TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

39th Pulses Scientists Meet 2021
(April 19-20, 2021)

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

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore – 641 003

2021

PROCEEDINGS

39th Pulses Scientists' Meet 2021
(April 19-20, 2021)

The 39th Pulses Scientists Meet was held during April 19-20, 2021 at the Tamil Nadu Agricultural University, Coimbatore, through on-line connecting all scientists across the University College Campuses, Research Stations and KVKs besides main campus. **Dr. K.S. Subramanian**, Director of Research set the stage for the meet indicating phenomenal progress made pulses production in the country over the years ever since 2016 was declared as the International Year of Pulses and achieved the production of 24 million tonnes in 2020-21 and self-sufficiency in the country. However, the pulses productivity in the State of Tamil Nadu is still lower and research programs need to be redesigned to meet the set target. **Dr. N. Kumar**, Vice Chancellor indicated that the Breeders should aim to breed a pulse variety with a productivity of 800-1000 kg per ha. Red gram should be given priority as major part of the State requirement is met from the import. Genotypes with multiple resistances should be given top most priority utilizing gene pyramiding technology.

The Director of Research anchored the meet with few emerging researchable issues encompassing speed breeding, inter-specific hybridization, transplanting in redgram, strategies for managing pod borer, nanotechnology interventions for improved use efficiencies, digital agriculture, viral diseases management besides complete mechanization for pulses. The action taken reports on the 38th Pulses Scientists Meets were presented by the lead scientists from National Pulses Research Center, Vamban. During the pre-review, the technical directors had reviewed the on-going university research projects (43), action plan projects (27), core projects (16), AICRPs (8) besides externally funded projects (39).

The outcome of the review process was presented by **Dr. S. Geetha**, Director (CPBG), **Dr. S. Mohankumar** (CPMB), **Dr. S. Sundareswaran**, Director (Seeds), **Dr. V. Geethalakshmi**, Director (Crop Management), **Dr. R. Santhi**, Director (DNRM), **Dr. S. Panneerselvam,** Director (WTC) and **Dr. K. Prabakar**, Director (CPPS). In the closing remarks, the Vice Chancellor said that molecular breeding efforts are required to gain multiple resistances to promote pulses productivity. He emphasized that scientist should explore a possibility of blending crop booster like "Pulse Wonder" with multi-micronutrient formulation in order to reduce the drudgery of farmers. The Director of Research suggested that strategies for rice fallow pulses in Cauvery Delta Zone, development of a microbial product from the isolate of NPRC, Vamban, mitigating multi-micronutrient deficiencies, detection and managing pod borer complex and viral diseases are the emerging areas of interest to enhance pulses productivity. **Dr. M. Gunsekaran**, Prof. & Head, NPRC, Vamban, proposed a formal vote of thanks.

The proceedings of the 39th Pulses Scientists meet are furnished below in the following headings:

1. CROP IMPROVEMENT

A. Decisions made on the entries for Variety Release Proposal/ART/OFT/MLT evaluation
B. Research projects on Pulses
C. Remarks on the ongoing university research projects/AICRP/Externally funded projects
D. Action Plan 2020-2024

2. CROP MANAGEMENT

A. Decisions made on OFT
B. Research projects on Pulses
C. Remarks on the ongoing University Research Projects/AICRP/ Externally funded projects
D. Action plan 2021-2024

3. CROP PROTECTION

A. Decisions made on OFT
B. Research projects on Pulses
C. Remarks on the ongoing University Research Projects/AICRP/ Externally funded projects
D. Action plan 2021-2024

4. GENERAL REMARKS

5. PARTICIPANTS

1. CROP IMPROVEMENT

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

I. Cultures identified for variety release (2021-22)

a) Blackgram (Rice Fallow)

Sl. No	Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	*Per cent* increase over		Special features
					ADT 6	VBN 9	
1.	AD (TR) BG 14003	Mutant of ADT 3	65-70	724	10.53 %	6.31 %	• Determinate plant type with synchronized maturity. • It is moderately resistant to MYMV and Powdery mildew diseases.

b) Greengram (*Kharif*, *Rabi* & Summer)

Sl. No	Culture	Pedigree	Duration (Days)	Seed yield (kg/ha)	*Per cent* increase over			Special features
					CO 7	CO 8	VBN 4	
1.	VGG 15-013	VBN (Gg) 2 x ML 1451	70-75	872	-	12.08 %	10.25 %	• Determinate plant type with synchronized maturity. • More branching tendency • Tolerant to drought and moderately resistant to MYMV.
2.	VGG 18-002	EC 496839 x IPM 409-4	65 – 70	969	14.42	16.19	11.38	• Determinate plant type with synchronized maturity. • Bold seeded (100 grain weight of 5.8 to 6.0 grams) and highly suitable for sprouted grains. • The **vitamin**

								C content of dry grains to sprouted grains increased from 0.50 to 18.17 (mg/100g)in VGG 18-002 and 0.50 (mg/100g) to 12.25 (mg/100g) in CO (Gg) 7.

II. Cultures identified for the evaluation under ART – (2021-22)

a) 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

b) 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

c) Greengram (Bold seeded 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)
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

d) 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 CO(Cp) 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, ThoothukudiKallakurichi, 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

e) 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)
KVK	Thiruppur, Dharmapuri, Salem, Virudhunagar (20 trials - Five trials in each KVK)

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

III. Cultures identified for the evaluation under OFT – 2021-22

a) 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 10, VBN 11 and CO 7					

OFT: 10 locations

b) 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

c) 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, Tolerance to water logging conditions

Checks	VBN 4

OFT: 10 locations

IV. Cultures identified for the evaluation under Multi location trial – 2021-22

1. Multilocation Trial – Redgram (Short duration)

a) Special MLT

Design :Replicated		No. of replications	:	3
Plot size : 6 rows - 4 × 5.4 m^2		Seed Quantity	:	200 g/entry/location
Spacing : 90 x 30 cm		Season	:	Summer

S. 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			

b) MLT – *Kharif & Rabi*

Design :Replicated		No. of replications	:	3
Plot size : 6 rows - 4 × 5.4 m^2		Seed Quantity	:	100 g/entry/location
Spacing : 90 x 30 cm		Season	:	*Kharif* & *Rabi*

S. No.	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	CRG 18-04(N)	CO (Rg) 7 x TAT 93-47	118 -122	1503	Early duration Resistant to SMD
2.	CRG 16-05(N)	CO (Rg) 7 x H 2001-41	118 -122	1522	Early duration Resistant to SMD
Checks		VBN(Rg)3, CO(Rg)7, APK 1			
Locations (06)		Vamban, Coimbatore, Paiyur, Virinjipuram, Athiyanthal, Yethapur, Bhavanisagar, Periyakulam and Madurai			

Note: Field / 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. Multilocation Trial – 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

S. No.	Culture	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	CRG 17-008 (R)	CO 6 x ICP11003	170-180	1632	Resistant to SMD, Moderate resistant to Maruca
2.	CRG 18-007 (N)	CO 6 x ICP 525431	175-180	1496	Moderately Resistant to SMD
3	CRG 18-001 (N)	CO 6 x JKM 198	175-180	1596	Green pod with 4- 6 seeds per pod SMD resistant (7.5%) MR to root rot (12.5%)
4.	CRG 17-008 (N)	CO 6 x ICP 11003	175-180	1632	long duration culture Resistant to SMD
5.	VMRG 14-001(N)	ICP 15599 x LRG 41	190	1572	High yielding
6.	VMRG 16-001(N)	APK1 X Yelagiri local	180	1422	High yielding

Checks	CO 8, CO 9
Locations	Vamban, Coimbatore, Paiyur, Yethapur, Virinjipuram, Periyakualm and Madurai Vazhavachanur,

Note: Field / 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. Multilocation Trial – 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

Sl. No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	VBG 18-043 (R)	VBN(Bg) 4 x Mash 114	65-70	1581	Glabrous pod, High yield and MYMV

					resistance
2.	VBG 18-052 (R)	VBN(Bg) 4 x Mash 114	65-70	1734	Bold seed, High yield and MYMV resistance
3.	KKB 15-052 (R)	PU-06-20 x KKB-12-107	70	1064	Resistant to MYMV
4.	VBG 17-021(N)	VBN-5 X KUG668	65-70	1479	High yielding Resistant to MYMV
5.	VBG 19-033(N)	MDU 1 X Mash 1008	65-70	1152	High yielding Resistant to MYMV
6.	COBG 18-05(N)	VBN 4 x ADT 3	65-70	965	Short duration High Yield Resistant to YMV Bold seed

Checks	VBN 8, VBN 11, VBN 10 (Rabi) , CO 7
Kharif (Jun-Jul)	Vamban, Coimbatore, Paiyur, Madurai, Tindivanam, Melalathur, Palur and Virinjipuram
Rabi (Sep-Oct)	Coimbatore, Vamban, Aruppukkotai, Kovilpatti, Madurai, Tindivanam, Kudumiyanmalai, Killikulam and Veppanthattai

Note: Artificial / Field 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	ULCV, Powdery mildew, root rot
CPMB, Coimbatore	-	MYMV through agro inoculation technique

4. Multilocation Trial – 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

Sl. No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	VBG 18-043 (R)	VBN(Bg) 4x Mash 114	65-70	1581	Glabrous pod, High yield and MYMV resistance
2.	VBG 18-052 (R)	VBN(Bg) 4x Mash 114	65-70	1734	Bold seed, High yield and MYMV resistance
3.	KKB 15-052 (R)	PU-06-20 x KKB-12-107	70	1064	Resistant to MYMV
4.	VBG 17-021(N)	VBN-5 X KUG668	65-70	1479	High yielding Resistant to MYMV
5.	VBG 19-033(N)	MDU 1 X Mash	65-70	1152	High yielding

		1008			Resistant to MYMV
6.	COBG 18-05(N)	VBN 4 x ADT 3	65-70	965	Short duration High Yield Resistant to YMV Bold seed
Checks	ADT 6 (RF), VBN 9 (RF)				
Rice fallow	Aduthurai, Thanjavur, Killikulam, Amabasamudram				

Note: Field/ 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. Multilocation Trial – Blackgram (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

Sl. No	Entry	Pedigree	Duration (days)	Seed yield (kg/ha)	Special features
1.	VBG 17-026(R)	KUG 365 x MDU 1	65-70	1290	MYMV disease resistant
2.	VBG 18-099 (R)	Mutant of ADT 5	65-70	1910	MYMV disease resistant
3.	VBG 18-111 (R)	Mutant of ADT 5	65-70	1548	MYMV disease resistant
4.	VBG 13 003	KU 2016 x VBN 3	65-70	742	MYMV disease resistant
5.	AD (TR) BG 14003	Mutant of ADT	65-70	735	MYMV disease resistant

Checks	VBN 11, ADT 5, CO7
Rice fallow	Aduthurai, SWMRI, Bhavanisagar and Sirugamani

Note: Field / 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. Multilocation Trial – 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

Sl. No	Culture	Parentage	Duration (days)	Seed yield (kg/ha)	Special features
1.	COGG 18-17 (R)	SML 668 x Pusa Vishal	60-65	1179	Short duration, high yield, bold seed, resistant to MYMV
2.	VGG 17-004 (R)	VBN 2 X LGG 460	65-70	1595	High yield
3.	VGG 17-036 (R)	VBN(Gg) 3x PusaEm 14-01	55-60	1460	Extra early, high yield
4.	TMGG 11042 (R)	CO 6 x TM 96-2	60-62	1078	Early with synchronized maturity, MYMV disease resistant, bold seed
5.	COGG 18-18	SML 668 x Pusa Vishal	60-65	996	High Yield Resistant to YMV
6.	VGG 17-106	Co-8 X Chinnamung	67	1193	High Yield Resistant to MYMV
7.	VGG 18-021	VBN (Gg) 2 X MH 421	68	1134	High Yield Resistant to YMV

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

Note: Field / 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. Multilocation Trial – 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.	COGG 18-17 (R)	SML 668 x Pusa Vishal	60-65	1179	Short duration, high yield, bold seed, resistant to MYMV
2.	VGG 17-004 (R)	(VBN 2 X LGG 460)	65-70	1595	High yield
3.	VGG 17-036 (R)	(VBN(Gg) 3x PusaEm 14-01)	55-60	1460	Extra early, high yield
4.	TMGG 11042(R)	CO 6 x TM 96-2	60-62	1078	Early with synchronized maturity MYMV disease resistant bold seed (5.2 g/100 seeds)
5.	ADGG 13009 (N)	Mutant of CO 7-550 Gy	65-70	688	High yield, powdery mildew resistant
6.	COGG 18-18(N)	SML 668 x Pusa Vishal	60-65	996	High Yield Resistant to YMV
7.	VGG 17-106(N)	Co-8 X Chinnamung	65-70	1193	High Yield Resistant to MYMV
8.	VGG 18-021 (N)	VBN (Gg) 2 X MH 421	65-70	1134	High Yield Resistant to YMV

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

Note: Field / 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. Multilocation Trial – 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

S. 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 (R)	VBN 1 X CP 37	65-70	1619	High yield, resistance to rust
3.	VCP 17-019 (R)	VBN 3 x CP 25	65-70	1552	High yield, resistance to rust
4.	VCP 18-032(N)	VBN 3 x TVCP -9-30	65-70	1291	High yielding
5.	VCP 18 025(N)	VBN 3 x TVCP 9-30	65-70	1316	High yielding
6.	COCP 19 03(N)	PCP 09-272 x CO2	50-55	1001	Early maturity Dual purpose Long pod (40-45cm) Bold seed-16.5g (100 seed weight)

Checks	VBN 3 and CO(CP)7	
	The culture VCP 15-006 to be evaluated in Coimbatore, Vamban and Madurai along with the check VBN 3 to confirm its performance to decide for promoting to ART.	
Locations	Kharif (Jul-Aug)	Vamban, Coimbatore, Paiyur, Madurai, Killikulam and Virinjipuram
	Rabi (Sep-Oct)	Coimbatore, Vamban, Aruppukottai, Kovilpatti, Madurai, Perambalur and Trichy

Field / 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. Multilocation Trial – 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	Duration (Days)	Seed yield (kg/ha)	Special features
1.	COC 19 01 (N)	NBeG 49 x ICCV 09106	80	1202	Bold seed-35.3g (100 seed weight)
2.	COC 19 02 (N)	ICC 133124 x JG 14	78	1334	High yield Bold seed-36.2g (100 seed weight),
3.	COC 19 04 (N)	NBeG 3 x ICCV 96836	85	1398	High yield 100 seed weight-34.6g
4.	COC 19 05 (N)	(JG 11 x ICC 2943) x JG 11	86	1258	Bold seed-32.6g (100 seed weight),
Checks		JG 11, CO 4			
Locations		Coimbatore, Paiyur, Veppanthattai and Kovilpatti			

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. Multilocation Trial – 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: Kharif

Features of the proposed culture

S. No	Cultures	Duration	Seed yield (kg/ha)
1.	RRB 18	78	575
2.	RRB 15	78	614
3.	LRB 576	79	614
4.	LRB 583	78	747
Checks	RBL 35, RBL 50		
Locations	Coimbatore, Bhavanisagar, Paiyur, ,Yethappur		

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

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

Important Dates in conduction of MLT and ART

Activities	Season	Last date for receipts	Date of Despatch

Seed material of the proposed ART entries at Vamban	*Kharif*	31.05.2021	15.06.2021
	Rabi	16.08.2021	05.09.2021
Seed material of the proposed MLT entries at Vamban	*Kharif*	31.05.2021	05.06.2021
	Rabi	15.08.2021	05.09.2021
	Rice fallow	30.11.2020	05.12.2021
	Summer Irrigated	30.12.2021	05.02.2022
Sowing report at Vamban	*Kharif*	30.07.2021	-
	Rabi	30.10.2021	
	Rice fallow	31.01.2022	
	Summer Irrigated	31.03.2022	
Visit of MLT/monitoring teams	*Kharif*	Sep. 2021	-
	Rabi	Dec. 2021	
	Rice fallow	Feb. 2022	
	Summer Irrigated	May. 2022	
	Rabi	Dec. 2021	
Date for receiving the trials results at Vamban for compilation	*Kharif*	15.12.2021	-
	Rabi	28.02.2022	
	Rice fallow	15.04.2022	
	Summer Irrigated	30.06.2022	

