TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

42nd Pulses Scientists Meet
(21st May, 2024)

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

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore – 641 003

2024

PROCEEDINGS

42nd Pulses Scientists Meet

(21st May, 2024)

The 42nd Pulses Scientists Meet was held on 21st May, 2024 at National Pulses Research Centre, Vamban, Pudukkottai through hybrid mode.

The meeting was chaired by **Dr. V. Geethalakshmi,** Vice-Chancellor, TNAU Coimbatore. Madam emphasized the need for increasing the productivity of pulses through adopting high yielding varieties, improved crop management practices and plant protection measures so as to attain self-sufficiency in pulses production. More attention to be given for System of Pulses Intensification, application of pulse wonder for all pulse crops and timely availability of good quality seeds so as to bring more area under pulses cultivation particularly in Cauvery Delta zone. Further, Madam highlighted the importance for bio fortification in pulses and production of pesticides residue free pulses for consumption to avoid health hazards.

During the welcome address, **Dr. M. Raveendran,** Director of Research, TNAU, Coimbatore presented the overall scenario of pulses in Tamil Nadu. It was emphasized to popularize the new varieties and technologies through field days inviting farmers and officials from line departments. It was suggested to develop improved crop management technologies to increase the productivity of pulse crops. He also stressed upon the importance of viral infection study in blackgram and greengram and IPM packages for major insect pests.

Dr. R. Ravikesavan, Director (CPBG), **Dr. M.K. Kalarani, Director (DCM), Dr. P. Balasubramaniam, Director (NRM)** and **Dr. M. Shanthi, Director (CPPS)** presented the research highlights (2023-24), action taken on the recommendations of 41st Pulses Scientists Meet and action plan for the ensuing year for their respective directorates.

The meeting was concluded with the formal vote of thanks by **Dr. K. Subrahmaniyan, Director, TRRI**, Aduthurai.

The proceedings of the meet are given below.

I. CROP IMPROVEMENT

A. Decisions made on the entries for Variety Release Proposal/ART/OFT/ MLT evaluation
B. Research projects on Pulses
C. Remarks on the ongoing University Research Projects/AICRP/Externally funded projects
D. Action Plan 2024-2025

II. CROP MANAGEMENT

A. Decisions made on OFT
B. Research projects on Pulses
C. Remarks on the ongoing University Research Projects /AICRP/ Externally funded projects
D. Action plan 2024-2025

III. CROP PROTECTION

A. Decisions made on OFT
B. Research projects on Pulses
C. Remarks on the ongoing University Research Projects /AICRP/ Externally funded projects
D. Action plan 2024-2025

IV. REMARKS

V. LIST OF PARTICIPANTS

I. CROP IMPROVEMENT

A. Decision made on the entries for variety release proposal / ART / OFT / MLT evaluation

1. Cultures identified for variety release (2024-25)

a. Blackgram (Rice fallow)

S. No.	Culture (s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over			Special features
					ADT 6	VBN 9	ADT 7	
1.	VBG 13-003	KU 216 × VBN 3	75-80	MLT: 742 ART: 844 OFT: 919	20.6	17.1	26.0	• Suitable for cultivation under rice fallow condition • More basal branches • Determinate plant type with synchronized maturity • Resistant to MYMV, ULCV and Powdery mildew diseases

II. Cultures identified for the evaluation under OFT / ART (2024-25)

OFT - 2024-25

a. Blackgram

S. No.	Culture (s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over			Special features
					VBN 6	VBN 8	CO 7	
1.	COBG 13-04	T 9 × ADT 5	60-65	808	9.0	8.6	9.0	• High yield • Resistant to YMV

OFT: 10 locations

ART 2024 – 25

a. Redgram (Short duration)

S. No.	Culture(s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over		Special features
					VBN (Rg) 3	CO (Rg) 7	
1.	CRG 16-01	CO (Rg) 7 x AL 1738	110-115	1018	8.8	5.0	• Early duration • Photo-

							insensitive • Moderately resistant to SMD and wilt
2.	VMRG 15-006	AL 2025 x ICP 15598	120-135	1165	8.1	19.5	• Determinate plant type • Resistance to SMD
Check		CO (Rg) 7, VBN (Rg) 3					
Season		Kharif and Rabi					
Districts		Dharmapuri, Krishnagiri, Vellore, Salem, Madurai, Thiruvannamalai (5 trials per Dist.)					
KVKs		Vellore, Madurai, Salem, Dharmapuri (5 trials per KVK)					

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

b. Blackgram (*Kharif* and *Rabi*)

S. No.	Culture (s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over				Special features
					VBN 8	VBN 10	VBN 11	CO 7	
1.	KKB 19-003 (N)	VBN 8 x MASH 1008	65-70	772	14.2	10.1	3.6	9.1	• High yield • MYMV resistant
Check (s)		VBN 8, VBN 11, CO 7 (Kharif)							
		VBN 8, VBN 10, VBN 11, CO 7 (Rabi)							
Season		Kharif and Rabi							
Districts		Villupuram, Vellore, Kanchipuram, Thiruvallur, Thiruvannamalai, Cuddalore, Dharmapuri, Krishnagiri, Salem, Namakkal, Coimbatore, Tiruppur, Erode, Trichy, Perambalur, Ariyalur, Karur, Pudukkottai, Madurai, Theni, Dindigul, Virudhunagar, Sivagangai, Thanjavur, Thiruvarur, Nagapattinam, Tuticorin, Kallakkuruchi, Tenkasi, Chengalpattu, Tirupathur, Ranipet, Mayiladurai and Tirunelveli (170 trials @ 5 trials in each district)							
KVKs		Vamban, Sirugamani, Kuntrakudi, Madurai, Viridhachalam, Tindivam, Virinjipuram, Santhiyur, Paparapatti and Tirur (40 trials @ 4 trials in each KVK)							

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

c. Blackgram (Rice Fallow)

S. No.	Culture (s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over VBN 9	Special features
1.	VBG 18-043 (R)	VBN (Bg) 4 x Mash 114	75-80	712	10.0	• Glabrous pod • High yield • MYMV resistant
2.	KKB 15-052 (R)	PU-06-20 x KKB 12-107	75-80	702	9.71	• High yield • MYMV resistant

Check	VBN 9, ADT 6, ADT 7
Season	December - January
Districts	Cuddalore, Thiruvarur, Nagapattinam, Mayiladuthurai, Thanjavur (125 trials @ 25 locations per district)
KVKs	Sirugamani, Viridhachalam, Needamangalam (15 trials @ 5 trials in each KVK)

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

d. Greengram (Rice Fallow)

S. No.	Culture(s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over ADT 3	Special features
1.	VGG 17-036 (R)	VBN (Gg) 3 x PusaEm 14-01	70-75	735	10.0	• Extra early • High yield
2.	COGG 13-39 (R)	CO 6 × SML 668	60-65	744	11.9	• Suitable for Rice fallow condition
Check		ADT 3, VBN 6				
Season		December - January				
Districts		Cuddalore, Tiruvarur, Nagapattinam, Mayiladuthurai, Thanjavur (125 trials @ 25 locations per district)				
KVKs		Sirugamani, Virudhachalam, Needamangalam (15 trials @ 5 trials in each KVK)				

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

e. Chickpea

S. No.	Culture(s)	Pedigree	Duration (Days)	Seed yield (kg/ha)	% increase over		Special features
					CO 4	JG 11	
1.	ICCV181674 (R)	(Genesis 836 / GG2) x (ICC 4958TM/JG 11)	70-75	1363	10.50	12	Extra early High yield Tolerant to dry root rot
2.	COC 1901 (N)	NBeG 49 x ICCV 09106	80	1209	12.05	14.11	Bold seeded (35.3g/100 seed wt.)
3.	COC 1902 (N)	ICC 133124 x JG 14	78	1175	8.90	10.90	Bold seeded (36.2g/100 seed wt.)
Check		CO 4, JG 11					
Season		*Rabi*					
Districts		Coimbatore, Tirupur, Dharmapuri, Salem, Erode, Krishnagiri (40 Trials – five trials in each district)					
KVKs		Tirupur, Dharmapuri and Salem (20 trials - Five trials in eachKVK)					

III. Cultures identified for evaluation under MLT (2023-24)

1. Multi Location Trial - Redgram

a. Redgram (Short duration)

Design	:	RBD	No. of replications	:	Seven
Plot size	:	6 rows - 4 × 5.4 m^2	Seed quantity	:	500g/ entry/ location
Spacing	:	90 × 30 cm	Season	:	*Kharif* and *Rabi*

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	VMR 17-001 (N)	ICP6128 x ICP15598	120	1104	Extra early, resistance to SMD
Checks		CO (Rg) 7, VBN (Rg) 3			
Locations (06)		Vamban, Coimbatore, Paiyur, Virinjipuram, Vazhavachanur, Bhavanisagar and Aruppukkottai			

b. Redgram (Long duration)

Design	:	RBD	No. of replications	:	Four
Plot size	:	6 rows- 4 × 7.2 m^2	Seed quantity	:	500g/entry/ location
Spacing	:	120 × 30 cm	Season	:	*Kharif*

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	VMRG 16-005 (R)	LRG 41 X Yelagiri local	160-180	1386	High yield, SMD Resistance
2.	CRG 20-006 (N)	CO 6 x ICP 10788	180	1248	Field tolerant to SMD
3.	CRG 20-007 (N)	CO 6 x IC 525488	180	1166	Field tolerant to SMD
Checks		CO 8, CO 9			
Locations (03)		Coimbatore, Paiyur Vazhavachanur and Virinjipuram			

c. Redgram (Dual purpose)

Design	:	RBD	No. of replications	:	Seven
Plot size	:	6 rows - 4 × 7.2 m^2	Seed quantity	:	500g/entry/ location
Spacing	:	150 × 90 cm	Season	:	*Kharif*

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	BSRG 20-029 (N)	PLS from BSR 1	180	2188	High yield than BSR 1 Bold seed
2.	BSRG 20-038 (N)	PLS from BSR 1	180	2062	High yield than BSR 1 Bold seed
Checks		BSR 1			

Locations (04)	Bhavanisagar, Paiyur, Vazhavachnur and Virinjipuram

2. Multi Location Trial - Blackgram

a. Blackgram (*Kharif* and *Rabi*)

Design	:	RBD	No. of replications	:	Three
Plot size	:	10 rows - 4 × 3 m^2	Seed quantity	:	200g/entry/ location
Spacing	:	30 × 10 cm	Season	:	*Kharif* and *Rabi*

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	VBG 20-100 (R)	VBN 6 × TCR 265 var. *sylvestris*	75-80	1146	High yield, MYMV Resistance
2.	VBG 21-015 (N)	VBN 8 × TCR 262	70-75	1216	High yield, MYMV Resistance
3.	COBG 22-06 (N)	CO 6 x MASH 114	60-65	905	Short duration, High Yield, bold seeds, Resistant to YMV
4.	KKB 19-008 (N)	VBN 8 x MASH 114	70	990	Resistant to MYMV
Checks (*Kharif*)		VBN 8, VBN 11, CO 7			
Locations (*Kharif*)		Vamban, Coimbatore, Paiyur, Madurai, Tindivanam, Melalathur, Virinjipuram, Vaigaidam			
Checks (*Rabi*)		VBN 8, VBN 10, VBN 11, CO 7			
Locations (*Rabi*)		Vamban, Coimbatore, Kovilpatti, Aruppukkottai, Madurai, Tindivanam, Kudumiyanmalai, Killikulam, Veppanthattai and Vaigaidam			

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	MYMV, ULCV, Powdery mildew,root rot
Dept of Pulses, Coimbatore	Pod borer and white	MYMV, ULCV, Powdery mildew,root rot
CPMB, Coimbatore	-	MYMV through agro inoculationtechnique

b. Blackgram (Rice fallow)

Design	:	RBD	No. of replications	:	Three
Plot size	:	10 rows - 4 × 3 m^2	Seed quantity	:	200g/entry/ location
Spacing	:	30 × 10 cm	Season	:	Rice fallow (Dec. - Jan.)

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	COBG 19-12 (R)	VBN 4 x ADT 3	65-70	964	Short duration, high yield
2.	VBG 20-008 (R)	MDU 1 × MASH 114	70-75	1524	High yield, Erect, MYMV Resistance
3.	VBG 20-100	VBN 6 × TCR 205	75-80	1146	High yield, MYMV

	(R)	var. *sylvestris*			Resistance
4.	ADBG 20-027 (R)	CO 6 x LBG 17	65-70	756	Most suitable for rice fallow condition
5.	KKB 19-008 (N)	VBN 8 x MASH 114	70	990	Resistnant to MYMV
6.	ADBG 20034 (N)	ADT 5 x LBG 623	65-70	747	High yield, Moderately resistance to powdery mildew
Checks		ADT 7, VBN 9			
Locations		Aduthurai, Thanjavur, Keezhvelur, Killikulam			

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 whitefly	MYMV, ULCV, Powdery mildew,root rot
Pulses, Coimbatore	Pod borer and whitefly	MYMV, ULCV, Powdery mildew,root rot
CPMB, Coimbatore	-	MYMV through agro inoculationtechnique

3. Multi Location Trial - Greengram

a. Greengram (*Kharif* and *Rabi*)

Design	:	RBD	No. of replications	:	Three
Plot size	:	10 rows - 4 × 3 m^2	Seed quantity	:	200g/entry/ location
Spacing	:	30 × 10 cm	Season	:	*Kharif* and *Rabi*

S. No	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	VGG 20-227 (R)	VBN 4 × VGG 16 - 045	70-75	1293	Bold seed, MYMV'
2.	VGG 20-235 (R)	VBN 4 × VGG 17 - 015	75-80	1573	Long pod, Bold seed, MYMV Resistance
3.	COGG 20-008 (N)	CO 8 x IPM 205	70	1299	Suitable for summer season
4.	COGG 23-016 (N)	CO 8 x IPM 02	70	1103	Field tolerant to YMV
5.	COGG 23-021 (N)	KM 2 x MH 42	70	1009	Field tolerant to YMV
6.	VGG 21-128 (N)	IPM 99-125 × SPS-5	65-70	1213	High yield, Top poding, YMV resistance, early (65 days), More pods
Checks (*Kharif and Rabi*)		VBN 5, VBN 7, CO 9			
Locations (*Kharif*)		Vamban, Coimbatore, Paiyur, Madurai, Tindivanam, Melalathur, Virinjipuram, Vaigaidam			
Locations (*Rabi*)		Vamban, Coimbatore, Kovilpatti, Aruppukkottai, Madurai,			

	Tindivanam, Kudumiyanmalai, Killikulam, Veppanthattai and Vaigai Dam.

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	MYMV, ULCV, Powdery mildew,root rot
Pulses, Coimbatore	Pod borer and white	MYMV, ULCV, Powdery mildew,root rot
CPMB, Coimbatore	-	MYMV through agro inoculationtechnique

b. Greengram (Rice fallow)

Design	:	RBD	No. of replications	:	Three
Plot size	:	6 rows - 4 × 3 m^2	Seed quantity	:	200g/entry/ location
Spacing	:	30 × 10 cm	Season	:	Rice fallow (Dec. – Jan.)

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	VGG 20-157 (R)	VBN (Gg) 2 × MASH 114	65-70	1194	Early, High yield, MYMV Resistance
2.	VGG 20-227 (R)	VBN 4 × VGG 16-045	70-75	1293	Bold seed, MYMV Resistance
3.	VGG 20-235 (R)	VBN 4 × VGG 17-015	75-80	1573	Long pod, Bold seed, MYMV Resistance
4.	COGG 22-3 (R)	CO 8 X LRB 576 (Ricebean)	55-60	893	Short duration, high yield, shiny bold seeds
5.	ADGG 20-026 (R)	CO 8 x ML 2087	65-70	712	Most suitable for rice fallow condition
6.	ADGG 20024 (N)	ADT 3 x IPM 12-2	65-70	731	High yield, Moderately resistance to powdery mildew
Checks		ADT 3, VBN 6			
Locations		Aduthurai, Thanjavur, Keezhvelur, Killikulam			

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	MYMV, ULCV, Powdery mildew,root rot
Dept of Pulses, Coimbatore	Pod borer and white	MYMV, ULCV, Powdery mildew,root rot
CPMB, Coimbatore	-	MYMV through agro inoculationtechnique

4. Multi Location Trial – Cowpea

Design	:	RBD	No. of replications	:	Five
Plot size	:	10 rows - 4 × 4.5 m^2	Seed quantity	:	500g/entry/ location
Spacing	:	45 × 15 cm	Season	:	*Kharif* and *Rabi*

S. No.	Culture(s)	Parentage	Duration (Days)	Seed yield (kg/ha)	Special features
1.	VCP 18-007 (R)	VCP 09-13 x TV CP 9-30	70-75	1466	Early and High yield
2.	VCP 20-051 (N)	VBN 1 x GC 3	70-75	1438	High yield, long pod
Checks (*Kharif* and *Rabi*)		VBN 3, VBN 4			
Locations (*Kharif*)		Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Kudumiyanmalai and Killikulam			
Locations (*Rabi*)		Vamban, Coimbatore, Kovilpatti, Aruppukkottai, Madurai, Trichy, Kudumiyanmalai and Veppanthattai			

Note: Artificial / Field 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

Important dates for conduction of MLT and ART

Activities	Season	Last date for receipts	Date of despatch
Receipt of seed material of the proposed ART entries at Vamban	*Kharif*	01.07.2024	15.07.2024
	Rabi	16.08.2024	06.09.2024
Receipt of seed material of the proposed MLT entries at Vamban	*Kharif*	01.07.2024	15.07.2024
	Rabi	16.08.2024	06.09.2024
	Rice fallow	02.12.2024	09.12.2024
Sowing report at Vamban	*Kharif*	30.07.2024	-
	Rabi	30.10.2024	
	Rice fallow	30.01.2025	
Visit of MLT / monitoring teams	*Kharif*	September 2024	-
	Rabi	December 2024	
	Rice fallow	February 2025	
Date for receiving the trials results at Vamban for compilation	*Kharif*	December 2024	-
	Rabi	February 2025	
	Rice fallow	April 2025	

