Development of high yielding medium duration photoinsensitivehorsegra m genotypes suited to rainfed tracts of North Western Zone through EMS induced mutagenesis	**Dr. K.Geetha,** Professor (PB&G)	April 2018 to September 2020	The project may be continued and completed on 30.09.2020
37	**CPBG/PAI/PBG/RGR/ 2018/CP178** Induced mutation to evolve an extra early redgram genotype (90-100 days) suitable for all seasons of Tamil Nadu	**Dr. S. Lakshmi Narayanan** Asst.Prof.(PBG) NPRC, Vamban	April 2018 to September 2020	Further follow up should be taken by NPRC,Vamban. The project may be continued and completed on 30.09.2020
38	CPBG/CBE/PBG/RGR/2018 /CP 125 Development of high yielding- photo insensitive and early duration (120-130 days) hybrids in redgram	A.Thanga - Hemavathy AP(PBG)	2018-2020	The selfing of partial restorers may be taken up for further evaluation. The project may be continued and completed on 30.09.2020
39	**CPBG/VRM/PBG/RG/2 018/CP113** Development of wilt resistant short duration	**Dr.A.Gopikrishnan,** Assistant professor (PBG) Dr. D. Dinakaran,	April 2018 to September 2020	The project may be continued and completed on 30.09.2020

	redgram variety	Professor, Plant Pathology and Head		
40	**CPMB/CBE/BIF/BGR/ 2018/CP006** Whole genome sequencing of contrasting genotypes of black gram to identify novel genes/alleles and pathways contributing to disease resistance against MYMIV	**Dr. M. Jayakanthan,** Assistant Professor (Bioinformatics)	April 2018 to September 2020	The project is to be completed on 30.09.2020
5.Breeder Seed Production Projects				
41.	**CPBG/PKT/PBG/BGR/2 016/001** Breeder Seed Production in Pulses and Groundnut	**Dr. A. Bharathi,** Asst. Professor (PBG)	From April 2016 to March 2021	The project may be continued.
42.	**CPBG/BSR/PBG/GGR/ 2016/001** Breeder seed production in greengram and black gram varieties and evaluation of pre released cultures under multi locational testing	**Dr. D. Malar*vizh*i** Associate Professor (PB&G)	June' 2016 - May' 2021	The project may be continued.
43.	**CPBG/VMB/PBG/BSP/20 15/ 002** Maintenance breeding and breeder seed production in greengram, blackgram, Redgram, Cowpea and Groundnut varieties	**Dr.K.Bharathi Kumar** Assistant Professor (PBG)	Sep 2015 to Aug 2019	The project may be continued.

II. CROP MANAGEMENT

2.1. Technologies for Adoption/OFT

Adoption

Piloting pulse produce support system through ICT enabled services
(**Centre:** DCM &ACRC, Coimbatore Coordinating Centre), TRRI, Aduthurai and ARS, Kovilpatti

University Research Project on **"**Piloting pulse produce support system through ICT enabled services" carried out in blackgram during 2019 – 20 in three different eco systems *viz*., irrigated (ACRC, Coimbatore), rice fallow (TRRI, Aduthurai) and rainfed (ARS, Kovilpatti) indicated that the registered farmers had received 10 -12 timely advisories during the crop period 3 - 5 days in advance thro' their mobile to plan their farm activities and realized an increased return ranging from Rs.1900 to Rs.2800 through yield increase and cost reduction, while the non registered farmers could react only after the occurrence of extreme weather events. Hence, the "TNAU – AAS web cum Mobile App" may be recommended for adoption and may be popularized among the farming community to manage weather based risks and to maintain sustainability in crop production during aberrant weather.

On Farm Trials

OFT 1. Agro technologies for rice fallow pulses

Treatment details:

Trials may be conducted at farmer's field with following practices (T_1):

Varieties	Blackgram ADT 6/ VBN 9 / & Greengram ADT 3
Time of sowing	2-4 days before mechanical rice harvest or 7-8 days prior to manual harvest in waxy soil moisture condition
Seed rate	30 kg ha^{-1}
Seed treatment	Imidacloprid (1.5 ml kg^{-1}) + *Bacillus subtilis* (10 g kg^{-1}) + *Rhizobium* and Phosphobacteria (30 g kg^{-1})
Herbicide	Tank mix application of Quizalofop-ethyl 50 g ha^{-1} and Imazethapyr 50 g ha^{-1} at 15- 20 DAS Normally, no herbicide will be used for weed control in rice fallow as the weeds do not emerge under such condition.
Foliar spray	TNAU Pulse wonder @ 5 kg ha^{-1} at flower initiation
Stress mitigation	Mobile sprinkler irrigation at critical stages using harvested rain water from farm pond PPFM spray to mitigate the drought
Plant protection measures	Monitoring of pests and diseases throughout the crop period and practicing need based IPM

T_2: Farmers practice

Season: Thaipattam (January – February 2021)

Observations to be recorded:

Plant population /m^2, Plant height, Dry matter production, No. of pods /plant, No. of seeds/pod, 100 seed wt, seed yield and economics.

Centres & Scientist In-charge:

Co-ordinating centre: TRRI, Aduthurai : Dr. C. Uma Maheswari, Assoc. Prof (Agronomy)
AC & RI, Killikulam : Dr. N. Senthilkumar, Asst. Prof. (Agronomy)
SWMRI, Kattuthotam : Dr. S. Porpavai, Prof. & Head

OFT 2. Mechanization in sowing of pulses

Treatments:

T_1 - Sowing with Precision pulse seeder
T_2 - Sowing with Turbo seeder
T_3 - Farmers's practice

Season: *Kharif* 2020 **Variety**: VBN 8

Observation to be recorded

Seed rate, germination per cent, crop establishment, plant height, No. of branches /plant, No. of pods /plant, seed yield, Economics, machine efficiency and labour saving.

Centres & Scientist In-charge

Co-ordinating centre: AEC & RI, Kumulur : Dr. S. Vallalkannan, Asst. Prof. (Agronomy)
NPRC, Vamban : Dr. S. Marimuthu, Asst. Prof. (Agronomy)
DARS, Chettinadu : Dr. T. Myrtle Grace, Professor & Head

OFT 3. Enhancing productivity of blackgram through Sea Weed Extract

Treatments:

T_1 – RDF + Foliar spray of Sea weed extract (2.5ml /lit)
T_2 – RDF + Basal application of Sea weed granule @ 10kg /ha
T_3 – RDF alone

Season: *Kharif* 2020 **Variety:** VBN8

Observations to be recorded

Growth parameters, Root nodules, No.of pods /plant, seed yield, Economics and nutrient uptake by plant.

Centres & Scientist In-charge

Co –ordinating centre: Dept. of Pulses, CBE : Dr. S. Anitta Fanish, Asst. Prof. (Agronomy)
NPRC, Vamban : Dr. S. Marimuthu, Asst. Prof. (Agronomy)
AEC&RI, Kumulur : Dr. S. Vallalkannan, Asst. Prof.(Agronomy)

OFT 4. Redgram based crop intensification under rainfed ecosystem

Treatments

T_1 - Redgram + Cotton (4:4)
T_2 - Redgram (Sole crop)

Season: *Kharif 2020* **Variety:** Redgram (Co8) and Cotton (Co 14)

Observations to be recorded:

- Plant height, No. of branches, No. of pods/plant, No. of seeds /pod, seed yield, Crop equivalent yield and Economics
- Pest and disease incidence

Centre & Scientist In-charge

Dept. of pulses, Coimbatore : Dr. S. Anitta Fanish, Asst. Professor (Agronomy)

OFT 5. Effect of growth regulating substances in improving crop establishment and Harvest Index in greengram under sodicity

Treatments:

T_1: Control (without any seed treatment)

T_2: Seed treatment with cowpea sprouts extract (2 %) + foliar spray of Panchagavya (3%) at flower initiation and pod initiation stages

Season: *Kharif* 2020 **Variety:** Greengram - VBN (Gg) 2

Observations to be recorded:

- Leaf Area Index at different stages (30, 45 & 60 DAS), Plant height, No of branches, No. of clusters/plant, No. of pods/plant, No. of seeds/pod, 100 seed weight, Grain yield, Biological yield, Harvest index,
- Plant leaf - Na / K ratio, Proline content & Catalase enzyme activity
- Study the cowpea sprouts extract characteristics

Centres & Scientist in-charge:

Co –ordinating centre: ADAC&RI, Trichy : Dr. S. Nithila, AP (CRP),
TNAU, Coimbatore : Dr. V. Babu Rajendra Prasad, AP (CRP)

Note:

The chemical composition of cowpea sprouts extract and Panchagavya has to be assessed in consultation with the Professor and Head, Dept. of Sustainable Organic Agriculture, Coimbatore

OFT 6. Influence of nipping on the productivity of rainfed horsegram under altered crop geometry