Monitoring team to visit MLT 2021-22

Scientists	Crop	Season	Centres
Dr.M. Gunasekaran, (P&H), Vamban Dr.Dr.R.P.Gnanamalar, (P&H), Pulses Coimbatore Dr. P. Thangahemavathy, AP (PBG) Coimbatore Dr. L.Karthiba, AP (Plant Path.) Pulses Dr P.S.Shanmugam, AP (Agrl.Ento), Pulses, Coimbatore	Redgram – Short duration	Kharif and Rabi 2021	Vamban, Coimbatore, Paiyur, Virinjipuram, Athiyanthal, Madurai, Yethapur, Bhavanisagar & Peiyakulam
Dr. Dr.R.P.Gnanamalar, (P&H), Pulses Coimbatore Dr. P. Thangahemavathy, APPBG) Coimbatore Dr. A. Gobikrishnan ,AP (PBG) Virinjipuram Dr P.S.Shanmugam, AP (Agrl.Ento), Pulses, Coimbatore	Redgram – Long duration	Kharif 2021	Vamban, Coimbatore, Virinjipuram, Paiyur, Melalathur, Yethapur, Valavachanur, Madurai & Periyakulam
Dr. M.Gunasekaran, (P&H), Vamban Dr. Dr.R.P.Gnanamalar, (P&H), Pulses Coimbatore	BlackgramGreengram	Kharif 2021	Vamban, Coimbatore, Paiyur, Madurai,

Dr. A.Muthusamy, Asst. Prof. (PBG), Pulses Coimbatore Dr.P.Shanthi, Asst. Prof(PBG), Vamban Dr. Dr.P.Ahila Devi, Asst. Prof. (Patho.), Vamban Dr.P.Ramesh, Asst Prof. (Agrl.Ento), NPRC, Vamban			Virinjipuram, Tindivanam, Melalathur, Palur & Tirur
		Rabi 2021-22	Coimbatore, Vamban, Aruppukkotai, Kovilpatti, Madurai, Tindivanam, Killikulam, Veppanthattai, Tirur & Kudumiyanmalai
Dr. M.Gunasekaran, P&H, Vamban Dr. P.Jayamani, Professor (PBG), Pulses Coimbatore Dr.K.Manimaran, Asso. Prof. (PBG) Aduthurai Dr. Dr.P.Ahila Devi, Asst. Prof. (Patho.), Vamban Dr.P.Ramesh, Asst Prof. (Agrl.Ento), NPRC, Vamban	BlackgramGreengram	Rice fallow 2021-22	Aduthurai, Thanjavur, Killikulam & Ambasumudram
Dr. M.Gunasekaran, P&H, Vamban Dr.P.Shanthi, Asst. Prof. (PBG), Vamban Dr.P.Anantharaju, Asst. Prof. (PBG), Pulses, Coimbatore Dr.K.Thangaraj, Asst. Prof. (PBG),Madurai Dr. Dr.P.Ahila Devi, Asst. Prof. (Patho.), Vamban Dr.P.Ramesh, Asst Prof. (Agrl.Ento), NPRC, Vamban	Cowpea	Kharif 2021	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Killikulam,
		Rabi 2021-22	Vamban, Coimbatore, Aruppukkottai, Kovilpatti, Madurai, Veppanthattai & Trichy
Dr. R.P.Gnanamalar, (P&H), Pulses Coimbatore Dr. P. Anantharaju, Asst. Prof. (PBG), Pulses, Coimbatore Dr P.S.Shanmugam, Asst Prof. (Agrl.Ento), Pulses Coimbatore Dr.T.K.S. Latha, Asst. Prof. (Pl.Patho.), Puses, Coimbatore	Chickpea	Rabi 2021-22	Coimbatore, Paiyur, Veppanthattai & Kovilpatti

Dr. Jayamani, Professor (PBG), Pulses Coimbatore Dr. A.Muthusamy, Asst. Prof. (PBG), Pulses Coimbatore Dr.T.K.S. Latha, Asst. Prof. (Pl.Patho.), Coimbatore Dr P.S.Shanmugam, Asst Prof. (Agrl.Ento), Pulses Coimbatore	Rice bean	Kharif 2021	Coimbatore, Bhavanisagar, Paiyur & Yethapur

B.RESEARCH PROJECTS ON PULSES

Plant Breeding and Genetics

Crop	Centre	URP	AICRP	EFP	CP	Total	No. of Scientists
Crop Improvement							
Redgram	NPRC, Vamban	-	-	-	1	1	-
	Pulses, Coimbatore	2	1	-	1	4	2
	ARS,Virinjipuram	-	1	-	1	2	1
Blackgram	NPRC, Vamban	1	1	3	1	6	2
	Pulses, Coimbatore	1	1*	1	-	3	1
	TRRI, Aduthurai	-	1	-	-	1	1
	AC&RI, Killikulam	1	-	-	-	1	1
	RRS, Aruppukkottai	1	-	-	-	1	1
	ARS, Pattukkottai	1	-	-	-	1	-
	AC&RI, Echankottai	1	-	-	-	1	1
Greengram	NPRC, Vamban	1	-		2	3	-
	Pulses, Coimbatore	1	-	-	-	1	-
	TRRI, Aduthurai	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	SRS, Melalathur	-	-	1	-	1	-
	RRS, Paiyur	-	1*	-	1	2	-
Mothbean	ARS, Bhavanisagar	1	-	-	-	1	1
Daincha	ADAC&RI, Trichy	1	-	-	-	-	1
Cluster bean	AC&RI, Madurai	1	-	-	-	-	1
	Total	20	5	8	8	42	17

Plant Biotechnology and Biochemistry

Centre	URP	AICRP	EFP	Total	No. of Scientists
AC&RI, Coimbatore	2	-	2	4	4
AC&RI, Madurai	1	-	-	1	1
AC&RI, Killikulam	1	-	-	1	1
AC&RI, Vazhavachanur	1	-	-	1	1
Total	5	-	2	7	7

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

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

Plant Breeding and Genetics

S.No.	Project No. and Title	Project leaders	Duration	Remarks
UNIVERSITY RESEARCH SUB PROJECTS				
REDGRAM				
1.	CPBG/CBE/PBG/RGR/2018/01 Evolution of high yielding short duration photo-insensitiveredgram varieties	Dr.R.P.Gnanamalar Professor(PBG) & Head	May 2018-April 2023	Minimum number of crosses involving wild species should be effected SMD screening should be done involving Plant pathologist. Project may be continued
2.	CPBG/CBE/PBG/RGR/2018/02 Evolution of high yielding grain and dual purposelong duration varieties in redgram	Dr. A.Thanga Hemavathy Assistant Professor (PBG)	May 2018-April 2023	Include Hybrids(National check) in the respective groups as check in all trials Breeding efforts on development of Dual purpose redgram should be intensified
Blackgram				
3.	CPBG/VMB/PBG/BGR/2016/001 Evolution of high yielding MYMV resistant blackgram (*Vigna mungo* (L.) Wilczek) genotypes and maintenance of	Dr.M.Gunasekaran Professor (PB&G) & Head	Jul 2016 to Jun 2021	Project may be closed and new project may be proposed by transferring the materials from the closed projects.

	germplasm.			Different acessions of *V.sylvestris* should regularly be used in crossing programme *V.glabrasecence* crosses may be evaluated critically.
4.	CPBG/CBE/PBG/BGR/2016/001 Evolution of blackgram varieties with yellow mosaic disease resistance.	Dr. A. Muthuswamy Assistant Professor (PB&G)	October 2016 to November 2021	Project may be closed and new project may be proposed by transferring the materials from the closed projects.
5.	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 (PB&G)	Oct 2015 to Sep 2020	Project was closed The genetic material developed through this project should be transferred to RRS, Aruppukkottai and NPRC, Vamban. The seed multiplication of the AICRP promoted culture should be taken care of
6.	CPBG/KKM/PBG/BGR/2020/001 Evolving high yielding YMV resistant black gram (*Vigna mungo* (L.) Hepper) genotypes suitable for Thamirabarani and delta zones	Dr. D. Shoba, Asst. Professor (PBG) Dr. N. Rajinimala, Asst. Professor (Pl.Pat.)	July 2019 to June 2022	Crossing may be effected involving selected parents like VBN 4 and MDU 1. IC culture should immediately be deposited in Ramaiah Gene Bank
7.	CPBG/PKT/PBG/PGR/2019/001: 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 2019 to May 2023	Project may be closed and the genetic material developed through this project may be transferred to the new project operated at Echangkottai by the same breeder
8.	CPBG/ECK/PBG/BGR/2020/001 Development of high yielding blackgram variety with resistance to MYMD and leaf crinkle virus suitable for summer irrigated condition of Cauvery Delta region.	Dr. A. Bharathi, Asst. Professor (PBG)		The trials may be conducted with utmost care

9.	CPBG/TNJ/PBG/BGR/2020/ New Evolution of high yielding Blackgram varieties suitable for rice fallow condition of Cauvery Delta Zone	Dr. L. Subha Asst. Professor (PBG)	September 2020 to October 2023	The project number may be obtained at the earliest. Good progress should be shown
10.	CPBG/APK/PBG/BGR/2020/ 001 Evolution of high yielding drought tolerant blackgram genotypes suitable for rainfed areas of southern districts	Dr. M. Gnanasekaran, Asst. Professor (PBG)	September 2020 to August 2025	Project may be continued. The identified promising entries may be subjected to seed multiplication. The possibilities of raising the crop in farmers' holdings during summer seasons in order for rapid advancement of genetic materials
Greengram				
11.	CPBG/VMB/PBG/GGR/2016 /001 Evolution of high yielding and MYMV resistant greengram (*Vigna radiata* (L.) Wilczek) genotypes with synchronized maturity and maintenance of its germplasm	Dr.M.Gunasekaran, Professor & Head Dr.P.Shanthi Asst. Prof. (PBG)	July 2016 to June 2021	Project may be closed and new project may be proposed by transferring the materials from the closed projects. VGG 15-013 may be checked for MYMV resistance through agro infection studies More number of related wild spp should be used in hybridization programme. The greengram x black gram seggregants should critically be evaluated
12.	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 latest variety VBN 4 may be included as check in all the trials
13.	CPBG/ADT/PBG/GGR/2017 /001 Evolution of high yielding MYMV resistant	Dr.R.Manimaran, Assoc. Professor (PBG)	October 2017- September	ADT 3 and powdery mildew donor should be included in crossing programme

	Greengram varieties suitable for rice fallow/summer irrigated conditions in CDZ		2022	
Cowpea				
14.	CPBG/VBN/PBG/COP/2020/001 Evolution of high yielding determinate cowpea genotypes (*Vigna unguiculata* (L.)) suitable for Tamil Nadu and maintenance of germplasm.	Dr.P.Shanthi Asst. Prof. (PBG)	September 2020 – August 2025	Genotypes may be screened for Aphid resistance. Project may be continued
15.	CPBG/CBE/PBG/COP/001 Development of high yielding cowpea (*Vigna unguiculata* (L.) Walp.) Varieties superior than CO (CP) 7	P.Anantharaju, Asst. Prof. (PBG)	May 2016 to April 2021	Project may be closed and new project may be proposed.
16.	CPBG/MDU/PBG/COP/2019 / 001 Development of short duration, determinate cowpea (*Vigna unguiculata* L.) variety suitable for southern districts of Tamil Nadu	Dr. K. Thangaraj, Asst. Prof. (PBG)	Sept. 2019-Aug. 2022	Project may be continued. Selection should be done with long pod and bold seed types to increase the yield.
Chickpea				
17.	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	Project may be closed and new project may be proposed
Mochai				
18.	CPBG/PAI/PBG/MOC /2017/001 Development of short duration high yielding photoinsensitive dual types of mochai (*Lablab purpureus var lignosus* L.)	Dr. K.Geetha, Professor (PBG)	August 2017 to July 2022	Rapid advancement of genetic materials is required. Station trials may be critically evaluated and best performing entries may be nominated for MLT
Mothbean				
19.	CPBG/BSR/PBG/PUL/2020/001 Evolution of high yielding moth bean ((*Vigna aconitifolia* (Jacq.) Marecha) varietysuitable for Tamil Nadu	Dr. S. Utharasu Assistant Professor (PBG)	November 2020 to October 2025	AICRP - IVT voluntary trials may be obtained. The variety TMV -1 may be mutated and evaluated

Daincha				
20.	CPBG / TRY / PBG / GMC / 2020 / 001 Evolution of high yielding daincha (*Sesbania aculeata*) genotypes	Dr. S. Chitra Asst. Professor (PBG)	June 2020 to May2023	Cages may be used for selfing The total biomass production and Nitrogen fixation in soil may be estimated
Clusterbean				
21.	No. P&H, PBG/AC&RI/MDU-New "Evaluation and development of new "Guar" gum – Clusterbean (*Cyamopsis tetragonoloba* L.) *Taub*.) variety suitable for southern districts of Tamil Nadu.	Dr. E. Murugan Professor (PBG)	December 2020 to March 2023	Include Aruppukkottai as one of the station for evaluation of entries in advanced stages
Plant Genetic Resources				
22.	CPBG-CBE-PGR-2019-001 Collection, conservation, documentation, viability monitoring and exchange of germplasm in the Ramiah Gene Bank (RGB)	Dr. V. Thiruvengadam Assistant Professor (PBG) Dr.S. Manonmani Professor and Head (PGR)	July 2019 - June 2022	May be continued
AICRP				
Redgram				
23.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea-Evaluation of redgram genotypes under All India Co-ordinated Crop Improvement Project	Dr.R.P.Gnanamalar Professor(PBG) & Head	Continuous	The project may be continued
24.	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 trials may be conducted in correct season. Germplasm may be deposited in Ramaiah gene bank
Blackgram and Greengram				
25.	AICRP/PBG/VBN/MUL/013 All India Coordinated Research Project on MULLaRP	Dr. M.Gunasekaran Professor (PBG) and Head	Continuous	Project may be continued
26.	AICRP/PBG/ADT/MUL/015 All India Coordinated Research Project on MULLaRP	Dr.R.Manimaran Assoc. Professor (PBG)	April 2018 - March 2020	New cultures may be nominated for AICRP
Chickpea				
27.	AICRP / PBG / CHB / 012 AICRP on Chickpea -	Dr.P. Anantharaju Asst.Prof.(PB&G)	Sept 2015 to	Project may be continued

	Breeding		Aug 2020	
AICRP MULLaRP Voluntary Centre				
28.	AICRP-VC/ PBG/ CBE/PUL/001 Evaluation of mungbean and urdbean coordinated trials on breeding	Dr. A. Muthuswamy Assistant Professor (PBG)	2020-21	Project may be continued
29.	AICRP-MULLaRP on Blackgram Evaluation of Blackgram genotypes under AICRP (MULLaRP)	Dr. G. Anand Asst. Professor (PBG)	2019-20	-
AINRP Arid Legumes (Voluntary centres)				
30.	AINRP-VC/PBG/VBN/PUL/001 Voluntary centre under AINRP on Arid Legumes 2020-21	Dr. M.Gunasekaran Professor (PBG) and Head Dr.P. Shanthi, Asst.Prof.(PB&G)	2020-21	Project may be continued
31.	AINRP-VC/PBG/CBE/PUL/001 Voluntary centre under AINRP on Arid Legumes 2019-20	Dr.P. Anantharaju Asst.Prof.(PB&G)	2020-21	Project may be continued
32.	AINRP on horsegram Voluntary centre under AINRP on Arid Legumes 2019-2020	Dr. K.Geetha Professor (PBG)	2020-2021	Project may be continued
External Funded Schemes				
33.	GOI/CPBG/VBN/PUL/2020/ D004 Collaborating DUS Centre for Blackgram	Dr. M.Gunasekaran Professor and Head Dr.P.Shanthi Asst.Professor (PBG)	2020 - 2021	Project may be continued
34.	ICAR/CPBG/VBN/PUL/2016 /D002 Creation of seed hub for increasing indigenous production of pulses in India-Tamil Nadu and its sustenance to the NPRC, Vamban centre of ICAR-AICRPs on Pulses under GOI NFSM	Dr. M.Gunasekaran Professor and Head Dr.P.Shanthi Asst. Professor (PBG)	2016-2021	Project may be continued. The newer varieties of blackgram viz., VBN9,10 and 11 may be included
35.	Augmentation of Seed Replacement Rate in Pulses and Oilseeds through Farmer's Participatory Seed Production	Dr. M.Gunasekaran Professor and Head Dr.P.Shanthi Asst. Professor (PBG)	2020-21	Project may be continued
36.	GOI/CPBG/CBE/PUL/2017/	Dr.D.Kumaraesan	April	Publication may be

