TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

37th Pulses Scientists' Meet 2019
(April 9-10, 2019)

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

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore 641 003

2019

PROCEEDINGS

37th Pulses Scientists' Meet 2019
(April 9-10, 2019)

The 37th Pulses Scientists Meet was held during April 9-10, 2019 at the Tamil Nadu Agricultural University, Coimbatore. **Dr. N. Kumar**, inaugurated the event and narrated the importance of pulses in nutritional security. **Dr. K.S. Subramanian**, Director of Research welcomed the gathering and presented the research highlights of the year 2018-19 encompassing varieties released, technologies developed and plant protection measures recommended for adoption. Further, he suggested to the Pulses Scientists to consider integration of classic plant breeding and molecular breeding approaches to develop resistant genotypes against yellow mosaic virus and pod borers, evolve technology capsule for holistic production and protection, smart delivery of nano-agri inputs besides exploitation of legume-microbe interaction to tide over biotic and abiotic stresses. **Dr. K.R. Ashok**, Director (CARDS) briefly presented the current production scenarios of pulses in India and Tamil Nadu besides yield gap analysis. The action taken reports on the 36th Scientists Meets were presented by the lead scientists from National Pulses Research Center (NPRC), Vampan. The technical directors had reviewed the on-going university research projects (89), action plan projects (5), core projects (15), AICRPs (5) besides externally funded projects (34). **Dr. S. Geetha**, Director (CPBG), **Dr. V. Geethalakshmi**, Director (Crop Management) and **Dr. K. Prabakar**, Director (CPPS) presented the significant outcomes of the review and proposed action plan for the year 2019-2020. In the closing remarks, the Vice Chancellor appreciated the scientists to bring lots of technologies to augment pulses productivity.

Action taken report on the recommendations made during previous crop scientist meet and progress report of various projects were presented by the lead scientists of the respective disciplines. **Dr. N. Manivannan**, Professor and Head, National Pulses Research Centre, Vamban made a presentation on the action taken report of 36th Pulses Scientist Meet. **Dr. S. Marimuthu**, Assistant Professor (Agronomy) made a presentation on the action taken report and salient findings pertaining to Crop Management. For Crop protection, **Dr. P. Pretheep Kumar**, Assistant Professor (Agricultural Entomology) made presentation on the action taken report and salient findings pertaining to Agricultural Entomology followed by **Dr. T.K.S. Latha**, Assistant Professor (Plant Pathology) for Plant Pathology respectively.

The proceedings of the meet is furnished as 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. General remarks
E. Action Plan 2019-2022

II. CROP MANAGEMENT

A. Decisions made on OFT
B. Research projects on Pulses
C. Remarks on the ongoing University Research projects/AICRP/Externally funded projects
D. General remarks
E. Action Plan 2019-2022

III. CROP PROTECTION

A. Decisions made on OFT
B. Research projects on Pulses
C. Remarks on the ongoing university research projects/AICRP/Externally funded projects
D. General remarks
E. Action Plan 2019-2022

IV. CLOSING REMARKS & WAY FORWARD

V PARTICIPANTS

I. CROP IMPROVEMENT

A. Entries for variety release proposal/ART/OFT/MLT (2019-2020)

A1. Blackgram: Variety Release

No	Culture	Pedigree	Duration (days)	Seed yield (kg/ha)	Yield increase over check (%)			Special features
					CO 6 (C)	VBN 6 (C)	VBN 8 (C)	
1	VBG 12-062	PU 31 x CO 6	60-65	935	-	20.0	19.1	• Suitable for all seasons • Resistant to MYMV • Moderately resistant to leaf crinkle
2	COBG 10-05	VBN 5 x *V. mungo* var *silvestris* /22/10	60-65	880	10.0	12.1	18.1	• Bold seeded (5.5-6.0 g/100 seeds); • Resistant to MYMV • Moderately resistant to leaf crinkle, stem necrosis • Protein 22.3%.