Treatments

T_1 - Broadcast method of sowing + chlormequat chloride 250 ppm at tendril initiation stage
T_2 **-** Broad cast method of sowing + manual nipping at tendril initiation stage
T_3 - Farmers practice

Season: *Rabi* 2020 **Variety:** Paiyur 2

Observations to be recorded

Plant population, Dry matter production, No. of branches /plant, No. of pods /plant, No. of seed /pod, Test weight (g) and seed yield (kg /ha)

Centres & Scientists in-charge

Co-ordinating centre: : Dept. of Agronomy, Coimbatore
: Dr. S. Sanbagavalli, Assoc. Prof (Agronomy)
RRS, Paiyur : Dr. S Tamilselvan, Professor & Head
KVK, Papparapatti : Dr. P. Ayyadurai, Asst. Prof (Agronomy)

OFT 7. Impact of TNAU Horsegram Wonder on yield improvement in horsegram under rainfed condition

Treatments
T_1 - Foliar spray of DAP (2%) spray
T_2 **-** Foliar spray of TNAU Pulse Wonder @ 2 kg / acre
T_3 - Foliar spray of TNAU Horsegram Wonder @ 2 kg / acre

Season **:** *Rabi* **Variety** **:** Paiyur 2

Observation to be recorded

Plant height (cm), crop growth rate (g m^{-2} day^{-1}), number of tendrils / plant, days to flowering, chlorophyll content / SPAD, soluble protein (mg g^{-1}), yield (kg $plot^{-1}$), estimated yield (kg ha^{-1}), BC ratio.

Centres & Scientists In-Charge

Co-ordinating centre: RRS, Paiyur : Dr. R. Sivakumar, Asst. Professor (Crop Physiology)
KVK, Papparapatti : Dr. P. Ayyadurai, Asst. Prof. (Agronomy)
TCRS, Yethapur : Dr. M. K. Kalarani, Professor (Crop Physiology)

OFT 8. Evaluation of drought tolerant rhizobial strains in Moth bean (*Vigna aconitifolia)*

Treatments

T_1-100%NPK
T_2- *Rhizobium* (MB-1) + 75% N + 100 % PK
T_3- *Rhizobium* (MB-1) + PSB + KRB-9 + 75 % NPK

Observation to be recorded

Plant height, No. of branches, Days to 50 % flowering, No. of rood nodule / plant, No.of pod /plant, No. of seed / pod, seed yield

Soil nutrient status –Initial and post harvest

Centres & Scientist in-charge

Co ordinating centre: ORS, Tindivanam : Dr. R. Brindavathy, Assoc. Prof. (AGM)
AC&RI, Madurai : Dr. K. Kumutha, Professor & Head (AGM)
CEM, Athiyandal : Dr. K. Ananthi, AP (CRP)

OFT 9: Mitigation of water stress by hydrophilic polymer seed coating in blackgram

Treatments

T_1 - No seed treatment + Recommended package of practices
T_2 - No seed treatment + Imposing water stress up to 20 days after life irrigation
T_3 - Seed treatment with Xanthan Gum + Carrageenan + Agar (4:1:1) @ 20 g /kg of seeds + Recommended package of practices
T_4 - Seed treatment with Xanthan Gum+ Carrageenan + Agar (4:1:1) @ 20 g /kg of seeds + Imposing water stress up to 20 days after life irrigation

Observations to be recorded:

Seed germination, Plant population, Plant growth characters and seed yield

Centre& Scientist in-charge

Co-ordinating centre: Department of Seed Science and Technology, Coimbatore
AC&RI, Kudumiyanmalai - Dr. V. Vijayalakshmi, Asst. Prof. (SST)
ARS, Bhavanisagar - Dr. K. Malarkodi, Asst. Prof. (SST)
ARS, Vaigai Dam - Dr. G. Mani, Asst. Prof. (SST)
AC&RI, Madurai - Dr. C. Menaka, Asst. Prof. (SST)

2.2. ACTION PLANS (2020-2023)

Ongoing Action Plans		
AGRONOMY		
Sl. No	**Project No. and Title**	**Remarks**
Action Plans		
1	**DCM/ CBE/AMT/ PUL/ 2019/ 001** **Piloting pulse producer support system through ICT enabled services** **Theme leader:** Dr. V. Geethalakshmi, Director, Crop Management **Irrigated Pulses** Dr. Ga. Dheebakaran, Asst. Prof. (Agron.), ACRC, Coimbatore **Rice Fallow Pulses** Dr. C. Uma Maheswari, Assoc. Prof. (Agron), TRRI, Aduthurai **Rainfed Pulses** Dr. B. Arthirani, Asst. Prof. (Agromet), ARS, Kovilpatti **Market Intelligence** Dr. S. Padmarani, Asst. Prof. (Agrl. Eco.), CARDS, TNAU, Coimbatore **Pest and Disease Surveillance** Dr. L. Rajendran, CPPS, TNAU	Project to be closed. The technology may be recommended for adoption. Completion report to be submitted.
2	**Standardization of drip fertigation schedule for blackgram** (2019-20 to 2021-22) **Theme leader** Dr. S. Panneerselvam, Director, WTC, TNAU, Coimbatore **Implementing Centre & Scientist incharge:** AEC & RI, Kumulur - Dr. S. Vallalkannan, Asst. Prof. (Agron) NPRC, Vamban - Dr. S. Marimuthu, Asst. Prof. (Agronomy) AC & RI, Vazhavachanur - Dr.C.Sivakumar, Assoc. Prof. (Agron). Dept. of Pulses, TNAU - Dr. S. Anitta Fanish, AP (Agron)	The project to be continued.
CROP PHYSIOLOGY		
3.	**Development of foliar formulations for yield enhancement in redgram under normal and water deficit conditions**	

	(2019 to 2022) **Theme leader** Dept. of Crop Physiology, Coimbatore - Dr. P. Jeyakumar, Professor and Head, **Implementing Centre & Scientist incharge:** Dept. of Crop Physiology, Coimbatore - Dr. V. Babu Rajendra Prasad, Asst Prof. (Crop physiology**)** AC &RI, Kudumiyanmalai - Dr. Anderson Amalan Kumar Asst Prof. (Crop physiology**)**	
SEED SCIENCE AND TECHNOLOGY		
4.	**Seed encapsulation for mechanized sowing in greengram** (2019 to 2021) Dr. K. Raja, Assoc. Prof. (SST) Dr.G.Sasthri, Assoc. Prof. (SST) Dr. V. Alex Albert, Asst. Prof. (SST) Dr. P. Mohan Kumar Asst. Prof.(Farm Machinery) Dr. B. Venudevan, Asst. Prof. (SST) Dr. V. Vijayalakshmi, Asst. Prof. (SST)	The project to be continued

AGRICULTURAL MICROBIOLOGY		
5.	Unravelling tri-partriate interaction of Rhizobium sp. VRE1 and non-rhizobial endophytic yeast (NREY), *Candida tropicalis* VYW1 for crop health and sustainable productivity of blackgram (2018 -2021) Dr. U. Sivakumar, Professor Dept. of Agrl. Microbiology, TNAU, Coimbatore	The project is to be continued

NEW ACTION PLANS (2020-2023)

Action plan 1. Evaluation of nursery technique for transplanted redgram (2020-21 to 2022-23)

Objectives

- To standardize the nursery technique for redgram
- To study the yield and economics of transplanted redgram

Treatments

Main Plot: (Nursery technique)

M_1- Eco friendly Poly bag

M_2-Protray (50 cavity) with higher depth

Sub plot: (Age of seedling)

S_1 - 20 DAS

S_2 - 25 DAS
Control: Direct sowing

Season: *Kharif*2020 Variety: Co 8

Observation to be recorded:

Nursery: Seedling length, root length

Main field: Crop establishment, plant height, stem girth, No. of branches /plant, Days to 50% flowering, No. of pods / plant, No. of seeds /pod, harvest index, seed yield and haulm yield.

Economics: Gross return, net return, BCR,

Centres & Scientist in-charge:

Co-ordinating centre: Department of Agronomy, TNAU, Coimbatore

Department of Pulses, Coimbatore - Dr. S. Anitta Fanish, Asst. Prof. (Agronomy)
AC & RI, Madurai - Dr. A. Gurusamy, Professor (Agronomy)
RRS, Paiyur - Dr. N. Tamil Selvan, Prof. & Head

Action Plan 2. Response of different genotypes of greengram for organic farming (2020-21 to 2022-23)

Objectives:

- To evaluate the response of greengram genotypes to organic production system
- To study the yield and economics of greengram genotypes grown organically
- To study the quality parameters of greengram genotypes in response to organic management practices

Varieties: 12 Greengram genotypes (CO 6, CO (Gg) 7, CO 8, VBN 2, VBN 3, VBN 4 and ADT 3 and five pre release cultures.