	R002 Isolation and characterization of mutants for durable resistance to powdery mildew in blackgram (*Vigna mungo*L.Hepper)	Asso. Professor (PBG)	2018 to March 2021	made at the earlieast
37.	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*viz*hi, Assistant Professor (PBG), ARS, Bhavanisagar Dr.A.ThangaHemavathy, AP (PBG), Dept. of Pulses, CPBG, TNAU	19.06.2017 to 18.06.2020	May be continued
38.	BRNS Development of a cowpea (*Vigna unguiculata* (L.) Walp) variety with terminal flowering habit suitable for mechanical harvest through gamma irradiation.	Dr. K. Thangaraj Assistant Professor (PB&G)	April 2018-March 2021	Determinate plant types may be utilized for development of new varieties.
39.	GoI/CPBG/CBE/PUL/2017/R002 Induced mutagenesis in horsegram (*Macrotyloma uniflorum* Lam. Verdc.) using gamma rays for isolation of short duration and compact high yield mutants	Dr. R. Sudhagar Assistant Professor (PBG) Dr. C.Vanniarajan Professor and Head	Apr,2017 – Mar,.2021	The best performing lines may be fixed in M_5 generation and evaluated in yield trial.
Core Project				
40.	CPBG/VBN/PBG/RGR/2018/ CP178 Induced mutation to evolve an extra early redgram genotype (90-100) days suited to all Seasons of Tamil Nadu	Dr.M.Gunasekaran Professor and Head Dr.P.Ramakrishnan TA (PBG)	2018-2021	Project may be closed
41.	CPBG/CBE/PBG/RGR/2018/ CP 125 Development of high yielding- photo insensitive and early duration (120-130 days) hybrids in redgram	A.ThangaHemavathy Ast. Prof. (PBG)	2018-2021	Project may be closed
42.	CPBG/VRM/PBG/RG/2018/CP113 Development of wilt resistant short duration	Dr. A.Gopikrishnan Assistant professor (PBG) Dr. D. Dinakaran,	April 2018 to March 2021	The susceptible checks may be included for identification of

	redgram variety	Professor Plant Pathology and Head		resistant genotypes
43.	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.M.Gunasekaran Professor (PBG) and Head, Co-Project Leaders Dr.P.Shanthi Asst.Prof. (PBG), NPRC,Vamban 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 March 2021	Project may be closed and materials may be shared with ARS, Thanjavur and TRRI, Aduthurai
44.	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.M.Gunasekaran Professor (PBG) and Head, NPRC, Vamban Co-Project Leaders Dr.P.Shanthi Dr. R. Manimaran, Assoc. Professor (PBG), TRRI, Aduthurai	April 2018 to March 2021	Project may be closed and materials may be shared with ARS, Thanjavur and TRRI, Aduthurai
45.	CPBG/ VMB/ PBG/ GGR/ 2018/ CP 177 Identification of high yielding bold seeded greengram genotype through farmers participatory varietal selection	Dr.M.Gunasekaran Professor (PBG) and Head, Dr.P.Shanthi, Asst. Professor (PBG)	April 2018 to March 2021	Project may be closed
46.	CPBG/PAI/PBG/HRM/2018/ CP175 Development of high yielding medium duration photoinsensitive horsegram genotypes suited to rainfed tracts of North Western Zone through EMS induced mutagenesis	Dr. K.Geetha Professor (PB&G)	April 2018 to March 2021	The best performing mutants may be evaluated in yield trials
47.	Maintenance breeding and breeder seed production in greengram, blackgram, redgram and Cowpea	Dr. P.Shanthi Asst. Prof. (PBG)	April 2020 – March 2025	The project may be continued

	varieties			
48.	CPBG/PKT/PBG/BGR/2016/ 001: Breeder Seed Production in Pulses and Groundnut	Dr. A. Bharathi Asst. Professor (PBG)	From April 2016 to March 2021	Project may be closed
49.	CPBG/BSR/PBG/GGR/2016/ 001 Breeder seed production in green gram and black gram varieties and evaluation of pre released cultures under multi locational testing	Dr. D. Malar*vizh*i Associate Professor (PB&G)	June' 2016 - May' 2021	Project may be closed and new project may be proposed
50.	CPBG/BSR/PBG/RGR/2020/ 001. Maintenance Breeding in Redgram variety BSR 1	Dr. D. Malar*vizh*i, Associate Professor(PBG)	June 2020 to May 2025	Project may be continued
52.	CPBG/ PLR/ PBG/ BSP/ 2016/ 001 Breeder Seed Production in Blackgram	Dr. S. Ganapathy Asst. Professor (PBG)	January 2016 to Decemb er 2021	Project may be closed and new project may be proposed
53.	CPBG/TNJ/PBG/SPN/2019/ 001 Breeder seed Production in paddy and Pulses	Dr. L. Subha Asst. Professor (PBG)	April 2018- March 2021	Project may be closed and new project may be proposed

Plant Biotechnology and Biochemistry

S. No.	Project No. and Title	Project Leader(S)	Duration	Remarks
1.	DBT/CPMB/CBE/DPB/2018R032: Understanding the molecular mechanism of defense in pigeon pea (*Cajanus cajan*) due to infestation by *Helicoverpa armigera*,	Dr. E. Kokiladevi, Associate Professor (Biotechnology)	Sep'2018 to Sep' 2021	Project may be continued; Phenotyping of pigeon pea genotypes against pod borer may be optimized
2.	DPB/CPMBB/Pul/2021/001: Evaluation of rice bean germplasm for yield and nutritional related traits	Dr. M. Sudha, Assistant Professor (Biotechnology)	Dec'2020 to Dec' 2023	Project may be continued; Profiling of anti-nutritional factors in mung bean may be carried out
3.	CPMB/CBE/BIF/BGR/2018/CP006: Whole genome sequencing of contrasting genotypes of blackgram to identify novel genes/alleles and pathways contributing to disease resistance	Dr. M. Jayakanthan, Assistant Professor (Bioinformatics)	Aug'2018 to Sep'2020	Completion report submitted; Publication may be given importance

	against MYMIV			
4.	CPMB/CBE/BIT/GGR/2020/001: Functional validation of mung bean (*Vigna radiata*) LEA genes for drought and salt stress tolerance in a bacterial expression system	Dr. S. Rajesh Assistant Professor	April 2020 to March 2023	Project to be continued; Leads obtained may be used for obtaining Externally funded project
5.	CPMB/MDU/BIT/BGR/2019/001: Exploration of trehalose pathway for enhancing drought tolerance in black gram	Dr. M.L. Mini, Asst. Professor (Biochemistry), AC & RI, Madurai	August 2019 to July 2021	Project may be continued; Publication in peer reviewed journals may be given importance
6.	CPMB/KKM/BIC/BGR/2020/001: Elucidating the changes in metabolism of polyamines in black gram under water deficit	Dr. A. Kavitha Pushpam	August 2019 to July 2021	Project may be continued; Publication in peer reviewed journals may be given importance; New project proposal on Cold plasma technology may be submitted
7.	CPMB/VVR/BIC/PUL/2020/001: Studies on Biochemical status of Moth bean in various genotypes	S. Pandarinathan, Asst. Professor (Biochemistry), AC & RI, Vazhavachanur	Oct'2020 to Sep'2022	Project may be continued; Efforts may be taken to assemble more number of moth bean genotypes from TNAU Ramaiah Gene bank or NBPGR, New Delhi.

D. ACTION PLAN 2019-2023

Plant Breeding and Genetics

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	R.P.Gnanamalar**, 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. M.Gunasekaran, Vamban Dr. A. Thangahemavathi, Coimbatore Dr. A. Gopikrishnan, Virinijipuram Dr.G. Anand Madurai Dr. K. Geetha, Paiyur Dr.A. Nirmalakumari Athiyandal	MLT (May-Sep)	Confirmation of the performance of CRG 16-01 (Jun- Sep)	Seed multiplication (Jan-May)	Special MLT (Jan-May)	Submission of variety release proposal (Oct – Nov.)
	MLT (Sep-Jan)	Confirmation of the performance of CRG 16-01 (Sep – Jan)		ART/OFT (Sep-Jan)	

Theme No 2	**Fast track release of bold seeded greengram varieties suitable for sprout**			
Theme Leader	**Dr. M. Gunasekaran, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. P.Shanthi, 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	Collection of seeds from nominating centres (May 3rd week) Despatch of seeds (May 4th week)	Evaluation of VGG 18-002 under ART/OFT (June-Sep) Sprout Quality analysis	Seed multiplication Conducting OFT	Release of bold seeded greengram varieties suitable for sprout
	MLT (June-Sep)	Evaluation of VGG 18-	Submission of variety	

Dr. P. Geetha, Assoc. Prof. (FSN), AEC&RI, Coimbatore Dr. K. Geetha, AP (FSN), ADAC&RI, Trichy		002 under ART/OFT (Sep-Oct) Sprout Quality analysis	release proposal	
	MLT (Sep-Oct)	Seed multiplication		

Theme No 3	**Fast track release of blackgram variety suitable for summer irrigated area of delta districts to replace ADT 5**			
Theme Leader	**Dr. M. Gunasekaran, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. P.Shanthi, Vamban Dr. L.Subha, Thanjavur Dr. R. Manimaran, Aduthurai	MLT (April-June)	Repeat of MLT (April-June)	Repeat of MLT (April-June). The advance cultures in different MLTs and ARTs should also be included	ART / OFT (April-June) Submission of variety release proposal
	Seed multiplication	Seed multiplication	Seed multiplication	

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,	MLT (Oct-Feb) Seed multiplication	Seed multiplication of ICGV 181674 at Wellington during off season	Evaluation of ICGV 181674 in ART/OFT (Oct-Feb)	Submission of variety release proposal

Kovilpatti Dr.C. Sivakumar, Programme Coordinator, KVK, Dharmapuri			Seed multiplication and Quality analysis	

Theme No 5	**Pyramiding of resistant genes for viral diseases (MYMV, ULCV) and powdery mildew diseases and bruchid resistance in blackgram**			
Theme Leader	**Dr. M. Gunasekaran, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. P.Shanthi, Vamban Dr. A. Muthuswamy, 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 TU 68) x (VBN(Bg) 4 x LBG 17) <u>Set 2</u>: (ADT 3 x TU 68) x (VBN(Bg) 4 x LBG 17) <u>Set 3</u>: (VBN(Bg) 4 x CO 5) x ((MDU 1 x TU 68) <u>Set 4</u>: (MDU 1 x Mash 1008) x (ADT 3 x TU 68)	Evaluation of F_4 of DC for MYMV and ULCV at Vamban under unprotected conditions for YMV and ULCV	Evaluation for seed yield Seed multiplication of promising entries for MLT 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 F_5 of DC for PM at Dept. of Pulses, Coimbatore	
		Evaluation of F_3 of DC (Rabi)		

Theme No 6	**Identification of genotypes for salinity tolerance in greengram and blackgram**				
Theme Leader	**Dr. M.Gunasekaran, Professor and Head, NPRC, Vamban**				
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Deliverables/expected out come**
Dr. P.Shanthi, AP(PBG), Vamban	Screening of germplasm / genetic stock for salinity at Laboratory (100 Nos. each)	Screening of germplasm / genetic stock for salinity at Laboratory (100 Nos. each)	Screening of germplasm / genetic stock for salinity at Laboratory (100 Nos. each)	Evaluation of promising genotypes at targeted location identified places of Salem and Nagapattinam Districts only	Identified lines will be used as donor for crossing programme for salinity tolerance

Theme No 7	**Development of pre breeding population in blackgram and greengram**			
Theme Leader	**Dr. M.Gunasekaran, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. P.Shanthi, 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 pre breeding genetic material 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)*	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	Seed multiplication of promising progenies	

	(F3) Greengram cv VBN(Gg) 2 x Blackgram cv Mash 114 (F7)	stabilised lines for Powdery mildew		

Theme No 8.	**Evaluation and Introduction of rice bean 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 Bhavanisagar Paiyur Yethapur	MLT (June to Aug)	Seed Multiplication (Jun – Aug)	Seed multiplication (June – Sep)	Release of High yielding ricebean variety
	MLT (Sep – December)	MLT Kharif –Spacing trial	Seed multiplication	
	Seed Multiplication (Jan – May)	Grain quality analysis (Jan – May)	Submission of variety release proposal (Oct – Nov)	

New Action plan

Theme No 9.	**Evolving high yielding blackgram genotypes with higher test weight (more than 6.0 grams)**			
Theme leader	**Dr.M.Gunasekaran. Prof. & Head, NPRC, Vamban**			
Name of the scientist and centre	**2021-22**	**2022-23**	**2023-24**	**Expected outcome**
Dr.P.Shanthi, NPRC, Vamban	Crossing block for the following crosses: (CO BG 18-05 x CO BG-1304) other donors from Coimbatore and Vamban after referring to germplasm details.	Evaluation of segregating populations	Evaluation of progenies for yield traits, pest and disease resistance	Release of blackgram variety with higher test weight
	Evaluation of F_1s.			