Monitoring team to visit MLT 2024 -25

Scientists	Centres
Dr. A. Yuvaraja, Prof. and Head, NPRC, Vamban Dr. K. Thiyagu, Asst. Prof. (PBG), NPRC, Vamban Dr. R. Ramesh, Asst. Professor (Agrl. Ento.), NPRC, Vamban Dr. R. Ramjegathesh, Asst. Prof. (Pl. Path.), NPRC, Vamban	Aduthurai, Thanjavur, Kudumiyanmalai
Dr. A. Thanga Hemavathy, Assoc. Prof. (PBG), Dept. of Pulses, Coimbatore	Trichy, Veppanthattai

Dr. K. Anandhi, Asst. Prof. (PBG), Dept. of Pulses, Coimbatore	
Dr. K. Amudha, Assoc. Prof. (PBG), ARS, Bhavanisagar Dr. S. Utharaju, Asst. Prof. (PBG), ARS, Bhavanisagar	Coimbatore
Dr. R. Manimaran, Prof. (PBG), TRRI, Aduthurai Dr. S. Mathiyazhagan, Assoc. Professor (Pl. Path.), TRRI, Aduthurai	Keelvelur
Dr. M. Kumar, Prof., Dept. of Pulses, Coimbatore Dr. L. Rajendran, Assoc. Prof. (Plant Path.), Dept. of Pulses, Coimbatore Dr. P.S. Shanmugam, Assoc Prof. (Agrl. Ento), Dept. of Pulses, Coimbatore	Bhavanisagar
Dr. P. Jayamani, Professor (PBG), Dept. of Pulses, Coimbatore Dr. L. Rajendran, Assoc. Prof. (Plant Path.) Dept. of Pulses, Coimbatore Dr. P.S. Shanmugam, Assoc Prof. (Agrl. Ento.), Dept. of Pulses, Coimbatore	Paiyur
Dr. A. Gopikrishnan, AP (PBG), ARS, Virinjipuram Dr. L. Rajendran, Assoc. Prof. (Plant Path.), Dept. of Pulses, Coimbatore Dr. P.S. Shanmugam, Assoc Prof. (Agrl. Ento), Dept. of Pulses, Coimbatore	Vazhavachanur, Melalathur
Dr. M. Shanmuganathan, Assoc. Professor (PBG), AC & RI, Kudumianmalai Dr. S. Hari Ramakrishnan, Assoc. Professor (PBG), AC & RI, Trichy Dr. L. Rajendran, Assoc. Prof. (Plant Path.) Dept. of Pulses, Coimbatore Dr. P.S. Shanmugam, Assoc. Prof. (Agrl. Ento.), Dept. of Pulses, Coimbatore	Vamban
Dr. K. Geetha, Professor (PBG), RRS, Paiyur	Virinjipuram
Dr. S. Suganthi, Asst. Prof. (PBG), AC&RI, Vazhavachanur	Tindivanam
Dr. M. Gunasekaran, Prof. and Head, AC & RI, Madurai Dr. K. Thangaraj, Professor (PBG), AC & RI, Madurai	Vaigaidam, Aruppukkottai
Dr. A. Sheeba, Assoc. Prof. (PBG), RRS, Aruppukkottai	Madurai, Kovilpatti
Dr. D. Shoba, Asst. Prof. (PBG), AC&RI, Killikulam	Killikulam

B. RESEARCH PROJECTS ON PULSES

Crop	Centre	URP	AICRP	EFP	Total	No. of Scientists
Crop Improvement (Plant Breeding and Genetics)						
Redgram	Dept. of Pulses, Coimbatore	1	1	-	2	2
	ARS, Virinjipuram	1	1	-	2	1
	AC&RI, Vazhavachanur	1	-	-	1	1
Blackgram	NPRC, Vamban	1	1	1	3	1
	Dept. of Pulses, Coimbatore	1	1*	-	2	1
	TRRI, Aduthurai	1	1	-	2	1
	AC&RI, Killikulam	1	-	-	1	1
	AC&RI, Kudumiyanmalai	1	-	-	1	1
	ARS, Thanjavur	1	-	-	1	1
	ARS, Pattukkottai	1	-	-	1	1

	AC & RI, Echangkottai	1	-	-	1	1
	AC & RI, Madurai	1	-	-	1	1
Greengram	NPRC, Vamban	1	-	-	1	-
	Dept. of Pulses, Coimbatore	1	-	-	1	-
	TRRI, Aduthurai	1	-	-	1	-
	AC&RI, Eachangkottai	1	-	-	1	1
	ARS, Pattukkottai	1	-	-	1	-
Cowpea	NPRC, Vamban	1	1*	-	2	1
	Dept. of Pulses, Coimbatore	1	1*	-	2	-
	AC&RI, Madurai	1	1*	-	2	1
Horsegram	Dept. of Pulses, Coimbatore	1	-	-	1	1
	SRS, Melalathur	-	-	1	1	1
	RRS, Paiyur	1	1*	-	2	1
Chickpea	Dept. of Pulses, Coimbatore	1	1	-	2	1
Mochai	RRS, Paiyur	1	-	-	1	-
Soyabean	Dept. of Pulses, Coimbatore	1	-	-	1	-
Ricebean	Dept. of Pulses, Coimbatore	1	-	-	1	-
Mothbean	ARS, Bhavanisagar	1	-	-	1	1
Cluster bean	AC&RI, Madurai	1	-	-	1	1
Pulses	PGR, TNAU	1	-	-	1	1
Pulses - BSP	NPRC, Vamban	1	-	-	1	-
	Dept. of Pulses, Coimbatore	1	-	-	1	-
	ARS, Bhavanisagar	2	-	-	2	1
	RRS, Paiyur	1	-	-	1	-
	ARS, Pattukkottai	1	-	-	1	-
	AC&RI, Chettinad	1	-	-	1	1
	ARS, Thanjavur	1	-	-	1	-
Seed Science and Technology						
Blackgram	DSC, Coimbatore	1	-	-	1	1
	KVK, Aruppukkottai	1	-	-	1	1
Blackgram & Greengram	NPRC, Vamban	1	-	-	1	1
Greengram	Dept. of Pulses, Coimbatore	1	-	-	1	1
CPMB & B						
Ricebean	CPMB&B	1	-	-	1	1
Total		**412**	**5+5***	**2**	**54**	**30**

URP : University Research Project
*AICRP - Voluntary centre

AICRP : ICAR funded AICRP projects
EFP : Externally funded projects.

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

Plant Breeding & Genetics

S. No.	Project No. and Title	Project leaders	Duration	Remarks
I.	**UNIVERSITY RESEARCH SUB PROJECTS**			
A.	**REDGRAM**			
1.	CPBG/CBE/PUL/PUL/2021/003: Development of CGMS based short duration hybrids in redgram (*Cajanus cajan*)	Dr. P. Jayamani Professor (PBG)	Sep 2021-Aug 2026	The project may be continued.
2.	CPBG/ VRI / PUL / 2022 / 001: Developing vegetable type pigeon pea for high nutritional and organoleptic qualities	Dr. A. Gopikrishnan Assistant Professor (PBG)	Jan 2021-Dec 2024	The project may be continued.
3.	CPBG/VAZ/PUL/2023/001 Evolution of Redgram varieties with Early Duration and High Yield suitable for Northern region of Tamil Nadu	Dr. S. Suganthi Assistant Professor (PBG)	Oct 2022 - Sep 2027	The segregating and advanced breeding material may be obtained from the Dept. of Pulses and should be evaluated for earliness, SMD resistant and high yield. The elite breeding material should be handled strictly under selfing.
B.	**Blackgram**			
4.	CPBG/VMB/PUL/2023/001 Evolution of high yielding, MYMV resistant Blackgram (*Vigna mungo* L. Wilczek) genotypes	Dr. A. Yuvaraja Prof. (PBG) and Head Dr. R. Ramjegathesh Assistant Professor (Pl. Patho.)	June 2022-May 2027	The project may be continued.
5.	CPBG/ADT/PBG/PUL:/2021/003. Evolution of Blackgram (*Vigna mungo* (L.) Hepper) varieties suitable for rice fallow/summer irrigated conditions of CDZ	Dr. R. Manimaran Professor (PBG)	Dec 2021 - Dec 2024	The project may be continued.
6.	CPBG/ECK/PBG/BGR/2020/001: Development of high yielding black gram variety	Dr. A. Bharathi, Asst. Professor (PBG)	Sep 2020 - Aug 2025	The project may be continued.

	with resistance to MYMD and leaf crinkle virus suitable for summer irrigated condition of Cauvery Delta region.			
7.	ACRI/KKM/GPB/PUL/2023/001 'Evolving high yielding black gram (*Vigna mungo* (L.) Hepper) genotypes suitable for rice fallow tracts of Thamirabarani and Cauvery Delta zones'	Dr. D. Shoba Assistant Professor (PBG)	Dec 2022 - Nov 2025	The project may be continued.
8.	CPBG/CBE/PUL/BG/2022/001 Evolution of high yielding blackgram varieties	Dr. P. Jayamani Professor (PBG)	June 2022 - May 2027	The project may be continued.
9.	CPBG/TNJ/PBG/BGR/2020/001: Evolution of high yielding Blackgram varieties suitable for rice fallow condition of Cauvery Delta Zone	Dr. L. Subha Asst. Professor (PBG)	Sep 2021 - Aug 2024	The project may be closed and new project proposal may be sent for RPAC approval. The breeding materials from the previous research project should be carried over to the new project.
10.	CPBG/PKT/PBG/PUL/2023/209. Evolution of Blackgram (*Vigna mungo* (L.) genotypes suitable for fallow conditions of Cauvery Delta Zone through mutagenesis	Dr. S. Chitra Associate Professor (PBG) Dr.R. Ramjegathesh Assistant Professor (Pl. Patho.)	Mar 2023 - Feb 2026	The project may be continued.
11.	CPBG/MDU/PBG/PULSES/2024 /004 Evolution of High Yielding YMV and Bruchid Resistant Blackgram Variety Suitable for Southern Districts of Tamil Nadu	Dr. M. Gunasekaran Professor and Head (PBG)	Nov 2023 - Oct 2026	The project may be continued.
12.	CPBG/KDM/PBG/PULSES/2023/ 271 Development of advanced cultures of Blackgram (*Vigna mungo* L. Hepper) for high yield and quality traits.	Dr. K. R. Saravanan Assistant Professor, (PBG)	Nov 2023 - Oct 2026	The project may be continued.
C.	**Greengram**			
13.	CPBG/VMB/PUL/2023/002 Evolution of high yielding and MYMV resistant greengram (*Vigna radiata* (L.) Wilczek)	Dr. A. Yuvaraja Prof. (PBG) and Head Dr. R.	June 2022 - May 2027	The project may be continued.

	genotypes with synchronized maturity	Ramjegathesh Assistant Professor (Pl. Patho.)		
14.	CPBG/ADT/PBG/GGR/2017/001 Evolution of high yielding MYMV resistant Greengram varieties suitable for rice fallow/summer irrigated conditions in CDZ	Dr. R. Manimaran, Professor (PBG)	Oct 2017-Sep 2022	The project may be closed and new project proposal may be sent for RPAC approval. The breeding materials from the previous research project should be carried over to the new project.
15.	CPBG/CBE/PUL/2021/002. Development of long pod and bold seeded greengram varieties suitable for Tamil Nadu. As per RPAC proceedings No. DCPBG/F-15/RPAC meeting/Proceedings/2022 (2) dt. 09.06.2022 from the O/o, The Director, CPBG, TNAU Coimbatore the objectives of CPBG/CBE/PBG/GCR/2016/001, Evolution of greengram varieties with sychronised maturity and resistance to yellow mosaic disease were merged with this project	Dr. S. Geetha Professor (PBG) and Head	July 2021-May 2025	The project may be continued.
16.	CPBG/ECK/PBG/BGR/2021/001: Evolving high yielding short duration Greengram (*Vigna radiata* (L) Wilczek varieties suitable for Cauvery New Delta	Dr. S. Hari Ramakrishnan, Assoc. Professor (PBG)	Apr 2021 - Mar 2024	The completion report may be submitted new project proposal may be sent for RPAC approval.
17.	CPBG/PKT/PBG/PULSES/2023/121 Evolution of Greengram (*Vigna radiata* (L.) wilczek) genotypes suitable for summer irrigated and rice fallow conditions of Cauvery Delta Zone through hybridization and mutagenesis	Dr. S. Chitra Associate Professor (PBG) Dr. M. Dhandapani Asst. Prof. (PBG) Dr. R. Ramjegathesh Assistant Professor (Pl. Patho.)	Dec 2022 - Nov 2025	The project may be continued.
D.	**Cowpea**			
18.	CPBG/VBN/PBG/COP/2020/001 Evolution of high yielding	Dr. K. Thiyagu Assistant Professor	Sep 2020 – Aug	The project may be continued.

	determinate cowpea genotypes (*Vigna unguiculata* (L.)) suitable for Tamil Nadu and maintenance of germplasm.	(PBG)	2025	
19.	CPBG/CBE/PUL/PUL/2021/005 Evolving high yielding cowpea (*Vigna unguiculata* (L.) Walp.) Varieties superior than CO (CP) 7	Dr. K. Anandhi Assistant Professor (PBG)	Nov 2021 – Oct 2026	The project may be continued.
20.	CPBG/MDU/PBG/PULSES/2023/185 Development of short duration, determinate cowpea (*Vigna unguiculata* L.) variety suitablefor southern districts of Tamil Nadu	Dr. K. Thangaraj Professor (PBG)	Sep 2022 – Aug 2025	The project may be continued.
E.	**Horsegram**			
21.	CPBG/PAI/PBG/PUL/2021/001 Development of high yielding medium duration photo-insensitive horsegram genotypes suited to rainfed tracts of North Western Zone through EMS induced mutagenesis	Dr. K. Geetha Professor (PBG)	Feb 2021 - Jan 2026	The project may be continued.
22.	CPBG/CBE/PBG/PULSES/2023/266 Evolution of high yielding early duration photo insensitive horsegram varieties	Dr. A. Thanga Hemavathy Associate Professor (PBG)	Nov 2023 - Dec 2026	The project may be continued.
F.	**Chickpea**			
23.	CPBG/CBE/PBG/PUL/2021/006 Evolving high yielding dry root rot resistant variety in chickpea	Dr. K. Anandhi Assistant Professor (PBG) Dr. G. Senthilraja Assistant Professor (Pl. Patho.)	Nov 2021 - Oct 2026	The project may be continued.
G.	**Mochai**			
24.	CPBG/PYR/PUL/2023/001: Development of short duration high yielding photo-insensitive dual mochai (*Lablab purpureus var lignosus* L.)	Dr. K. Geetha Professor (PBG)	Sep 2022 - Sep 2027	The project may be continued.
H.	**Soyabean**			
25.	CPBG/CBE/PUL/2021/007 Development of high yielding soyabean (*Glycine max*) variety suitable for Tamil Nadu	Dr. K. Anandhi Assistant Professor (PBG)	Nov 2021 - Oct 2024	The project may be continued.
I.	**Ricebean**			

26.	CPBG/CBE/PUL/PUL/2021/004 Development of YMD resistant varieties in greengram through introgression of genes from ricebean (*V. umbellata*)	Dr. P. Jayamani Professor (PBG)	Sep 2021 - Aug 2026	The project may be continued.
J.	**Mothbean**			
27.	CPBG/BSR/PBG/PUL/2020/001 Evolution of high yielding moth bean (*Vigna aconitifolia* (Jacq.) Marecha) variety suitable for Tamil Nadu	Dr. S. Utharasu Assistant Professor (PBG)	Nov 2020-Oct 2025	The project may be continued.
K.	**Clusterbean**			
28.	CPBG / MDU / PBG / PUL / 2022 / 002 "Evaluation and development of new "Guar" gum (*Cyamopsis tetragonoloba* (L.) *Taub*.) variety suitable for southern districts of Tamil Nadu.	Dr. E. Murugan Professor (PBG)	Sep 2021 - Aug 2024	The project may be continued.
L.	**PGR - Pulses**			
29.	CPBG/CBE/PBG/PULSES/2023/016. *Ex-situ* conservation of germplasm in pulses, oilseeds, cotton, vegetables and miscellaneous crops and its management in seed gene bank	Dr. D. Malarvizhi Professor (PBG) Dr. P.R. Renganayaki Professor (SST)	Nov 2022-Oct 2025	The project may be continued.
II.	**a. AICRP on Pulses – Main Centres**			
A.	**Redgram**			
30.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea-Evaluation of redgram genotypes under All India Co-ordinated Crop Improvement Project	Dr. S. Geetha Professor (PBG) & Head	Continuous	The project may be continued.
31.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea-Evaluation of redgram genotypes under All India Co-ordinated Crop Improvement Project	Dr. A. Gopikrishnan Assistant Professor (PBGP	Continuous	The project may be continued.
B.	**Blackgram and Greengram**			
32.	AICRP/PBG/VBN/MUL/013 All India Coordinated Research Project on MULLaRP	Dr. K. Thiyagu Assistant Professor (PBG) Dr. A. Yuvaraja Professor (PBG) & Head	Continuous	The project may be continued.
33.	AICRP/PBG/ADT/MUL/015 All India Coordinated	Dr. R. Manimaran Professor (PBG)	Continuous	The project may be