A2. Blackgram: ART

Culture/check	Duration (days)	Seed yield (kg/ha)	Yield increase over check (%)		Special features	Season
			VBN 6	VBN 8		
COBG 13-04 (R)	65-70	908	17.2	16.7	High yield, MYMV resistant	Kharif (June-July) Rabi

						(Sep.-Oct)
Checks	VBN 6, VBN 8					

A3. Greengram : ART

Culture/check	Duration (days)	Seed yield (kg/ha)	Yield increase over check (%)		Special features	Season
			VBN (Gg)3	CO 8		
COGG 13-19 (R)	60-65	815	4.0	14.4	Early duration, Moderately resistant to MYMV	Kharif (Jun-Jul) Rabi (Sep-Oct)
VGG 15-013 (N)	70-75	977	16.17	31.67	Resistant to MYMV	
VGG 15-029 (N)	60-65	970	15.33	30.73	Moderately resistant to MYMV	
VGG 15-030 (N)	60-65	927	10.22	24.93	Moderately resistant to MYMV	
Checks	VBN 4 and CO 8					

A4. Distribution of ARTs

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

A5. Blackgram (Summer Irrigated) : OFT

No	Cultures	Parentage	Grain yield (kg/ha)	Duration (days)	Yield increase over (%)		Special features
					VBN 6	VBN 8	
1.	VBG 12-062	PU 31 x CO 6	935	65-70	20.0	19.1	• Suitable for all seasons • Resistant to MYMV • Moderately resistant to leaf crinkle
Check		VBN 8, VBN 6 and ADT 5					

OFT (10): OFTs will be conducted in Thanjavur district during Summer 2019.

A6. Redgram (Long Duration): MLT

Design : RBD	No. of replications	:	Four
Plot size : 4 × 5.4 m^2	Seed Quantity	:	200 g/entry/location
Spacing : 90 x 30 cm*	Season	:	Kharif

*120 x 30 cm for heavy soil

Features of the redgram MLT cultures

S. No.	Culture	Parentage	Grain yield (kg/ha)	Duration (Days)	Special features
1.	CRG 16-008(R)	CO(Rg) 7 x Richa	1667	175-180	High yield, resistant to SMD
2.	VRG 08-003 (R)	VRG 92 x Vamban 2	1378	175-180	High yield, resistant to SMD
3.	CRG 16-011 (N)	CO(Rg) 7 x ICPL 7835	1646	175-180	long duration, Resistant to SMD
4.	CRG 16-002 (N)	CO 6 x ICPL 87119	1697	175-180	long duration, Resistant to SMD
Checks	CO 8				
Locations	Vamban, Coimbatore, Paiyur, Melalathur, Yethapur, Virinjipuram				

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

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

A7. Blackgram: Multilocation Trial

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

Features of the proposed culture

Sl. No	Culture	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	VBG 17-026 (R)	KUG 365 x MDU 1	1289	65-70	High yield and MYMV resistant
2.	VBG 17-029 (R)	VBN (Bg) 5 x TU 17-14	1416	65-70	High yield and MYMV resistant
3.	KKB-14-015 (R)	IPU 2006-01 x TNY local	1088	65-70	High yield, recommended for rice fallow, irrigated and resistant to YMV
4.	COBG 17- 06 (N)	VBN(Bg) 5 x Mash 114	969	65-70	Short duration, High Yield Resistant to YMV and Bold seed
5.	COBG 17- 11 (N)	CO 6 x PU 31	965	65-70	Short duration, High Yield Resistant to YMV and Bold seed
6.	ACM 14-001(N)	CO 5 x VBN(Bg) 4	955	65-70	High yield and MYMV resistance
7.	ACM 16-017(N)	Mutant of MDU 1	1075	65-70	High yield, arabinose content 8.38% and high battervolume

8.	VBG 17-007(N)	VBN(Bg) 5 x MDU 1	1148	65-70	High yield and MYMV resistance
9.	VBG 17-012(N)	VBN(Bg) 4 x Uttra	1094	65-70	High yield and MYMV resistance
10.	KKB-14-047(N)	PU 06-20x Vamban 3	990	65-70	Suitable for rice fallows and irrigated, Resistant to YMV
11.	KKB-14-049(N)	VBN(Bg) 4 x KU-12 -39	977	65-70	Suitable for rice fallows and irrigated Resistant to YMV