Theme No 10	Evolving high yielding greengram genotypes with long pod (More than 10 cm)			
Theme leader	**Dr.R.P.Gnanamalar Prof. & Head, Dept of Pulses**			
Name of the scientist and centre	**2021-22**	**2022-23**	**2023-24**	**Expected outcome**
Dr.A.Muthuswamy, **Dept of Pulses**	Crossing block for the following crosses: Three crosses may be included for long pod (more than 10 cm) using VGG 18-002 and WGG 42 as donors Evaluation of F_1s.	Evaluation of segregating populations	Evaluation of progenies for yield traits, pest and disease resistance	Release of greengram variety with long pod

Plant Biotechnology and Biochemistry

Theme I: Exploring *Vigna* genetic diversity for MYMV resistant genes	
Accelerating development of MYMV resistant mungbean genotypes through molecular breeding (Dr. M. Raveendran, Dr. N. Senthil, Dr. M.Sudha, Dr. G. Karthikeyan and Dr. M. Pandiyan)	• To understand the mechanism(s) of MYMV resistance in rice bean (*Vigna umbellata*) • Evaluation of inter-specific population(s) between mungbean and ricebean against MYMV • Genomic analysis of RILs/BILs exhibiting contrasting responses against MYMV • Identification and validation of rice bean loci/genes controlling resistance against MYMV

THEME II. NEXT GENERATION GENOMICS FOR ACCELERATING GENETIC GAINS IN PULSES	
Theme Leader: Dr. M. Raveendran, Professor (Biotechnology)	
Accelerating Genetic Gains in mungbean through MAGIC/ Genomic Selection (Dr.M.Sudha and Dr. N. Senthil)	• Identifying donors for yield components, synchronous maturity and disease resistance • Developing MAGIC population(s) in mungbean • Evaluation of MAGIC population for yield, disease resistance

Whole Genome Sequencing for accelerating gene discovery in pulses (Dr.M.Jayakanthan and Dr.M.Sudha)	• Completion of WGS analysis in black gram • Initiating genomics research in ricebean • Development of genomic resources for breeding applications in pulses
Nutrigenomics in pulses (Dr.D.Uma, Dr. M. Sudha, Dr. V.P.Santhanakrishnan and Dr. S. Pandarinathan)	• Profiling nutritional/therapeutic compounds in minor pulses (rice bean/moth bean) • Profiling anti-nutritional factors in pulses

2. CROP MANAGEMENT

A. DECISIONS MADE ON ADOPTION / OFT

A1. For Adoption

a. Mechanization in sowing of pulses

Centers: AEC&RI, Kumulur, NPRC, Vamban and DARS, Chettinad

Sowing with Turbo seeder at a seed rate of 22 $kgha^{-1}$under dry condition along with adoption of other package of practices for weed management, fertilizer and pest management recommended for summer irrigated blackgram cultivation will fetch higher yield (907 kg/ha), gross return (Rs. 54420 /ha), net return (Rs.33320 /ha) and BCR (2.58) with labour reduction for sowing as compared to conventional practices.

b. Standardization of drip fertigation schedule for Blackgram

Centres: WTC, TNAU, Coimbatore, Dept. of Pulses, TNAU, Coimbatore, NPRC, Vamban, AEC & RI, Kumulur, and AC& RI, Vazhavachanur

Sowing of blackgram @ 20kg/ha in raised bed (90cm) with the spacing of 30x10 cm adopting drip irrigation system by placing of lateral at the spacing of 90 cm with dripper spacing of 60cm at the centre of the bed. Drip irrigation once in three days and Drip fertigation of 100% recommended dose of 25:50:25 kg/ha once in three days through water soluble fertilizers during vegetative stage (1-20 DAS) @ 60:80:20 % of recommended quantity of NPK, flowering stage (21-40 DAS)40:10:40 % of recommended quantity of NPK, pod formation stage(41-55 DAS)@0:10:40 of recommended quantity of NPK with the quantity of water soluble fertilizers is given in the table is important to achieve higher grain yield of 1324 kg /ha, higher WUE (4.70 kg /ha /mm), net return (Rs.43132 /ha)and BC ratio (1.98) when compared to the conventional cultivation of blackgram.

Crop stage (DAS)	Fertilizer grade	Total Fertilizer (kg/ha)
0-20	MAP (12:61:0) Urea(46%N) SOP(50 % K)	66.00 15.36 10.00
21-40	19:19:19 Urea(46%N) SOP(50 % K)	26.00 11.00 10.00
41-55	0:52:34 (MPP) SOP(50 % K)	9.66 14.24

MAP-Mono Ammonium Phosphate, SOP- Sulphate of Potash & MPP- Mono Potassium phosphate

c. Enhancing productivity of blackgram through Sea Weed Extract

Centres: Department of Pulses, Coimbatore; NPRC, Vamban and AEC&RI, Kumulur

Basal application of SWE granule @ 10 kg /ha and foliar spray of SWE (2.5 ml/lit) along with RDF (25:50:25:20 kg NPKS/ha) enhanced the productivity of blackgram.

d. Redgram based crop intensification under rainfed ecosystem

Centre: Dept. of Pulses, Coimbatore

Under rainfed condition, strip intercropping of redgram cotton at 4:4 ratio had higher crop equivalent yield (668 kg /ha), Net return (Rs. 36755 /ha) and BCR (2.4) when compared to sole redgram.

e. Effect of growth regulating substances in improving crop establishment and harvest Index in greengram under sodicity

Centers: ADAC&RI, Trichy and Dept. of Crop Physiology, TNAU, Coimbatore

Greengram seeds treated with Cowpea sprouts extract (2 %) followed by the foliar spray of Panchagavya (3 %) at flowering and pod initiation stages recorded higher number of cluster /plant (13), number of pods/plant (33), 100 seed weight (3.8 g) and grain yield (635 kg ha^{-1}) under sodicity soil condition.

f. Influence of chemical nipping on the productivity of rainfed horsegram under altered crop geometry

Centres: Dept. of Agronomy, Coimbatore, RRS, Paiyur and KVK, Papparapatty

Sowing of horsegram by broadcast method and spraying of chlormequat chloride @ 250 ppm during tendril initiation stage recorded higher horsegram yield (892 kg/ha) and net return (Rs.13563/ha) than the farmer's practice of no nipping(775 kg/ha and Rs. 10743/ha).

g. Multi-nutrient foliar fertilization for irrigated greengram

(Lead Centre: Dept. of SS&AC, TNAU, Cbe; Co-ordinating centres: AC&RI, Killikulam; AC&RI, Madurai; AC&RI, Kudumiyanmalai; TRRI, Aduthurai& RRS, Paiyur)

In multi-nutrient deficient soils, foliar application of 2% water soluble fertilizer (WSF) + 1% Liquid multi micronutrient (MMN) at 30 and 45 DAS along with recommended NPK can be adopted for enhancing greengram productivity under irrigated conditions with higher seed yield (13% over 2% DAP), N uptake, protein content and BCR (2.64).

h. Nodule Associated Plant Probiotics (NAPPs) for nodulation and yield enhancement in Blackgram

(Lead Centre: Dept. of Agricultural Microbiology, TNAU, Cbe; Co-ordinating centres, NPRC, Vamban, ORS, Tindivanam & TRRI, Aduthurai)

Seed inoculation of root nodule *Rhizobium* VRE1, *Candida tropicalis* VYW1 and *Paenibacillus taichungensis* TNEB6 @ 125 mL ha^{-1} seeds and Arbuscular Mycorrhizal Fungi

(AMF) spore @ 1g kg^{-1} of seed, enhanced nodulation and yield **(15%)** over existing recommendation in blackgram.

i. Drought tolerant Rhizobial strains in Moth bean (*Vigna aconitifolia)*

(Lead Centre: AC&RI, Vazhavachanur; Co-ordinating centres, AC&RI, Madurai & CEM, Athiyandal)

Rhizobium (MB-1) having a drought tolerant trait with Phosphorus Solubilising Bacteria, Potassium Releasing Bacteria (KRB -1) + 75 % RDF (NPK)can be recommended for moth bean to increase the yield in drought prone areas.

A2. For On Farm Trials

OFT: 1 Agro technologies for rice fallow pulses

Objective : To revisit the Agro technologies for rice fallow pulses

Treatments

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

Variety	Blackgram ADT 6/ VBN 9 / ADT 3 &Greengram ADT 3
Time of sowing	During 2nd Fortnight of Jan .2-4daysprior to mechanical rice harvest in waxy mire condition of the soil.
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} each)
Herbicide	Tank mix application of Quizalofop-ethyl @ 50 g ha^{-1} and Imazethapyr@50 g ha^{-1} at 15- 20 DAS
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 2022)

Observations to be recorded:

Plant population /m^2, Plant height, Dry matter production, No. of clusters /plant, No. of pods /plant, Seed yield and economics.

Centres& Scientist In-charge:

TRRI, Aduthurai (Co-ordinatingcentre) - Dr. C. Umamaheswari, Assoc. Prof (Agron)
AC & RI, Killikulam-Dr.T.Sampath, Asst. Prof. (Agronomy)
SWMRI, Kattuthottam- Dr. S. Porpavai, Prof. (Agronomy) & Head

OFT 2 - Enhancing productivity of green gram through foliar spray of fermented fish waste extract

Objectives

- To study the effect of fermented fish waste extracts as foliar spray on growth and yield of greengram
- To find out the effect of fermented fish waste extracts as foliar spray on pest and disease incidence and economics of greengram

Treatments

T_1- 1.5% Fermented fish waste extract
T_2- 2.0% Fermented fish waste extract
T_3- Control
Season: *Kharif* 2021 ; Foliar spray at flowering stage & 15 DAS

Observations to be recorded

Growth and yield parameters, leaf chlorophyll, observation on
Pest & diseases, grain yield and Economics.

Centres& Scientist In-charge

Co –ordinating centre: ADAC&RI, Trichy : Dr. T.Ramesh, Asst. Prof. (Agronomy)
NPRC, Vamban : Dr. S. Marimuthu, Asst. Prof. (Agronomy)
AC&RI, Madurai: Dr. E.Subramanian, Asst. Prof. (Agronomy)
ARS, Kovilpatti : Dr. S. Manoharan, Asst. Prof. (Agronomy)

OFT 3. 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

Number of tendrils plant^{-1}, days to flowering, yield (kg plot^{-1}), estimated yield (kg ha^{-1}) and BC ratio.

Co ordinating Centre & Scientist in-charge:

RRS, Paiyur- Dr. R. Sivakumar, Asst. Professor (Crop Physiology), RRS, Paiyur

Other Centres& Scientists In-Charge

Dr. Senbagavalli, Associate Professor, Dept. of Agronomy, TNAU, Coimbatore
Dr. R. Nageswari, Asst. Prof. (Agronomy), TCRS, Yethapur

OFT 4. Mitigation of water stress by Hydrophilic Polymer seed coating in Blackgram

Treatment details

- **T_1.** Control (No seed treatment with recommended package of practices)
- **T_2.** Control (No seed treatment with water stress upto 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 + water stress upto 20 days after life irrigation

Observations to be recorded:

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

Co-ordinating centre& Scientist In-charge:	AC&RI, Kudimiyanmalai	Dr.V.Vijayalakshmi Asst. Prof. (SST)
Centres& Scientist in-charge	ARS, Vaigaidam	Dr.K.Sundaralingam Professor and Head
	AC&RI, Madurai	Dr.K.Sujatha Prof. (SST)
	ARS, Bhavanisagar	Dr.K.Malarkodi Assoc. Prof. (SST)
	KVK, Vamban	Dr.K.NelsonNavamaniraj, Asst. Prof. (SST)

Duration: One year (2020-21) and will be continued for 2021-22.

B. RESEARCH PROJECTS ON PULSES

Crop	Centre	URP	AICRP	EFP	Total
Agronomy					
Blackgram	NPRC, Vamban	2	1	-	3
	Pulses, Coimbatore	1	1	-	2
	TRRI, Aduthurai	-	1	-	1
	SOA,Coimbatore	1	-	-	1
	ARS, Kovilpatti	-	1	-	1
	AEC&RI, Kumulur	1	-	-	1
	AC & RI, Vazhavachanur	1		-	1
Greengram	NPRC, Vamban	1	1	-	2
	TRRI, Aduthurai	-	1	-	1
	AD.AC&RI, Trichy	1	-	-	1
	ARS, Kovilpatti	1	-	-	1
Redgram	Department of Pulses, Coimbatore	1	1	-	2
Green manure	AC &RI, Kudumiyanmalai	1	-	-	1
Total		11	7	-	18
Crop physiology					
Blackgram	Dept. of CRP, TNAU, Coimbatore	1	-	-	1
Greengram	Dept. of CRP, TNAU, Coimbatore	3	-	1	4
Redgram	Dept. of CRP, TNAU, Coimbatore	1	-	-	1
Horsegram	RRS, Paiyur	1	-	-	1

		6		**1**	**7**
Soil Science and Agricultural Chemistry					
Blackgram	SS&AC, TNAU, Coimbatore	1	1	-	2
	AC&RI, Madurai	1	-	1	2
Green gram	SS&AC, TNAU, Coimbatore	1	-	-	1
Redgram	SS&AC, TNAU, Coimbatore	1	-	-	1
Bengalgram	SS&AC, TNAU, Coimbatore	-	1	-	1
Total		4	2	1	7
Agricultural Microbiology					
Blackgram	NPRC, Vamban	1	1	-	2
	Dept. ofAgrl. Micro, TNAU, Coimbatore	1	-	1	2
Greengram	NPRC, Vamban	-	1	-	1
	ADAC&RI, Trichy	1	-	-	1
Redgram	NPRC, Vamban	-	1	-	1
Moth bean	ORS, Tindivanam	1	-	-	1
Pulses	AC&RI, MDU	1	-	-	1
	TRRI, Aduthurai	1	-	-	1
Total		6	3	1	10

Seed Science and Technology					
Blackgram, greengram and horse gram	Seed Centre, Coimbatore	2	-	-	2
Redgram& Soybean	Seed Centre, Coimbatore	1	1	-	2
Pulses	KVK,Thiruppur	1			1
Total		**4**	**1**	**-**	**6**

C. REMARKS ON ONGOING ACTION PLANS/URPS/CORE/AICRPS / EXTERNALLY FUNDED PROJECTS

AGRONOMY

Sl. No.	Project No. and Title	Remarks
ACTION PLAN		
1	Evaluation of nursery technique for transplanting redgram (2020-21 to 2022-23) Co-ordinating centre: Department of Agronomy, TNAU, Coimbatore Department of Agronomy, AC & RI, Madurai Dr. A. Gurusamy, Professor (Agronomy) Dept of Pulses, Coimbatore Dr.S.AnittaFanish, Assistant Professor (Agronomy) Dr.P.Parasuraman, Professor and Head, RRS, Paiyur	The project to be continued.
2	Response of different genotypes of greengram for organic farming (2020-21 to 2022-23) Dr.S. Manickam, Professor and Head Dept. of Sustainable Organic Agriculture TNAU, Coimbatore Dr. M. Suganthy, Associate Professor (Agrl. Ento)	The project to be continued.
3	DCM/VBN/AGR/GGR/2020/001 Augmentation of green gram productivity in problem soils through suitable variety and phosphorus fertilization (2020-21 to 2022-23) Co-ordinating centre: NPRC, Vamban NPRC, Vamban (Acid soil) Dr. S.Marimuthu Assistant Professor (Agronomy) NPRC, Vamban Dr.P.Kannan, Assistant Professor (SS&AC) AC&RI, Madurai ADAC&RI, Trichy (Sodic soil) Dr. T. Ramesh Assistant Professor (Agronomy) Dr.J.Ejilane, Assistant Professor (Microbiology) ARS, Kovilpatti (Normal soil) Dr.S.Manoharan, Assistant Professor (Agronomy) Dr.V.Sanjivkumar, Assistant Professor (SS&AC)	Phosphobacteria population alone may be enumerated. The project to be continued.
4	DCM/CBE/AGR/BGR/2020/001 Standardization of drip fertigation schedule for Blackgram (2019-2022) Theme leader: Dr.S.Panneerselvam, Director, WTC, TNAU, Coimbatore Implementing Centre: Dept of Pulses, TNAU Dr.S.AnittaFanish, Asst. Prof.(Agron),TNAU NPRC, Vamban Dr.S.Marimuthu,Asst. Prof. (Agronomy),	Project to be closed. The technology may be recommended for adoption.

	AC & RI, Vazhavachanur- Dr.P. Ayyadurai, Asst. Prof. (Agronomy). AEC & RI, Kumulur- Dr.S.Vallalkannan, Asst. Prof. (Agronomy),	
UNIVERSITY RESEARCH PROJECTS		
Redgram		
1	DCM/KDM/AGR/GMC/2021/001 Response of crop plants to intercrop based green manuring in surface crust Alfisol under different land Configuration (January 2020 to July 2022) Dr.R.Chandrasekaran, Professor (Agronomy) AC &RI, Kudumiyanmalai	The project to be continued.
CORE PROJECT **Greengram**		
1	DCM/TRY/AGR/RIC/2018/CP151 Evaluation of fermented egg and fish waste extracts as foliar spray on yield and economics of rice and green gram (February, 2019 to February, 2021) Dr. T. Ramesh, Asst Prof. (Agronomy) AD.AC&RI Navalur Kuttapattu, Tiruchirappalli	The project to be proposed for OFT
AICRP PROJECT: Blackgram		
1	AICRP/PBG/VBN/MUL/017 U1 –a : Agronomic evaluation of AVT2 *Kharif* urdbean genotypes under varied plant population (2020) (June 2020 to May 2021) Dr. S.Marimuthu, Asst. Prof. (Agronomy) NPRC, Vamban	The project to be continued.
2	AICRP/PBG/VBN/MUL/017 U1 –b: Agronomic evaluation of AVT2 *Rabi* urdbean genotypes under varied plant population (2020) (June 2020 to May 2021) Dr. S.Marimuthu, Asst. Prof. (Agron) Agronomy) NPRC, Vamban	The project to be continued.
3	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 2021) Dr. S. Marimuthu, Asst. Prof. (Agronomy), NPRC, Vamban	The project to be continued.
4	AICRP/PBG/VBN/MUL/017 Residual effect of fertilizer doses, organic manure and biofertilizer for yield maximization of Maize after cultivation of Urdbean (Modified 2018) (June 2017 to May 2021) Dr. S. Marimuthu, Asst. Prof. (Agronomy), NPRC, Vamban	The project to be continued.
5	AICRP/PBG/VBN/MUL/018 Evaluation of post-emergence herbicides in urdbean (June 2019 to May 2021) Dr. S.Marimuthu, Asst. Prof. (Agronomy), NPRC, Vamban	The project to be continued.
6	AICRP/ PBG/ ADT/ MUL/ 015 Yield maximization in summer blackgram through agronomic management(April 2020 - March 2022) Dr. C. Umamageswari, Assoc. Prof. (Agronomy), TRRI, Aduthurai.	The project to be continued.