Season: Rabi

Packages of practices for organic greengram cultivation

- Basal application of well decomposed FYM @ 12.5 t /ha.
- Seeds treatment with *Basillus Subtilis* @10 g/ ha + *Trichoderma viride* @ 4g / kg + Rhizobium @ 30 g/kg + Phosphobacteria @ 30 g /kg + Potash bacteria @ 30 g /kg
- Soil application of Rhizobium @ 2.5 kg + Phosphobacteria 2.5 kg + Potash bacteria @ 2.5 kg / ha mixed with each of 25 kg of FYM and applied before sowing
- Application of Panchagavya @ 3 % trice at 25, 40 and 50 DAS as organic foliar nutrition
- Need based application of Neem Seed Kernal Extract @ 5% / Neem oil @ 3% / *Beauveria bassiana* @ 2% as foliar spray for the management of insect pests.
- Need based application of liquid *Pseudomonas flurescens* @ 2ml /lit to ward off foliar diseases.

Observation to be recorded

Biometric observations: Plant height (30 DAS, 60 DAS and at harvest), No. of branches /plant, No. of leaves /plant, Leaf length and leaf breadth, root volume, nodule number and nodule weight.

Yield characters: Days to first flowering, days to 50% flowering, No. of pods /plant, No. of seeds /pod, pod length, seed yield, stover yield, test weight and harvest index

Soil analysis: pH, EC, CEC, N, P_2O_5, K_2O and organic carbon (Initial and post-harvest), Soil microbial population (Bacteria, fungi and actinomycetes), enzyme activity (dehydrogenase, acid phosphatase, Nitrate reductase and urease)

Nutrient uptake by crop: N, P_2O_5, K_2O uptake at harvest

Economics: Cost of cultivation, gross return, net return and benefit cost ratio.

Quality characters: Protein, carbohydrates, fats, sugar, fibre, amino acids and minerals.

Implementing Centres & Scientist in-charge:

Co ordinating centre: SOA, TNAU, Coimbatore

Dr. E. Somasundaram, Professor and Head (SOA)

Dr. K. Ganesan, Asst. Prof (Agrl. Ento) SOA

Dr. S. Sanbagavalli, Assoc. Prof (Agronomy), Dept. of Agronomy

Action Plan 3. Augmentation of greengram productivity in problem soils through Suitable variety and phosphorus fertilization (2020-21 to 2022-23)

Objectives:

- To identify a suitable greengram variety for higher productivity under problem soils
- To optimize the phosphorus dose for higher productivity of greengram under problem soils

Treatments

Main plot: Variety

V_1 -VBN 2

V_2 - VBN3

V_3-VBN4

Subplot: Phosphorus level

F_1 -100 % RDF of P

F_2 - 125 % RDF of P

F_3 -100 % RDF of P + PSB @ 2 kg/ ha+ VAM @ 50 kg/ha

F_4 - 125 % RDF of P + PSB @ 2 kg/ ha+ VAM @ 50 kg/ha.

Design: Split plot Season: *Kharif*

Observations to be recorded

Growth and yield parameters; Microbial population at initial and post-harvest, Soil available NPK analysis at Initial &post harvest, Plant NPK uptake analysis at 45 DAS & at harvest and Economics.

Implementing Centres & Scientist in-charge:

Co – ordinating centre: - NPRC, Vamban
NPRC, Vamban (Acid soil) - Dr. S. Marimuthu, Asst. Prof. (Agronomy),
ADAC&RI, Trichy (Sodic soil) - Dr. T. Ramesh, Asst. Prof. (Agronomy),
ARS, Kovilpatti (Saline soil) - Dr. S. Manokaran, Asst. Prof. (Agronomy)
**Soil scientist from the respective centre should be included*

2.3. Research Projects and remarks

University Research Projects		
AGRONOMY		
Greengram		
1.	**DCM/KPT/AGR/GGR/2017/001** Studies on planting geometry and foliar spray application for yield maximization in green gram under dryland vertisols condition (October 2017 to September 2019) Dr. S. Manoharan, Asst. Prof (Agronomy) ARS, Kovilpatti	Project to be closed. Completion report to be submitted.
CROP PHYSIOLOGY		
2.	**DCM/PAI/CRP/HGM/2019/001** Physiological manipulation for altering the horsegram growing season (2019 – 2021) Dr. R. Sivakumar, Asst. Prof. (CRP), RRS, Paiyur	The project to be continued
SOIL SCIENCE AND AGRICULTURAL CHEMISTRY		
Blackgram		
3.	**NRM/CBE/SAC/BGR/19/001** Evaluation of N utilization potential of prominent black gram varieties of TNAU. (July 2019 to June 2021) 1. Dr. R.K. Kaleeswari, Professor (SS&AC), Dept. of SS&AC, TNAU, Coimbatore 2. Dr. S. Suresh, Professor & Head, Dept. of SS&AC, AC&RI, Killikulam.	The results of the other three centres are to be compiled and pooled analysis of all the six centres to be reported. Economics and BCR to be worked out.

	3. Dr. P. Kannan, AP (SS&AC), Dept. of S&E, AC&RI, Madurai 4. Dr. R. Jagadeeswaran, Assoc.Prof. (SS&AC), AC&RI, Kudumiyanmalai. 5. Dr. K. Satya Bama, Assoc.Prof. (SS&AC), TRRI, Aduthurai. 6. Dr. M. Vijayakumar,AP (SS&AC), RRS, Paiyur	The project is to be continued.
4.	**NRM/MDU/SAC/BGR/2016/001** Studies on the effect of zinc solubilizing bacteria on zinc availability in alkaline soil and yield enhancement in blackgram (August 2019 to March 2021) Dr. R.Indirani, Asst. Professor (SS&AC), AC&RI, Madurai.	Analysis of soil properties, nutrient uptake and quality of blackgram are to be completed and reported. The project is to be continued.
Greengram		
5.	**NRM/CBE/SAC/GGR/19/001** Multi nutrient foliar fertilization for irrigated green gram (July 2019 to June 2021) 1. Dr. R.K. Kaleeswari, Professor (SS&AC), Dept. of SS&AC, TNAU, Coimbatore, (Inceptisol). 2. Dr. S. Suresh, Professor & Head, Dept. of SS&AC, AC&RI, Killikulam, (Alfisol). 3. Dr. P. Kannan, AP (SS&AC), Dept. of S&E, AC&RI, Madurai, (Alfisol). 4. Dr.R. Jagadeeswaran, Assoc. Prof. (SS&AC), AC&RI, Kudumiyanmalai, (Alfisol). 5. Dr.K. Satya Bama, Assoc.Prof. (SS&AC), TRRI, Aduthurai, (Vertisol). 6. Dr. M. Vijayakumar, AP (SS&AC), RRS, Paiyur, (Inceptisol).	The results of the other three centres are to be compiled and pooled analysis of all the six centres to be reported. Economics and BCR to be worked out. The project is to be continued.
Redgram		
6.	**NRM/CBE/SAC/RGR/2019/001** Effect of Crop Specific Nutrient Mixture on Yield Maximization and Quality Improvement in Red Gram (October,2019 to September,2021) Dr. M.R.Backiyavathy, Professor (SS&AC), Dept. of SS&AC, TNAU, Cbe-3.	Soil nutrient availability, uptake and use efficiency and quality analysis are to be completed and reported. The project is to be continued.

AGRICULTURAL MICROBIOLOGY		
7.	**NRM/VBN/AGM/BGR/2018/001** Response of bacterial and fungal bioinoculants on nodulation, seed yield and enhancing the qualitative parameters in blackgram (Aug'2018 to July'2020) Dr R. Parimaladevi, AP (Agrl. Micro.), NPRC, Vamban.	Nutrient uptake and quality parameters are to be completed. The project is to be closed and the completion report may be submitted.
8.	**NRM/CBE/AGM/BGR/2019/001** Validating the stability of *Rhizobium* mutant VM1 suitable for blackgram under acid soil condition (Oct 2019 to Sep 2020) Dr. M. Gnanachitra, Associate Professor (Agrl. Microbiology), Dept. of Agrl. Microbiology, TNAU	The project is to be continued
Greengram		
9.	**NRM/TRY/AGM/GGR/2019/001** Isolation and characterization of elite *Rhizobium* strains for Green gram raised under Sodic soils of Tamil Nadu (Sep. 2018 to Dec.2020) Dr. M. Sundar, Professor (Agrl.Micro.), ADAC&RI, Trichy.	The project is to be continued
MOTH BEAN		
10.	**NRM/TVM/AGM/MOB/2017/001** Isolation and screening of efficient rhizobial strains and evaluation of their efficiency in Moth bean (*Vignaa conitifolia)* (April 2017- March 2021) Dr. R. Brindavathy, Associate Professor (Ag. Microbiology) ORS, Tindivanam 604 002.	Studies initiated on drought tolerant mechanism may be completed and the project work to be continued. The findings are to be proposed for OFT
SEED SCIENCE AND TECHNOLOGY		
11	**SEC/KDM/SST/BGR/2016/001** Development of Hydrophilic polymer seed coating technique for rainfed Blackgram (*Vigna mungo L.*) (Jun 2016 to May 2019) Extended up to June 2020 Dr.V.Vijayalakshmi Asst. Prof. (SST), AC & RI, Kudumiyanmalai	The project to be closed. Results to be proposed for OFT.
12	SEC/CBE/SST/PUL/2019/001 Assessment of percentage conversion of hard seeds into normal seedlings and vigour status of hard seeds in black gram, green gram and horse gram. (June 2019 to April 2021) Dr.G.Sasthri Assoc. Prof. (SST), DSST, TNAU, Coimbatore	The project to be continued