	Research Project on MULLaRP			continued.
C.	**Chickpea**			
34.	AICRP / PBG / CHB / 012 AICRP on Chickpea - Breeding	Dr. K. Anandhi Assistant Professor (PBG)	Continuous	The project may be continued.
	b. AICRP MULLaRP / AINRP on Arid Legumes – Voluntary Centre			
A.	**AICRP MULLaRP on Blackgram and Greengram**			
35.	AICRP-VC/PBG/CBE/PUL/ 001 Evaluation of mungbean and urdbean coordinated trials on breeding	Dr. K. Anandhi Assistant Professor (PBG)	Continuous	The project may be continued.
B.	**AINRP on Arid Legumes**			
36.	AINRP-VC/PBG/VBN/PUL/001 Voluntary centre under AINRP on Arid Legumes 2022-23	Dr. A. Yuvaraja Professor (PBG) & Head Dr. K. Thiyagu Assistant Professor (PBG)	Continuous	The project may be continued.
37.	AINRP-VC/PBG/CBE/PUL/001 Voluntary centre under AINRP on Arid Legumes 2022-23	Dr. K. Anandhi Assiatant Professor (PBG)	Continuous	The project may be continued.
38.	AINRP-VC/PBG/MDU/PUL/001 Voluntary centre under AINRP on Arid Legumes 2022-23	Dr. M. Gunasekaran Professor (PBG) and Head	Continuous	The project may be continued.
39.	AINRP on Horsegram Voluntary centre under AINRP on Arid Legumes 2022 - 2023	Dr. K. Geetha Professor (PBG)	Continuous	The project may be continued.
III.	**External Funded Schemes**			
40.	GOI/CPBG/VBN/PUL/2020/D004- GOI-PPVFRA-Collaborating DUS Centre for Blackgram	Dr. A. Yuvaraja Prof. (PBG)& Head Dr. C. Menaka Assoc. Professor (Seed Tech.)	Continuous	The project may be continued.
41.	DST-SERB/TRRI/MEL/2022/R001 Molecular genetic dissection of growth habit, phenology and yield traits in horsegram (*Macrotyloma uniflorum*) Lam. Verde.	Dr. R. Sudhagar Professor (PBG) Dr. M. Raveendran Professor (Plant Biotechnoogy) Dr. C. Vanniarajan Professor (PBG)	Dec 2021 - Nov 2024	The project may be continued.
IV.	**Breeder Seed Production**			
42.	CPBG/VMB/PBG/BSP/2020/001 Maintenance breeding and breeder seed production in greengram, blakcgram, redgram and Cowpea	Dr. A. Yuvaraja Prof. (PBG) and Head Dr. K. Thiyagu Assistant Professor	Apr 2020 - Mar 2025	The project may be continued. Target may be achieved as per

	varieties	(PBG)		the indent.
43.	CPBG/CBE/PUL/PUL/2021/001 Maintenance of breeding in redgram varieties released from TNAU, Coimbatore	Dr. S. Geetha Professor (PBG) and Head	Aug 2021 - July 2024	The completion report may be submitted. Target may be achieved as per the indent.
44.	CPBG/BSR/PUL/2021/001 Breeder seed production of newly released crop varieties in pulses	Dr. K. Amudha Associate Professor (PBG)	June 2021 - May 2024	The completion report may be submitted. Target may be achieved as per the indent.
45.	CPBG/BSR/PBG/RGR/2020/001 Maintenance Breeding in Redgram variety BSR 1	Dr. K. Amudha Associate Professor (PBG) Dr. S. Utharasu Assistant Professor (PBG)	June 2020 - May 2025	The project may be continued. Target may be achieved as per the indent.
46.	DRES/PAI/PBG/BSP/2018/001: Maintenance and production of nucleus and breeder seeds of rice, horsegram and Millet varieties released from RRS, Paiyur.	Dr. K. Geetha Professor (PBG)	Dec 2018 Dec 2023	The project may be continued. Target may be achieved as per the indent.
47.	CPBG/PKT/PBG/K/PBG/PULSESSES/2023/02626 Breeder seed production in Pulses and Groundnut	Dr. S. Chitra Associate Professor (PBG)	Nov 2022 - Oct 2025	The project may be continued. Target may be achieved as per the indent.
48.	CPBG/CHE/PUL/2023/001. Breeder seed production in pulses and groundnut	Dr. M. Jayaramachndran Associate Professor (PBG)	Jun 2022 - May 2024	The completion report may be submitted. Target may be achieved as per the indent.
49.	CPBG/TNJ/PBG/RIC/2022/001 Breeder seed Production in paddy and Pulses	Dr. L. Subha Asst. Professor (PBG)	Sep 2021 - Aug 2024	The project may be closed and new project may be submitted for approval. Target should be achieved as per the indent.

Seed Science and Technology

S. No.	Project No. and Title	Project leaders	Duration	Remarks
I.	**UNIVERSITY RESEARCH SUB PROJECTS**			
1.	SEC/CBE/SST/PUL/2022/001 Development of neem based phyto-fumigant to maintain black gram seed quality during storage	Dr. T. Eevera Assoc. Prof. (SST) DSST, TNAU, Coimbatore Dr. G. Preetha, Assoc. Prof. (Ag. Ento.) Seed Centre, TNAU, Coimbatore	Oct 2022 - Sep 2024	The project may be continued
2.	DSC/CBE/SST/PULSES/2023/074 Influence of seed biopriming with Nodule Associated Plant Probiotics (NAPP) on seed vigour, drought stress mitigation and quality traits in greengram	Dr. K. Sundaralingam Professor (SST) Dept. of Pulses TNAU, CBE	Nov 2023 - Oct 2026	The project may be continued
3.	SEC/VMB/PUL/2023/002 Development of crop management strategies to mitigate hard seed formation in blackgram and greengram	Dr.C. Menaka Assoc. Prof. (SST)	Jan 2023 - Dec 2024	The project may be continued
4.	DSC/APK/SST/PULSES/2023/098 Agronomic and physiological manipulation for enhancing seed yield in Blackgram Vamban 11	Dr. B. Venudevan Asst. Prof. (SST) KVK, Aruppukottai Co-Project Leaders Dr. Chelvi Ramesh Programme Co-ordinator Dr. C. Rajababu Assoc. Prof. (CRP), KVK, Aruppukottai	Nov 2023 - Oct 2026	The project may be continued

CPMB&B

S. No.	Project No. and Title	Project leaders	Duration	Remarks
I.	**UNIVERSITY RESEARCH SUB PROJECTS**			
1.	DPB/CPMBB/Pul/2021/001 Evaluation of rice bean germplasm for yield and nutritional related traits	Dr. M. Sudha Asst. Professor (Biotechnology)	Dec 2020 - Dec 2023	Project may be closed and completion report may be submitted

D. ACTION PLAN 2024-25

Plant Breeding and Genetics

The action plan will be continued with identified scientists towards achieving the deliverables in Crop Improvement.

Theme No.	Theme	Proposed plan of work for 2024-25
1.	Fast track release ofshort duration (120 - 130 days) redgram variety **Centres** Dr. S. Geetha, Dept. of Pulses, Coimbatore	Conducting of ART/OFT for CRG 16-01 at Coimbatore, Tiruvannamai, Vellore, Salem, Dharmapuri and Krishnagiri.
2.	Fast track release of new chickpea variety **Centres** Dr. K. Anandhi, Dept. of Pulses, Coimbatore	Conducting of OFT (10 Nos.) for ICCV 181674 at Coimbatore and Tirupur.
3.	Evolving high yielding greengram genotypes with long pod **Centres** Dr. A. Yuvaraja, NPRC, Vamban Dr. S. Geetha, Dept. of Pulses, Coimbatore	Evaluation of segregating material obtained from new crosses for long pod and other important traits.
4.	Development of pre- breeding population in blackgram and greengram **Centres** Dr. A. Yuvaraja, NPRC, Vamban Dr. P. Jayamani, Dept. of Pulses, Coimbatore	Pre-breeding lines (GGISC 49, GGISC 153, GGISC 179 and GGISC 186) identified for Bruchid resistant should be shared to other centres for utilization in breeding programmes. The fresh crosses may also be attempted with *Vigna radiata* var. *sublobata* and *Vigna umbellata* to develop pre breeding lines MYMV, Leaf crinkle and powdery mildew diseases.
5.	Evolving high yielding bold seeded blackgram genotypes with higher test weight **Centres** Dr. A. Yuvaraja, NPRC, Vamban Dr. S. Geetha, Dept. of Pulses, Coimbatore	Evaluation of segregating material obtained from new crosses for high test weight.
6.	Development of dual purpose redgram variety **Centres** Dr. A. Gopikrishnan, ARS, Virinjipuram Dr. K. Amudha, ARS, Bhavanisagar Dr. S. Utharasu, ARS, Bhavanisagar	Two promising dual purpose Redgram cultures *viz.,* BSRG 20-026 and BSRG 20-026 promoted to 2nd year MLT. The local vegetable type pigeon pea kaadai kannu recorded highest test weight (23.6 grams) should be purified and characterized. The kaadai kannu genotype needs seed multiplication in order to execute multi location trail.

7.	Bio-fortification of Iron and Zinc in greengram **Centres** Dr. P. Jayamani, Dept. of Pulses, Coimbatore Dr. A. Yuvaraja, NPRC, Vamban	Identification of genotypes for high Fe & Zn. Crossing will be initiated for generating genetic material for high Fe & Zn.
8.	Development of drought tolerant variety in blackgram and greengram **Centres** Dr. P. Jayamani, Dept. of Pulses Coimbatore Dr. A. Yuvaraja, NPRC, Vamban Dr. P. Boominathan Dept. of CRP, CBE.	Seed multiplication in identified drought tolerant lines. Conducting of PYT.

Seed Science and Technology

1.	Study of disintegration of cuticle and palisade layer in hard and normal seed of blackgram during storage **Centre** Dr. C. Meneka, Assoc. Prof (SST), KVK, Vambam Dr. R. Vigneshwari, Asst. Prof (SST), Dept. of SST, TNAU, Coimbatore	Project may be closed and completion report may be submitted
2.	Performance of early harvested redgram seed to accelerate generation advancement for speed breeding **Centre** Dr. S. Lakshmi, Prof (SST), DODL Dr. K. Sundaralingam, Prof (SST) Dept. of Pulses	The project may be continued

CPMB & B

Theme. No.	Theme	Proposed plan of work for 2024-25
1.	Exploring *Vigna* genetic diversity for MYMV resistant genes **Centres** Dr. M. Sudha, CPMB&B, Coimbatore Dr. M. Raveendran, CPMB&B, Coimbatore Dr. N. Senthil, CPMB&B, Coimbatore Dr. G. Karthikeyan, Dept. of Pl. Patho., Cbe Dr. M. Pandiyan, AC&RI, Echangkottai	Genomic Analysis of RILs/BILs exhibiting contrasting responses against MYMV
2	**Next generation genomics for accelerating genetic gains in pulses**	
	2.1. Accelerating Genetic Gains in mungbean through MAGIC/ Genomic Selection **Centre** Dr. M. Sudha, CPMB&B, Coimbatore Dr. N. Senthil, CPMB&B, Coimbatore	Developing MAGIC Population(s) in mungbean
	2.2. Nutrigenomics in Pulses **Centres** Dr. D. Uma, CPMB&B, Coimbatore	Profiling nutritional/therapeutic compounds in minor pulses reveals the presence of health

	Dr. M. Sudha, CPMB&B, Coimbatore Dr. V.P. Santhanakrishnan, CPMB&B, Coimbatore Dr. S. Pandarinathan, AC & RI, Vazhavachanur	benefitting metabolites related to steroid biosynthesis, flavonoid biosynthesis pathways including natural flavonoids like Catechin, Rustin, Genestein, Kaempferol *etc*.
	2.3. Whole Genome Sequencing for accelerating gene discovery in pulses **Centres** Dr. M. Jayakanthan, CPMB&B, Coimbatore Dr. M. Sudha, CPMB&B, Coimbatore	Initiating genomic research in ricebean

II. CROP MANAGEMENT

a. Crop Management

A. Decisions made on OFT

A1. For Adoption

1. Water saving and cost-effective irrigation technology for blackgram cultivation

Centres: NPRC Vamban, CSRC Ramnad, ADAC&RI Trichy and AC&RI Madurai

Treatment	Seed yield (kg ha^{-1})	Water Used (mm)	WUE (kg ha^{-1}. mm^{-1})	Water productivity (Rs.ha.mm^{-1})	Gross Income (Rs. ha^{-1})	COC (Rs. ha^{-1})	Net Income (Rs. ha^{-1})	BCR
T_1. Check basin method	788	361	21.90	176.14	56095	21467	34628	3.33
T_2. Rain hose method of irrigation system	1032	310	33.40	262.33	75909	22792	53117	2.61

Blackgram cultivation with rain hose method of irrigation with recommended agronomic practices is important for exploiting higher yield of 1032 kg ha^{-1}, WUE 52.51%, Water productivity 48.93% and BCR of 3.33 as compared to Check basin method. This is an alternate farmer-friendly irrigation with a water savings of 16.5 % as compared to Check basin method.

2. Evaluation of crop geometry and nipping in redgram

Centres: Dept. of Pulses, TNAU, Coimbatore, NPRCVamban, RRS Paiyur

Treatments	Plant height (cm)	No. of branches $plant^{-1}$	No. of pods $plant^{-1}$	Grain yield (kg ha^{-1})	Net income (Rs. ha^{-1})	BC Ratio
T_1 : 90 x 30 cm spacing with no nipping	191.66	12.63	186	1128	28162	2.00
T_2 : 120 x 45 cm spacing with chemical nipping by spraying of Mepiquat chloride @ 500 ppm at bud initiation stage	188.33	17.20	257	1409	39492	2.31

Wider crop geometry (120 x 45 cm) with foliar spray of Mepiquat chloride @ 500 ppm at bud initiation stage recorded 25% increased grain yield (1409 kgha^{-1}) and saving of seed cost (upto 50%) resulted in higher BCR (2.31).

3. Redgram + Sweetcorn intercropping system for enhancing profitability under irrigated condition

Centres: Dept. of Pulses, TNAU, Coimbatore, NPRC, Vamban, RRS, Paiyur, ARS, Kovilpatti

Redgram + sweet corn (1:2) intercropping system recorded redgram equivalent yield of 2030 kgha^{-1}than sole redgram (970 kgha^{-1}) under irrigated condition and an additional income of Rs. 62160 ha^{-1}with BCR of 3.4.

4. Redgram + Groundnut and Redgram + Tenai intercropping system under rainfed *Alfisols* and *Vertisols*

Centres: ARS, Kovilpatti, DARS, Chettinad, NPRC, Vamban, AC&RI, VVNR and RRS, Paiyur

Redgram + Groundnut intercropping (2:6) recorded 1521 kgha^{-1}redgram equivalent yield and an additional net return of Rs. 27068ha^{-1} with benefit cost ratio of 2.37 suitable for *Alfisols*.

Centres: ARS, Kovilpatti, RRS, Aruppukottai, CRS, Vepanthattai

Redgram + Tenai intercropping (2:6) recorded 1087 kgha^{-1}of redgram equivalent yield and an additional income of Rs. 12597ha^{-1}with BCR of 2.32 suitable for *Vertisols.*

5. Agronomic bio-fortification of Zinc through drip fertigation in blackgram

Centres: NPRC-VBN, Dept. of Pulses, TNAU, Coimbatore and AC &RI, Madurai

Treatment	Seed yield (kg ha^{-1})	ZSB (x103 CFU/g of soil)	Soil available Zn (mg kg^{-1})	Zn content in plant (mg kg^{-1})	Seed Zn content (mg kg^{-1})	BCR
T_1 - Control	815	7.6	0.57	44.3	28.9	1.78
T_2 - Seed treatment with Zn solubilizing bacteria @125 ml ha^{-1} and application of zinc through drip fertigation @ 25 kg $ZnSO_4$ in two splits (1st irrigation and 30 DAS) along with bio-fertigation of Zn solubilizing bacteria @ 500 ml ha^{-1} at 30 DAS	1016	23.9	0.73	67.4	33.7	2.10

Blackgram VBN 11 seeds were treatment with Zn solubilizing bacteria @125 ml ha^{-1} and application of zinc through drip fertigation @ 25 kg $ZnSO_4$in two splits (1st irrigation and 30 DAS) along with bio-fertigation of Zn solubilizing bacteria @ 500 ml ha^{-1} at 30 DAS resulted in 24.7% increased seed yield of blackgram (1016

kgha^{-1}) and BCR of 2.10. It also increased the Zn content @ 10 % in soil, 28% in plant and 12.7 % in seed than control.

6. Melatonin-mediated drought and high temperature stress tolerance in greengram

Centres: Dept. of Crop Physiology, TNAU Coimbatore, NPRC Vamban, AC & RI, Kudumiyanmalai

Foliar application of 100 µMmelatonin at flowering stage of greengram increased the yield upto 17.23 % under drought and high temperature stresses. It is released as a technology in the name of 'TNAU crop shine' during 2024.

7. Assessment of liquid Pulse wonder through Drone application on yield enhancement in blackgram and greengram

Centres: Dept. of Crop Physiology, TNAU Coimbatore, NPRC Vamban, AC & RI Kudumiyanmalai

Treatments	Blackgram			Greengram		
	Chl. index	Yield (kg/ha)	BCR	Chl. Index	Yield (kg/ha)	BCR
T_1: 1% TNAU pulse wonder (Powder) – HS (Control)	45.3	960	2.53	40.8	914	2.33
T_2: 3% TNAU Liquid pulse wonder - Drone spray	46.3	1020	2.56	43.5	996	2.41

Drone application of 3% TNAU liquid pulse wonder at peak flowering stage increased the yield of blackgram (6.1%) and greengram (5.7%) over manual application of powder form of TNAU pulse wonder. The advantage of technologies were water, labour and time saving technology, High nutrient use efficiency due to nano scale droplets.

b. NATURAL RESOURCE MANAGEMENT

E. Decisions made on OFT

A I. For Adoption

Soil Science and Agricultural chemistry

1. STCR-IPNS based Fertiliser Prescriptions for Greengram on Palaviduthi soil series

Five validation experiments were conducted to test verify the following fertilizer prescriptions for Greengram on Palaviduthi soil series.

$FN = 9.75\ T - 0.29\ SN - 0.70\ ON$

$FP_2O_5 = 12.12\ T - 2.83\ SP - 0.79\ OP$

$FK_2O = 8.65\ T - 0.14\ SK - 0.62\ OK$

where, FN, FP_2O_5 and FK_2O are fertiliser N, P_2O_5 and K_2O in kg ha^{-1} respectively; T is Grain yield target in q ha^{-1}; SN, SP and SK are soil available N, P and K in kg ha^{-1} respectively; ON, OP and OK are N, P and K supplied through FYM in kg ha^{-1}, respectively.