7	AICRP/ PBG/ ADT/ MUL/ 015 Yield maximization in rice fallow blackgram through agronomic management(April 2019 - March 2021) Dr. C. Umamageswari, Assoc. Prof. (Agronomy),TRRI, Aduthurai	The project to be continued.
8	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		
9	AICRP/PBG/VBN/MUL/017 M1: Agronomic evaluation of AVT2 *Rabi* mungbean genotypes under varied plant population (2020) (June 2020 to May 2021) Dr. S. Marimuthu, Asst. Prof. (Agronomy), NPRC, Vamban	The project to be continued.
10	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 2021) Dr. S. Marimuthu, Asst. Prof. (Agronomy), NPRC, Vamban	The project to be continued.
11	AICRP/PBG/VBN/MUL/017 Residual effect of fertilizer doses, organic manure and biofertilizer for yield maximization of Maize after cultivation of mungbean (Modified 2018) (June 2017 to May 2021) Dr. S. Marimuthu, Asst. Prof. (Agronomy), NPRC, Vamban	The project to be continued.
12	AICRP/ PBG/ ADT/ MUL/ 015 Effect of foliar spray of nutrientes and different land configurations for yield maximization of mungbean (April 2018 - March 2021) Dr. C. Umamageswari, Assoc. Prof. (Agronomy),TRRI, Aduthurai	The project to be continued.
13	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 2021) Dr. C. Umamageswari, Assoc. Prof. (Agronomy),TRRI, Aduthurai	The project to be continued.
AICRP PROJECT :Redgram		
14	AICRP/PBG/CBE/PIP/010 Evaluation of post emergence herbicides in pigeonpea (2019 -2021) Dr. S. AnittaFanish, Asst. Prof. (Agronomy), Dept. of Pulses, TNAU, Coimbatore	The project to be continued.
15	AICRP/DCM/KPT/004Intercropping of nutricereals and pulses with medium duration pigeon under *alfisols* condition (June 2019 to May 2022) Dr. S.Manoharan, Asst.Prof. (Agronomy), ARS, Kovilpatti	The project to be continued.
16	AICRP/DCM/KPT/004 Intercropping of nutricereals with medium duration pigeon under *vertisols* condition (June 2019 to May 2022) Dr. S.Manoharan, Asst.Prof. (Agronomy), ARS, Kovilpatti	The project to be continued.

CROP PHYSIOLOGY

S. No.	Project No. and Title	Remarks
Action Plan		
1.	Development of foliar formulations for yield enhancement in	The project to be

	redgram under normal and water deficit conditions (2019 to 2022) Dr. P. Jeyakumar, Prof.(Crop Physiology) Dr. V. Babu Rajendra Prasad, Assistant Professor Department of Crop Physiology, TNAU, Coimbatore	continued
University Research Project		
1.	DCM/CBE/CRP/GGR/2021/001: Study on melatonin induced changes in physiology and metabolome of greengram (*Vigna radiata* L.) under drought and high temperature stresses (2020 to 2022) Dr. M.K. Kalarani Prof and Head, Department of Crop Physiology TNAU, Coimbatore	The project to be continued
2.	DCM/ECK/CRP/GGR/2020/001: Compatibility studies of pulse wonder with insecticides and fungicides in greengram (2020 to 2022) Dr. C. Tamilselvi, Asst. Professor (Crop Physiology) Dr.Thirumurugan, Professor (Entomology) AC&RI, Eachangkottai, Thanjavur	The project to be closed
3.	DCM/PAI/CRP/HGM/2019/001: Physiological manipulation for altering the horsegram growing season (2018 to 2020) Dr. R. Sivakumar Asst. Professor (Crop Physiology), RRS, Paiyur, Krishnagiri	The project to be closed and completion report to be submitted
University Core Project		
1.	DCM/CBE/CRP/BGR/2018/CP130: Screening, evaluation and identification of suitable blackgram varieties for saline areas (2018 to 2020) Dr. V. BabuRajendra Prasad Assistant Professor, Department of Crop Physiology TNAU, Coimbatore	The project to be closed and completion report to be submitted
2.	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 to be closed and completion report to be submitted
Externally Funded Project		
1.	DST/DCM/VBN/CRP/2017/003: Physiological and Molecular dissection of Greengram (*Vigna radiata* (L.) Wilczek) genotypes for drought and high temperature stress tolerance (2017 to 2020) PI: Dr. V. BabuRajendra Prasad Assistant Professor Co-PI: Dr. A. Senthil, Associate Professor Department of Crop Physiology, TNAU, Coimbatore	The project to be closed and completion report has to be submitted

SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

Sl. No.	Project No. and Title	Remarks
University Research Projects		
Blackgram		
1.	NRM/CBE/SAC/BGR/2019/001 Evaluation of N utilization potential of prominent blackgram varieties of TNAU (July 2019 to June 2021)(Action Plan project) Centre: Coimbatore Dr. R.K.Kaleeswari, Professor (SS&AC) Centre: Killikulam Dr. S. Suresh, Professor & Head Centre: Madurai Dr. P. Kannan, Asst Prof. (SS&AC) Centre: RRS,Paiyur Dr.M. Vijayakumar, Asst. Prof. (SS&AC) Centre: Kudumiayanmalai Dr. R. Jagadeeswaran, Assoc. Prof. (SS&AC) Centre: Aduthurai Dr.K.Sathiya Bama, Assoc. Prof.(SS&AC)	• The project may be closed and completion report may be submitted. • The research findings may be submitted for information.
2.	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 (Aug. 2019 -Mar.2021) Dr.R.Indirani, Asst.Professor (SS&AC),AC&RI, Madurai	• Composite package to reduce the cost of zinc fertilizer by inclusion of ZSB may be explored. • Action plan for the year 2021-2022 may be submitted with graded levels of Zn along with ZSB.
Greengram		
3.	NRM/CBE/SAC/GGR/2019/001 Multi-nutrient foliar fertilization for irrigated greengram (July 2019 to June 2021) (Action Plan project) Centre: Coimbatore Dr. R.K.Kaleeswari, Professor (SS&AC) Centre: Killikulam Dr.Suresh, Professor & Head Centre: Madurai Dr. P. Kannan, Asst Prof. (SS&AC) Centre: RRS,Paiyur Dr.M. Vijayakumar, Asst. Prof. (SS&AC) Centre: Kudumiayanmalai Dr. R. Jagadeeswaran, Assoc. Prof. (SS&AC) Centre: Aduthurai Dr.K.Sathiya Bama, Assoc. Prof.(SS&AC)	• Recommended for adoption • The research findings of this project conducted for two years (2019-2020 and 2020-2021) at six centres may be submitted for adoption. • Project to be closed and completion report to be submitted

		at the earliest.
Redgram		
4.	NRM/CBE/SAC/RGR/2019/001 Effect of crop specific Nutrient Mixture on Yield Maximization and Quality Improvement in Redgram (Oct. 2019 to Sep. 2021) Dr.M.R.Backiyavathy, Professor (SS&AC) TNAU, Coimbatore	• Project is to be continued as per objectives • After harvest, results of ongoing experiments are to be compiled and reported.
AICRP Projects		
Blackgram		
1.	AICRP/NRM/CBE/SAC/004 Screening pulses genotypes for Zn and Fe efficiency and bio-fortification (Apr. 2020 to Mar. 2022) Dr.T.Chitdeshwari, Prof.(SS&AC), TNAU, Coimbatore	• Research findings on screening of genotypes for Zn and Fe utilization may be submitted for information • Project is to be continued as per objectives.
Bengalgram		
2.	AICRP/NRM/CBE/SAC/002 AICRP on Soil Test Crop Response Correlation Studies through IPNS for Bengalgram (Sep. 2020 to Aug. 2023) Dr. M. Gopalakrishnan,Asst.Prof(SS&AC) Dr.S. Maragatham, Assoc.Prof.(SS&AC)& Dr.J.Balamurugan, Asst.Prof(SS&AC) TNAU, Coimbatore	• Fertilizer prescription equations are to be developed. • In *Rabi* season of 2021 validation trials have to be conducted. • Project is to be continued.
Externally Funded Projects		
1.	DST/ACRI/MDU/DSE/2020/R010 Effect of organo-mineral biochar phosphorus fertilizer on phosphorus availability, utility and yield of pulse crop in low pH Alfisol (Feb.2020 to Jan.2023) Dr.P.Kannan,Asst.Professor (SS&AC), AC&RI,Madurai	• Assessment of P fractions and its role in complexing with organic matter has to be studied in the ensuing cropping season. • Impact of phosphobacteria on OC content may be evaluated.

AGRICULTURAL MICROBIOLOGY

Sl. No.	Project No. and Title	Remarks
Action plan		
Blackgram		
1.	Non-rhizobial endophytic yeast (NREY), *Candida tropicalis* VYW1 and *Rhizobium* sp. VRE1 for crop health, drought protection and sustainable productivity of blackgram ((Action Plan project) Dr. U. Sivakumar Professor (AGM) Dept.of Agrl. Microbiology, TNAU, Coimbatore Dr. R. Parimala devi Asst. Professor (AGM),NPRC, Vamban Dr. A. Ramalakshmi Asst.Professor (AGM), Cbe Dr. E. Jamuna Asst.Professor (AGM), ORS, TVM Dr. T. Sivasankari Devi, Asst. Professor, (AGM) TRRI, Aduthurai	• Recommended for adoption. • Assay on phosphatase activity may be carried out.
University Research Projects		
1.	**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 January'2021) Dr.R. Parimaladevi, Assistant Professor (Agrl. Microbiology), NPRC, Vamban	• The project may be closed. The completion report may be submitted at the earliest.
2.	**NRM/CBE/AGM/BGR/2019/001** Validating the stability of *Rhizobium* mutant VM1suitable for blackgram under acid soil condition (October' 2019 to September'2020) (Action Plan project) Dr.M.Gnanachitra Associate Professor (Microbiology), Dept. of Agrl Micro, TNAU, Cbe-3	• Project may be closed. The completion report may be submitted at the earliest.
3.	**NRM/MDU/AGM/PUL/2020/001** Development of efficient indigenous *Rhizobium* strains for yield maximization of pulses in Madurai district (September' 2020 to October' 2023) Dr. M. Jeya Bharathi Asst. Professor (Agrl. Microbiology) Dr. E. Subramani Asst. Professor (Agronomy)	• Use standard cultures/existing cultures for comparison studies. • Isolation of new *Rhizobium* may be considered based on location/soil. • Nodule endophytes may be explored.
4.	**NRM/ADT/AGM/PUL/2020/001:** Development of salt tolerant *Rhizobium* for enhancing productivity of rice fallow pulses under salinity stress (August' 2020 to August' 2022)	• Nodule endophytes may be explored for microbial consortia development.

	Dr. T. Sivasankari Devi, Asst. Professor, (Agrl. Microbiology), TRRI, Aduthurai	
Greengram		
5.	**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	• Nodule endophytes may be explored for microbial consortia development for sodic soils. • Salt tolerance mechanism of the cultures may be evaluated. • Based on the results of the present study, a new action plan may be proposed.
Mothbean		
6.	**NRM/TVM/AGM/MOB/2017/001:** Isolation and screening of efficient Rhizobial strains and evaluation of their efficiency in Moth bean (*Vigna aconitifolia)* (April 2017- March 2021) Dr. R. Brindavathy, Associate Professor (Agrl. Microbiology) Oil Seeds Research Station Tindivanam,Villupuram District	• Project may be closed. The completion report may be submitted at the earliest.
AICRP Projects		
Blackgram		
1.	**AICRP/PBG/VBN/MUL/013:** Study on the effect of bio-inoculants on blackgram (April, 2019 to March, 2022) Dr. R. Parimala devi, Assistant Professor (Agrl. Microbiology), NPRC, Vamban.	• The best performing Vamban strains in AICRP trials may be proposed as action plan. • Promote our own microbial strains under AICRP trials
Greengram		
2.	**AICRP/PBG/VBN/MUL/01:** AICRP on MULLaRP (Mung bean) (April, 2019 to March, 2022) Dr. R. Parimala devi, Assistant Professor (Agrl. Microbiology), NPRC, Vamban.	• The best performing Vamban strains in AICRP trials may be proposed as action plan. • Promote our own microbial strains under AICRP trials
Redgram		
3.	**AICRP on Pigeonpea** (April, 2019 to March, 2022) Dr. R. Parimala devi, Assistant Professor (Agrl. Microbiology), NPRC, Vamban.	• To be continued

Externally funded projects		
1.	**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. **Principal Investigator** Dr. R. Anandham, Asst. Prof. (AGM) Dept. of Agrl. Microbiology, TNAU, Cbe **Co-Principal investigators** Dr. N.O. Gopal, Prof.(AGM),Dept. of Agrl. Microbiology, TNAU, Cbe Dr. I. Johnson, Asst. Prof. (Plant Pathology) Dept. of Plant Pathology,TNAU, Cbe	• Volatile compounds that possess antagonistic action against the said pathogens *Streptomyces* and *Bacillus* may be explored.