13	**SEC/CBE/SST/PUL/2019/002** Documentation of quality status of farm saved seeds of pulses in major pulse growing districts of Tamil Nadu (September 2019 to July 2021) Dr. M. Kathiravan Asst. Prof. (SST), Seed Centre, TNAU, Coimbatore	The project to be continued

AICRP Projects		
AGRONOMY		
Blackgram		
1	**AICRP/PBG/VBN/MUL/017:** Effect of fertilizer doses, organic manure and biofertilizer for yield maximization of Urdbean and their effect on succeeding *rabi* crop (cereal/oilseed) - Modified 2018 (June 2017 to May 2019) Dr. S. Marimuthu, Asst. Prof. (Agron) AICRP – MULLaRP, NPRC, Vamban	The project to be continued
2	**AICRP/ PBG/ VBN/ MUL/ 015:** Residual effect of fertilizers, organic manure and biofertilizers applied for *kharif*Blackgram on succeeding *Rabi* maize (June 2017 to May 2019) Dr. S. Marimuthu, Asst. Prof. (Agron) AICRP – MULLaRP,NPRC, Vamban	The project to be continued
3	**AICRP/PBG/VBN/MUL/018**: Evaluation of post-emergence herbicides in urdbean (June 2019 to May 2022) Dr. S.Marimuthu, Asst. Prof. (Agron) AICRP – MULLaRP, NPRC, Vamban	The project to be continued.
4	**AICRP/ PBG/ ADT/ MUL/ 015:** Effect of foliar nutrition on productivity of summer blackgram (April 2017 - March 2019) Dr. C. Umamageswari, Associate Professor (Agronomy), TRRI, Aduthurai.	The project to be closed

5	**AICRP/ PBG/ ADT/ MUL/ 015**: Efficacy of post emergence herbicides to manage weeds for higher productivity of summer blackgram (April 2017 - March 2019) Dr. C. Umamageswari, Associate Professor (Agronomy), TRRI, Aduthurai.	The project to be continued
6	**AICRP/ PBG/ ADT/ MUL/ 015:** Yield maximization in rice fallow urdbean through agronomic management (Sept.2019 – March 2020) Dr. C. Umamageswari, Associate Professor (Agronomy), TRRI, Aduthurai.	The project to be closed
7	**AICRP/DCM/KPT/AGR/003:** Effect of weather conditions on powdery mildew disease in blackgram (September 2015 to March 21) Dr.G. Sudhakar, Assistant Professor (Agronomy), ARS, Kovilpatti	The project to be continued
AICRP Project: Greengram		
8	**AICRP/PGBG/VBN/MUL/017:** Effect of fertilizer doses, organic manure and biofertilizer for yield maximization of mungbean and their effect on succeeding rabi crop (cereal/oilseed)- Modified 2018 (June 2017 to May 2019) Dr. S. Marimuthu, Asst. Prof. (Agron) AICRP – MULLaRP, NPRC, Vamban	The project to be continued
9	**AICRP/ PBG/ VBN/ MUL/ 015:** Residual effect of fertilizers, organic manure and biofertilizers applied for *kharif* Blackgram on succeeding *Rabi* maize (June 2017 to May 2019) Dr. S. Marimuthu, Asst. Prof. (Agron) AICRP – MULLaRP, NPRC, Vamban	The project to be continued

10	**AICRP/ PBG/ ADT/ MUL/ 015:** Land configuration and foliar spray of nutrients for yield maximization of greengram (April 2018 - March 2020) Dr. C. Umamageswari, Associate Professor (Agronomy), TRRI, Aduthurai	The project to be continued
11	**AICRP/ PBG/ ADT/ MUL/ 015:** Fertilizer dose, organic manure and biofertilizer for yield maximization of greengram and their effect on succeeding *rabi* cereal/ oilseed crop (April 2018 - March 2020) Dr. C. Umamageswari, Assoc.Prof.(Agron.),TRRI, Aduthurai	The project to be continued
12	**AICRP/ PBG/ ADT/ MUL/ 015:** Residual effect of fertilizers, organic manure and biofertilizers applied for *Kharif* greengram on succeeding *Rabi*(*Thaladi*) rice (April 2018 - March 2020) Dr. C. Umamageswari, Associate Professor (Agronomy), TRRI, Aduthurai	The project to be continued
AICRP Project : Redgram		
13	**AICRP/PBG/CBE/PIP/010:** Enhancing production potential of Pigeonpea through foliar nutrition (2019 -2021) Dr. S. Anitta Fanish, Asst. Prof. (Agron) AICRP – Pigeonpea, Dept. of Pulses, TNAU, Coimbatore	The project to be continued
14	**AICRP/PBG/CBE/PIP/010:** Evaluation of post emergence herbicides in pigeonpea (2019 - 2022) Dr. S. Anitta Fanish, Asst. Prof. (Agron) AICRP – Pigeonpea, Dept. of Pulses, TNAU, Coimbatore	The project to be continued
15	**AICRP/PBG/CBE/PIP/ Agronomic evaluation of AVT –II entries (2019 -2020)** Dr. S. Anitta Fanish, Asst. Prof. (Agron) AICRP – Pigeonpea, Dept. of Pulses, TNAU, Coimbatore	The project to be continued

16	**AICRP/DCM/KPT/004:** Intercropping of nutri cereals and pulses with medium duration pigeon under *alfisols* condition (June 2019 to May 2022) Dr. S. Manoharan, Asst. Prof. (Agronomy) AICRP for Dryland Agriculture, ARS, Kovilpatti	The project to be continued
17	**AICRP/DCM/KPT/004:** Intercropping of nutri cereals with medium duration pigeon under *vertisols* condition (June 2019 to May 2022) Dr. S. Manoharan, Asst. Prof. (Agronomy) AICRP for Dryland Agriculture, ARS, Kovilpatti	The project to be continued

AGRICULTURAL MICROBIOLOGY		
AICRP: Blackgram		
1.	**AICRP/PBG/VBN/MUL/013:** Study on the effect of bio-inoculants on blackgram (April, 2019 to March, 2022) Dr. R. Parimaladevi, Assistant Professor (Ag. Microbiology), NPRC, Vamban.	The findings may be given for information. The project is to be continued.
Greengram		
2.	**AICRP/PBG/VBN/MUL/01:** AICRP on MULLaRP (Mung bean) (April, 2019 to March, 2022) Dr. R. Parimaladevi, Assistant Professor (Ag. Microbiology), NPRC, Vamban.	The findings may be given for information. The project is to be continued.
SEED SCIENCE AND TECHNOLOGY		
AICRP Project		
1	**AICRP/STR/CBE/SEP/001-AICRP on NSP (Crops) – STR Experiment** Use of nano-particles in enhancing seed quality and storability of soybean and onion seeds (2016 to 2022) Dr. C. Vanitha, Asst. Prof. (SST) Seed Centre, TNAU, Coimbatore	The project to be continued.

External Funded Research Project		
CROP PHYSIOLOGY		
1	**DST/DCM/VBN/CRP/2017/003** Physiological and Molecular dissection of Greengram (*Vigna radiata* (L.) Wilczek) genotypes for drought and high	The project to be closed and submit the completion report.

	temperature stress tolerance(May,2017 to May, 2020) Dr. V. Babu Rajendra Prasad, Assistant Professor Department of Crop Physiology, TNAU, Coimbatore Dr. A. Senthil, Associate Professor Department of Crop Physiology, TNAU, Coimbatore	
AGRICULTURAL MICROBIOLOGY		
Blackgram		
2.	**MHRD/NRM/CBE/AGM/2014/R015** Centre of Excellence in Frontier areas of Science and Technology (FAST) on MICROBES TO FEED THE WORLD: Plant-Microbe interactions to boost Agricultural Production (2014-2020) Dr. U. Sivakumar, Professor Dept. of Agrl. Microbiology, TNAU, Coimbatore	The project may be continued to make it as a technology for pulse growers.
3.	**BRNS/NRM/CBE/AGM/ 2018/R024** Gamma irradiated mutants of *Bacillus* spp. and Actinobacteria consortium to control the wilt and root rot diseases of pulses. (April 2018- March 2021) Dr. R. Anandham, Assistant Professor, Department of Agrl. Microbiology,TNAU, Coimbatore	The project is to be continued.