Checks		VBN 6, VBN 8, ADT 6 (Rice fallow)
Locations	Kharif (Jun-Jul)	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam
	Rabi (Sep-Oct)	Coimbatore, Vamban, Eachangkottai, Aruppukkotai, Kovilpatti, Madurai, Pattukkottai and Tindivanam
	Rice fallow (Jan – Feb)	Aduthurai, SWMRI Thanjavur and Killikulam

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

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

A8. Greengram : Multilocation Trial

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

Features of the proposed cultures

Sl. No	Culture	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	VGG 16-029 (R)	VBN (Gg)2 x ML 2037	1278	60-65	High yield, Synchronous maturity and MYMV resistance
2.	VGG 16-047 (R)	VBN (Gg)2 x SM 47	1308	60-65	High yield, bold seed, Synchronous maturity and MYMV resistance
3.	VGG 17-002 (R)	VBN (Gg) 2 x LGG 460	1518	70-75	High yield, with MYMV resistance
4.	VGG 17-048 (R)	VBN (Gg) 2 x Pusa EM 14-02	1563	60-65	High yield, Synchronous maturity and MYMV resistance
5.	COGG 16-10 (R)	CO 6 x SML 668	946	60-65	High yield, Moderately resistant to YMV, Shiny bold seeds
6.	VGG 17-019 (N)	VBN (Gg) 2 x ML 818	1302	60-65	High yield, Synchronous maturity and MYMV resistance
7.	VGG 17-049 (N)	VBN (Gg) 2 x Pusa EM 14 - 02	1329	60-65	High yield, Synchronous maturity and MYMV resistance
8.	VGG 17-015 (N)	VBN (Gg) 2 x ML 1451	1159	50-55	Extra early and MYMV resistance
9.	COGG 17-16 (N)	CO 7 x ML 818	844	60-65	Short duration, High Yield, Resistant to YMV, Medium Bold seed
Checks		VBN 4, CO 8 and ADT 3 (Rice fallow)			
Locations	Kharif (Jun-Jul)	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam			
	Rabi (Sep-Oct)	Coimbatore, Vamban, Eachangkottai, Aruppukkotai, Kovilpatti, Madurai, Pattukkottai and Tindivanam			

	Rice fallow (Jan – Feb)	Aduthurai, SWMRI Thanjavur and Killikulam

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

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

A9. Cowpea : Multilocation Trial

Design : RBD	No. of replications : Four
Plot size : 4 × 3 m^2	Seed Quantity : 250 g/entry/location
Spacing : 45 × 15 cm	Season: kharif, rabi

Features of the proposed culture

S. No	Cultures	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	VCP 12-006 (R)	Vamban 1 x CO(CP) 7	2899	70-75	High yield, and resistance to rust
2.	VCP 14-001 (R)	Vamban 1 x VCP 10-001	2893	70-75	High yield, and resistance to rust
3.	VCP 14-005 (R)	CO(CP)7 x Vamban 1	2634	70-75	High yield, and resistance to rust
4.	VCP 15-006 (N)	Vamban 1 x VCP11-006	2002	70-75	High yield, and resistance to rust
Checks	VBN 3 and CO(CP)7				
Locations	Kharif (Jul-Aug)	Vamban, Coimbatore, Paiyur, Madurai, Killikulam and Virinjipuram			
	Rabi (Sep-Oct)	Coimbatore, Vamban, Aruppukottai, Kovilpatti, Madurai, Perambalur and Trichy			