SEED SCIENCE AND TECHNOLOGY

Sl. No.	Project No. and Title	Remarks
Action plan		
1	Seed encapsulation for mechanized sowing in greengram (2019-20 & 2020-21) Dr.K.Raja, Assoc. Prof. (SST) DSST, Seed Centre, TNAU, Coimbatore. Dr.P.Mohan Kumar, Asst. Prof. (Farm Mach.) AEC & RI, TNAU, Coimbatore.	The project may be continued.
	University Research Projects	
1	SEC/CBE/SST/PUL/2019/001 Studying the impact of hard seeds on normal seedling production and vigour status in blackgram, greengram and horsegram varieties (June 2019 to May 2021) Dr.G.Sasthri, Assoc. Prof. (SST) Assoc. Prof. (SST), DSST, TNAU, Coimbatore	The project may be extended for one more year and extension proposal may be submitted for approval.
2	SEC/CBE/SST/RGR/20220/001 Standardization of early seed harvesting method for speed breeding in pigeonpea (April 2020 to March 2022) Dr.S.Lakshmi, Assoc. Prof. (SST)	The project may be continued
3	SEC/CBE/SST/PUL/2019/002 Documentation of seed quality status of farm saved seeds of pulses in major pulse growing districts in Tamil Nadu (September 2019 to July 2021) Dr.M.Kathiravan, Asst. Prof. (SST) KVK, Thiruppur	The project may be continued

AICRP PROJECT		
1	AICRP/STR/CBE/SEP/001 Use of nano-particles in enhancing seed quality and storability of seeds (2018-2021) Dr. C.Vanitha Asst. Prof. (SST) Seed Centre, TNAU, Coimbatore	The project may be continued

D. NEW ACTION PLAN

Action Plan 1. Water saving and cost effective irrigation technology for blackgram cultivation (2021to 2023)

Objective:

- To identify cost effective irrigation method for blackgram cultivation

Treatments

Irrigation method

T_1 : Check basin method
T_2 : Raised bed method
T_3 : Drip irrigation system
T_4 : Sprinkler irrigation system
T_5 : Rain hose irrigation system

Note : Quantity of water to be applied @100% PET in all the system of irrigation .
Recommended Fertilizer dose to be applied through fertigation under drip irrigation @ 25:50:25& 20 NPK kg ha^{-1} and blanket recommendation in other methods of irrigation

Crop stage (DAS)	Duration in days	Number of fertigation/ stage (3 days interval)	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied (Kg)			% of requirement		
					N	P	K	N	P	K
0-20	20	6	MAP (12:61:0) Urea(46%N) SOP(50 % K)	66.00 15.36 10.00	7.92 7.06 -	40.26 - -	- - 5.00	60	80	20
					14.98	40.26	5.00			
21-40	20	6	19:19:19 Urea(46%N) SOP(50 % K)	26.00 11.00 10.00	4.94 5.06 -	4.94 - -	4.94 - 5.00	40	10	40
					10.00	4.94	9.94			
41-55	15	5	0:52:34 (MKP) SOP(50 % K)	9.66 14.24	- -	5.02 -	3.28 7.12	-	10	40
					-	5.02	10.40			
Total					24.98	50.22	25.34	100	100	100

Time of Application

Vegetative stage (1 – 20 DAS) - 60:80:20 quantity % of NPK
Flowering stage (21-40 DAS) - 40:10:40 quantity % of NPK
Pod formation stage (41-55 DAS) - 0:10:40 % quantity of NPK
Maturity stage (55 DAS to harvest) -

Design: Factorial RBD Season: *Kharif* & Summer

Observations to be recorded:

Initial soil characteristics, post harvest soil characteristics No fertigation, growth and yield parameters, water use efficiency, water productivity and economics

Co ordinating centre

Dr.S. Panneerselvam, Director, WTC, TNAU, Coimbatore

Implementing Centre& Scientist incharge:

NPRC, Vamban- Dr.S. Marimuthu, Asst. Prof. (Agronomy)
AEC & RI, Kumulur - Dr.S.Vallalkannan, Asst. Prof. (Agronomy)

Action plan 2: Agronomic evaluation of spacing and fertilizer requirement of ricebean

Objective: To evaluate the optimum spacing and fertilizer requirement for enhancing the productivity of rice bean

Treatments

Main plot (Spacing)

S_1 - 30 x 10cm
S_2 - 30 x 15 cm
S_3 - 45 x 10 cm
S_4– 45 x 15 cm

Sub plot (fertilizer levels)

F_1 - 75 % RDF
F_2 - 100% RDF
F_3 - 125 % RDF
(Note: 100% RDF is 25 : 50:25 20 kg NPKS /ha)

Design: Split plot Season: *Rabi* Replication : Three

Observations to be recorded:

Initial soil characteristics, post harvest soil characteristics, growth and yield parameters, yield and economics

Co ordinating centre& Scientist in-charge:

Department of Pulses, TNAU, CBE - Dr. S. AnittaFanish, Asst. Prof. (Agronomy)

Action Plan 3: Evolving System of Pulses Intensification on blackgram (2021-22 and 2022-23)

Objectives: To evolve agro techniques for enhancing productivity of blackgram under system of pulses intensification

Treatments

Particulars	T_1 - Improved practices	T_2 -Farmers practices
Organic manure	6.25 tons of FYM	6.25 tons of FYM
Land configuration	Raised bed	Flat bed
Seed treatment	Imidacloprid (5 ml kg^{-1}) + *Bacillus subtilis* (10 g kg^{-1}) + *Rhizobium* and Phosphobacteria (30 g kg^{-1} each)	*Rhizobium* (3 packets / ha)
Spacing	30 x 15cm	30 x 10 cm
Irrigation	Through drip	Surface irrigation
Nutrient management	Drip fertigation of 25 :50 :25 : 20 kg NPKS ha^{-1}	Basal application of 25 :50 : 25 : 20 kg NPKS ha^{-1}
Weed management	PE application of Pendimethalin + Imazethapyr (32% EC) @1 kg a.i ha^{-1} followed by POE tank mix application of Quizalofop-ethyl @ 50 g ha^{-1} and Imazethapyr @50 g ha^{-1} at 15-20 DAS	PE application of pendimethalin @1 kg a.i ha^{-1} followed by hand weeding on 25 DAS.
TNAU Pulse wonder application	Drip fertigation of water soluble pulse wonder at 30, 40 and 45 DAS @ 5 lit /ha each times	TNAU pulse wonder @ 5 kg ha^{-1} at peak flowering stage

Season: *Kharif*

Observations to be recorded:

Plant population / m^2, Plant height, No. of primary branches / plant, No. of pods / plant, Seed yield and economics.

Co-ordinator: Director, WTC, TNAU, Coimbatore

Dr. M.K. Kalarani, Prof and Head, Department of Crop Physiology TNAU, Coimbatore

Implementing centres & Scientist In-charge

Dept. of Pulses, TNAU, CBE: Dr. S. AnittaFanish, Asst. Prof. (Agronomy)
NPRC, Vamban : Dr. S. Marimuthu Asst. Prof (Agronomy)
AEC &RI, Kumulur : Dr. S. VallalKannan, Asst. Prof (Agronomy)
AC & RI, Killikulam : Dr. J. Bhuvaneswari, Asst. Prof. (Agronomy)

Action Plan 4: Assessment of quality parameters of TNAU pulse varieties

Rationale

- Protein quality depends on amino acid profile
- Genetic variation in quality traits is reported

Objectives

- To evaluate quality parameters of TNAU pulse varieties

Treatments

Grain legumes: Cowpea, Greengram,
Blackgram and Redgram
Varieties : CO and VBN varieties

Lab analysis

- Amino acid profile

- Protein content
- Sulphur, zinc and iron content

Duration : 1 Year (2021-2022)

Lead centre- Department of SS&AC, TNAU, Coimbatore
Dr. R.K. Kaleeswari, Professor (SS&AC), Dept.of SS&AC, TNAU, Cbe

Co-ordinating centre- Department of Biochemistry
Dr.D.Uma, Professor & Head, Dept. of Biochemistry, TNAU, Cbe

Action Plan 5. Zinc nutrition of blackgram in alkaline soils
Objective

- Improving the zinc availability in alkaline soil and yield enhancement in blackgram

Treatments

T_1 No $ZnSO_4$
T_2 Zinc Solubilising Bacteria (ZSB)
T_3 12.5kg $ZnSO_4$ ha^{-1}
T_4 12.5kg $ZnSO_4$ ha^{-1} + ZSB
T_5 18.75kg $ZnSO_4$ ha^{-1}
T_6 18.75kg $ZnSO_4$ ha^{-1}+ ZSB
T_7 25kg $ZnSO_4$ ha^{-1}
T_8 25kg $ZnSO_4$ ha^{-1}+ ZSB

Note : All the treatments will receive Soil test based NPK
ZSB will be applied @ 500ml/ha (mixed with finely powdered FYM)

Design : RBD Replications : Three Period : 1 year (2021-2022)

Observations and Analysis

- Seed yield
- Growth and yield attributes
- DTPA zinc
- Zinc content & uptake
- Zn use efficiency

Lead centre& Scientist In-charge :

Department of Soils and Environment, AC&RI, Madurai

1. Dr. R.Indirani, Asst. Professor (SS&AC)
2. Dr.K.Kumutha, Professor and Head (AGM), Dept.ofAgrl. Microbiology, TNAU, Cbe

Co-ordinating centres& Scientists In-charge

3. ADAC&RI, Trichy : Dr. D.Janaki , Asst. Professor (SS&AC)
4. CSRC, Ramanathapuram : Dr. J. Prabaharan, Asst. Professor (SS&AC)

Action Plan 6. Performance evaluation of *Rhizobium* isolate-VMC in blackgram under different locations

Rationale

- *Rhizobium* inoculation enhances nodulation in blackgram
- Microbial inoculants improves soil health and plant productivity

Objective: To study the effect of *Rhizobium* isolate-VMC on growth and yield of blackgram

Treatments

T_1 : Uninoculated control

T_2 : RDF alone (100%)

T_3 : *Rhizobium* BMBS 47 + PSB +KRB+ 75% RDF

T_4 : *Rhizobium* isolate -VUC + PSB +KRB+ 75% RDF

Dose and method of application of bio-fertilizers

- Seed treatment: *Rhizobium* @600g ha^{-1}
- Phosphobacteria (PSB) and Potassium Releasing Bacteria (KRB) @ 1 kg ha^{-1}
- RDF will be applied based on STCR approach

Observations & Analysis

- Plant parameters : Plant height, number of $nodules plant^{-1}$, nodule dry weight, number of $pods plant^{-1}$, yield
- Nutrient analysis in soil and plant

Lead centre & Scientist In-charge

NPRC, Vamban -Dr. R. Parimala devi, Asst. Prof. (Agrl. Micro)

Centres and Scientist in-charge

- Dept. of Agrl. Microbiology : Dr. M. Gnanachitra, Assoc. Prof. (Agrl. Micro)
- AC&RI, Madurai : Dr. K. Kumutha, Professor and Head, Dept. of Agrl Microbiology
- ORS, Tindivanam : Dr. E. Jamuna, Asst. Prof. (Agrl. Micro.)
- TRRI, Aduthurai : Dr. T. Sivasankari Devi, Asst. Prof. (Agrl. Micro.)

Period : 1 year (2021-2022)

New Action Plan 7. Performance evaluation of *Rhizobium* isolate-VMF in greengram under different locations

Rationale

- *Rhizobium* inoculation enhances nodulation in greengram
- Microbial inoculants improves soil health and plant productivity

Objective: To study the effect of *Rhizobium* isolate-VMF on growth and yield of greengram

Treatments

T_1 : Uninoculated control

T_2 : RDF alone (100%)

T_3 : *Rhizobium* BMBS 47 + PSB+KRB +75% RDF

T_4 : *Rhizobium* isolate-VMF + + PSB+KRB +75% RDF

Dose and method of application of biofertilizers

- Seed treatment: *Rhizobium* @600g ha^{-1}
- Phosphobacteria (PSB) and Potassium Releasing Bacteria (KRB) @ 1 kg ha^{-1}
- RDF will be applied based on STCR approach

Observations and Analysis

- Plant parameters : Plant height, number of $nodulesplant^{-1}$, nodule dry weight, number of $podsplant^{-1}$, yield
- Nutrient analysis in soil and plant

Lead centre & Scientist In-charge

NPRC, Vamban -Dr. R. Parimala devi, Asst. Prof. (Agrl. Micro)

Centres and Scientist in-charge

- Dept. of Agrl. Microbiology : Dr. M. Gnanachitra, Assoc. Prof. (Agrl. Micro)
- AC&RI, Madurai : Dr. K. Kumutha, Professor and Head, Dept. of Agrl Microbiology
- ORS, Tindivanam : Dr. E. Jamuna, Asst. Prof. (Agrl. Micro.)
- TRRI, Aduthurai : Dr. T. Sivasankari Devi, Asst. Prof. (Agrl. Micro.)

Period : 1 year (2021-2022)

New Action Plan 8. Evaluation of *Rhizobium* strain for greengram suitable for sodic soils

Rationale

- Site specific strains perform better compared to standard strains
- Co inoculation of bio inoculants gives higher yield compared to individual inoculation

Objectives

- To evaluate the performance of *Rhizobium* strain TRY3 in greengram at different locations of sodic soil condition
- To study the effect of TRY 3 *Rhizobium* strain in co-inoculation with other bio-inoculants in greengram

Treatments

T_1 : Uninoculated control

T_2 : RDF alone (100%)

T_3 : *Rhizobium* BMBS 47 (Standard strain) + Phosphobacteria +KRB + 75% RDF

T_4 : *Rhizobium* TRY3 + Phosphobacteria +KRB + 75% RDF

Observations to be recorded

- Growth parameter like plant height and nodulation
- Yield and yield attributes

Period : 2021-22

Lead centre& Scientist In-charge

Department of Soil Science &Agricultural Chemistry, ADAC&RI, Trichy

Dr. M.Sundar, Professor (AGM)

Co ordinating Centres and Scientist in-charge

ADAC&RI, Trichy - Dr. M. Sundar, Prof. (Agrl. Micro.)
ORS, Tindivanam - Dr. E. Jamuna, Asst. Prof. (Agrl. Micro.)
AC&RI, Killikulam - Dr. K.G. Sabarinathan, Asst. Prof. (Agrl. Micro.)

3. CROP PROTECTION

A. DECISIONS MADE ON OFT

Agricultural Entomology

I. Specific Recommendations

1. The scientists are instructed to monitor the insect pests and diseases of pulses in their districts regularly. If any outbreak of existing pests, disease and nematodes or occurrence of new insect pests, diseases and nematodes of pulses is noticed report to the Director (CPPS) immediately.
2. The Scientists identified for pest and disease surveillance in the state are requested to upload the data in the Google Forms for consolidation by the Head of the Departments. The Heads of the Department are instructed to submit the monthly pest and disease surveillance report to the Director CPPS on or before 2nd of every month without fail.
3. The monthly progress made under the OFT and Action Plans should be submitted to the respective Head of the Departments by the Monitoring Scientist/Theme Leader o/b 25th of every month and a consolidated report of the progress made should be made by the respective Head of the Departments to Director CPPS along with the Monthly Reports.
4. The TNAU entries alone can be taken account for the resistance screening and wherever possible artificial screening may be done. Entries found to be resistant to pests and diseases have to be handed over to Breeders. The action taken should be intimated to the Director CPPS and concerned Heads of the Departments at CPPS, TNAU, Coimbatore.
5. The microbial culture collections have to be deposited with the University Repository available at the Plant Pathology Department by all the Scientists working on microbial organisms.
6. The natural enemies of pests other than coccinellids and spiders have to be recorded. Wherever required, the entomophages, especially the parasitoids have to be documented. Eggs, larval/nymphal, pupal and adult stages of insect pests have to be observed under laboratory conditions for the emergence of parasitoids and documented.
7. Entomopathogens when observed in field studies have to be recorded and identified. The cultures have to be sent to the Professor and Head, Dept. of Agrl. Entomology, TNAU, Coimbatore for further studies. The Professor and Head, Dept. of Agrl. Entomology, TNAU, Coimbatore is instructed to work out modalities for further studies.
8. The identity of the local collections of redgram made at ARS, Virinjpuram should be made in consultation with the breeder before proceeding further in screening studies.

9. The identity of the leaf miner species in pulse ecosystem should be reconfirmed.
10. Research area should be focused for new emerging virus to give the proper IPM recommendation.
11. Virus – vector interaction studies has to be taken up
12. While screening of genotypes against virus diseases in pulses, both per cent disease incidence and disease severity with disease scoring scales have to be recorded and both the data have to be given in the variety release proposals for comparisons
13. Forewarning models may be developed for an important diseases of pulses
14. Thematic schemes should be formulated for viral diseases.
15. Disease and pest scoring techniques should be formulated with artificial intelligence and high resolution imaging.

A. Technologies for Adoption/OFT/Information

I. Technology for Adoption:

1. IPM package for yellow mosaic disease and its vector in blackgram

The IPM module comprising

- 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* (Bbv57) *@* 2.5kg / ha
- Border row planting of maize (2 rows)
- Roguing out of virus infected plants upto 25 DAS
- Installing yellow sticky traps @ 12 Nos. / ha
- Foliar spray of borax @ 0.1% and nochi leaf extract 10% at 30DAS
- Need based spraying of acetamiprid 20 WP @ 250g / ha

has recorded a significantly lower yellow mosaic disease incidence of 1.82 per cent as against 5.35 per cent in farmers' practice. The IPM module has also recorded a higher grain yield of 648 kg/ha as against 562 kg/ha in farmers' practice.