The results proved the validity of the fertilizer prescriptions for Greengram grown on Palaviduthi soil series (*Typic Rhodustalf*). The treatment STCR-IPNS-12 q ha^{-1} recorded the highest mean grain yield (11.60 q ha^{-1}), response ratio (4.03 kg kg^{-1}) and BCR (2.26) with the yield increase of 17.1 and 58.4 % over blanket + FYM and Farmer's practice, respectively. For a soil test value of available NPK 219:23.2:342 kg ha^{-1}, the fertiliser saving was 12.5: 12.9: 12.5 kg N: P_2O_5: K_2O ha^{-1}, respectively. Therefore, Soil Test Crop Response based fertiliser prescriptions under Integrated Plant Nutrition System for Greengram on Palaviduthi soil series (red, non calcareous, sandy loam soil) can be adopted or achieving higher yield, response ratio and BCR.

Agricultural Microbiology

1. **Field evaluation of Nodule Associated plant probiotics in greengram and redgram**

- Redgram seed treatment with nodule associated probiotics *viz., Rhizobium* VRE1+AMF+ *Candida tropicalis* VYW1+ *Paenibacillus taichungensis* TNEB6 + 75% RDF recorded highest grain yield of 1142 kg/ha with 524 number of pods per plant and 51 number of nodules/plant.
- Greengram Seed treatment with probiotic consortia *Rhizobium* VRE1+AMF+ *Candida tropicalis* VYW1 + *Paenibacillus taichungensis* TNEB6 along with 75% RDF recorded highest grain yield of 897.63 kg/ha with 43.10 pods per plant and 33 numbers of nodules/plant.

2. Evaluation of saline tolerant *Rhizobium* NAG1 for enhancing productivity of green gram in saline soil

For saline soil seed treatment of green gram with saline tolerant *Rhizobium* NAG1 + PSB +KRB+ 75% RDF recorded higher grain yield (466.7 kg/ha). number of pods per plant (39.5), number of nodule per plant (25.9) and highest nutrient uptake of Nitrogen (32.1 kg/ha), Phosphorus (8.47 kg/ha) and Potassium (27.1 kg/ha).

A II. For Information

1. Evaluation of different greengram varieties for their tolerance to sodicity

- VBN 5, VBN 6, VBN 2, CO 8 and CO 9 can be recommended upto the ESP level of 24 to get reasonable yield (at least 50 %) of greengram.
- VBN 5 performed better than other varieties and recorded lower Na/K ratio (Grain – 0.58; Straw – 0.90).

2. Optimising Micronutrients (Zn & Fe) recommendations for rainfed greengram and blackgram

- Zinc: Basal application of soil test based NPK with 15 kg $ZnSO_4$ ha^{-1} was superior in improving the grain yield (598 & 659 kg ha^{-1}), BCR (1.85 & 2.01) and zinc uptake.
- Iron: Basal application of soil test based NPK with 25 kg $FeSO_4$ ha^{-1} recorded higher yield (603 & 660 kg ha^{-1}), BCR (1.91 & 2.01) and iron uptake.

- This also recorded the higher Zn/Fe content, uptake, availability, plant enzymes (Super Oxide Dismutase, Peroxidase) and quality of rainfed pulses.

3. Field evaluation of Nodule Associated plant probiotics in greengram and redgram

- In redgram seed treatment with *Rhizobium* VRE1+AMF+ *Candida tropicalis* VYW1+ *Paenibacillus taichungensis* TNEB6 + 75% RDF recorded maximum number of nodules/plant (51) and this is 18.7 % increase over the standard strain CC1 with higher yield of 1142 kg/ha and this is 12.11 % increase over the standard strain CC1
- In greengram Seed treated with probiotic consortia *Rhizobium* VRE1+AMF+ *Candida tropicalis* VYW1 + *Paenibacillus taichungensis* TNEB6 along with 75% RDF recorded maximum number of nodules/plant (33) and this is 10.38% increase over the standard strain CoC10 with higher grain yield of 897.63 kg/ha and this is 11.63% increase over the standard strain CoC10 (804.1 kg/ha).

4. Development of liquid bioinoculant consortium and its effect on growth and productivity of Red gram.

Seed treatment of red gram with liquid bioinoculant consortium *Rhizobium* + PSB+ KRB followed by soil applications of bioinoculant consortium with 100 % NPK had recorded higher yield of 1259.7 kg/ha.

5. Development of efficient indigenous Rhizobium strains for yield maximization of Pulses in Madurai District.

Black gram seed treatment with *Rhizobium nepotum* along with 100 % RDF of NPK recorded higher yield of 600 kg/ha, 12 nodules per plant with B/C ratio of 2:1.

6. Evaluation of *Rhizobium* strain TRY3 for greengram suitable for sodic soils (OFT)

Green gram seed treatment with *Rhizobium* isolates TRY3 + PSB +KRB+ 75% RDF recorded higher grain yield of 715 kg/ha, shoot length of 42.45 cm, root length 14.36 cm, 35.5 nodule count per plant with 44.5 number of pods/ plant.

7. Evaluation of saline tolerant *Rhizobium* NAG 1 for enhancing productivity of green gram in saline soil.

Seed treatment of greengram seeds var VBN4 with saline tolerant *Rhizobium* NAG1 + PSB + KRB + 75% RDF recorded higher grain yield of 466.7 kg/ha, 25.9 nodules per plant, 39.5 number of pods/plant, higher nutrient NPK uptake (32.1, 8.47 & 27.1 kg/ha) and B/C ratio of 2:1.

8. Interaction of Nodule Associated Microbes (NAM) and *Rhizobium* sp. for enhanced drought tolerance in Horse gram (*Macrotyloma uniflorum*).

In horsegram microbial consortium of nodule associated plant probiotics (NAPPs) *viz., Rhizobium* HGR1, *Pseudomonas indoloxydans* HGB2, and yeast HGY1 were developed and were found to be compatible. The consortia treated plants recorded highest shoot and root length. HGR1, HGY1, and HGB2 were able to grow significantly at lower osmotic potentials of -1.0 MPa. Seeds treated with consortium

under moisture deficit stress (at-1MPa) showed the highest germination of 66.6 %. Root exudate metabolites such as glucopyranoside and pyrimidinedione dehydrate produced by the NAPPs are involved in the signaling mechanisms for effective colonization. The enrichment of pathways by analysing the root exudates revealed the biosynthesis of unsaturated fatty acids, indicating the production of EPS and LCOs which are essential molecules in plant and microbe signalling.

Crop Management
A2. For OFT

OFT 1. Chemical weed management through drone in blackgram
Objective: To standardize spray fluid requirement for early post emergence herbicides through drones

Treatments:

T_1: EPoEPropaquizafop + Imazethapyr @ 125 g a.i. ha^{-1} @ 20 DAS through Drone (spray volume 25 litres /ha)

T_2: EPoEPropaquizafop + Imazethapyr @ 125 g a.i. ha^{-1} @ 20 DAS through Drone (spray volume 40 litres /ha).

Observations to be recorded:

- Weed count and weed dry matter at 30 and 45 DAS
- Crop growth like plant height, number of branches
- Yield parameters like number of pods/plants, number of seeds /pods
- Yield and economics

Centres and Scientist in-charge

Coordinating centre: Dept. of Pulses, TNAU, CBE: Dr. S. Anitta Fanish, Asst. Prof. (Agron.)
Sub centres:

NPRC, Vamban: Dr.S.Marimuthu, Associate Professor (Agronomy)
CSRC, Ramnad: Dr. S. Vallal Kannan, Associate Professor (Agronomy) & Head
ARS, Kovilpatti: Dr. S. Manoharan, Asst.Prof (Agronomy)
KVK, Needamangalam: Dr. V. Karunakaran, Asst.Prof. (Agronomy)

OFT 2. Farm mechanization - technology capsule development for blackgram and greengram
Objective: To develop technology capsule for farm mechanization in blackgram and greengram

Treatments:

T_1: Existing practices (Manual sowing, Herbicide application through hand sprayer and manual harvesting)

T_2: Complete mechanization (Sowing by seed drill (45x15 cm), Herbicide & TNAU Pulse Wonder application through drone and harvest using combine harvester)

Varieties: Blackgram: VBN 11 Greengram: VBN 7 (Autodefoliate variety)

Observations to be recorded:

- Crop growth like plant height, number of branches
- Yield parameters like number of pods/plant, number of seeds /pod
- Energy productivity
- Yield and Economics

Centres and Scientist in-charge
Coordinating centre: ARS,Kovilpatti : Dr.S.Manoharan,Asst.Prof. (Agronomy)

Sub centres:

Dept. of Pulses, CBE with Farm Machinery Department: Dr. S. Anitta Fanish, AP(AGR)
NPRC, Vamban: Dr. S. Marimuthu, Associate Professor (Agronomy)
CSRC, Ramnad: Dr. S. Vallal Kannan, Assoc. Prof. (Agronomy)&Head
KVK, Tirur: Dr.K. Sivagamy, Asst. Prof. (Agronomy)
KVK, Needamangalam: Dr. V. Karunakaran, Asst.Prof. (Agronomy)
KVK, Madurai: Dr. E. Subramanian, Associate Professor (Agronomy)

NATURAL RESOURCE MANAGEMENT

OFT 1: Evaluation of different green gram varieties for their tolerance to sodicity

Objective: To evaluate different green gram varieties for their tolerance to sodicity
Lead Centre and Scientists Incharge:
ADAC & RI, Trichy
Dr.M. Baskar, Prof. & Head, Dept of SS&AC.
Dr. S. Rathika, Assoc. Prof. (Agronomy)
Dr. T. Sherine Jenitha Rajammal, Assoc. Prof. (SS&AC)

Coordinating Centre and Scientists Incharge:
AC&RI, Kudumiyanmalai
Dr. M. Vijayakumar, Asst. Prof. (SS&AC)
RRS, Paiyur
Dr. M. Sangeetha, Assoc. Prof. (SS&AC)
CRS, Veppanthattai
Dr. S. Somasundaram, Professor & Head
Varieties: VBN 5, VBN 6, VBN 2, CO 8 and CO 9

(These five varieties were screened for sodicity tolerance and recommend for OFT)

Observations and Analysis:

- Initial soil analysis: pH, EC and ESP
- Growth and yield parameters
- Grain yield

OFT 2: Validation of Zinc recommendation for rainfed greengram and blackgram

Objective: To validate the Zinc recommendation for rainfed greengram & blackgram

Treatments

T_1 : Soil test based NPK alone

T_2: T_1 + 15 kg $ZnSO_4$ ha^{-1} enriched with FYM @ 10:1

T_3 :T_1 + 15 kg $ZnSO_4$ ha^{-1} without enrichment

Validation of Iron recommendation for rainfed greengram and blackgram

Objective: To validate the Iron recommendation for rainfed greengram & blackgram

Treatments

T_1 : Soil test based NPK alone

T_2: T_1 + 25 kg $FeSO_4$ ha^{-1} enriched with FYM @ 10:1

T_3 :T_1 + 25 kg $FeSO_4$ ha^{-1} without enrichment

Observations and Analysis

- Growth and yield attributes
- Grain yield
- Zn content & uptake
- Economics

Period: One year (2024-2025)

Lead Centre & Scientists In-charge:

Dept. of SS&AC, TNAU, CBE

Dr. S. Suganya, Assoc. Prof. (SS&AC)

Dr. M. Elayarajan, Professor (SS&AC)

Co-ordingating Centres & Scientists In-charge:

RRS, Paiyur: Dr. M. Sangeetha, Assoc.Prof. (SS&AC)

AC&RI, Vazhavachanur: Dr. V. Arunkumar, Asst. Prof. (SS&AC)

AC&RI, Kudumiyanmalai: Dr. M. Vijayakumar, Asst. Prof. (SS&AC)

OFT 3: Development of efficient indigenous *Rhizobium* strains for yield maximization of pulses in Madurai District

Objective: Evaluate the performance of efficient indigenous *Rhizobium* strains on yield of black gram.

Treatment details

T_1 : Unioculated control

T_2 : Recommended dose of fertilizers alone

T_3 : *Rhizobium BMBS* 47 + 100% RDF

T_4 : *Rhizobium BMBS* 47 + 75% RDF

T_5 : *Rhizobium nepotum* + 100% RDF

T_6 : *Rhizobium nepotum* + 75 % RDF

Design of Experiment

Replication: Four

Observations and Analysis

- Number of nodules per plant
- Nodule dry weight
- Nitrogenase and dehydrogenase activity
- Growth and yield attributes

Period: One year (2024-2025)

Lead centre& Scientists In-charge:

Dept. of Agrl. Micro., AC & RI, MDU: Dr. M. Jeya Bharathi, Asst. Prof (Agrl. Micro.)
Dr. K.G. Sabarinathan, Assoc. Prof & Head (Agrl. Micro.)

Co-ordingatingCentres& Scientists In-charge:

Dr. J. Jayachitra, Asst. Prof., (Agrl. Micro), ARS, Arupukottai
Dr.G. Thangamani, Assoc Prof., (Agrl. Micro), NPRC, Vamban,
Dr. S. Muthuramu, Associate Prof & Head, ARS, Paramakudi

Research projects on Pulses
Crop Management

Crop	Centre	Action plan	URP	AICRP	EFM	OFT	Total
	Agronomy						
Blackgram	NPRC, Vamban	1	-	1	-	1	3
	TRRI, Aduthurai	-	-	2	-	-	2
	Agronomy, Coimbatore	3	-	-	-	-	3
	AC&RI, Madurai	-	1	-	-	-	1
	ARS, Kovilpatti	-	-	-	1	-	1
Greengram	NPRC, Vamban	-	-	2	-	-	2
	Pulses, Coimbatore	1	-	-	-	-	1
	TRRI, Aduthurai	-	-	3	-	-	3
	SOA, Coimbatore	1	-	-	-	-	1
Redgram	Pulses, Coimbatore	-	-	2	-	2	4
	ARS, Kovilpatti	-	-	-	-	2	2
	Crop Physiology						
Greengram	TNAU, Coimbatore	1	1	-	-	1	3
Redgram		1	-	-	-	-	1
	NOFRC						
Greengram	NOFRC, Coimbatore	1	-	-	-	-	1

Natural Resource Management

Crop	Centre	Action plan	URP	AICRP	Externally funded	Student thesis	OFT	Total
Soil Science and Agricultural Chemistry								
Blackgram	AC&RI, TNAU, Coimbatore.	1	-	1	-	-	-	2

Greengram	AC&RI, TNAU, Coimbatore.	1	-	1	-	-	-	2
Blackgram Greengram	ADAC&RI, Trichy	-	-	1	-	-	-	1
Redgram, Blackgram Greengram	ADAC&RI, Trichy	1 (New)	-	-	-	-	-	1
Daincha	ADAC&RI, Trichy	1 (New)	-	-	-	-	-	1
Total		**4**	**-**	**3**	**-**	**-**	**-**	**7**
Agricultural Microbiology								
Pulse	CSC&RI, Madurai	-	-	-	-	-	1 (New)	1
	KVK, Tindivanam	-	1	-	-	-	-	1
Greengram	TRRI, ADT	-	-	-	-	-	-	-
	ADAC&RI, Trichy	-	-	-	-	-	-	-
	NPRC, Vamban	-	-	3	-	-	-	3
Blackgram& Greeengram	Dept.of Microbiology, TNAU, CBE	-	-	-	-	-	-	-
Blackgram	NPRC, Vamban	1 (New)	-	-	-	-	-	1
Horsegram	Dept.of Microbiology, TNAU, CBE	1	-	-	-	-	-	1
Total		**2**	**1**	**3**	**-**	**-**	**1**	**7**
		6	**1**	**6**	**-**	**-**	**1**	**14**

F. Remarks on the ongoing Action Plans /URPs/ Core/ AICRPs/ Externally Funded Projects

Crop Management
AGRONOMY

S. No.	Project No. and Title	Remarks
ACTION PLAN		
1.	DCM /VBN /AGR /PULSES/ 2023 /254 Standardization of drip bio-fortification of Zinc for nutritional security in blackgram (2022- 2024) **Centres & Scientist in-charge** Theme leader: Professor & Head, Dept. of Agronomy, TNAU, Coimbatore NPRC, Vamban: (Co-ordinating Centre) Dr. S. Marimuthu, Assoc. Prof. (Agron)	• The technology has been recommended for adoption. • Project to be closed and submit the completion report

	Dr. R. Thangamani, Asso. Prof. (Agrl. Micro) AC & RI, Madurai: Dr.P. Kannan (Assoc. Professor (SS&AC) Dept. of Pulses, TNAU, CBE: Dr. S. Anitta Fanish, Asst. Prof. (Agron) Dr. M. Gnanachitra, Prof. (Agrl. Micro) AC & RI, Madurai: Dr.T. Sampathkumar Asst. Prof. (Agron) Dr.M. Jeyabharathim, Asst. Prof. (Agl.Micro.)	
2.	Weed management with new generation herbicides through Drones in Blackgram (2022-23 to 2023-24) Dr. P. Parasuraman, Professor & Head Dept. of Agronomy, TNAU, Coimbatore Dept. of Pulses, TNAU, CBE: Dr. S. Anitta Fanish, Asst. Prof. (Agron)	• Project to be closed. • Thistechnology is recommended for OFT
3.	Evaluation of new generation herbicide for effective weed control in short duration pulses (June 2023-March 2024) **Centres & Scientist in-charge** Dept. of Agronomy, TNAU, Coimbatore: Dr.P.Parasuraman, Professor and Head **(Co–ordinating centre)** Dept. of Pulses, TNAU, CBE: Dr. S. Anitta Fanish, Assistant Professor (Agron.) NPRC, Vamban: Dr. S. Marimuthu, Associate Professor (Agronomy) RRS, Paiyur: Dr. Tamilselvan, Professor (Agronomy) ARS, Kovilpatti: Dr. S. Subbulakshmi, Associate Professor (Agronomy)	• Project to be continued • Results may be given for information. • Observation on weed count and weed dry matter should be taken on 25 & 40 DAS.
4.	Farm mechanization – technology capsule development for rainfed blackgram (June 2023-24 to March 2024-25) **Centres & Scientist in-charge** Dept. of Agronomy,TNAU, Coimbatore : Dr. P. Parasuraman, Professor and Head (Co–ordinating centre) ARS,Kovilpatti: Dr. S. Manoharan, Asst.Prof.(Agron.) CSRC,Ramnad : Dr. S. Vallalkannan, Assoc.Prof.(Agron.) NPRC,Vamban: Dr. S. Marimuthu, Assoc. Prof. (Agron.)	• Project to be closed. • This technology is recommended for OFT
5.	Management of *Cuscuta chinensis* incidence in blackgram in Cauvery Delta Region (June 2023-24 to March 2025) Centres& Scientist in-charge Department of Agronomy, TNAU, Coimbatore: Dr. S. Radhamani, Professor (Agronomy) (Co–ordinating centre) KVK, Needamangalam: Dr. V. Karunakaran, Asst.Prof. (Agron) AC& RI, Keezhvelur: Dr. S. Kalaisudharsan, Asst. Prof. (Agronomy) KVK, Vridhachalam:	• Project to be continued