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

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

Important Dates in conduct of MLT and ART

Activities	Season	Last date for receipt	Date of Dispatch
Seed material of the proposed ART entries at Vamban	*Kharif*	31.05.2019	15.06.2019
	Rabi	15.08.2019	05.09.2019
Seed material of the proposed MLT entries at Vamban	*Kharif*	31.05.2019	05.06.2019
	Rabi	15.08.2019	05.09.2019
	Rice fallow	30.11.2019	05.12.2019
Sowing report at Vamban	*Kharif*	30.07.2019	-
	Rabi	30.10.2019	
	Rice fallow	31.01.2020	
Visit of MLT/monitoring teams	*Kharif*	Sep. 2019	-
	Rabi	Dec. 2019	
	Rice fallow	Feb. 2020	
Date for receiving the trials results at Vamban for compilation	*Kharif*	15.12.2019	-
	Rabi	28.02.2020	
	Rice fallow	15.04.2020	

Monitoring team to visit MLT 2019-20

Scientist	Crop	Season	Centres
Dr. P.Jayamani, Coimbatore Dr. A. Thangahemavathi, Coimbatore Dr. K,Bharathikumar, Vamban Dr. A. Gobikrishnan, Virinjipuram Dr. D. Rajabaskar, Coimbatore Dr. L.Karthiba, Coimbatore	Redgram	Kharif	Vamban, Coimbatore Virinjipuram,Paiyur, Melalathur,Yethapur
Dr. N.Manivannan, Vamban Dr. K,Bharathikumar, Vamban Dr. P. Jayamani, Coimbatore Dr. A. Muthuswamy, Coimbatore Dr. R. Maniamaran, Aduthurai	Blackgram Greengram	Kharif	Vamban, Coimbatore, Paiyur, Madurai, Virinjipuram, Eachangkottai and Killikulam

Dr. P.Preethpkumar, Vamban Dr. L. Karthiba, Coimbatore		Rabi	Coimbatore, Vamban, Aruppukkotai, Kovilpatti, Madurai, Chettinad and Tindivanam
Dr. K,Bharathikumar, Vamban Dr.P.Anantharaju, Coimbatore Dr.K.Thangaraj, Madurai Dr. P.Preethpkumar, Vamban Dr.T. K.S. Latha	Cowpea	Kharif	Vamban, Paiyur, Madurai, Killikulam, Virinjipuram
		Rabi	Vamban, Coimbatore, Aruppukkottai, Kovilpatti, Madurai, Veppanthattai

B. Research Projects on Pulses

Crops	Centres	URP	AICRP	EFP	CP	Total	No. of Scientists
Redgram	NPRC, Vamban	2	-	-	1	3	-
	Pulses, Coimbatore	2	1	-	-	3	2
	ARS,Virinjipuram	1	1	-	1	3	1
	AC&RI, Eachangottai	1	-	-	-	1	1
	RRS, Paiyur	1	-	-	-	1	-
	CPMB, Coimbatore	-	-	1	-	1	1
Blackgram	NPRC, Vamban	1	1	-	1	3	1
	Pulses, Coimbatore	1	-	1	-	2	1
	TRRI, Aduthurai	1	1	-	-	2	1
	AC&RI, Madurai	1	-	-	-	1	1
	AC&RI, Killikulam	1	-	-	-	1	1
	AC&RI, Eachankottai	1	-	-	-	1	1
	ARS, Pattukkottai	1	-	-	-	1	1
	CPMB, Coimbatore	-	-	-	1	1	1
	SWMRI, Thanjavur	1	-	-	-	1	1
Greengram	NPRC, Vamban	1	-		2	3	-
	Pulses, Coimbatore	1	-	-	-	1	-
	TRRI, Aduthurai	1	-	-	-	1	-
	CPMB, Coimbatore	-	-	1	-	1	1
	ARS,Bhavanisagar	-	-	1	-	1	1
Cowpea	NPRC, Vamban	1	-	-	-	1	1
	Pulses, Coimbatore	1	-	-	-	1	-
	AC&RI, Madurai	1	-	1	-	2	1
Chickpea	Pulses, Coimbatore	1	1	-	-	2	1
Mochai	RRS, Paiyur	1	-	-	-	1	1

Horsegram	Pulses, Coimbatore	-	-	1	-	1	-
	RRS, Paiyur	-	-	-	1	1	1
	Total	**23**	**5**	**6**	**7**	**41**	**21**