Core Projects		
Agronomy : Blackgram		
1	**DCM/VBN/AGR/BGR/2018/CP051** Response of blackgram varieties for nipping (morphological modification) and graded levels of nitrogen for higher productivity under Irrigated condition (Sep` 2018 – Sep` 2020) Dr. S. Marimuthu, Asst.Prof(Agronomy), NPRC, Vamban Dr. K. Nelson Navamaniraj, AP (Seed Sci. & Tech) KVK, Vamban	Project to be closed. Completion report to be submitted.
2	**DCM /CBE /AGR / BGR / 2018 / CP059** Enhancing productivity of blackgram through Sea Weed Extract (SWE) (October 2019 -September 2020) Dr. S. Anitta Fanish, Assistant Professor	The project to be proposed for OFT. Completion report is to be submitted on or before 30.09.2020

Greengram		
3	**DCM/TRY/AGR/RIC/2018/CP151** Evaluation of fermented egg and fish waste extracts as foliar spra on yield and economics of rice and green gram (February, 2019 to February, 2021) Dr. T. Ramesh, Asst Prof. (Agronomy) ADAC&RI NavalurKuttapattu, Tiruchirappalli	The project to be continued. Completion report is to be submitted on or before 30.09.2020
Other Pulses		
4.	**DCM/CBE/AGR/HGM/2018/CP008** Influence of nipping on the productivity of rainfed horsegram under altered crop geometry June 2018 to May 2020) Dr.S. Sanbagavalli, Associate Professor(Agronomy) Department of Agronomy, TNAU, Coimbatore.	The project to be proposed for OFT. Completion report is to be submitted on or before 30.09.2020
CROP PHYSIOLOGY		
5	**DCM/PAI/CRP/HGR/2018/CP106** Development of foliar formulation for enhancement of yield in horsegram under irrigated and rainfed environment (2018 – 2020) Dr. R. Sivakumar, Asst. Prof. (CRP) Dr. M. Vijayakumar, Asst. Prof. (SS & AC) RRS, Paiyur	The project is to be closed and completion report is to be submitted on or before 30.09.2020
6	**DCM/CBE/CRP/CSF/2018/CP009** Development of crop specific foliar formulations for yield enhancement in selected crops (rice, redgram, sesame and finger millet) under normal and water deficit environments (June 2018- September 2020) Project Leader Dr P. Jeyakumar, Professor and Head, Department of Crop Physiology, TNAU, Coimbatore Co- Project Leaders Dr. V. Ravichandran, Prof. (CRP) Dr. S. Vincent, Prof. (CRP) Dr. S. Srinivasan, Asst. Prof. (CRP) Dr. N. Sritharan, Asst. Prof. (CRP)	The project to be continued and Completion report is to be submitted on or before 30.09.2020
7	**DCM/CBE/CRP/CGR/2018/CP127** Mitigation of drought using a new growth regulating compound Melatonin in greengram (April 2019 to September 2020) Dr. A. Senthil, Associate Professor (CRP) Dept. of Crop Physiology, TNAU, Coimbatore	The project is to be closed and completion report is to be submitted on or before 30.09.2020

8	**DCM/CBE/CRP/GGR/2018/CP129** Improving drought tolerance of greengram through application of nanoparticles mimicking antioxidant activity (2018 to 2020) Dr. M. Djanaguiraman, Assistant Professor Department of Crop Physiology, TNAU, Coimbatore	The project is to be closed and completion report is to be submitted on or before 30.09.2020
9	**DCM/CBE/CRP/BGR/2018/CP130** Screening, evaluation and identification of suitable blackgram varieties for saline areas (June 2019 to September 2020) Dr. V. Babu Rajendra Prasad, Asst. Professor Dept. of Crop Physiology, TNAU, Coimbatore	The Project is to be continued and completion report is to be submitted on or before 30.09.2020
SEED SCIENCE AND AGRICULTURAL CHEMISTRY		
10	**SEC/TRY/SST/GGR/2018/CP 028** Development of polyherbal based greengram seed protectant against pulse beetle (*Callosobruchus maculatus* F), (July 2018 to September 2020) Dr.T. Eevera Asst. Prof. (SST), ADAC & RI, Trichy	The Project is to be continued and completion report is to be submitted on or before 30.09.2020

III. CROP PROTECTION
3.1. Technologies for adoption/OFT/Information
Adoption
AGRICULTURAL ENTOMOLOGY

1. IPM module for pod borer complex in red gram (Irrigated)

- IPM module (growing pod borer tolerant variety – CO 8, two rows of maize as border crop, pheromone traps @ 12/ha for monitoring *Helicoverpa armigera* , erecting bird perches @ 50/ha, application of azadirachtin 1% EC @ 500 ml /ha at vegetative phase and chlorantraniliprole 18.5 SC @ 150ml/ha at50 % bud initiation stageflubendiamide 480 SC @ 125ml/ha at flowering, and dimethoate 30 EC @ 1000ml/ha (pod maturation) resulted in maximum reduction of larval population and damage by pod borers with higher yield (1330 kg/ha and BCR (2.1) than non-IPM module.

2. Management of spotted pod borer

- Novaluron 10 EC (2 ml/lit) was effective in reducing the webbings of spotted pod borer in redgram and increasing yield to 880 kg/ha with BCR 1.28

Information

1. Identification of Resistant Sources against *Maruca vitrata*

- Eleven black gram AICRP entries (KUE 19-35, KUE 19-46, KUE 19-57, KUE 19-65, KUE 19-70, KUE 19-74, KUE 19-76, KUE 19-78, KUE 19-79, KUE 19-80 and KUE 19-81) were identified as resistant to *Maruca vitrata*
- Four green gram AICRP entries (KME 19-3, KME 19-10, KME 19-16 and KME 19-32) were identified as moderately resistant to *Maruca vitrata*
- Three red gram MLT entries (RL-K-19-02, RL-K-19-04 and AC 9060) were identified as resistant to *Helicoverpa armigera*

2. Development of poly-herbal based greengram seed protectant against pulse beetle *Callosobruchus maculates*

- Seeds treated with poly-herbal formulation @ 10 ml/kg of seeds packed in polythene bag resulted in minimum number of bruchid eggs per 100 seeds, bruchid seed damage and higher germination than untreated seeds after six months of storage

PLANT PATHOLOGY

Adoption

1. Biological management of chickpea wilt

Application of *Pseudomonas chlororaphis* (CPs3) as seed treatment @10g / kg of seeds and soil application @ 2.5kg /ha reduced the wilt incidence by 68.87 per cent with highest grain yield of 748.5 kg/ ha as against 552.83 kg/ ha in the control with highest cost benefit ratio 1:2.93

2. Management of root rot and wilt diseases in redgram with biocontrol agents

Application of talc based formulation of *B. subtilis* as seed treatment @ 10 g/kg seed and soil application @ 2.5 kg/ha reduced the wilt and root rot incidence by 69.16 and 65.88 per cent respectively, with highest grain yield of 1142.66 kg/ ha as against 884.4 kg/ ha in the control with highest cost benefit ratio of 1:1.27

On Farm Testing

1. OFT-1 Revalidation of IPM package for YMD and its vector in blackgram

Treatments

T1- IPM Module

- Seed soaking with borax @ 2g / kg + 10% nochi leaf extract @ 300ml/kg followed by seed treatment with imidacloprid 600FS @ 5g/kg
- Soil application of *Bacillus subtilis* (*BS*-1) *@* 2.5kg / ha
- Border row planting of maize (2 rows)
- Rogue out virus infected plants upto 25 DAS
- Installing yellow sticky traps @ 12 no. / ha

- ❖ Foliar spray of borax @ 0.1% and nochi leaf extract 10% at 30DAS
- ❖ Need based spraying of acetamiprid 20 WP @ 250g / ha

T2- Farmers Practice

Observations to be recorded

- Per cent disease incidence (YMD, Necrosis disease & other diseases)
- Vector population (White fly)
- Yield

Participating Centres:

TNAU, Coimbatore (Dr. G. Karthikeyan & Dr. D. Rajabaskar)
NPRC, Vamban (Dr. P. Akiladevi & Entomologist)
TRRI, Aduthurai (Dr.R.Thilagavathi and Dr.P.Anandhi)
AC&RI, Killikulam (Dr.V.Ramamorthi and Dr.K.Elanchezhyan)
ARS, Thindivanam (Dr.S.Thangeswari and Entomologist)

Information

Redgram

1. Out of 70 entries, five entries *viz*., ICP 6859, ICP 8602, Yelagiri local, Vathalmalai -1 and TTB 7 found to record no wilt incidence as against the highest incidence of 73.7% in ICP 7366.
2. The AICRP redgram entries viz., IPA 9F, MAL 13 and BRG 4 were found to be resistant donors for SMD and AICRP entries viz., BSMR 553 and LRG 160 were found to be resistant to wilt disease.