	Dr. K. Natarajan, Programme Coordinator Dr. P. Veeramani, Asst.Prof. (Agron)	
6.	Response of different varieties of greengram for organic farming (June 2020 – April 2023) Dr. R. Krishnan Professor and Head Nammazhvar Organic Farming Res. Centre, TNAU, Coimbatore Dr. M. Suganthy Professor (Agrl. Entomology) NOFRC, TNAU, Coimbatore	• Project to be closed. • Results may be given for information
UNIVERSITY RESEARCH PROJECTS: BLACKGRAM		
1.	DCM/MDU/AGR/PULSES/2024/024 Comparative study of plant aqueous extracts and its combination on the management of weed flora in irrigated blackgram (June 2023-April2024) PI: Dr. T. Sampathkumar, Assistant Professor (Agronomy) Co-PI: Dr.J. Prabharaan, Asoc. Prof. (SS&AC) Dr. M. Jeyabharathi, AP (Agrl. Micro.)	• Project to be continued
AICRP PROJECT: BLACKGRAM		
1.	AICRP/PBG/VBN/MUL/017 AICRP - SU1(New): Effect of weed and organic management on productivity of summer urdbean (June 2023 to May 2024) Dr. S. Marimuthu, Associate Prof. (Agronomy), AICRP on *kharif* crops, NPRC, Vamban	• Project to be continued
2.	AICRP/PBG/ADT/MUL/015 Effect of seed inoculation, weed management and foliar nutrition on urdbean for higher productivity (June 2020 to March 2024) Dr. P. Rajarathinam, Associate Professor (Agron.), AICRP on *kharif* crops, TRRI, Aduthurai	• Project to be closed
3.	AICRP/PBG/ADT/MUL/015 Effect of nano fertilizers on rice fallow urdbean for higher productivity (June 2023 to March 2024) Dr. P. Rajarathinam, Associate Professor (Agron.), AICRP on *kharif* crops, TRRI, Aduthurai	• Project to be continued
AICRP PROJECT: GREENGRAM		
1.	AICRP/PBG/VBN/MUL/017 M3: Effect of seed inoculation, weed management and foliar nutrition on mungbean for higher productivity (2022) (June 2022 to March 2024) Dr. S. Marimuthu, Associate Prof. (Agronomy), AICRP on *kharif* crops, NPRC, Vamban	• Project to be continued
2.	AICRP/PBG/VBN/MUL/017 M1: Agronomic evaluation of AVT_2 rabi mungbean genotypes under varied date of sowing (2023) (June 2023 to March 2024) Dr. S. Marimuthu, Associate Prof. (Agronomy), AICRP on *kharif*	• Project to be closed

	crops, NPRC, Vamban	
3.	AICRP/PBG/ADT/MUL/015 Effect of seed inoculation, weed management and foliar nutrition on mungbean for higher productivity (June 2022 to March 2024) Dr. P. Rajarathinam, Associate Professor (Agron.), AICRP on *kharif* crops, TRRI, Aduthurai	• Project to be closed
4.	AICRP/PBG/ADT/MUL/015 Effect of foliar spray of nutrients for yield maximization of mungbean (June 2021 to March 2024) Dr. P. Rajarathinam, Associate Professor (Agron.), AICRP on *kharif* crops, TRRI, Aduthurai	• Project to be closed
5.	AICRP/PBG/ADT/MUL/015 Crop establishment techniques for higher productivity and resource use efficiency of mungbean in rice fallow system (June 2021 to March 2024) Dr. P. Rajarathinam, Associate Professor (Agron.), AICRP on *kharif* crops, TRRI, Aduthurai	• Project to be continued
AICRP PROJECT: REDGRAM		
1.	AICRP/PBG/CBE/PIP/010 Agronomic fortification of pigeonpea with Zn and Fe (June 2022 to March 2024) Dr. S. Anitta Fanish, Asst. Prof. (Agronomy), AICRP on kharif pulses, Dept. of Pulses, TNAU, Coimbatore	• Project to be closed
2.	AICRP/PBG/CBE/PIP/010 Evaluation of pigeonpea + specialty corn and parching sorghum intercropping system (June 2022 to March 2024) Dr. S. Anitta Fanish, Asst. Prof. (Agronomy), AICRP on kharif pulses, Dept. of Pulses, TNAU, Coimbatore	• Project to be closed

CROP PHYSIOLOGY

S. No.	Project No. and Title	Remarks
Action Plan		
1.	Drone application of TNAU Pulse wonder for yield enhancement in redgram (2022 to 2024) Dr. A. Senthil, Prof. & Head Dr. V.B.R. Prasad, Asst. Prof., Dept. of Crop Physiology TNAU, Coimbatore	Project to be closed. Technology has been recommended for adoption to short and medium duration varieties of redgram
2.	Assessment of liquid Pulse wonder through Drone application on yield enhancement in blackgram and greengram (2023 to 2024) Dr. A. Senthil, Prof. & Head Dr. V.B.R. Prasad, Asst. Prof., Dept. of Crop Physiology TNAU, Coimbatore	The technology has been recommended for adoption
University Research Projects		
1.	DCM/YTP/PUL/2022/001 Effect of exogenous growth regulators and rhizobial inoculants on physiology traits associated with drought tolerance in blackgram (2022 to 2024)	Project to be closed and completion report may be submitted

S. No.	Project No. and Title	Remarks
	Dr. C. Tamilselvi, Assoc. Professor (Crop Physiology) ICAR-KVK, Tiruvallur Dr. R. Brindhavathy, Professor (Microbiology), ORS, Tindivanam	

New action plan for 2024-25:

Action plan 1. Response of different genotypes of blackgram for organic farming

Objectives:

- To evaluate the response of blackgram genotypes to organic production system.
- To study the yield and economics of blackgram genotypes grown organically.

Varieties:

- 8 blackgram varieties and cultures (CO 6, CO7, VBN 8, VBN 10, VBN 11 and three pre-release cultures (CO (Bg) 13-04, CO (Bg) 19-12 and CO (Bg) 18-05).

Packages of practices for organic black gram cultivation

- Basal application of well decomposed FYM @ 12.5 t ha^{-1}.
- Seed treatment with *Bacillus subtilis* @10 g/ ha + *Trichoderma viride* @ 4g / kg + Rhizobium @ 30 g/kg + Phosphobacteria @ 30 g /kg + Potash bacteria @ 30 g /kg
- Soil application of Rhizobium @ 2.5 kg + Phosphobacteria 2.5 kg + Potash bacteria @ 2.5 kg / ha mixed with each of 25 kg of FYM and applied before sowing
- Application of Panchagavya @ 3 % thrice at 25, 40 and 50 DAS as organic foliar nutrition
- Need based application of Neem Seed Kernel Extract @ 5% / Neem oil @ 3% / *Beauveria bassiana* @ 2% as foliar spray for the management of insect pests.
- Need based application of *Bacillus subtilis* 0.5% to ward off foliar diseases.

Observations to be recorded

- Initial and post-harvest soil physio-chemical properties
- Growth and yield parameters: Plant height at harvest (cm), No. of branches/ plant, No. of pods / plant, Pod length, No. of seeds / pod, Yield (kgha^{-1})
- Economics: Cost of cultivation, Gross returns, Net returns and BCR

Co ordinating centre: NOFRC, TNAU, Coimbatore
Scientist in-charge: Dr. R. Krishnan, Professor & Head, Dr. M. Suganthy, Prof. (Agrl. Ento)

Action plan 2. Exploitation of under-utilized pulses for protein security and climate resilience (2024-2026)

Objectives:

- To find out the production potential of under- utilised pulses for climate resilience
- To workout protein contribution and the economics of under-utilised pulses

Treatment details

T_1- Moth bean- TMV1
T_2 - Rice bean- (RBL 50)
T_3-Horsegram- Paiyur 2
T_4 -Field Lab Lab– CO2
T_5-Cluster bean- Pusa Navbahar
T_6- Samba rajmash-local
T_7 -Greengram (Control)

Season: *Rabi*, Design: RBD Replication: Three Ecosystem: Rainfed

Observations to be recorded

Growth & yield parameters Plant height at harvest, Total DMP, Days to 50% Flowering, Days to Physiological maturity, Number of pods/ plant, Number of seeds /Pod, test weight and yield, economics and quality parameter**.**

Coordinating Centre& Scientists incharge

ARS Kovilpatti: Dr.S. Manoharan Assistant Professor (Agronomy)

Implementing centers & Scientist in charge

NPRC Vamban: Dr. S. Marimuthu, Assoc.Professor (Agronomy)
AD AC&RI Trichy: Dr. S. Rathika, Assoc. Prof. (Agron.)
DRS, Chettinad: Dr. C. Uma Maheswari, Professor (Agronomy)
ORS Tindivanam: Dr. K. Sathya, Assoc. Professor (Agronomy)
Dept.of Agronomy, TNAU, CBE Dr. S. Anitta Fanish, Asst. Professor (Agronomy)

Action plan 3. Explore the possibility of complete mechanization in early maturity redgram

Objective: To develop mechanizationcapsule for redgram

Treatments:

T_1: Seed drill sowing at 60 x 20 cm + PE herbicide through drone + Mechanical weeding at 20 & 40 DAS + TNAU Pulse Wonder (twice) through drone + Mechanical harvesting

T_2: Manual sowing at 60 x 20 cm + PE herbicide through manual spray +Manual weeding at 20 & 40 DAS + TNAU Pulse Wonder (twice) through manual spray + Manual harvesting

Observations to be recorded: Germination percentage, Plant population /m^2, Mechanical damage at weeding, plant height, stem girth, yield parameters, yield, labour saving, cost saving andtime saving and energy efficiency

Coordinating Centre & Scientist in-charge

Dept. of Pulses, TNAU, Coimbatore: Dr. S. Anitta Fanish, Assistant Professor (Agronomy)

Implementing center& Scientist in-charge

ARS Kovilpatti: Dr. S. Manoharan, Assistant Professor (Agronomy)

Action plan 4. Compatibility studies of TNAU Pulse Wonder with Fungicides and Pesticides in Blackgram

Objective: To assess the compatibility studies of TNAU Pulse Wonder with fungicides and Pesticides in blackgram

Treatments

Treatment details	
T_1 -	3% TNAU Pulse Wonder (Liquid form)
T_2 -	T_1 + Chloranthraniliprole (0.5 ml)
T_3 -	T_1 + Flubendamide (0.5 ml)
T_4 -	T_1 + Imidacloprid (1 ml)
T_5 -	T_1 + carbendazim (0.1%)
T_6 -	T_1 + Mancozeb (0.2 %)
T_7 -	T_1 + Chloranthraniliprole (0.5 ml) + carbendazim (0.1%)
T_8 -	T_1 + Chloranthraniliprole (0.5 ml) + Mancozeb (0.2 %)
T_9 -	T_1 + Flubendamide (0.5 ml) + carbendazim (0.1%)
T_{10} -	T_1 + Flubendamide (0.5 ml) + Mancozeb (0.2 %)
T_{11} -	T_1 + Imidacloprid (1 ml) + carbendazim (0.1%)
T_{12} -	T_1 + Imidacloprid (1 ml) + Mancozeb (0.2 %)

Observations to be recorded: Miscibility; Physical properties (pH & EC); Nutrients availability

Centre: Department of Crop Physiology, TNAU, Coimbatore

Scientists Incharge: Dr. V. Babu Rajendra Prasad, Asst. Professor (CRP)
Dr. I. Johnson, Associate Professor (Plant Pathology) &
Dr. V.R. Swaminathan, Professor (Agricultural Entomology)

Action plan 5. Study on the impact of plant growth retardants on tendril, physiological traits and flowering in cowpea (2024-2026)

Objectives:

- To arrest the tendril formation and to avoid diversion of photosynthates to tendrils
- To induce the flowering and yield of cowpea

Treatments

Treatment details		**Mode of application**
T_1	Absolute control	
T_2	Control (water spray) at 30 DAS	

T_3	CCC (250 ppm) at 30 DAS	Foliar application
T_4	Mepiquat Chloride (250 ppm) at 30 DAS	
T_5	TIBA (200 ppm) at 30 DAS	
T_6	Salicylic acid (100 ppm) at 30DAS	

Cowpea Season: *Rabi* Design: RBD, Replication: Four Ecosystem: Irrigated

Observations to be recorded

Plant height, Number of tendrils/plant, Number of flowers/ plant, No of pods/plant, Total chlorophyll content, NRase activity and Pod yield

Scientist incharge

KVK, Tirur: Dr. C. Tamilselvi, Assistant Professor (Crop Physiology)
Dr. K. Sivagamy, Assistant Professor (Agronomy)

Natural Resource Management

I. Soil Science and Agricultural Chemistry

S. No.	Project Number and Title	Name and Designation of the Project leader	Duration	Project wise remarks
ACTION PLAN				
1.	Action Plan 1. Bio-fortification of Boron in Blackgram	Dr. M. Elayarajan, Professor (SS&AC) Dept. of SS&AC, TNAU, Coimbatore	April, 2022 to March, 2024	To be continued with additional centres *viz.,* RRS, Paiyur and AC&RI, Vazhavachanur
2.	Action Plan 2. Evaluation of different green gram varieties for their tolerance to sodicity.	Dr. M. Baskar, Prof.& Head, Dept. of SS&AC, ADAC&RI, Trichy Dr. S. Rathika Assoc. Prof. (Agron, ADAC&RI Trichy Dr.T. Sherine Jenitha Rajammal Assoc. Prof. (SS& AC), ADAC&RI, Trichy	April 2023 to March 2025	To be continued Results may be given for information
AICRP PROJECTS				
1.	**AICRP/NRM/CBE/SAC/004** Programme 4. Optimizing micronutrients recommendations for rainfed pulses	Dr. S. Suganya Assoc. Professor (SS&AC) Dept. of SS&AC, TNAU Coimbatore	April, 2022 to March, 2024	Project to be closed. Results may be given for information. It may be recommended for OFT.
2.	**AICRP/NRM/CBE/SAC/002** Programme No.1&2	Dr. P. Malathi Associate Professor	April, 2023 to	The technology has been

	Soil Test Crop Response Correlation Studies through IPNS for Greengram	(SS&AC) Dept. of SS&AC, TNAU Coimbatore Dr. S. Maragatham Professor (SS&AC) Dept. of SS&AC, TNAU Coimbatore Dr. R. Rajeswari Assistant Professor (SS&AC), Dept. of SS&AC, TNAU Coimbatore	March, 2024	recommended for adoption. Project to be closed.

II. Agricultural Microbiology

S. No.	Project Number and Title	Name and Designation of the Project leader	Duration	Project wise remarks
UNIVERSITY RESEARCH PROJECTS				
1.	**NRM/CBE/AGM/PUL/001:** Field Evaluation of Nodule Associated Plant Probiotics in greengram and redgram	Dr. U. Sivakumar, Prof. & Head, (Agrl.Micro.), Coimbatore-3 Dr. G. Thangamani Asst. Prof. (Agrl. Micro.), NPRC, Vamban Dr. J. Prabina, Associate Professor, (Agrl. Micro.), AC & RI, Killikulum Dr. E. Jamuna, Assoc. Prof. (Agrl. Micro.), ORS, Tindivanam Dr. T. Sivasankari Devi, Asst. Prof. (Agrl. Micro.), TRRI, Aduthurai Dr. A. Ramalakshmi, Assoc. Prof. (Agrl. Micro), Dept. of Agrl. Micro., TNAU, Coimbatore	April2022 to March 2024	• The technology has been recommended for adoption. • Results may be given for information.
2.	**NRM/TVM/AGM/PUL/2022/001:** Developmentof liquid bioinoculant consortium and its effect on growth and productivity of redgram	Dr.R. Brindavathy, Prof. (Ag. Micro.) KVK, Tindivanam	January 2022-December 2024	• Project to be continued. • Results may be given for information.
3.	**NRM/MDU/AGM/PUL/2020/001:** Development of efficient indigenous *Rhizobium* strains for yield maximization of	Dr. M. Jeya Bharathi Asst. Prof. (Agrl. Micro.) Dr. E. Subramani Assoc. Prof. & Head (Agronomy), KVK, Madurai.	September, 2020 to October, 2023	• Findings may be proposed for OFT in three locations (ARS, Arupukottai, NPRC, Vamban

	pulses in Madurai district.			and ARS, Paramakudi).