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

C. Ongoing URPs / AICRPs / Externally Funded Projects in Crop Improvement

No.	Project No. and Title	Project leaders	Duration	Remarks
	C1. University Research Projects (URPs)			
Redgram				
1.	CPBG/VBN/PBG/RGR/2017/001: Evolution of high yielding redgram variety with resistance to major pests and diseases	Dr. S. Lakshmi Narayanan, Assistant Professor (PBG)	April 2017 to March 2022	The Project may be closed. New project may be proposed for three years period. The culture VRG 12 - 005 found to be resistant to wilt may be test verified and registered in NBPGR.
2.	CPBG/VMB/PBG/RGR/2015/002: Collection, evaluation and maintenance of germplasm in redgram	Dr. S. Lakshmi Narayanan, Assistant Professor (PBG)	October 2015 to September 2020	The Project may be closed. New project may be proposed for three years period. Efforts should be taken to identify an extra early maturing genotypes from the existing germplasm.
3.	CPBG/CBE/PBG/RGR/2018/001: Evolution of high yielding short duration photo-insensitive Redgram varieties	Dr. P.Jayamani, Professor (PBG) and Head	May 2018-April 2023	The Project may be continued. Project period may be modified for three years. Based on the plant type, possibilities for high density sowing system may be explored. Critical studies

				may be made for the pollen fertility and seed set during summer season.
4.	CPBG/CBE/PBG/RGR/2018/002: Evolution of high yielding grain and dual purpose long duration varieties in redgram	Dr. A.Thanga Hemavathy, Assistant Professor (PBG)	May 2018-April 2023	The Project may be continued. Project period may be modified for three years. The best performing genotypes should be tried for possibilities for grafting with perennial redgram types.
5.	CPBG/VIJ/PBG/RGR/2016/001: Development of high yielding long duration redgram suitable for rainfed tract of Tamil Nadu	Dr. A.Gopikrishnan, Assistant professor (PBG)	June 2016 to May 2019	The Project may be closed. New project may be proposed for three years period. Restrict the number of crosses effected with the short duration redgram varieties and cultures focusing on the proven parents.
6.	CPBG/EKT/PBG /RGR/2017/001: Evaluation of short duration Redgram (*Cajanus cajan* L.) genotypes suitable for Summer irrigated condition in New Cauvery Delta Zone	Dr. S. Arulselvi, Assistant Professor (PBG)	July, 2017 to June, 2020	The Project may be continued. Segregating materials may be obtained from Dept. of Pulses, TNAU, Coimbatore, to strengthen the breeding programme.
7.	CPBG/PYR/PBG/RGR/2016/001: Development of long duration redgram varieties with efficient rhizosphere for yield maximization	M. Dhandapani, Assistant Professor (PBG)	June 2016 to Dec 2020	The Project may be closed and the completion report should be submitted by May '2020.

Blackgram				
8.	CPBG/VMB/PBG/BGR/2016/001: Evolution of high yielding MYMV resistant blackgram (*Vigna mungo* (L.) Wilczek) genotypes and maintenance of germplasm.	Dr.N.Manivannan, Professor (PBG) & Head	Jul 2016 to Jun 2021	The Project may be closed. New project may be proposed for three years period. More emphasis may be given for evolving black seed coated varieties along with resistance for leaf crinkle disease.
9	CPBG/CBE/PBG/BGR/2016/001: Evolution of blackgram varieties with yellow mosaic disease resistance.	Dr. A. Muthuswamy, Assistant Professor (PBG)	October 2016 to November 2021	The Project may be closed. New project may be proposed for three years period.
10.	CPBG/ADT/PBG/BGR/2013/001: Development of blackgram cultures suitable for rice fallow condition of Cauvery Delta Zone	Dr.R.Manimaran, Assoc. Professor (PBG)	April 2013 to March 2018	The Project may be closed. New project may be proposed for three years period. Segregating materials may be obtained from NPRC, Vamban.
11.	CPBG/MDU/PBG/BGR/2015/002: Development of high yielding YMV disease resistant variety in black gram. (*Vigna mungo* (L). Hepper)	Dr. G. Anand, Assistant Professor (PBG)	Oct 2015 to Sep 2018	The Project may be closed. New project may be proposed for three years period with the available materials.
12.	CPBG/KKM/PBG/BGR/2012/001: Development of high yielding black gram variety suitable for irrigated and rice fallow of southern districts of Tamil Nadu	Dr. D. Shoba, Asst. Professor (PBG)	April 2013 to September 2019	The Project may be closed. Only limited number of focused crosses should be taken up. Efforts should be taken to maintain the genetic