Blackgram

1. Among the fifty four blackgram entries screened through whitefly transmission, the five entries viz., KUP 19-40, KUP 19 -59, KUP 19-61 and KUP 19-77 were free from YMV during Kharif, 2020.
2. Among blackgram entries screened for MYMV resistance under artificial condition through insect transmission during Rabi, 2019-20, four entries *viz*., RUP 19-57, RUP 19 -58, RUP 19- 62 and RUP 19-66 were free from YMV**.**

Greengram

1. The entries viz., KMP 19-6, KMP19-13, KMP 19-14, KMP 19-36, KMP19-35 and KMP 19-33 were free from YMV during Kharif, 2020
2. An entry RMP19-56 was found to be free from YMV during Rabi, 2019-2020

Rice fallow Pulses

1. Blackgram

Out of 55 blackgram entries evaluated under Rice fallow during 2019-20, four entries viz., SUP 20 – 63, SUP 20 – 85, SUP 20 – 88 and SUP 20 – 107 were recorded resistant reaction to powdery mildew and they were free (F) from leaf crinkle disease also.

2. Greengram

Out of 53 greengram entries evaluated under Rice fallow during 2019-20, 10 entries *viz.*, SMP 20-7, SMP 20-11, SMP 20-21, SMP 20-23, SMP 20-24, SMP 20-25, SMP 20-29, SMP 20-32, SMP 20-37 and SMP 20-43 showed resistant reaction to powdery mildew and they were free from leaf crinkle diseases

Chickpea

Among 241 chickpea entries screened the entries *viz.*,P-13016, P-13030, P-13042, P-13048, P-13055, P-13067, P-13072, P-13077, P-13105, P-13117, P-13122, P-13135, P-13145, P-13154, P-13162, P-13172, P-13181, P-13189, P-13196, P-13202, P-13214, P-13226 and P-13251 were found to be resistant to dry root rot by recording an incidence less than 10.0% under sick plot condition

3.2. Action Plan Project for 2020-21
AGRICULTURAL ENTOMOLOGY

Theme areas

Theme area 1: Changing pests scenario in relation to weather parameters
Theme area 2: Identification of resistant sources and mechanism of resistance
Theme area 3: Management modules for emerging pests of pulses

Action Plan 1: Changing pests scenario in various pulse ecosystems in relation to weather parameters			
THEME LEADER:	**Dr. W. Baby Rani, Professor and Head, CSRC, Ramanathapuram**		
Activity	**Name of the Centre and crop**	**Observations to be recorded**	**Deliverable/ expected out come**
• Continuous observation on emerging pests either through introduction or shift in pest status • Assessment of pest and natural enemies population through *in situ* observation, light and pheromone trap catches Fixed plot and roving surveys should be conducted	**Dr.Vijayaraghavan (AC&RI, Kudumiyanmalai)** (Redgram, Greengram, Blackgram, cowpea **TNAU, Coimbatore** Dr.D.Rajabaskar (Redgram, Greengram, Blackgram, Chickpea, horsegram, cowpea) **NPRC, Vamban** **ARS, Virinjipuram** Dr. P. Thilagam (Redgram, Blackgram, Greengram, horsegram) **AC & RI, Madurai** Dr. Zadda Kavitha (Blackgram, and cowpea) **AC&RI, Vazhavachanur** Dr. K. Govindan (Blackgram, Redgram, lablab) **SRS, Cuddalore (for Villupuram District)** Dr. S. Pasupathy **RRS, Vriddhachalam** Dr. Sheeba Jasmin (Blackgram, greengram, lablab) **TRRI, Aduthurai** **Dr.P.Anandhi** (Blackgram)	• Incidence of stem fly, sucking pests, pod bugs, pod borers, pod fly and natural enemies once in a week through *in situ,* observation, light and pheromone traps catches • Correlation and regression analysis with weather parameters	Fore warning on pulse pests and emerging pests if any

	CSRC, Ramanathapurm Dr. W. Baby Rani **AC&RI, Killikulam** Dr. N. Balakrishnan & **ACRC, Coimbatore** Dr. S. Kokilavani		

Action Plan 2: Identification of resistant sources and mechanism of resistance for major insect pests in pulses			
THEME LEADER:			
Activity	**Name of the Centre and crop**	**Observations to be recorded**	**Deliverable/ expected out come**
Identification of resistance sources from AICRP, AVT, IVT, MLT and ART entries for key pests by field screening and artificial screening	**TNAU, Coimbatore** Dr.D.Rajabaskar (Redgram, Greengram, Blackgram, Chickpea) **NPRC, Vamban** Dr.Vijayaraghavan (Redgram, Greengram, Blackgram) **ARS, Virinjipuram** Dr. P. Thilagam (Redgram, Blackgram, Greengram, cowpea)	• Observations on the incidence of stem fly, sucking pests, pod bugs, pod borers and pod fly once in a week following standard procedure • Artificial screening of resistant sources to key pests in the given pulse crops following standard procedures • Mechanism of resistance for identified resistant entries against major pest of pulses	Promising resistance entries with known resistance mechanisms against major insect pests will be available for further breeding purpose

Action Plan 3: Development of seed treatment technology for the management of stem fly and sucking pests in pulses			
THEME LEADER:	**Dr.Abdul Razak, Professor (Entomology), AC & RI, Killikulam**		
Activity	**Name of the Centre and crop**	**Observations to be recorded**	**Deliverable/ expected out come**
Treatment 1. Seed treatment with thiamethoxam 30 FS at 10 ml/kg 2. Seed treatment with imidacloprid 600 FS at 6 ml/kg 3. Seed treatment with Tetraniliprole 480 FS at 7 ml/kg 4. Seed treatment with Fipronil 250 FS at 7 ml/kg 5. Untreated control Design: RBD Replications: 4	**TNAU, Coimbatore** Dr.D.Rajabaskar (Greengram, blackgram and cowpea) Dr. R. Arulprakash Redgram **NPRC, Vamban** Dr.Vijayaraghavan (AC&RI, Kudumiyanmalai (Redgram, blackgram, greengram, cowpea) **ARS, Virinjipuram** Dr. P. Thilagam (Redgram, blackgram, greengram and cowpea) **AC & RI, Madurai** Dr. K. Suresh (Greengram, blackgram and cowpea) **AC & RI, Killikulam** Dr.Abdul Razak (Redgram, greengram, blackgram and cowpea) **CSRC, Ramanathapuram** Dr. Baby Rani (Blackgram) **SRS, Cuddalore** Dr. S. Pasupathy (Blackgram, greengram)	• Observations on the incidence of stem fly and sucking pests once in a week starting from 10 DAS till Maturity following standard procedure	Suitable seed treatment chemicals for early protection will be made available

Action Plan 4: Development of management modules for pod bugs and pod fly in redgram and horsegram			
THEME LEADER:	**Dr. C. Vijayaraghavan, Asst. Professor, AC&RI, Kudumiyanmalai**		
Activity	**Name of the Centre and crop**	**Observations to be recorded**	**Deliverable/ expected out come**
1. Azadirachtin 1% EC at 1000 ml/ha in flowering followed by novaluron 10 EC 750 ml/ha during early pod formation and emamectin benzoate 5 SG at 220 g/ha during pod maturity 2. Thiamethoxam 25 EG at 100g/ha in flowering followed by novaluron 10 EC 750 ml/ha in early pod formation and indoxacarb 14.5 SC 350 ml/ha in pod maturity 3. Azadirachtin 1% EC at 1000 ml/ha in flowering followed by lufenuron 5.4% EC 600ml/ha in early pod formation and chlorantraniliprole 18.5% SC 150ml/ha in pod maturity stage 4. Dimethoate 30 EC at 500 ml/ha in flowering followed by azadirachtin 0.03 % WSP 2.5kg/ha in early pod formation and quinalphos 25 EC 1400 ml/ha in pod maturity stage 5. Untreated control Design: RBD Replications: 4	**TNAU, Coimbatore** Dr.D.Rajabaskar (Horsegram) Dr. R. Arulprakash (Redgram) **NPRC, Vamban** Dr.Vijayaraghavan (Redgram) **ARS, Virinjipuram** Dr. P. Thilagam (Redgram, horsegram) **Paiyur** Dr.P.S.Shanmugam Programme Coordinator, KVK, Papparapatty (horsegram) Dr. Mohamed Jalaladdin (Redgram)	• Observations on the incidence of pod fly from pod forming stage to harvest at 10 days interval following standard procedure	Suitable pod bug and pod fly management technology will be made available