OFT				
4.	Evaluation of *Rhizobium* TRY3 suitable for sodic soils in green gram	Dr. M. Sundar, Professor (Agrl. Micro), ADAC&RI, Trichy. Dr. E. Jamuna, Assoc. Prof. (Agrl. Micro.), ORS, Tindivanam Dr. K.G. Sabarinathan, Asst. Prof. (Agrl. Micro.), AC&RI, Killikulam.	April 2023 to March 2024	• Results may be given for information.
5.	Evaluation of saline tolerant *Rhizobium* NAG1 for enhancing productivity of green gram in saline soil	Dr. T. Sivasankari Devi, Asst. Prof. (Agrl. Micro.) TRRI, Aduthurai Dr. R. Parimala Devi, Assoc. Prof. (Agrl. Micro.) AEC & RI, TNAU, Coimbarore. Dr. Umasankareswari, Assoc. Prof (Agrl. Micro.) MSSAC & RI, Echangottai. Dr. J. Prabhaharan, Assoc. Prof. (SS&AC), AC & RI, Madurai Dr. E. Jamuna, Assoc. Professor (Agrl. Micro.), ORS, Tindivanam	April 2023 to March 2024	• The technology has been recommended for adoption. • Results may be given for information.
AICRP				
6.	**AICRP/PBG/VBN/ MUL/03:** AICRP on MULLaRP (Pigeonpea)	Dr. G. Thangamani Assoc. Prof. (Agrl. Micro.) NPRC, Vamban.	April, 2019-March, 2022	• The project may be continued as per the technical programme of AICRP
7.	**AICRP/PBG/VBN/ MUL/013:** Study on the effect of bioinoculants on blackgram	Dr. G. Thangamani Assoc. Prof. (Agrl. Micro.) NPRC, Vamban.	April, 2019-March, 2023	• The project may be continued as per the technical programme of AICRP
8.	**AICRP/PBG/VBN/ MUL/013:** AICRP on MULLaRP (Mungbean)	Dr. G. Thangamani Assoc. Prof. (Agrl. Micro.) NPRC, Vamban.	April, 2019- to March, 2023	• The project may be continued as per the technical programme of AICRP
Action Plan				

9.	Interaction of Nodule Associated Microbes (NAM) and *Rhizobium* sp. for enhanced drought tolerance in Horse gram (*Macrotyloma uniflorum*)	Dr. U. Sivakumar Prof. (Agrl. Micro.), Dept.of Agrl. Microbiology, TNAU, Coimbatore. Dr. R. Brindhavathy, Professor (Agrl. Micro.), ORS, Tindivanam Dr. G. Thangamani, Assoc. Prof. (Agrl. Micro.), NPRC, Vamban Dr. E. Jamuna, Assoc. Prof (Agrl.Micro.), AC&RI, Vazhavachanur Dr. R. Uma Sankareswari, AC&RI, Eachangkottai Dr. Sangeetha, AP, RRS, Paiyur Dr. S. Gayathry, KVK, Vridhachalam	April, 2023 to March, 2025	To be continued Results may be given for information
10.	Evaluation of Nodulation responsive genotypes in blackgram	Dr. G. Thangamani Assoc. Prof. (Agrl. Micro.) NPRC, Vamban Dr. A. Ramalakshmi, Assoc. Prof. (Agrl. Micro.), TNAU, Coimbatore Dr. T. SivaSankari Devi, Asst. Prof (Agrl. Micro.) TRRI, Aduthurai Dr. E. Jamuna, Assoc. Prof. AC&RI, Vazhavachanur Dr. J. Prabhaharan, Assoc. Prof. (SS&AC), AC&RI, Madurai.	April, 2023 to March, 2025	Project to be initiated.

B. New Action plan (2024-2025)

Action Plan1: Effect of Foliar Application of TNAU Water Soluble Fertilizer on Yield Maximization and Quality Improvement in Pulses.

Objective: To assess the effect of foliar application of TNAU Water Soluble Fertilizer by drone on grain yield and grain quality in pulses
Pulse Crops: Redgram, Greengram and Blackgram

Treatments details

T_1 - 25 % STCR – NPK
T_2 - 50% STCR - NPK
T_3 - 75% STCR - NPK
T_4 - T_1+TNAU-WSF-1% FS at Vegetative, Flowering & Pod formation stages
T_5 - T_2+ TNAU -WSF -1% FS at Vegetative, Flowering & Pod formation stages
T_6 - T_3+ TNAU -WSF-1% FS at Vegetative, Flowering & Pod formation stages
T_7 - 100% RDF

T_8 - Absolute control

Design: RBD **Replications**: 3 **Duration**: One year
RDF: 25:50:25 kg N, P& K ha^{-1} NPK: Soil application based on STV

Observations to be recorded:
- Grain yield
- Grain quality
- NPK uptake by Plant & Grain
- Available NPK in soil

Centres & Scientists In-Charge:

Lead Centre: Dept.of SS&AC, TNAU, Coimbatore
Dr. M.R. Backiyavathy, Professor (SS&AC)
Sub Centre: IOA, Vamban
Dr. K.P. Senthikumar, Asst. Prof. (Agronomy)

Action Plan 2: Evaluation of different Daincha varieties for their tolerance to sodicity
Objectives
- To assess the effect of different ESP levels of soil on the growth and yield of Daincha varieties
- To fix the tolerance limits (ESP) of Daincha varieties

Experimental site: Permanent ESP gradient field, ADAC&RI, TRY

Treatment details
Main Plot: ESP level @ 8, 16, 24, 32, 40, 48%
Sub Plot: TRY 1, CSD 123, CSD 137, Local var
Design: Strip plot Replications: 2

Duration: May, 2024 - April, 2025

Observations to be recorded
- Growth and Yield attributes of Daincha
- Nodulation count
- DMP
- Seed Yield

Soil analysis (Initial and Post harvest)
- pH, EC, ESP, Exchangeable cations, Available nitrogen
- Plant analysis at harvest – Na/K ratio and N content

Project Leaders
- Dr. M. Baskar, Professor & Head (SS&AC), ADAC&RI, Trichy
- Dr. S. Rathika, Associate Professor (Agronomy), ADAC&RI, Trichy

Action plan 3: Studies on Zinc solubilizing bacteria in enhancing Zinc uptake and Zinc use efficiency in Blackgram

Objective

- ✓ To assess the effect of Zinc Solubilizing Bacteria with and without $ZnSO_4$ on Soil Zinc and Zinc uptake

Treatments

T_1 - Absolute Control
T_2 - RDF alone (25:50:25 kg NPK ha^{-1})
T_3 - RDF + 25 kg $ZnSO_4$ ha^{-1} *
T_4 - RDF +12.5 kg $ZnSO_4$ ha^{-1} *+ Soil application of Zinc Solubilizing Bacteria @ 2 kg ha^{-1}**
T_5 - RDF + Soil application of Zinc Solubilizing Bacteria @ 2 kg ha^{-1} **
* - One time application of $ZnSO_4$ for first year alone during the experimental trial
** - Application of Zinc Solubilizing Bacteria for all the year

Design: RBD **Replications**: 4 **Duration**: Three years

Observation & Analysis

- ✓ Growth parameters, yield attributes and yield
- ✓ Soil total and available Zinc
- ✓ Zn uptake by plant and grain

Lead Centre and Scientist In-charge

Dept. of SS&AC, TNAU, Coimbatore: Dr. S. Suganya, Assoc. Professor (SS & AC), TNAU, Coimbatore

Co-ordinating Centre and Scientist In-charge

KVK, Tindivanam: Dr. E. Jamuna, Assoc. Professor (Agrl. Micro.), KVK, Tindivanam

Large Scale demonstrations in farmer's field during 2024-25

S. No.	Title of the technology	Location and No. of demonstrations	Scientists in charge
Agronomy			
1.	Water Saving and Cost-effective Irrigation Technology for Blackgram Cultivation	NPRC Vamban: 02	Dr.S. Marimuthu, Assoc. Prof (Agronomy)
		CSRC Ramnad :02	Dr. S. Vallal Kannan, Assoc. Prof (Agronomy) & Prog. Coordinator
		ADAC&RI Trichy :02	Dr. T. Ramesh, Assoc. Prof (Agronomy) & Head
		KVK, Madurai: 02	Dr. E. Subramanian Assoc. Prof (Agronomy) & Prog. Coordinator
		Dept. of Agronomy, TNAU, Coimbatore: 02	Dr.S.P. Sangeetha & Dr. S. Anitta Fanish, Asst. Professors Agronomy
Crop Physiology			
2.	Liquid Pulse Wonder in Blackgram/Greengram	1. ARS, Thanjavur: 05	Dr. A. Parthiban, Asst. Prof. (Agronomy)
		2. KVK,	Dr. V. Karunakaran, SMS

		Needamangalam: 05	(Agronomy)
		3. RRS, Aruppukottai: 05	Dr. S. Krishna Surendar, Asst. Prof. (CRP)
		4. KVK, Trichy: 05	Dr. C. Rajababu, Programme Coordinator KVK, Trichy
3.	Liquid Pulse Wonder in Redgram	1.KVK, Dharmapuri: 05	Dr. M.A. Vennilla, Programme Coordinator KVK, Dharmapuri
		2. KVK, Trichy: 05	Dr. C. Rajababu, Programme Coordinator KVK, Trichy

III. CROP PROTECTION

A. Technologies for Adoption/OFT/Information

AGRICULTURAL ENTOMOLOGY

I. Technology for Adoption: NIL

PLANT PATHOLOGY

I. Technology for Adoption: NIL

II. Technology for OFT

AGRICULTURAL ENTOMOLOGY

OFT 1: Management of blister beetle infestation in redgram

T1: Indoxacarb 14.5 SC @ 50 g ai/ha
T2: Lambda cyhalothrin 5 EC @ 25g ai/ha
T3: Flubendiamide 480 SC @ 48g ai/ha
T4: Untreated Control
Design: RBD
Replications: 5

Centres:

Team Leader: Dr. R. Ramesh, NPRC, Vamban

Dr. P. S. Shanmugam, Assoc. Prof. (Ento.), Dept. of Pulses, TNAU, Coimbatore
Dr. P. Thilagam, Assoc. Prof. (Ento.), ARS, Virinjipuram
Dr. Zadda Kavitha, Assoc. Prof. (Ento.), Dept. of Agrl. Entomology, AC&RI, Madurai

First spray will be given immediately after observing the blister beetle incidence. The second spray will be given 15 days after first spray.

Observations:

Pre and post count of number of adults per plant & NE populations (3 DAS, 7 DAS, 14 DAS), Yield, BCR

PLANT PATHOLOGY

OFT 1: Validation of the IPDM module for the management of yellow mosaic disease in blackgram

Theme leader	**Dr. G. Karthikeyan, Professor (Plant Pathology), TNAU, Coimbatore**		
Treatment details	**Name of the scientist and centre**	**Observations to be recorded**	**Deliverables/ expected outcome**
T1 (IPDM Module): • Seed soaking with borax @2g/kg +10% nochi leaf extract @300 ml/kg followed by seed treatment with imidacloprid 600FS @ 5 ml / kg of seed. • Soil application of *Bacillus subtilis* @ 2.5kg/ha • Border row planting of maize (2 rows) • Rogue out virus infected plants upto 25 DAS • Installing yellow sticky traps @ 12 No. / ha • Foliar spray of borax @0.1% and nochi leaf extract 10% at 30 DAS • Need based spraying of acetamiprid 20 WP @ 250g /ha T2: Farmers practice	1. Pudukkottai (15 locations) Scientists In-charge: Dr. R. Ramjegathesh & Dr. R. Ramesh - NPRC, Vamban 2. Thanjavur (10 locations) Scientists In-charge: Dr. S. Mathiyazhagan & Dr. P. Anandhi - TRRI, Aduthurai	• % disease incidence • Whitefly population • Yield parameters • CB ratio • Pesticide residue • Photo & video documentation Treatments: 2 Replications: 25 locations Season: *Kharif* & *rabi* -summer Variety: Moderately Resistant VBN 11/ADT 6	2024-2025: • OFT through participatory approach will be conducted in 25 locations in collaboration with Department of Agriculture Officials • Filed days will be conducted 2025-2026: The effective IPDM module will be released as the technology for the management of YMD in blackgram

OFT 2: Management of foliar diseases in blackgram using new generation fungicides

Theme leader	**Dr. L. Rajendran, Associate Professor (Plant Pathology), TNAU, Coimbatore**		
Treatment details	**Name of the scientist and centre**	**Observations to be recorded**	**Deliverables/ expected outcome**
T1. Azoxystrobin 18.2% + Difenoconazole 11.4% w/w SC @ 500 ml/ha T2. Captan70%+ Hexaconazole 5%WP @ 750 g/ha T3. Metiram 55% + Pyraclostrobin 5% WG @ 1500-1750 g/ha T4. Carbendazim 50% WP @ 500 g/ha T5. Farmers practice T6. Untreated control **Note**: Spray should be given immediately after the appearance of the disease. If necessary, repeat the spray 15 days later. Treatments: 6 Replications: 4 Design: RBD Plot size: 4x3m^2 Season: *Kharif* & *rabi*-summer Variety: VBN 11	Dr. L. Karthiba, TNAU, Coimbatore Dr. R. Ramjegathesh, NPRC, Vamban Dr. R. Udayakumar, AC & RI, Kudumiyanmalai	• Disease severity – % disease index of powdery mildew and *Cercopsora* leaf spot • Yield parameters • CB ratio • Fungicide residue (TNAU, Coimbatore)	• 2024-2025: Identifying an effective chemical to manage powdery mildew and Cercopsora leaf spot diseases in blackgram • 2025-2026: The effective fungicide molecules identified will be included in the crop production guide

II. For Information

AGRICULTURAL ENTOMOLOGY

- The whitefly activity was recorded from 37th SW to 43rd SW and 50th SW to 6th SW. The leafhopper activity also showed a similar trend in greengram. Rainfall was negatively correlated with the incidence of whiteflies, leaf hoppers, spotted pod borers, and pod bugs in greengram.
- The redgram PYT entries 21-01, 21-02, and 21-03 showed tolerance to the pod borer complex with pest severity indexes of 18.18, 14.77, and 16.48, respectively. The short-duration redgram MLT entries S-K-23-01 (CRG 18-02) was moderately resistant to pod borer and pod bug. SH-K-23-01 (IPA 15-06) and SH-K-23-02 (ICPH 2438) were moderately resistant to both pod borer and pod bug. L-K-23-01 (CRG 19-007) was resistant to pod bug and L-K-23-03 (VMRG 16-001) was moderately resistant to pod borer and pod bug. DP-K-23-04 (BSRG 20-004) was resistance to pod bug and DP-K-23-01 (BSRG 20-038) and DP-K-23-03 (BSRG 20-029) were moderately resistant to pod borer and pod bug.
- Among the blackgram entries, K-23-01 (VBG 19-010), K-23-02 (COBG 19-12) & K-23-04 (VBG 20-100) were resistant to pod borer and pod bug and in Rabi, R-23-03 (VBG 20-100) showed resistance to both pod borer and pod bug.
- In greengram, K-23-01 (VGG 20-157) was resistant against pod borers, and pod bugs. In Rabi, R-23-02 (VGG 20-227) was resistance to pod borer.
- In cowpea, K -23-03 (VCP 18-007) and K-23-05 (VCP 18-024) were showed multiple resistance against pod borers and pod bugs.
- Spraying of Indoxacarb 14.5 SC @ 50 g a.i./ha was highly effective against blister beetle in redgram with a lower mean number of adults (0.66/10 plants).
- Among the pod bug species, *Riptortus pedestris and Clavigralla gibbosa* were the most dominant in Virudhunagar and Pudukottai districts.
- In blackgram, spraying of NSKE 5% (0.28 pod bug/plant) or the 3G Extract 5% (0.31 pod bug/plant) were effective against pod bugs. Among the insecticides evaluated, imidacloprid 17.8 SL @ 100 ml/ha was effective (0.15 pod bugs/plant) with the lowest pod damage (4.15%) and recorded the highest yield (910.40 kg/ha) and BCR (2.82).

PLANT PATHOLOGY

- The MLT Redgram entries *viz*., MLT RGSK 23-02, MLT RGSK 23-03, MLT RGSDK 23-04, MLT RGLK 23-02 and MLT RGLK 23-03 were recorded free from sterility mosaic disease under field and artificial screening conditions.
- The blackgram entry (MLT BGK23-06) and greengram entry (MLT GGK23-01) were moderately resistant to YMV under field conditions but susceptible in artificial screening.
- PCR amplification of a DNA fragment of ~1.8 kb and ~1.2 kb from phyllody infected greengram and redgram samples (Accession no. PP31090 and PP31025) identified as *Candidatus Phytoplasma aurantifloia* 16SrII group.
- Bean common mosaic virus in lablab was identified by using RT-PCR, the amplified DNA fragments (OR545585, OR545586, OR695083 and OR722678) had an identity of 93-98 per cent with BCMV isolates of India.

- Dolichos yellow mosaic virus in lablab was characterized through Rolling circle amplification (RCA) and the sequence results of the DNA - A (OR625192) showed an identity of 98.05 per cent with of DoYMV isolates of Tamil Nadu and the DNA - B clone (OR621379) had an identity of around 93.05 per cent with of DoYMV isolates of Bangladesh.
- In redgram, IPDM package for SMD - seed treatment with *Bacillus subtilis* (Bbv 57) at 10g/kg and *Rhizobium* 25g/kg of seed followed by imidacloprid 600 FS at 5g/kg, intercropping with sorghum, rogue out infected plants upto 45 days after sowing, foliar spray of *Bacillus subtilis* at 1% at 30 days after sowing and need based spraying of fenazaquin 10 EC at 1 ml/lit was recorded with minimum incidence of 6.91 per cent, lowest population of mite at 2.66 nos./leaf with highest grain yield of 942 kg/ha and BC ratio of 1.92.
- Foliar spraying of five per cent *Ampelomyces* as liquid formulation at initial appearance of the disease symptom was found to be effective in reducing the blackgram powdery mildew (17.50 %) with increasing grain yield of 845 kg/ ha and more BC ratio of 2.45.
- Foliar spray of Biomolecule A in blackgram (CO 5 variety) reduced the incidence of yellow mosaic disease at 1000 ppm and 500 ppm treated plots with a per cent inhibition over control of 86.66 and 66.66 respectively.
- Pre-inoculated application of CuO based nanoparticles (all spice- *Pimenta dioica*) at 500 ppm was found effective against *Tobacco streak virus* by reducing the disease in blackgram upto 76.54% as compared to post-inoculation spray (36.12%).

C. Research projects on pulses
Total Number of Projects in Crop Protection

Type of project	AEN	PAT	Total
University sub projects	4	7	**11**
AICRP projects	2	3	**5**
Externally funded project	1	-	**1**
Total	**7**	**10**	**17**

D. Remarks on the ongoing URP/AICRIP/EPF/UCF
1. AGRICULTURAL ENTOMOLOGY

S. No.	Project Number and Title	Scientist In charge	Duration	Remarks
UNIVERSITY RESEARCH PROJECTS				
1.	**CPPS/VAM/PUL/2022/001** Population dynamics of pod bugs in major pulse crops and its management	Dr. R. Ramesh Assistant Professor (Agrl. Entomology) NPRC, Vamban	September 2021 to August 2024	Project may be completed and submit along with publication.
2.	**CPPS/MDU/PUL/2022/001** Identification of olfactory and visual cues involved in host finding behaviour of blister beetles, *Hycleus biundulatus* (Pallas) the flower feeders in pulses	Dr. Zadda Kavitha Assoc. Professor (Agrl. Entomology) AC & RI, Madurai	June 2022 to May 2024	Project may be completed and submit along with publication.