				purity of KKM1 variety. New projects may be proposed on blackgram and greengram with three years period.
13.	CPBG/EKT/PBG/RIC/2016/001: Development of high yielding blackgram varieties through breeding approaches for new Cauvery Delta Zone	Dr. M. Sakila, Asst. Prof. (PBG)	April 2017 to March 2019	The Project may be closed. New project may be proposed on maize.
14.	CPBG/PKT/PBG/PGR/2018/001: Development of high yielding black gram variety with resistance to MYMD suitable for summer irrigated condition of Cauvery Delta region.	Dr. A. Bharathi, Asst. Professor (PBG)	June 2018 to May 2023	The Project may be continued. Project period may be modified for three years. Segregating materials may be obtained from NPRC, Vamban for evaluation. The pathologists and entomologists from NPRC, Vamban / KVK, Vamban should be involved for screening against MYMD.
15	CPBG/TNJ/PBG/BGR/2013/001: Development of blackgram cultures suitable for rice follow condition of Cauvery Delta Zone	Dr. L. Subha, Assistant Professor (PBG)	April 2013 to March 2018	The Project may be closed. New project on rice follow pulses may be evolved by incorporating already developed materials. Delay may be avoided for submitting closing proposal and the new proposal.

Greengram				
16.	CPBG/VMB/PBG/GGR/2016/001: Evolution of high yielding and MYMV resistant greengram (*Vigna radiata* (L.) Wilczek) genotypes with synchronized maturity and maintenance of its germplasm	Dr. A. Mahalingam, Assistant Professor (PBG)	July 2016 to June 2021	The Project may be closed. New project may be proposed for three years period. The trait based genotypes developed through interspecific hybridization should be registered with NBPGR. The genetically pure seeds of wild spp of *Vigna* may be deposited in Ramaiah Gene bank.
17	CPBG/CBE/PBG/GGR/2016/001: Evolution of greengram varieties with synchronized maturity and resistant to yellow mosaic disease	Dr. A. Muthuswamy, Assistant Professor (PBG)	October 2016 – November 2021	The Project may be closed. New project may be proposed for three years period.
18.	CPBG/ADT/PBG/GGR/2017/001: Evolution of high yielding MYMV resistant Greengram varieties suitable for rice fallow/summer irrigated conditions in CDZ	Dr.R.Manimaran, Assoc. Professor (PBG)	October 2017- September 2022	The Project may be continued. Project period may be modified for three years. Segregating materials may be obtained from NPRC, Vamban for evaluation. The generaration advancement should be done for minimum of three seasons.

Cowpea				
19.	CPBG/VMB/PBG/COP/2015/003: Evolution of high yielding genotypes and germplasm maintenance in cowpea	Dr.K.Bharathi Kumar, Assistant Professor (PBG)	September 2015 to August 2020	The Project may be closed. New project may be proposed for three years period. Focus may be given in identifying highly determinate with synchronized maturity types along with resistance for aphids. The entomologist may be involved in rigorous screening of available germplasm for aphids resistance and the genotypes with confirmatory results may be documented and registered with NBPGR.
20.	CPBG/CBE/PBG/COP/2016/001: Development of high yielding cowpea (*Vigna unguiculata* (L.) Walp.) Varieties superior than CO (CP) 7	Dr. P.Anantharaju Assistant Professor (PBG)	May 2016 to April 2021	The Project may be closed. New project may be proposed for three years period. Emphasis should be given for screening for Aphids resistance. The entomologist (AICRP redgram) should be involved for aphid screening.
21.	CPBG/MDU/PBG/COP/2015/001: Development of short duration, determinate cowpea (*Vigna unguiculata* L.) variety suitable for southern districts of Tamil Nadu	Dr. K. Thangaraj Assistant Professor (PBG)	October 2015 to September 2018	Anymore delay in submission of Completion report should be avoided. New project may be proposed for three years period with available materials.