II. Technology for OFT

OFT 1: Development of management modules for pod bugs and pod fly in redgram

Treatments

1. Azadirachtin 1% 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. Azadirachtin 1% at 1000 ml/ha in flowering followed by novaluron 10 EC @ 750 ml/ha in early pod formation and flubendiamide 39.35% m/m SC 100 ml/ha in pod maturity
3. Thiamethoxam 25 WG at 100g/ha in flowering followed by novaluron 10 EC @ 750 ml/ha in early pod formation and flubendiamide 39.35% m/m SC 100 ml/ha in pod maturity
4. Untreated control

Design: RBD; Replications: 5

Variety: Ruling variety
Season: September-October

Observations to be recorded

- Observations on the incidence of pod bugs species and pod fly from pod forming stage to harvest at 10 days interval following standard procedure
- Natural enemy population and records
- Yield
- CB Ratio

Centres to be involved:

TNAU, CBE [MS]*	**: Dr. P.S. Shanmugam, Asst. Professor (Entomology) (Coimbatore Dt.)**
TNAU, CBE	: Dr. R. Arulprakash, Asst. Professor (Entomology) (Salem/Namakkal Dt.)
NPRC, VBN	: Dr. R. Raja Ramesh, Asst. Professor (Entomology) (Pudukottai Dt.)
ARS, VRM	: Dr. P. Thilagam, Asst. Professor (Entomology) (Vellore & Krishnagiri Dts.)

* MS-Monitoring Scientist

OFT 2: Development of IPM methods for the management of *Maruca vitrata* in Cowpea

Treatments

T1: Azadirachtin 1% at 1000 ml/ha in flowering followed by novaluron 10 EC @ 750 ml/ha in early pod formation
T2: Azadirachtin 1% at 1000 ml/ha in flowering followed by flubendiamide 39.35 % SC @ 100ml/ ha in early pod formation
T3: Azadirachtin 1% at 1000 ml/ha in flowering followed by chlorantraniliprole 18.5% SC @ 150ml/ha in early pod formation
T4: Untreated control
Design: RBD; Replications: 5
Season: Rabi
Variety: Ruling cultivar

Observations to be recorded

- Observations on the incidence of spotted borer damage, larval population, natural enemies during flower, pod formation and pod maturation stages
- Yield
- CB Ratio
- Other natural enemies
- Yield
- CB Ratio

Centres to be involved:

AC&RI, MDU [MS]* : Dr. Zadda Kavitha, Asst. Professor (Entomology)

TNAU, CBE : Dr. R. Arulprakash, Asst. Professor (Entomology)
NPRC, VBN : Dr. R. Raja Ramesh, Asst. Professor (Entomology)
ARS, VRM : Dr. P. Thilagam, Asst. Professor (Entomology)

* MS-Monitoring Scientist

OFT-3: Chemical management of foliar diseases of blackgram and greengram
Treatments
T1 - Tebuconazole 25EC @ 1 ml/lit
T2 - Tebuconazole 50% + trifloxystrobin 25% WG @ 1 ml/lit
T3 - Farmers' Practice
T4 - Untreated Control
Replications: 5
Plot size: 4 X 5 M

Observations to be recorded
- Per cent disease index (PDI)
- Correlation with weather data
- Yield (kg/ha)
- CB ratio

Trials have to be conducted for both blackgram and greengram with the varieties recommended for the region

Monitoring Scientist: Dr. P. Ahila Devi, NPRC, Vamban
Participating Centres:

Dr. P. Ahila Devi, NPRC, Vamban

Dr. K. Chitra, TRRI, Aduthurai

Dr. N. Rajinimala, AC&RI, Killikulam

Dr. S.Thangeswari , ORS,Tindivanam

II. For Information

Agricultural Entomology

- In all the pulse growing areas of Tamil Nadu, aphids among the sucking pests, were found to be dominant in crops viz., blackgram, greengram and cowpea. The aphid population was positively correlated with minimum temperature in blackgram and greengram.
- In redgram, cowpea and lablab, spotted pod borer was observed to be the major pest. The average spotted pod borer incidence was 8/plant.
- Podbug incidence was negatively correlated with maximum temperature in greengram, blackgram and redgram.
- In resistance screening programme, blackgram BG K 20-06, greengram GG K 20-02 and Cowpea CP K 20-01 & CP K 20-02 showed resistance against more than one pest at NPRC, Vamban. Redgram CRG 19-007, CRG 18-001 and CRG 18-007 were moderately resistant to spotted pod borers.

- Seed treatment with thiamethoxam 30 FS @ 10ml/kg recorded lowest stem fly incidence in blackgram (10.42%), greengram (4.93%), cowpea (3.92%) and lowest leaf hopper population in greengram (0.14/plant), cowpea (1.15/plant) and redgram (0.62/plant)
- In redgram the application of thiamethoxam 25 WG at 100g/ha in flowering followed by novaluron 10 EC 750 ml/ha in early pod formation and Indoxacarb 100 ml/ha in pod maturity recorded 4.06 maggots/50pods and 16.88% cumulative pod damage at harvest. The same treatment combination recorded 1.18 maggots/50pods and 10.08% cumulative pod damage at harvest in horsegram.
- The application of Chlorantraniliprole 18.50% SC (100 ml/ha) in flowering followed by Flubendiamide 39.35% SC (100 ml/ha) recorded lowest spotted pod borer incidence at flowering stage (1.14 nos/plant) and pod formation stage (3.20%) in Cowpea. In lablab lowest spotted pod borer incidence at flowering stage (0.53 nos/plant) and pod formation stage (0.96%) in the above treatment combination.
- The contact toxicity of the β- asarone nanoemulsion was found to be higher as compared to other nanoemulsions. The LC50 values for *A. calamus, Cymbopogon flexuosus* and *Mentha piperita* nanoemulsions against *C. maculatus* were 0.40, 0.57 and 0.42 % respectively.

Plant Pathology

Influence of weather parameters on the occurrence of major diseases of blackgram greengram and Redgram

- The minimum temperature and maximum RH was positively correlated with YMD, stem necrosis, powdery mildew and leaf crinkle diseases in green gram and blackgram
- The maximum temperature and rainfall was negatively correlated with YMD, stem necrosis, powdery mildew and leaf crinkle diseases in green gram and blackgram
- The minimum temperature and RH are positively correlated with the SMD and wilt diseases of redgram

Resistant sources for major diseases in redgram, blackgram greengram and chickpea

Redgram

- The redgram genotypes *viz*., ICP 1918, ICP 1942, BRG 4 BSMR 74, MAL13, ICPWS-1904, 1905, 1912, 1914, 1925, 1930,1932, BSMR 74, IPA 15F, 8F, MAL 6, BWR 153 and IPA 9F were found resistant to sterility mosaic disease.
- The entries *viz*., CRG 16-01 (early), CRG 16-002 (M) and CRG 17-008(M) were found to have multiple resistance against sterility mosaic and wilt diseases

Black gram

- The black gram entries *viz.,* SUP 20-56, SUP 20-63, SUP 20-90, BG-K20-01, BG-K20-03, BG-K20-05 and BG-K20-06, were found to be resistant to yellow mosaic disease (whitefly transmission).
- The black gram entries *viz.,*SUP 20- 56 , SUP 20-74, SUP 20-93, SUP 20- 97 and SUP 20-81 was found to be resistant to leaf crinkle disease.

Greengram

- The green gram entries *viz.,* SMP 20-1,SMP 20-7, SMP 20-11, SMP 20-17, KMP 20-5, KMP 20-13, KMP 20-15, KMP 20- 18, KMP 20-21 and KMP 20-24 were found to be resistant to yellow mosaic disease (whitefly transmission).
- The green gram entries *viz.,* SMP 20-29, SMP 20-30, SMP 20-31, SMP 20 -32, SMP 20-37, KMP 20-2, KMP 20-23, KMP 20-32, KMP 20- 40, GG-R20-04 and GG-R20-05 were found to be resistant to leaf crinkle disease

Chickpea

- The MLT chickpea entry, CHP-showed resistant reaction to dry root rot disease

Etiology of leaf crinkle disease in blackgram

- The PCR analysis of leaf crinkle disease infected leaves of blackgram resulted in amplification of ~1050bp for SYMMV - CP primer. The partial sequence analysis showed 99% identity with *Soybean yellow mottle mosaic virus* (SYMMV).

Characterization of causal agent of pigeonpea sterility mosaic disease in Tamil Nadu

- The mixed infection of both PPSMV-1 and PPSMV-2 was observed and the presence of RNA6 in all PPSMV-2 isolates of Tamil Nadu was also documented.
- The intra-species recombination of PPSMV-1 in Namakkal isolate and PPSMV-2 in Coimbatore isolate was observed

Integrated management of sterility mosaic disease of redgram

- Seed treatment with imidacloprid @ 5g/kg followed by fenazaquin @ 0.1% recorded the least incidence of SMD (6.48%), lowest mite population (3.6 Nos./ leaf) coupled with highest grain yield (1155 kg/ha) and C:B (1:1.98). The untreated control registered the highest incidence of SMD (32.31%), mite population (10.6 Nos./leaf) and lowest grain yield (737.3 kg/ha) and C:B (1:1.12).

Management of root rot of greengram using salt tolerant biocontrol agents

- Five *Bacillus* isolates were isolated from salt affected soils**.** BS1 of *Bacillus* had high salt tolerance capacity and maximum per cent inhibition of root rot pathogen under *in vitro.*

Exploring *Clonostachys* fungal biocontrol agent against root rot disease of black gram

- The isolated strain CR4 of *Clonostachys rosea* had potential antagonistic activity against major soil borne plant pathogens.

dsRNA technology for MYMV management in blackgram

- The dsRNAs targeting coat protein (AV1) and replication initiator protein (AC1) of MYMV genome were developed using Ambion MEGASCRIPT RNAi kit (Thermo Fisher

Scientific, USA). The initial experiments on the exogenous application of dsRNA in blackgram resulted in significant symptom remission of YMD.

B. RESEARCH PROJECTS ON PULSES

Total Number of Projects in Crop Protection

Type of project	AEN	PAT	Total
University sub projects	3	5	8
University Core Project	1	0	1
AICRP projects	3	4	7
Student thesis	1	1	2
Externally funded project	-	1	1
Total	8	11	19

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

1. AGRICULTURAL ENTOMOLOGY

S. No.	Project Number and Title	Remarks
REDGRAM		
1.	**AICRP / PBG - Cbe / PIP / 010** AICRP on Pigeonpea (Agrl. Entomology)	Project may be continued
2.	**AICRP/PBG/VRM/PIP/01** All India Co-ordinated research project on Pigeonpea	Project may be continued
BLACKGRAM AND GREENGRAM		
3.	**AICRP/PBG/VBN/MUL/013** AICRP on MULLaRP (Agrl. Entomology)	Project may 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	Project may be continued
University Research Project		
5.	**CPPS/VRM/ENT/RGR/2020/001** Development of Bio-rational approaches for the management of spotted podborer, *Maruca vitrata* in pigeonpea	The ecological engineering components along with *Bacillus thuringiensis* may be proposed for on farm trail in short duration redgram
6.	**CPPS/VRM/ENT/RGR/2020/002** Identification of resistance and its associated traits against podborer complex in Pigeonpea	As the collections are from closer geographical areas the material should be handed over to breeder to identify the difference between collected seed

S. No.	Project Number and Title	Remarks
		material. The screening work may be continued after the identification.
7.	**CPPS/KKM/ENT/PUL/2020/001** Molecular characterization of indigenous Bt isolates and their toxicity analysis against *Maruca vitrata* and *Leucinodes orbonalis*	The project may be continued. The possibility of mass production of promising Bt strains may be explored
Core Project		
8.	**SEC/TRY/SST/CGR/2018/CP028** Development of poly herbal based green gram seed protectant against pulse beetle (*Callosobruchus maculates* (F)	A new URP to be proposed to evaluate the herbal formulation comparing with the previous findings

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	April 2018 – March 2021	The project may be closed and the completion report may be submitted immediately.
Blackgram				
2.	CPPS/CBE/PAT/BGR/2019/001 Exploring *Clonostachys* fungal biocontrol agent against root rot disease of black gram	Dr. L. Karthiba Assistant Professor (Plant Pathology)	July 2019-June 2022	The formulation has to be developed. The project may be continued.
3.	**CPPS/VBN/PAT/BGR/2020/001** Mycoparasitic potential of *Ampelomyces* sp for the management of Powdery mildew disease in black gram	Dr. P. Ahiladevi Assistant Professor (Plant Pathology)	July 2020 to March 2023	The *Ampelomyces* isolates have to be corfirmed at molecular level. The project may be continued.
Greengram				
4.	CPPS/TRY/PAT/CGR/2019/001: Management of root rot of greengram using salt tolerant biocontrol agents	Dr. P. T. Sharavanan Assistant Professor (Plant Pathology)	Nov, 2019 to Oct, 2022	The survival ability of our *Bacillus subtilis* (Bbv57) has to be assessed in

		ADAC&RI, Trichy		sodic soil and it has to be compared with the salt tolerant isolates for efficacy. The project may be continued.
Chickpea				
5.	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	Intensive survey may be conducted to document the non-occurrence of chlorotic dwarf in recent days and the probable reasons may be ascertained for non-occurrence. The project may be continued.
AICRP				
Redgram				
6.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea (Plant Pathology)	Dr. L. Karthiba Assistant Professor (Plant Pathology)	Continuous programme	The project may be continued as per the technical programme of AICRP
Blackgram & Greengram				
7.	AICRP/PBG/VBN/MUL/013 AICRP on MULLaRP (Plant Pathology)	Dr. P. Ahila Devi Assistant Professor (Plant Pathology)	Continuous programme	The project may be continued as per the technical programme of AICRP.
8.	AICRP/STR/CBE/SEP/001 AICRP on NSP (Crops) - Seed Technology Research. Impact of different storage conditions and longevity on seed associated mycoflora of greengram / blackgram	Dr. T. Anand Assistant Professor (Plant Pathology)	Continuous programme	The project may be continued as per the technical programme of AICRP.
9.	AICRP/PBG/ADT/MUL/013 AICRP on MULLaRP (Plant Pathology)	Dr. K. Chitra, Assistant Professor (Plant PAthology)	Continuous programme	The project may be continued as per the technical programme of AICRP.

Chickpea				
10.	AICRP / PBG / CHP / 012 AICRP on Chickpea (Plant Pathology)	Dr. T. K. S. Latha Assistant Professor (Plant Pathology)	Continuous programme	The project may be continued as per the technical programme of AICRP
Externally Funded Project				
Blackgram				
11.	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)	Sept 2018-Sept 2021	The cause of the leaf crinkle disease may be identified at the earliest, since the project will be closed shortly. The project to be continued as per the objectives of the DBT project.

D. Action Plan for 2021-22

Agricultural Entomology

1. Theme areas

1. Changing pests scenario in relation to weather parameters
2. Identification of resistant *sources and mechanism of resist*ance
3. *Management mod*ules for emerging pests *of pulses*

Action Plan 1	: **Monitoring of insect pests of pulses**		
Theme Leader	**: Dr. S. Jeyarani, Professor (Entomology), TNAU, Coimbatore**		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables
1. Monitoring the pests of pulses 2. Keeping vigilance on emerging pests either through introduction or shift in pest status. 3. Assessment of insect pests and natural enemies population *in situ*	<u>Coordination at Statelevel-TNAU, CBE*</u> Dr. S. Jeyarani, Professor (Entomology) <u>NPRC, VBN</u> Dr. Mohamed Jalaluddin, Professor (Entomology) (Cowpea) (Pudukottai Dt.) Dr. R. Raja Ramesh, Asst. Professor (Entomology) (Redgram, Greengram, Blackgram)	• Incidence of stem fly, sucking pests, pod bugs, pod borers, pod fly and natural enemies once in a week through *in situ*, observation and pheromone traps catches in fixed plot and	• Forewarning on emerging pests.