3.	**CPPS/VIR/ENT/PUL/2023/001** Diversity analysis and management of podbugs in short duration Pulses	Dr. B. Usha Rani Associate Professor (Agrl. Entomology) AC & RI, Madurai	Jan 2023 to March 2025	Project may be continued
4.	**CPPS/CBE/AEN/Pulses/2023/218** Evaluation of seed treatment insecticides to manage early season insect pests in short duration pulses	Dr. P.S. Shanmugam Associate Professor (Agrl. Entomology) Dept. of Pulses, TNAU, Coimbatore	September. 2023 to August 2025	Project may be continued

EXTERNALLY FUNDED RESEARCH PROJECTS				
1.	**WVC/CPPS/CBE/2022/R001** – World Vegetable Center, Taiwan sponsored "Integrated Pest and Disease Management in Tomato and Lablab bean"	Dr. P.S. Shanmugam Associate Professor (Agrl. Entomology (Co-PI)	2023 – 24	Project may be continued
AICRP				
REDGRAM				
2.	**AICRP / PBG - Cbe / PIP / 010** AICRP on Pigeonpea (Agrl. Entomology)	Dr. P.S Shanmugam Associate Professor (Agrl. Entomology)	2024-25	Project may be continued
3.	**AICRP/PBG/VRM/PIP/01** AICRP on Pigeonpea	Dr. P. Thilagam Associate Professor (Agrl. Entomology)	2024-25	Project may be continued
BLACKGRAM AND GREENGRAM				
1.	**AICRP/PBG/VBN/MUL/013** AICRP on MULLaRP (Agrl. Entomology)	Dr. R. Ramesh Assistant Professor (Agrl. Entomology)	2024-25	Project may be continued

PLANT PATHOLOGY

S. No.	Project Number and Title	Name and Designation of the Project leader	Duration	Project wise remarks
UNIVERSITY RESEARCH PROJECTS				
REDGRAM				
1.	**CPPS/VNJ/PUL/2023/001:** Development of biocontrol consortia against wilt disease of redgram caused by	Dr. V. Sendhilvel Associate Professor (Plant Pathology)	Nov 2022 to Nov 2025	The project may be continued Endophyte mediated strategy may be

	Fusarium oxysporum f. sp. *udum*			concentrated
BLACKGRAM				
2.	**CPPS/VBN/PAT/BGR/2020 /001:** Mycoparasitic potential of *Ampelomyces* sp for the management of powdery mildew disease in blackgram	Dr. P. Ahiladevi Assistant Professor (Plant Pathology)	July 2020 to March 2023	The project should be closed and the completion report should be submitted immediately and a research paper has to be published in a peer reviewed journal. A new project must be proposed immediately.
3.	**CPPS / CBE / PAT / PUL / 2021 / 001:** Development of a consortium using bacterial bio-agents for the management of dry root rot of black gram [*Vigna mungo* (L.)] caused by *Macrophomina phaseolina* (Tassi) Goid	Dr. L. Karthiba Assistant Professor (Plant Pathology) Dr. L. Rajendran, Associate Professor (Plant Pathology)	September 2021 to August 2024	The completion report should be submitted on time and a research paper has to be published in a peer reviewed journal. A new project should be proposed within two months of completion.
4.	**CPPS/CBE/PAT/SOR/2021 /001:** Development of actinobacteria consortia for the effective biological management of *Macrophomina phaseolina* (Tassi.) Goid.	Dr. K. Angappan Professor (Plant Pathology)	April 2021 to March 2024 Extended upto April 2025	The project may be continued
5.	**CPPS/CBE/PAT/PUL/2023 /001:** Developing bioformulation of antiviral principles for the management of Tobacco Streak Virus (TSV) infecting blackgram and greengram	Dr. R. Kannan Professor (Plant Pathology)	January 2023 to December 2025	The project may be continued
6.	**CPPS/CBE/PAT/PUL/2023 /001** Diagnosis of blackgram diseases using deep learning models	Dr. L. Karthiba Assistant Professor (Plant Pathology)	October 2022 to September 2024	The project may be continued and completion report submitted in time and publishes a paper in a peer review journal.
7.	**CPPS/VMB/PUL/2023/07:** Characterization of Candidatus phytoplasma inciting pulses phyllody	Dr.R. Ramjegathesh Assistant Professor (Plant Pathology) Dr. R. Ramesh Assistant Professor (Agrl. Entomology)	August 2022 to July 2025	Seed transmission study may be taken up and the project may be continued

AICRP				
REDGRAM				
8.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea (Plant Pathology)	Dr. L. Karthiba Assistant Professor (Plant Pathology)	April 2024 to March 2025	The project may be continued as per the technical programme of AICRP
BLACKGRAM & GREENGRAM				
9.	AICRP/PBG/VBN/MUL/013 AICRP on Kharif Pulses (Plant Pathology)	Dr. R. Ramjegathesh Assistant Professor (Plant Pathology)	April 2024 to March 2025	The project may be continued as per the technical programme of AICRP
10.	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 Associate Professor (Plant Pathology)	April 2024 to March 2025	The project may be continued as per the technical programme of AICRP
CHICKPEA				
11.	AICRP / PBG / CHP / 012 AICRP on Chickpea (Plant Pathology)	Dr. G. Senthilraja Assistant Professor (Plant Pathology)	April 2024 to March 2025	The project may be continued as per the technical programme of AICRP

B. Action Plan (2024-25)
Agricultural Entomology

1.	**Theme areas**
	1. Changing pests scenario in relation to weather parameters. 2. Identification of resistant sources for major insect pests in pulses 3. Seed treatment for management of sucking pests in short duration pulses 4. Monitoring pod wasp, pod weevil and other new emerging pests infestation and their damage potential in major redgram growing districts

Action Plan 1	**Changing pests scenario in relation to weather parameters**		
Theme Leader	**Dr. R. Ramesh**, Asst. Prof. (Ento.), NPRC, Vamban		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverables**
1. Assessment of insect pests and natural enemies population *in situ* 2. Fixed and roving survey in the districts identified during specific crop season 3. On campus fixed plot study at weekly interval in identified crops at VBN & CBE. 4. Roving plot study at fortnightly interval by all the participating Scientists in the identified Centres	**<u>Fixed Plot Survey</u>** **Dr. P. S. Shanmugam**, Assoc. Prof. (Ento.), Dept. of Pulses, TNAU, Coimbatore **Dr. R. Ramesh**, Asst. Prof. (Ento.), NPRC, Vamban **Dr. P. Thilagam**, Assoc. Prof. (Ento.), ARS, Virinjipuram **<u>Roving Survey</u>** **Dr. M. Pazhanisamy,** Asst. Professor, AC & RI, Kudumiyanmalai (Pudukottai Dt.) **Dr. K. Suresh**, Assoc. Prof. (Ento.), KVK, Madurai (Madurai Dt.) **Dr. K. Govindan**, Assistant Professor (Agrl. Entomology), RRS, Paiyur **Mr. A. Sivaraman**, Assistant Professor (Agrl. Entomology), AC&RI, Vazhavachanu	• Incidence of stem fly, important sucking pests, pod bugs, pod borers, pod fly and natural enemies population once in a week through *in situ* observation and pheromone traps catches in fixed plot and fortnightly observations in roving plot survey • Identification of natural enemies • Correlation and regression analysis with weather parameters	• Keeping vigilance on emerging pests either through introduction or shift in pest status. • Forewarning on emerging pests.

Action Plan 2	**Identification of resistant sources for major insect pests in pulses**		
Theme Leader	**Dr. P.S. Shanmugam,** Assoc. Professor (Agrl. Entomology), Dept. of Pulses, 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, pod bugs, defoliators, pod fly, pod borers etc. Artificial screening:	**Dr. P. S. Shanmugam**, Assoc. Prof. (Ento.) Dept. of Pulses, TNAU, Coimbatore **Dr. R. Ramesh**, Asst. Prof. (Ento.) NPRC, Vamban **Dr. P. Thilagam**, Assoc. Prof. (Ento.)	• Incidence of stem fly, aphids, 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 in pulse crops following standard procedures • Mechanism of resistance only for identified resistant entries against	• Promising resistant entries with known resistance mechanisms against major insect pests will be available for further breeding purpose

Whitefly under free choice and no choice test	ARS, Virinjipuram	major pest of pulses	

Action Plan 3	**Seed treatment for management of sucking pests in short duration pulses**		
Theme Leader	: **Dr. P.S. Shanmugam,** Associate Professor (Agrl. Entomology), Dept. of Pulses, TNAU, Coimbatore		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverables**
Studying the effect of seed treatment on sucking pests in short duration pulses T1: Imidacloprid 600 FS – 5ml/kg T2: Thiamethoxam 30 % FS – 10ml/kg T3: Cyantraniliprole 19.8% +Thiamethoxam 19.8% @ 4ml/kg T4: Untreated Control Design: RBD, Replications: 5	**Dr. P. S. Shanmugam**, Assoc. Prof. (Ento.), Dept. of Pulses, TNAU, Coimbatore **Dr. R. Ramesh**, Asst. Prof. (Ento.), NPRC, Vamban **Dr. P. Thilagam**, Assoc. Prof. (Ento.), ARS, Virinjipuram	• Infestation of various sucking pests in short duration pulses. • Effect of seed treatment chemicals on sucking pests and natural enemies.	• 2024-25: Field experiments will be conducted • 2025-26: Best treatment will be proposed to OFT in multiple locations • 2026-27: Best insecticide for seed treatment will be identified

Action Plan 4. Monitoring pod wasp, pod weevil and other new emerging pests infestation and their damage potential in major redgram growing districts (Pod wasp and pod weevil infestation are reported in North India and also in Karnataka)			
THEME LEADER	**Dr. R. Ramesh**, Asst. Prof. (Ento.), NPRC, Vamban		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observations to be recorded**	**Deliverables**
Regular monitoring of new emerging pests in major pulses growing districts	**Dr. P. S. Shanmugam**, Assoc. Prof. (Ento.), Dept. of Pulses, TNAU, Coimbatore **Dr. R. Ramesh**, Asst. Prof. (Ento.), NPRC, Vamban **Dr. P. Thilagam**, Assoc. Prof. (Ento.), ARS, Virinjipuram **Dr. Zadda Kavitha**, Assoc. Prof. (Ento.), AC & RI, Madurai **Mr. A. Sivaraman**, Assistant Professor (Agrl. Entomology), AC&RI, Vazhavachanur	• Infestation of various new emerging pests in pulses.	• 2024-25: Survey will be conducted to identify the emerging insect pests of pigeonpea • 2025-26: Extent of damage and management will be initiated

PLANT PATHOLOGY

Theme 1. Surveillance and forecasting plant diseases
Action Plan 1: Monitoring of diseases in pulses and collection of data set for AI based diagnosis

Theme Leader	**Dr. R. Ramjegathesh, Assistant Professor (Plant Pathology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable / expected out come**
A. Monitoring the incidence of important diseases of pulses • Roving survey • Fixed plot survey B. Analysis of data for the development of forewarning model C. Collection of good quality images for machine learning algorithms	Fixed plot and roving survey 1. Dr. R. Ramjegathesh - NPRC, Vamban (Blackgram, Greengram) 2. Dr. L. Karthiba - TNAU, Coimbatore (Redgram, Greengram, Blackgram) 3. Dr. L. Rajendran - TNAU, Cbe (Chickpea) 4. Dr. S. Mathiyazhagan - TRRI, Aduthurai (Blackgram, Greengram – Rice fallow) Roving survey 5. Dr. K. Chitra - KVK, Virinjipurm (Redgram, Blackgram, Greengram) 6. Dr. M. Deivamani- KVK, Dharmapuri (Redgram, Blackgram, Greengram)	• Incidence of diseases, *viz*., yellow mosaic, wilt, sterility mosaic disease, powdery mildew, rust, anthracnose, root rot have to be monitored throughout the crop period • The severity of emerging disease symptoms like little leaf and phyllody. • Correlation of weather factors with disease severity • Weekly weather data along with disease incidence/intensity will be recorded in fixed plot survey • Collection of minimum 500 images for each major diseases in each crop covering all the seasons / varieties	• 2024-2025: Correlation of weather data with disease severity • 2025-2026: Development of forewarning models • 2026-2027: Development and release of AI based mobile App for the detection of diseases in pulses

Theme 2. Identification of resistant sources
Action Plan 2: Identification of resistant sources and mechanisms of resistance to plant diseases

Theme Leader	**Dr. R. Ramjegathesh, Assistant Professor (Plant Pathology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable / expected out come**
• Pre-breeding materials / MLT cultures will be screened for their resistance against major diseases in pulses	1. Dr. R. Ramjegathesh - NPRC, Vamban - (Blackgram, Greengram & Redgram)	• % disease incidence and % disease index • Biochemical and	• 2024-2025: Identifying resistant sources for major diseases in pulses

Season: *Kharif* / *Rabi*-summer Design: Augmented design	2. Dr. L. Karthiba - TNAU, Coimbatore - (Redgram) 3. Dr. L. Rajendran - TNAU, Coimbatore - (Greengram, Blackgram & Chickpea)	molecular mechanisms of resistance will be carried out in TNAU.	• 2025-2026: Mechanisms of resistance will be explored in identified resistant sources to support release of new varieties

Theme 3. Biological control

Action Plan 3: Biological management of *Cercospora* leaf spot in greengram

Theme leader	**Dr. L. Karthiba, Assistant Professor (Plant Pathology), TNAU, Coimbatore**		
Treatment details	**Name of the scientist and centre**	**Observations to be recorded**	**Deliverables/ expected outcome**
T1-Foliar spray of *Bacillus subtilis* (Bbv 57) at 0.5% T2-Foliar spray of *Bacillus amyloliquefaciens* (Vb 7) at 0.5% T3- Foliar spray of *B. subtilis* (Bbv 57) + *B. amyloliquefaciens* (Vb 7) at 0.5% T4-Foliar spray of tebuconazole 25.9% EC at 500 ml/ha T5- Control Variety : VBN 5 (Gg) Season : *Kharif* Design : RBD Plot size : 4x3 m^2 Treatments : 5 Replications: 4	1. Dr. L. Karthiba - TNAU, Coimbatore 2. Dr. R. Ramjegathesh - NPRC, Vamban 3. Dr. R. Udayakumar - AC &RI, Kudumiyanmalai • Bioagents will be supplied by Dr. L. Karthiba, TNAU, Coimbatore • Seeds will be supplied by NPRC, Vamban	• Severity of *Cercospora* leaf spot disease • Yield parameters • CB ratio	• 2024-2025: Field experiment will be conducted • 2025-2026: Best treatment will be proposed to OFT in multiple locations • 2026-2027: Technology to manage *Cercospora* leaf spot in greengram to be released

Action Plan 4: Eco-friendly management of soil-borne diseases in redgram & chickpea

<table>
<tr><td>Theme leader</td><td colspan="3">Dr. L. Karthiba, Assistant Professor (Plant Pathology)
Dr. L. Rajendran, Associate Professor (Plant Pathology), TNAU, Coimbatore</td></tr>
<tr><td>Activity</td><td>Name of the scientist and centre</td><td>Observations to be recorded</td><td>Deliverables/ expected outcome</td></tr>
<tr><td>T1- ST with Consortium - A at 10 g/ kg + SA Consortium - A at 2.5 kg/ha on 20 DAS+ SA of Consortium - A at 2.5 kg/ha on 40 DAS
T2- ST with Consortium - B at 10 g/ kg + SA Consortium - B at 2.5 kg/ha on 20 DAS+ SA of Consortium - B at 2.5 kg/ha on 40 DAS
T3- ST with Consortium - C at 10 g/ kg + SA Consortium - C at 2.5 kg/ha on 20 DAS+ SA of Consortium - C at 2.5 kg/ha on 40 DAS
T4- ST with Carbendazim at 2g/ kg + soil drenching carbendazim at 1g/lit on 20 and 40 DAS
T5- Control</td><td><u>Redgram</u>
1. Dr. L. Karthiba, TNAU, Coimbatore
2. Dr. R. Ramjegathesh, NPRC, Vamban
<u>Chickpea</u>
1. Dr. L. Rajendran, TNAU, Coimbatore
2. Dr. P. Deivamani, KVK, Dharmapuri</td><td>• Incidence of wilt and root rot diseases
• Yield parameters
• CB ratio</td><td>• 2024-2025: Field experiment will be conducted
• 2025-2026: Best treatment will be proposed to OFT in multiple locations
• 2026-2027: Technology to manage wilt and root rot diseases in redgram & chickpea to be released</td></tr>
<tr><td colspan="4">Bioagents will be supplied by Dr. L. Karthiba, TNAU, Coimbatore
Consortium – A (50:50 Bacillus subtilis (Bbv57): Bacillus amyloliquefaciens (Vb 7))
Consortium –B (75:25 B. subtilis (Bbv57): B. amyloliquefaciens (Vb 7))
Consortium -C (25:75 B. subtilis (Bbv57): B. amyloliquefaciens (Vb 7))</td></tr>
<tr><td colspan="4">Variety: Redgram (CO 8) / Chickpea (CO 4) will be supplied by TNAU Centre
Season: Kharif (Redgram) / Rabi (Chickpea)
Design: RBD; Plot size: 5x4m^2; Treatments: 5; Replications: 4</td></tr>
</table>

Action Plan 5: Development of Aviro formulations for the management of yellow mosaic and stem necrosis diseases in blackgram and greengram