Action Plan 5: Development of IPM methods for the management of *Maruca vitrata* in cowpea and lab lab			
THEME LEADER:	Dr. Mohamed Jalaluddin, Professor(Entomology), RRS, Paiyur		
Activity	**Name of the Centre and crop**	**Observations to be recorded**	**Deliverable/ expected out come**
1. Azadirachtin 1% EC at 1000 ml/ha in flowering followed by novaluron 10 EC 750 ml/ha in early pod formation 2. Thiodicarb 75 WP at 625 g/ha in flowering followed by Flubendiamide 39.35 % SC 100ml / ha 3. Novaluron 10 EC 750 ml/ha in flowering followed by emamectin benzoate 5 SG at 220 g/ha in early pod formation 4. Thiamethoxam 25 EG at 100g/ha in flowering followed by indaxacarb 14.5 SC at 350 ml/ha in early pod formation 5. Azadirachtin 1% EC at 1000 ml/ha in flowering followed by chlorantraniliprole 18.5% SC 150ml/ha in early pod formation 6. Dimethoate 30 EC at 500 ml/ha in flowering followed by azadirachtin 0.03 % WSP 2.5kg/ha in early pod formation 7. Untreated	**RRS, Paiyur** Dr. Mohamed Jalaluddin (Lablab and cowpea) **TNAU, Coimbatore** Dr.D.Rajabaskar (Cowpea and Lab lab) **NPRC, Vamban** Dr.Vijayaraghavan (Cowpea) **ARS, Virinjipuram** Dr. P. Thilagam (Cowpea and Lab lab) **AC & RI, Madurai** Dr. Zadda Kavitha (Cowpea and Lab lab)	• Observations on the incidence of spotted borer damage, larval population, natural enemies during flower, pod formation and pod maturation stages, Yield and BCR	Suitable spotted pod borer management technology will be made available

2. PLANT PATHOLOGY			
Action Plan 1: Influence of weather parameters on major diseases of pulses and development of forewarning models			
Theme leader	**Dr. P. Ahila Devi, Asst. Professor (Plant Pathology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
• Monitoring the incidence of important diseases of pulses through Roving and fixed plot surveys	**NPRC,Vamban** Dr. P. Ahila Devi (Blackgram, Greengram, Redgram) **TNAU,Coimbatore** Dr.L.Karthiba (Redgram, Greengram, Blackgram) **ARS,Virinjipuram** Dr.D.Dinakaran (Redgram, Blackgram, Greengram) **AC & RI, Madurai** Dr.L.Harish (Redgram) **TRRI, Aduthurai** Dr.R.Thilagavathi (Blackgram & Greengram) **AC & RI, Killikulam** Dr.N.Rajinimala (Blackgram, Greengram)	• Incidence of diseases, *viz.,* yellow mosaic, wilt, sterility mosaic disease,powder mildew, rust, anthracnose, root rot have to be monitored throughout the crop period • The severity of emerging disease symptoms like little leaf and phyllody.	• Forewarning models • Correlation of weather data with disease severity
	ACRC, Coimbatore Dr. S. Kokilavani, Assistant professor Agricultural Meteorology	Incidence of disease has to be correlated with the weather parameters	

Action Plan 2: Identification of resistant sources and mechanism of resistance for major diseases in pulses			
Theme Leader	**Dr. L. Karthiba, Asst. Professor (Plant Pathology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
• Field screening of AICRP, AVT, IVT, MLT, ART and TNAU entries • Artificial screening for selected entries for major diseases	**Vamban** Dr. P. Ahila Devi (Blackgram&Greengram) **Coimbatore** Dr. L. Karthiba (Redgram) Dr. T.K.S. Latha (Chickpea) **TRRI, Aduthurai** Dr.R.Thilagavathi (Blackgram&Greengram) **ARS, Virinjipuram** Dr.D.Dinakaran (Redgram)	• Observations have to be taken in the field on the incidence of diseases(including vector population if any) of redgram, chickpea, blackgram and greengram by following standard procedure. • Artificial screening for selected entries for diseases. • The biochemical/ molecular mechanism for disease resistance	Promising resistant entries against major diseases with mechanism of resistance.
	CPMB & B, TNAU, Coimbatore Dr.M.Sudha and Dr.S.Varanavasiappan,	Molecular mechanism of resistance for identified resistant entries against major disease to be studied.	

Action Plan 3: Identification of the etiological agent and spread of leaf crinkle disea blackgram and greengram			
Theme Leader	**Dr. T.K.S. Latha, Asst. Professor (Plant Pathology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Identification of virus and mode of spread	**Coimbatore** Dr. T.K.S. Latha	• Molecular characterization of virus through NGS and PCR. • Identification of vector.	• The etiological agent and spread of leaf crinkle disease is identified • The cause for the emerging little leaf and phyllody like symptoms in blackgram, greengram and redgram may be identified and confirmed. A separate interim report on this activity may be submitted to the directors (CPPS and CPBG). Since it was raised as an issue in the CSM.

Action Plan 4: Characterization of causal agent of Pigeonpea sterility mosaic disease in Tamil Nadu			
Theme Leader	**Dr. L. Karthiba, Asst. Professor (Plant Pathology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Characterization of causal agent of Pigeonpea sterility mosaic disease	**Coimbatore** Dr. L. Karthiba Dr. T.K.S. Latha	• Characterization and identification of the PPSMV isolates in Tamil Nadu • Development of diagnostics and vector transmission studies.	PPSMV isolates in Tamil Nadu will be characterized and diagnostic methods will be developed.

Action Plan 5: Integrated management of sterility mosaic disease of Redgram (New)			
Theme Leader	**Dr. L. Karthiba, Asst. Professor (Plant Pathology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Treatments T1. Seed treatment Imidacloprid 70 % WS @ 5 g/kg seed +Spraying of of Neem Kernel Aqueous Extract @ 5 % T2. Seed treatment Imidacloprid 70 % WS @ 5 g/kg seed + spraying of Sulphur 80 % WP @ 0.25 % T3. Seed treatment Imidacloprid 70 % WS @ 5 g/kg seed + Spraying of Fenpyroximate 5 EC @ 0.1% T4. Seed treatment Imidacloprid 70 % WS @ 5 g/kg seed+ Spraying of Fenazaquin 5 EC @ 0.1% T5. Untreated control	**TNAU,Coimbatore** Dr. L. Karthiba **ARS,Virinjipuram** Dr.D.Dinakaran **ARS, Yethapur** Dr.M.Deivamani **ARS,Bhavanisagar** Dr.SangeethaPanicker	• Per cent disease incidence • Vector population • Other pest population • Weather data • Yield	Efficient Management strategy will be identified

Action plan 6: Management of foliar diseases of blackgram and greengram (New)			
Theme Leader	**Dr. P. Ahila Devi, Asst. Professor (Plant Pathology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
1.Azoxystrobin 25SC 2.Propiconazole 25EC 3.Tebuconazole 25EC 4.Hexaconazole 5EC 5.Trifloxystrobin 25WG 6.Tebuconazole 50% + Trifloxystrobin 25% WG 7.Untreated Check	**NPRC, Vamban** Dr. P. Ahila Devi **TRRI, Aduthurai** Dr.R.Thilagavathi **AC&RI, Killikulam** Dr.V.Ramamorthi **ORS,Thindivanam** Dr.S.Thangeswari	• Per cent disease incidence • Weather data • Yield	Efficient Management strategy will be available

3.3. Research Projects and remarks

Research Projects

Crop	Centre	URP	AICRP	EFP	CP	Total
Agricultural Entomology						
Redgram	Coimbatore	-	1	-	-	1
	Virinjipuram	-	1	-	-	**1**
Blackgram and Greengram	Vamban	-	1	-	-	**1**
Mochai	Paiyur	1	-	-	-	**1**
Seed Tech	Coimbatore	-	1	-	-	**1**
Plant Pathology						
Redgram	Coimbatore	-	1	-	-	1
	Virinjipuram	1	-	--	-	1
Blackgram and Greengram	Coimbatore	1	-	1	-	2
	Vamban	-	1	-	-	1
Chickpea	Coimbatore	1	1	-	-	1
Seed Tech	Coimbaore	-	1	-	-	1
	Total	**4**	**8**	**1**	**-**	**13**

Remarks on the ongoing University Research Projects/AICRP/ Externally funded projects		
UNIVERSITY RESEARCH PROJECT		
1. AGRICULTURAL ENTOMOLOGY		
CPPS/PAI/ENT/MCI/2019/001 Studies on the host plant resistance to insects in the advanced generation materials of short duration high yielding photo insensitive dual types of mochai (*Lablab purpureus* var Lignosus (L) (July 2019 to June 2021) Dr.S.Mohamed Jalaluddin, Professor - Agricultural Entomology).		The project to be continued.
AICRP		
Redgram		
1	**AICRP/PBG/CBE/PIP/010** AICRP on Pigeonpea (Entomology) (Jan.15 to Dec.19) **Dr. D.Rajabaskar**	The project to be continued.
2	**AICRP/PBG/VRM/PIP/011** All India Co-ordinated Research Project on Pigeonpea Dr. P. Thilagam Asst. Professor (Agrl. Entomology)	The project to be continued
BLACKGRAM AND GREENGRAM		
3.	**AICRP/PBG/VBN/MUL/013** AICRP on MULLaRP (Entomology) Dr. P. Pretheep Kumar Assistant Professor (Ag. Entomology)	The project to be continued.
4.	**AICRP/STR/CBE/SEP/001** AICRP on NSP (Crops) Effect of solarization on bruchids (pulse beetle) infestation and quality of pulse seeds Dr. R. Arulprakash Assistant Professor (Ag. Entomology)	The project to be continued.