4. Fixed and rowing survey in the district identified during specific crop season • On campus fixed plot study at weekly interval in identified crops at VBN, CBE, VRM, MDU, VVNR, ADT by the identified Scientists • Roving plot study at fortnightly interval by all the participating Scientists in the identified Centres	(Pudukottai and Sivagangai) AC&RI, VVNR Dr. Y. S. Johnson Edward Thangaraj (Redgram, Blackgram, Greengram, horsegram) (Thiruvannamalai Dt.) AC&RI, KKM Dr. G. Ravi, Professor (Entomology) (Blackgram, Greengram) (Tirunelveli & Thoothukudi Dt.) TNAU, CBE Dr. P. S. Shanmugam, Asst. Professor (Entomology) (Redgram, Greengram, Blackgram, Chickpea) (Coimbatore & Tiruppur Dts.) AC&RI, MDU Dr. Zadda Kavitha, Asst. Professor (Entomology) (Blackgram, cowpea) (Madurai Dt.) ARS, VRM Dr. P. Thilagam, Asst. Professor (Entomology) (Redgram, Blackgram, Greengram, horsegram) (Vellore, Tirupattur and Ranipet Dts.) TRRI, ADT Dr. P. Anandhi, Asst. Professor (Entomology) (Thanjavur Dt.) RRS, VRI Dr. C. Vijayaraghavan, Asst. Professor (Entomology) (Blackgram, Greengram) (Cuddalore, Villupuram and Kallakurichi Dts.) KVK, NDM Dr. Radhakrishnan, Asst. Professor (Entomology) (Blackgram) (Thiruvarur Dt.)	fortnightly observations in roving plot survey • Identification of natural enemies for stem fly, pod fly and pod borers • Correlation and regression analysis with weather parameters	

	KVK, TKM Dr. S. Vijayashanthi, Asst. Professor (Entomology) (Blackgram and greengram) (Thirivallur & Kancheepuram Dts.) ADAC&RI, TRY Dr. Sheeba Joyce Rosleen, Asst. Professor (Entomology) (Blackgram, Cowpea) (Trichy Dt. * will consolidate the monthly data, make assessment of the pest scenario and submit state report o/b 25th of the month to the Department.		

Action Plan 2	:**Identification of resistant sources for major insect pests in pulses**		
Theme Leader	: **Dr. N. Chitra, Assoc. Professor (Entomology), TNAU, Coimbatore**		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables
Identification of resistance sources by field screening and artificial screening as per standard protocol a. Screening of TNAU (MLT/ART) entries b. Screening of local germplasms Field screening: Stemfly, whitefly, aphids, podbugs, defoliators, podfly, podborers etc. Artificial screening: Whitefly, podborer under free choice and no choice test	TNAU, CBE Dr. P. S. Shanmugam, Asst. Professor (Entomology) NPRC, VBN Dr. R. Raja Ramesh, Asst. Professor (Entomology) ARS, VRM Dr. P. Thilagam, Asst. Professor (Entomology)	• Incidence of stem fly, sucking pests, pod bugs, pod borers and pod fly once in a week following standard procedure in field screening • Artificial screening for expression of resistance against whitefly and podborers in pulse crops following standard procedures • Mechanism of resistance only 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 IPM methods for the management of *Maruca vitrata* in lablab**		
Theme Leader	**: Dr. R. Raja Ramesh, Asst. Professor (Entomology), NPRC, Vamban**		
Activity	Name of the Scientist and Centre	Observations to be recorded	Deliverables
1. Azadirachtin 1% 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. Azadirachtin 1% 1000 ml/ha in flowering followed by novaluron 10 EC 750 ml/ha in early pod formation and flubendiamide 39.35% m/m SC 100 ml/ha in pod maturity 3. Novaluron 10% EC 750 ml/ha in flowering followed by emamectin benzoate 5%SG at 220 g/ha during early pod formation and flubendiamide 39.35% m/m SC 100 ml/ha during pod maturity 4. Untreated control Design: RBD Replications: 7	NPRC, VBN Dr. R. Raja Ramesh, Asst. Professor (Entomology) TNAU, CBE Dr. P. S. Shanmugam, Asst. Professor (Entomology) ARS, VRM Dr. P. Thilagam, Asst. Professor (Entomology) AC&RI, MDU Dr. Zadda Kavitha, Asst. Professor (Entomology)	• Observations on the incidence of spotted borer damage, larval population, natural enemies during flower, pod formation and pod maturation stages (generalist predators; entomophages in different biostages of the pest) • Yield • CB Ratio	• Suitable spotted pod borer management technology will be made available

Action Plan 4. Development of management strategies for podborers on short-duration Redgram			
THEME LEADER	**: Dr. P. Thilagam, Assistant Professor (Entomology), ARS, Virinjipuram**		
Treatments	**Name of the Scientist(s) and Centre(s)**	**Observations to be recorded**	**Deliverables**
1. Pigeonpea (5 rows) + Groundnut (one row intercrop)+ Application of *Bacillus thuringiensis* var *kurstaki* (2.0 g / litre) at 50 % flowering stage followed by second and third application of spinosad @0.5 ml/ha at 10 days interval 2. Pigeonpea (5 rows) + sunnhemp (one row intercrop) + Application of *Bacillus thuringiensis* var *kurstaki* (2.0 g / litre) at 50 % flowering stage followed by second and third application of spinosad @0.5 ml/ha at 10 days interval 3. Pigeonpea (5 rows) + Sesamum (one row intercrop) + Application of *Bacillus thuringiensis* var *kurstaki* (2.0 g / litre) at 50 % flowering stage followed by second and third application of spinosad @0.5 ml/ha at 10 days interval 4. Pigeonpea alone + Application of *Bacillus thuringiensis* var *kurstaki* (2.0 g / litre) at 50 % flowering stage followed by second and third application of spinosad @0.5 ml/ha at 10 days interval 5. Pigeonpea alone + Untreated check	ARS, VRM Dr. P. Thilagam, Asst. Professor (Entomology) TNAU, CBE Dr. P.S. Shanmugam, Asst. Professor (Entomology) NPRC, VBN Dr. R. Ramesh, Asst. Professor (Entomology) RRS, PYR Dr. K. Govindan, Asst. Professor (Entomology)	• Observations on the larval population of pod borers *viz*., gram pod borer, spotted borer, blue butterfly and plume moth at 3, 7 and 10 days after each spray • Marketable grain Yield • BCR	Management strategies for pod borers in short duration redgram

Plant Pathology

Theme Areas

1. Changing disease scenario in relation to weather parameters
2. Identification of etiological agent for leaf crinkle disease
3. Characterization and management modules for virus and phytoplasma diseases of pulses
4. Virus – vector relationships

Action Plan 1. Influence of weather parameters on major diseases of pulses and development of forewarning models

<table>
<tr><td colspan="2">Theme Leader</td><td colspan="2">Dr. N. Rajinimala, AC & RI, Killikulam</td></tr>
<tr><th>Activity</th><th>Name of the Scientist and Centre</th><th>Observations to be recorded</th><th>Deliverable / expected out come</th></tr>
<tr><td>Monitoring the incidence of important diseases of pulses through roving and fixed plot surveys</td><td rowspan="2">NPRC,Vamban
Dr. P. Ahila Devi
(Blackgram, Greengram, Redgram)
TNAU,Coimbatore
Dr. L. Karthiba
(Redgram, Greengram, Blackgram)
Dr. T. K. S. Latha
(Chickpea)
AC&RI,Vazhavachanur
Dr. D. Dinakaran
(Redgram, Blackgram, Greengram)
AC & RI, Madurai
Dr. P. Manonmani
(Redgram)
TRRI, Aduthurai
Dr. K. Chitra
(Blackgram, Greengram)
AC & RI, Killikulam
Dr. N. Rajinimala
(Blackgram, Greengram)
TNAU, Coimbatore
Dr. T.K.S Latha
(Chickpea)
Dr. S. Kokilavani,
Agrl. Meteorology
ACRC, Coimbatore</td><td rowspan="2">• Incidence of diseases, viz., yellow mosaic, leaf crinkle, wilt, sterility mosaic disease, powdery mildew, rust, anthracnose, root rot etc have to be monitored throughout the crop period
• The severity of emerging diseases like little leaf and phyllody.

• Incidence of disease has to be correlated with the weather parameters</td><td>• Forewarning models
• Correlation of weather data with disease severity</td></tr>
<tr><td>A forewarning model may be developed for YMD with the available data by the Vamban centre.</td><td>The forewarning model will be ready for revalidation</td></tr>
</table>

Action Plan 2. Identification of the etiological agent and spread of leaf crinkle disease in blackgram and greengram (through externally funded project)

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 and characterization of etiological agent • Mode of transmission – mechanical, seed, vectors etc • Virus – vector relationships	Dr. T. K. S. Latha TNAU, Coimbatore	• Molecular characterization of virus through NGS and PCR. • Identification of vector and studying the virus – vector relationship • Other mode of transmission like seed, mechanical etc.	• The etiological agent and spread of leaf crinkle disease is identified

Action Plan 3. Integrated management of sterility mosaic disease of redgram and virus - vector relationship

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 and identification of the PPSMV isolates in Tamil Nadu ➢ Development of diagnostics ➢ Virus - vector relationship ➢ Integrated management of sterility mosaic disease **Treatments** T_1. Seed treatment imidacloprid 70 % WS @ 5 g/kg seed + spraying of of neem kernel aqueous extract @ 5 % T_2. Seed treatment imidacloprid 70 % WS @ 5 g/kg seed + spraying of sulphur 80 % WP @ 0.25 % T_3. Seed treatment imidacloprid 70 % WS @ 5 g/kg seed + spraying of fenpyroximate 5 EC @ 0.1% T_4. Seed treatment	**TNAU,Coimbatore** Dr. L. Karthiba Dr. T. K. S. Latha Dr. P. S. Shanmugam (Agrl. Entomology) **AC&RI, Madurai** Dr. K. Kalpana Dr. Zadda Kavitha (Agrl. Entomology) **ARS, Yethapur** Dr. N. Indra Dr. B. Geetha (Agrl. Entomology) **ARS,Bhavanisagar** Dr. SangeethaPanicker Dr. Ganesan (Agrl. Entomology) **NPRC, Vamban** Dr. P. Ahila Devi Dr. R. Ramesh (Agrl.	• The characteristics of virus vector relationships to be determined • In the management trial the following observations to be made • Per cent disease incidence • Vector population • Other pest population • Weather data • Yield	• PPSMV isolates in Tamil Nadu will be characterized and diagnostic methods will be developed. • Efficient management strategy will be recommended

imidacloprid 70 % WS @ 5 g/kg seed+ spraying of fenazaquin 5 EC @ 0.1% T_5. Untreated control	Entomology)		

Action Plan 4. Characterization of causal agent of Phyllody like symptoms in pulses of 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**
• Documenting the symptoms and yield loss • Characterization and identification of Phytoplasma infecting pulses in Tamil Nadu • Development of diagnostics • Vector transmission studies • Management of phytoplasma diseases in pulses	**Coimbatore** Dr. L. Karthiba Dr. T.K.S. Latha Dr. M. Murugan (Agrl. Entomology)	• Characterization and identification of phytoplasma causing phyllody like symptoms on pulses in Tamil Nadu • Development of diagnostics • Phytoplasma - Vector interactions • A module may be evaluated for the maangement	• Phyllody like symptoms in Tamil Nadu will be characterized and diagnostic methods will be developed.

Action Plan 5: Biological management of blackgram powdery mildew by *Ampelomyces* spp (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**
• T_1. *Ampelomyces* sp seed treatment @ 10 g/kg • T_2. *Ampelomyces* sp seed treatment @ 20 g/kg • T_3. *Ampelomyces* sp liquid formulation @ 2 ml/lit • T_4. *Ampelomyces*sp liquid formulation @ 4 ml/lit • T_5. Dinocap foliar spray – 2 ml/lit • T_6. Untreated Control (*Ampelomyces* formulation will be supplied by Dr P. Akila Devi, NPRC, Vamban)	Dr. P. Ahila Devi NPRC, Vamban Dr. L . Karthiba, TNAU, Coimbatore Dr. K. Chitra TRRI, Aduthurai	• Per cent disease index • Weather data • Yield	• Efficient management strategy will be available

Action plan 6: YMV – whitefly vector interaction and seed borne nature of YMV in blackgram and greengram

Theme Leader	**Dr. T. K. S. Latha, Asst. Prof. (Pl. Path.), TNAU and Dr. P. Ahila Devi, Asst. Professor (Plant Pathology), NPRC, Vamban Coimbatore**		
Activity	**Name of the Scientist(s) and Centre(s) – Proposed**	**Observations to be recorded**	**Deliverable/ expected out come**
YMV – whitefly vector interaction	**TNAU, Coimbatore** Dr. T. K. S. Latha, Asst. Prof. (Plant Pathology) Dr. M. Murugan, Professor (Ento) **NPRC, Vamban** Dr. P. Ahila Devi, Asst. Prof. (Plant Pathology) Dr. R. Raja Ramesh, Asst. Professor (Entomology)	• Per cent transmission of YMV by whitefly in blackgram and greengram at different locations • Cross infectivity / transmission of YMV by whitefly (blackgram to greengram and vice-versa) • The biotype / cryptic species to be determined	The efficiency of vector transmission at different agroclimatic zones will be available
Identification of seedborne nature of YMV	**NPRC, Vamban** Dr. P. Ahila Devi **TNAU, Coimbatore** Dr. L. Karthiba **TRRI, Aduthurai** Dr. K. Chitra	• Studies on seed borne and seed transmission • Virus pathway through developmental stages of pods and seeds • Electron microscopy and confocal studies	Identification of seed borne nature of YMV

4. GENERAL REMARKS

CROP IMPROVEMENT

- Short duration blackgram varieties may be developed suitable for rice fallow condition (TRRI, Aduthurai)
- The seeds of tree redgram available at Dharmapuri should be collected at the earliest and the same should be raised at Vamban and Coimbatore may be used for redgram breeding programme (Dept. of Pulses, TNAU, Coimbatore).
- Variety similar to ADT3 with target yield of 800-1000 kg/ ha may be developed for rice fallow condition (TRRI, Aduthurai)
- Host and vector relationship may be studied involving Ph.D students (Dept. of Pulses, TNAU, Coimbatore)
- Cataloguing of germplasm should be done regularly and critically and the unique germplasm identified for important key traits should be reported along with action plan progress report for further utilisation in breeding programme (CBE and VBN)

- Care should be taken to maintain the wild spp (CBE and VBN)
- The seeds of wild spp of redgram and *Vigna spp* to plant protection scientists for screening for major pests and diseases resistance (CBE)
- Hybrid redgram development should be given priority (CBE)
- Developing blackgram and green gram varieties for drought and salinity tolerance should be given emphasis (CBE, VBN)

CROP MANAGEMENT

- Tree redgram available at Dharmapuri may be used for redgram breeding programme (Dept. of Pulses, TNAU, Coimbatore).
- Technology capsule may be developed to bridge the yield gap in pulses (DCM, TNAU, Coimbatore, Dept. of Pulses &NPRC, Vamban).
- Agronomic practices (spacing and fertilizer) may be standardized for rice bean cultivation (DCM, TNAU, Coimbatore).
- Optimize the technology of nursery for redgram transplanting (DCM, TNAU, Coimbatore and Dept. of Pulses, TNAU, Coimbatore).
- Agronomist/Soil Scientist/Agricultural Engineer should work together to revisit the technology of rice fallow pulses (Dean, AC&RI, Eachangkottai & Director, TRRI, Aduthurai)
- Agronomist/Soil Scientist/Agricultural Engineer should work together to revisit the technology of rice fallow pulses (DCM, TNAU, Coimbatore, Dean, AC&RI, Eachangkottai & Director, TRRI, Aduthurai)
- Effect of *Candida tropicalis* NREY in greengram is to be studied (Dept. of Agrl. Microbiology, TNAU, Cbe)
- Best performing *Rhizobium* cultures in AICRP experiments are to be tested in different locations (NPRC, Vamban).
- Microbial consortia may be developed for pulse crops (Dept. of Agrl. Microbiology, TNAU, Cbe).

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.
- Latent infection 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

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