Theme leader	**Dr. R. Kannan, Professor (Plant Pathology), TNAU, Coimbatore**		
Treatment details	**Name of the scientist and centre**	**Observations to be recorded**	**Deliverables/ expected outcome**
T1: Spraying of Aviro 25% a.i. @ 5% concentration on 15, 30 and 45 DAS T2: Farmers practice T3: Control T4: Spraying of Aviro 25% a.i. @ 10% concentration on 15, 30 and 45 DAS (Phytotoxicity study) Variety : Blackgram - VBN 11 (Bg) Greengram : VBN 7 (Gg) Season : *Kharif* Design : RBD Plot size : 4x3m^2 Treatments : 4 Replications: 5 • Seeds will be supplied by NPRC, Vamban (VBN 11-Bg) and (VBN 7-Gg) • AVP formulations will be supplied by Dr. R. Kannan, TNAU, Coimbatore • Pesticide residue and phytotoxicity study will be carried out in TNAU, Coimbatore	Dr. R. Kannan & Dr. L. Rajendran - TNAU, Coimbatore Dr. R. Ramjegathesh NPRC, Vamban	% disease incidence Yield parameters CB ratio Pesticide residue Phytotoxicity	• 2024-2025: Field experiment will be conducted • 2025-2026: Best treatment will be proposed to OFT and adoption

Action Plan:6 Field evaluation of Biomolecule A against yellow mosaic disease in blackgram at hot spot area

Theme leader	**Dr. V.K. Satya, Asst. Professor (Plant Pathology), HC & RI (W), Trichy**		
Treatment details	**Name of the scientist and centre**	**Observations to be recorded**	**Deliverables / Expected outcome**
T_1- Foliar spray of Biomolecule A @ 500 ppm at 15, 30 and 45 DAS + Foliar spray of Imidacloprid @ 0.5 ml /lt at 20 and 40 DAS T_2- Foliar spray of Biomolecule A @ 1000 ppm at 15, 30 and 45 DAS + Foliar spray of Imidacloprid @ 0.5 ml /lt ppm at 20 and 40 DAS T3- Untreated control Replication: 7 Design: RBD Variety: Moderately resistant	Dr. V.K. Satya, Dr. S. Sheeba Joyce Roseleen, HC & RI (W), Trichy	• % diseases incidence • Whiteflies population • Pesticide residue • Yield • CB ratio	2024-25: Field experiment will be carried out in *kharif* and summer crop 2025-2026: If biomolecule A performs well, the process will be patented 2026-2027: Technology for management of yellow mosaic disease to be released

IV. REMARKS

a. General recommendations

- The Technical Directors/Deans may conduct reviews on the actions taken and monitor the progress made by the scientists for every cropping season (**Action**: All University Officers)
- All the scientists may be encouraged to submit research proposals involving various disciplines for externally funding. (**Action:** All Scientists)
- All scientists may be encouraged to publish research articles in peer-reviewed journals with NAAS ratings more than 7.0 (**Action**: All Scientists)

b. Crop Improvement

- Fast tract breeding for development of short duration and synchronized maturity in redgram genotypes may be intensified (**Action**: Dept. of Pulses, Coimbatore and ARS, Virinjipuram)
- Production and supply of quality seeds in pulses may be ensured through Seed Hubs (**Action**: Director (Seed Centre) and DCPBG)
- Bio-fortification research to improve Iron and Zinc in major pulses may be intensified (**Action**: DCPMB&B and DCPBG)
- New Donors may be utilized in breeding programme to develop improved varieties. (**Action** : Dept. of Pulses, Coimbatore and NPRC, Vamban)
- Research may be intensified to develop dual purpose redgram varieties (**Action:** ARS, Virinjipuram, Dept. of Pulses, Coimbatore and ARS, Bhavanisagar)
- Breeding for resistance to viral diseases and storage pests in major pulses may be intensified (**Action:** CPBG, CPPS and CPMB&B)
- Research on genetic improvement of Mochai, Horsegram and Chickpea may be intensified through conventional and molecular breeding approaches. (**Action:** RRS, Paiyur & Dept. of Pulses, Coimbatore)

c. Crop Management

- Large-scale demonstrations (One acre) on redgram transplanting technicque may be organized at ARS, Bhavanisagar and ARS, Virinjipuram and field day may be conducted to popularize the technology (**Action:** DCM)
- Research may be intensified to suppress the weed flora using microorganisms/biofertilizers and herbicides in pulses-based cropping system, involving microbiologists, soil scientists and agronomists. (**Action:** DNRM & DCM)
- Crop production guide may be updated with new technologies (**Action:** DCM & DNRM)
- Validation of horsegram root exudate metabolites such as glucopyranoside and pyrimidinedione dehydrate produced by the NAPPs on suppression of weed growth or weed control may be carried out through field evaluation (**Action:** DNRM).

d. Crop Protection

- Field evaluation of Biomolecule "A" against yellow mosaic disease in blackgram may be carried out in a hot spot location (**Action:** DCPPS)

- Artificial screening may be done for field-level resistant cultures received from breeders for the development of resistance varieties against pests and diseases (**Action:** DCPPS).
- Research on the development of pheromone traps for control of blister beetles in pulses may be initiated (**Action:** DCPPS).
- Production of pesticides residue free pulses for consumption to avoid health hazards may be ensured (**Action:** DCPPS).
- All the scientists are instructed to monitor the insect pests and diseases of pulses in their districts regularly. If there is an outbreak of existing pests, diseases, and nematodes or the occurrence of new insect pests and diseases and nematodes, they should be reported to the Director (CPPS) immediately (**Action:** All the pulse scientists).
- Basic research on YMV on cross infectivity studies may be initiated (**Action:** DCPPS).

V. List of Scientists

A. Offline participants

S. No.	Name of the Scientist	Designation & Department
1.	Dr. K. Subrahmaniyam	Director, TRRI, Aduthurai
2.	Dr. M. Raveendran	Director of Research, TNAU, Coimbatore
3.	Dr. R. Ravikesavan	Director, CPBG, TNAU, Coimbatore
4.	Dr. P. Balasubramaniam	Director, NRM, TNAU, Coimbatore
5.	Dr. M.K. Kalarani	Director, CM, TNAU, Coimbatore
6.	Dr. M. Shanthi	Director, CPPS, TNAU, Coimbatore
7.	Dr. R. Umarani	Director, Seed Centre, TNAU, Coimbatore
8.	Dr. A. Raviraj	Dean, AEC & RI, Coimbatore
9.	Dr. S. Nakkeeran	Dean, AC & RI, Kudumiyanmalai
10.	Dr. A. Yuvaraja	Prof. & and Head, NPRC, Vamban
11.	Dr. R. Manimaran	Prof. (PBG), TRRI, Aduthurai
12.	Dr. B. Umesh Kanna	Prof. (Forestry), TNAU, Coimbatore
13.	Dr. N. Seenivasan	Prof. (Nematology), TNAU, Coimbatore
14.	Dr. C. Babu	Prof. (PBG), Directorate of Research
15.	Dr. N. Balakrishnan	Prof. (Ento.), Directorate of Research
16.	Dr. P. Rajarathinam	Assoc. Prof. (Agron.), TRRI, Aduthurai
17.	Dr. S. Mathiyazhagan	Assoc. Prof. (Pl. Patho.). TRRI, Aduthurai
18.	Dr. S. Marimuthu	Assoc. Prof. (Agron.). NPRC, Vamban
19.	Dr. G. Thangamani	Assoc. Prof. (Agrl. Micro.). NPRC, Vamban
20.	Dr. B. Karthikeyan	Assoc. Prof. (Agrl. Micro.), NPRC, Vamban
21.	Dr. A. Alagesan	Assoc. Prof. (Agron.), KVK, Vamban
22.	Dr. C. Menaka	Assoc. Prof. (SST), KVK, Vamban
23.	Dr. M. Shanmuganathan	Assoc. Prof. (PBG), AC & RI, Kudumiyanmalai
24.	Dr. T. Sivasankariselvi	Asst. Prof. (Agrl. Micro.), TRRI, Aduthurai
25.	Dr. K. Thiyagu	Asst. Prof. (PBG), NPRC, Vamban
26.	Dr. R. Ramesh	Asst. Prof. (Ento.), NPRC, Vamban
27.	Dr. R. Ramjegathesh	Asst. Prof. (Pl. Patho.), NPRC, Vamban

28.	Th. K.P. Senthil Kumar	Asst. Prof. (Agron.), NPRC, Vamban
29.	Dr. V.B. Raghavendran	Asst. Prof. (V&AH), KVK, Vamban
30.	Dr. K.R. Saravanan	Asst. Prof. (PBG), AC & RI, Kudumiyanmalai

B. Online participants

I. Crop Improvement

S. No.	Name of the Scientist	Designation & Department
1.	Dr. N. Senthil	Director, CPMB & B, TNAU, Coimbatore
2.	Dr. S. Geetha	Prof. & Head, Dept. of Pulses, TNAU, Coimbatore
3.	Dr. M. Gunasekaran	Prof. (PBG) & Head, AC & RI, Madurai
4.	Dr. V. Manonmani	Prof. & Head, DSST, TNAU, Coimbatore
5.	Dr. E. Kokiladevi	Prof. & Head, Plant Biotechnology, CPMB & B, TNAU, Coimbatore
6.	Dr. D. Uma	Prof. & Head, (Biochemistry), CPMB & B, TNAU, Coimbatore
7.	Dr. P. Jayamani	Prof. (PBG), Dept. of Pulses, TNAU, Coimbatore
8.	Dr. M. Kumar	Prof. (PBG), Dept. of Pulses, TNAU, Coimbatore
9.	Dr. E. Murugan	Prof. (PBG), KVK, Ramanathapuram
10.	Dr. K. Geetha	Prof. (PBG), RRS, Paiyur
11.	Dr. D. Malarvizhi	Prof. (PBG), Dept. of PGR, TNAU, Coimbatore
12.	Dr. R. Sudhagar	Prof. (PBG), O/o, Dean (Agri.), TNAU, Coimbatore
13.	Dr. K. Thangaraj	Prof. (PBG), AC & RI, Madurai
14.	Dr. K. Sundaralingam	Prof. (SST), Dept. of Pulses, TNAU, CBE
15.	Dr. S. Lakshmi	Prof. (SST), DODL, TNAU, CBE
16.	Dr. T. Eevera	Assoc. Prof. (SST), DSST, TNAU, CBE
17.	Dr. M. Jayaramachandran	Assoc. Prof. (PBG), AC&RI, Chettinad
18.	Dr. S. Hari Ramakrishnan	Assoc. Prof. (PBG), ADAC & RI, Trichy
19.	Dr. A. Thanga Hemavathy	Assoc. Prof. (PBG), Pulses, TNAU, Coimbatore
20.	Dr. K. Amudha	Assoc. Prof. (PBG), ARS, Bhavanisagar
21.	Dr. S. Chitra	Assoc. Prof. (PBG), AC & RI, Madurai
22.	Dr. K. Anandhi	Asst. Prof. (PBG), Pulses, TNAU, Coimbatore
23.	Dr. A. Bharathi	Asst. Prof. (PBG), AC & RI, Vazhavachanur
24.	Dr. A. Gopikrishnan	Asst. Prof. (PBG), ARS, Virinjipuram
25.	Dr. D. Shoba	Asst. Prof. (PBG), AC&RI, Killikulam
26.	Dr. S. Utharasu	Asst. Prof. (PBG), ARS, Bhavanisagar
27.	Dr. L. Subha	Asst. Prof. (PBG), ARS, Pattukottai
28.	Dr. M. Sudha	Asst. Prof. (Biotech.), CPMB&B, TNAU, Coimbatore
29.	Dr. S. Suganthi	Asst. Prof. (PBG), AC & RI, Vazhavachanur
30.	Dr. R. Vigneshwari	Asst. Prof. (SST), DSST, TNAU, CBE
31.	Dr. B. Venudevan	Asst. Prof. (SST), KVK, Aruppukottai

II. Crop Management

S. No.	Name of the Scientist	Designation & Department
I.	**CROP MANAGEMENT**	
A.	**Agronomy**	
1.	Dr. E. Somasundaram	Director, ABD, TNAU, Coimbatore
2.	Dr. S. Pazhanivezhan	Director, CWGS, TNAU, Coimbatore
3.	Dr. P. Parasuraman	Prof. & Head, Agronomy, TNAU, Coimbatore
4.	Dr. R. Krishnan	Prof. & Head, NOFRC, TNAU, Coimbatore
5.	Dr. N.K. Sathiyamoorthy	Prof. & Head, ACRC, TNAU, Coimbatore
6.	Dr.S. Somasundaram	Prof. & Head, CRS, Veppanthattai
7.	Dr. Tamilselvan	Prof. (Agron.), RRS, Paiyur
8.	Dr. C. Uma maheswari	Prof. (Agron.), AC &RI, Chettinad
9.	Dr. S. Radhamani	Prof. (Agron.), Dept. of Agronomy
10.	Dr. T. Rangaraj	Prof. (Agron.), RRS, Aruppukottai
11.	Dr.S. Vallalkannan	Assoc. Prof. (Agron.), PC, KVK, Ramand
12.	Dr. E. Subramanian	Assoc. Prof. (Agron.), KVK, Madurai
13.	Dr. T. Ramesh	Assoc. Prof. (Agron.) & Head, ADAC&RI, Trichy
14.	Dr. S. Subbulaskhmi	Assoc. Prof. (Agronomy) ARS, Kovilpatti
15.	Dr. P. Kannan	Assoc. Prof. (SS&AC), CWGS, TNAU Coimbatore
16.	Dr. S. Anitta Fanish	Asst. Prof. (Agron.), Dept. of Pulses, TNAU, Cbe
17.	Dr. S. Manoharan	Asst. Prof (Agron.), ARS, Kovilpatti
18.	Dr. J. Bhuvaneswari	Asst. Prof. (Agron.), AC&RI, Killikulam
19.	Dr. T. Sampathkumar	Asst. Prof. (Agron), AC & RI, Madurai
20.	Dr. M. Jeyabharathi	Asst. Prof. (Agrl. Micro), AC & RI, Madurai
21.	Dr. P.Ayyadurai	Asst. Prof. (Agron.), AC&RI Vazhavzchanur
22.	Dr. T. Parthiban	Asst. Prof. (Agron.), ARS, Thanjavur
23.	Dr. V. Karunakaran	Asst. Prof. (Agron.) KVK, Needamangalam
B.	**Crop Physiology**	
24.	Dr. A. Senthil	Prof. & Head, Dept. of CRP, TNAU, Coimbatore
25.	Dr. V. Babu Rajendra Prasad	Asst. Prof. (CRP), TNAU, Coimbatore
26.	Dr. C. TamilSelvi	Assoc. Prof. (CRP), KVK, Tiruvallur
27.	Dr. J. Rajkumar	Assoc. Prof. (CRP), AC&RI, Kudumiyanmalai
II.	**Natural Resource Management**	
A.	**Soil Science and Agricultural Chemistry**	
28.	Dr. D. Selvi	Prof. & Head, Dept. of SS&AC, TNAU, Coimbatore
29.	Dr. M. Baskar	Prof. & Head, Dept. of SS&AC, ADADC&RI, Trichy
30.	Dr. M. Elayarajan	Prof. (SS&AC), Dept. of SS&AC, TNAU Coimbatore
31.	Dr. S. Suganya	Assoc. Prof. (SS&AC), Dept. of SS&AC, TNAU Coimbatore
32.	Dr. P. Malathi	Assoc. Prof. (SS&AC), Dept. of SS&AC, TNAU, Coimbatore
33.	Dr. T. Sherine Jenitha Rajammal	Assoc. Prof. (SS& AC), ADAC&RI, Trichy
34.	Dr. S. Rathika	Assoc. Prof. (Agronomy), ADAC&RI, Trichy
B.	**Agricultural Microbiology**	

35.	Dr. U. Sivakumar	Prof. & Head, Dept. of Agrl. Microbiology, TNAU, Coimbatore
36.	Dr. D. Balachandar	Professor, Dept. of Agrl. Microbiology, TNAU, Coimbatore
37.	Dr. M. Gnanachitra	Professor, Dept. of Agrl. Microbiology, TNAU, Coimbatore
38.	Dr. R. Brindavathy	Professor (Agrl. Micro), ORS, Tindivanam
39.	Dr. M. Sundar	Professor, (Agrl. Micro.), ADAC&RI, Trichy
40.	Dr. M. Jeyabharathi	Asst. Prof., (Agrl. Micro.), AC&RI, Madurai.
41.	Dr. T. Sivasankari Devi	Asst. Prof., (Agrl. Micro.), TRRI, Aduthurai.

III. Crop Protection

S. No.	Name of the Scientist	Designation & Department
I.	**Agricultural Entomology**	
1.	Dr. M. Murugan	Prof. & Head (Agrl. Ento.), TNAU, Coimbatore
2.	Dr. M. Chandrasekaran	Prof., AC & RI, Kudumiyanmalai
3.	Dr. P.S. Shanmugam	Assoc. Prof., Dept. of Pulses, TNAU, Coimbatore
4.	Dr. P. Thilagam	Assoc. Prof., ARS, Virinjipuram
5.	Dr. Zadda Kavitha	Assoc. Prof., AC & RI, Madurai
6.	Dr. B. Usharani	Assoc. Prof., AC & RI, Madurai
II.	**Plant Pathology**	
7.	Dr. K. Angappan	Prof. & Head (Plant Pathology), TNAU, Coimbatore
8.	Dr. G. Karthikeyan	Prof. (Plant Pathology), TNAU, Coimbatore
9.	Dr. R. Kannan	Prof. (Plant Pathology), TNAU, Coimbatore
10.	Dr. T. Anand	Assoc. Prof., Seed Centre, TNAU, Coimbatore
11.	Dr. V. Sendhilvel	Assoc. Prof., TNAU, Coimbatore
12.	Dr. N. Rajinimala	Assoc. Prof. (Pl. Pathology), RRS, Ambasamudram
13.	Dr. K. Chitra	Assoc. Prof., KVK, Virunjipuram
14.	Dr. G. Senthilraja	Asst. Prof., Dept. of Pulses, TNAU, Coimbatore
15.	Dr. L. Karthiba	Asst. Prof., Dept. of Pulses, TNAU, Coimbatore
16.	Dr. M. Deivamani	Asst. Prof., KVK, Papparapatti
17.	Dr. P. Ahiladevi	Asst. Prof., AC & RI, Keelvzhur
18.	Dr. V.K. Sathya	Asst. Prof., HC & RI(W), Trichy

******