2. PLANT PATHOLOGY				
S. No.	**Project Number and Title**	**Name and Designation of the Project leader**	**Duration**	**Remarks**
University Research Project				
Redgram				
1.	**CPPS/ VRM/ PAT/ RGR/ 2018/ 001.** Studies on identification of resistant genotypes to wilt and root rot diseases for pigeonpea	**Dr. D. Dinakaran** Professor (Plant Pathology) and Head, ARS, Virijipuram	April 2018 to March 2021	The project may be continued
2.	**CPPS/CBE/PAT/BGR/2019/001** Exploring *Clonostachys* fungal biocontrol agent against root rot disease of blackgram	**Dr. L. Karthiba** Assistant Professor (Plant Pathology)	July 2019-June 2022	The project may be continued
3.	**CPPS/CBE/PAT/CHP/2019/001** Characterization of viruses associated with the newly emerging chlorotic dwarf disease of chickpea in Tamil Nadu	**Dr. T.K.S. Latha** Assistant Professor (Plant Pathology)	July 2019 to May 2022	The project may be continued
AICRP				
Redgram				
4.	**AICRP/PBG/CBE/PIP/010** AICRP on Pigeonpea (Plant Pathology)	**Dr. L. Karthiba** Assistant Professor (Plant Pathology)	April 2018 to March 2021	The project may be continued as per the technical programme of AICRP
Blackgram & Greengram				
5.	**AICRP/PBG/VBN/MUL/013** AICRP on MULLaRP (Plant Pathology)	**Dr. P. Ahila Devi** Assistant Professor (Plant Pathology)	January 2015 to December 2019	The project may be continued as per the technical programme of AICRP
6.	**AICRP/STR/CBE/SEP/001** AICRP on NSP (Crops) - Seed Technology Research • Standardization of detection methods for seed borne pathogens of significance.	**Dr. T. Anand** Assistant Professor (Plant Pathology)	2016 - 2019	The project may be continued as per the technical programme of AICRP

	• Impact of different storage conditions and longevity on seed associated mycoflora of greengram / blackgram			

Chickpea				
7.	**AICRP / PBG / CHP / 012** AICRP on Chickpea (Plant Pathology)	**Dr. T.K.S. Latha** Assistant Professor (Plant Pathology)	April 2015 to March 2020	The project may be continued as per the technical programme of AICRP
Externally Funded Project				
Blackgram				
8.	**DBT/CPPS/PAT/2018/R019** Unraveling etiology of leaf crinkle disease in urdbean and development of diagnostics	**Dr. T.K.S. Latha** Assistant Professor (Plant Pathology)	September 2018 to September 2021	The project to be continued as per the objective, technical programme of the DBT project The cause of the leaf crinkle disease may be identified at the earliest.

Remarks of the Director, CPPS

- All the scientists are instructed to monitor the insect pests, diseases and nematodes of pulse crops in their districts regularly. If any outbreak of existing pests, disease and nematodes or occurrence of new insect pests, diseases and nematodes of pulse crops are noticed, report to the Director (CPPS) immediately.
- Monthly pest and disease surveillance report should be submitted to the Professor and Head, Department of Agrl. Entomology, CPPS on or before 25th of every month without fail in the Google Forms for consolidation.
- Basic work on mechanism of resistance, effect of cropping systems on pests and diseases and their natural enemies, insect- plant interaction, host pathogen interaction and induced systemic resistance should be taken up using PG and Ph.D. students.
- The dates given for sending the closure / deletion /extension/ change of project leadership should be strictly adhered.
- All the scientists working in the pulses should have minimum of two viable University Research Projects.
- All scientists are requested to publish their findings in reputed peer reviewed society journals. Both hard and soft copies of published articles shall be sent to the Director, CPPS, TNAU, Coimbatore for repository purpose.
- Technology capsule must be evolved for the management of spotted pod borer, *Maruca vitrata* in red gram.

4. Remarks of the Vice Chancellor

Crop Improvement

- Perennial redgram varieties should be explored and utilized for grafting purpose to extend the duration and enhance the yield. Students will be engaged for grafting.
- Breeding for virus disease resistance will be reinforced by understanding the host-vector- virus interaction study.
- Multiple resistance breeding in pulses is to be done by gene pyramiding techniques.
- Priority should be given for minor pulses like Mothbean, Ricebean, Horsegram, and Mochai.
- Benchmark yield for every pulse should be standardized and followed for varietal breeding and advancement.
- Action should be taken for functioning of Centre for Molecular Breeding and the building should be effectively utilized.
- Prerelease advanced cultures will be subjected to agronomical studies, nutrient management and suitability for mechanical harvest.
- Battering quality of blackgram should be analyzed with the help of industries before nomination to variety release.
- Advanced cultures of chickpea will be tested at Gudalur, Nilgris and Kodaikanal condition to ascertain the performance
- Hybrid redgram development will be intensified
- BSR 1 redgram variety should be reconstituted and ensure the seed supply in the seed chain.
- Ricebean genotypes available at CPMB could be shared to CPBG to evaluate the yield performance.
- Centres working in pulse crops should be strengthened.
- Efforts should be given for developing high yielding and early duration biotic and abiotic resistant varieties.
- ADT 3 blackgram variety should be reconstituted and ensure the seed supply in the seed chain.

Crop Management

- Fine tune the technology on redgram transplanting (DCM, TNAU, Coimbatore).
- The recommended package of practices in Crop Production Guide may be followed while conducting the experiments (DCM and NRM, TNAU, Coimbatore)
- Agro technologies for rice fellow pulses is to be revisited for further improving the productivity, since large area is covered under this
- Physiology of drought tolerance in pulse crop may be studied (Dept. of Crop Physiology, TNAU, Coimbatore)
- Explore the relation between the nodulation and yield of pulse crops (Agrl. Microbiology, TNAU, Coimbatore)
- Study the feasibility of drip fertigation in blackgram with water soluble and conventional fertilizer (WTC, TNAU, Coimbatore)

- Management studies on minor pulses is to be focused (DCM, TNAU, Coimbatore).
- Technologies for adoption may be taken up in large scale through KVKs (DEE, TNAU, Coimbatore)
- Nutrient uptake pattern of pulse crops may be studied (Dept. of Crop Physiology, TNAU, Coimbatore)
- TNAU Pulse Wonder developed by Department of Crop Physiology is an exclusive formulation to improve yield, quality and also abiotic stress tolerance by influencing nutrition and hormonal status of the crop. It is given as general recommendation and included in Crop Production Guide. Hence, the nutrient mixtures/formulations proposed from other Departments for correcting specific nutritional problems, are to be compared with TNAU Pulse Wonder.
- Adoption trials is to be demonstrated in larger area

Crop Protection

- Periodical pest surveillance reports have to be submitted regularly before the stipulated timings
- All the pulse scientists should have sufficient university research projects
- Proposals may be sent for external funding especially in redgram, rice fallow pulses etc.
- Alternative fungicides to the fungicides recommended in the CPG may be evaluated for major diseases, since there is a possibility to ban the recommended fungicides
- All microbial bio-inoculants used for plant protection experiment should get registered and obtain the accession number from the Professor & Head, Department of Plant Pathology, TNAU, Coimbatore.
- Research related to integration of virus and host genome in YMV is to be taken.
- Latent infection of YMV disease in blackgram needs to be confirmed.
- Studies on etiology of phyllody symptoms in blackgram, greengram and redgram should be addressed.
- IPDM modules for major virus diseases of pulses has to be formulated

5. Remarks by Director of research, TNAU, Coimbatore

- Pulses research should be strengthened by adopting clear-cut guidance given in the Crop Production guide
- Varieties should be developed based on the average yield given by the state government
- Research focus should be given to Minor pulses exploration, evaluation and utilization
- Separate task force team will be framed for early detection of virus diseases, early virus diagnosis by using lateral flow technique and immune assay.
- Nano inputs to boost productivity especially in rice fellow pulses

DIRECTOR OF RESEARCH

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