Chickpea				
22.	CPBG/CBE/PBG/CHP/2015/001: Evolution of high yielding chickpea (*Cicer arietinum* L.) varieties for biotic and abiotic stresses for Tamil Nadu zone.	Dr.P.Anantharaju, Asst.Prof. (PBG)	Sept 2015 to August 2020	The Project may be closed. New project may be proposed for three years period. Superior genotypes may be nominated for MLT. Superior ICRISAT cultures may be tested and released as variety. All possibilities for generation advancement over favourable seasons in AICRP centers should be explored and followed regularly in the forthcoming seasons.
Mochai				
23.	CPBG/PAI/PBG/MOC/2017/001: Development of short duration high yielding photo insensitive vegetable pea types of mochai *Lablab purpureus* L.Var. Lignosus (L.)	Dr.P.Sudamathi, Assoc. Professor (PBG), Dr.R.Sivakumar, Asst.Professor (CRP) & S.Mohamed Jalaluddin, Professor (Agrl.Ento.)	Aug 2017-July 2022	The title should be changed. The breeding objective should be only for Mochai types and not for vegetable pea types. More concentration should be made on development of recombinants rather than on mere PLS. Brown Seed cultures to be utilized in breeding. Project period may be modified for three years.

C2. AICRPs				
Redgram				
24.	AICRP/PBG/CBE/PIP/010: AICRP on Pigeonpea- Evaluation of redgram genotypes under All India Co-ordinated Crop Improvement Project	Dr. P.Jayamani Professor (PBG) and Head	Continuous	The Project may be Continued.
25.	AICRP/PBG/VRM/PIP/011: All India Co-ordinated Research Project on Pigeonpea	Dr. A.Gopikrishnan, Assistant professor (PBG)	April 2018 to March 2020	The Project may be Continued.
Blackgram and Greengram				
26	AICRP/PBG/VBN/MUL/013: All India Coordinated Research Project on MULLaRP	Dr. N. Manivannan Professor (PBG) and Head	Jan 2015 to March 2020	The Project may be Continued.
27.	AICRP/PBG/ADT/MUL/015: All India Coordinated Research Project on MULLaRP	Dr.R.Manimaran, Assoc. Professor (PBG) Dr.K. Iyanar, Assoc. Professor (PBG)	April 2018 - March 2020	The Project may be Continued.
Chickpea				
28.	AICRP/PBG/CHB/012: AICRP on Chickpea - Breeding	Dr.P. Anantharaju, Asst.Prof.(PB&G)	Sept 2015 to Aug 2020	The Project may be Continued.
AINRP Arid Legumes (Vountary centres)				

29.	AINRP-VC/PBG/VBN/PUL/001: Voluntary centre under AINRP on Arid Legumes 2018-19	Dr. N.Manivannan Professor (PBG) and Head Dr.K. Bharathi Kumar Asst.Prof.(PB&G)	2018-2019	The Project may be Continued.
30.	AINRP-VC/PBG/CBE/PUL/001: Voluntary centre under AINRP on Arid Legumes 2018-19	Dr.P. Anantharaju, Asst.Prof.(PBG)	2018-19	The Project may be Continued.
31.	AINRP on horsegram: Voluntary centre under AINRP on Arid Legumes 2018-19	Dr. K.Geetha, Professor (PBG)	2018 -2019	The Project may be Continued.
C3. External Funded Schemes				
32.	DBT/CPBG/BSR/PBG/2017/R004: "Introgression of Bruchid Resistant Gene(s) from *Vigna* genotypes into popular Mung bean (*Vigna radiata* L.) variety through Marker Assisted Backcross Breeding".	Dr.D.Malarvizhi, Assistant Professor (PBG), ARS, Bhavanisagar Dr.A.Thanga Hemavathy, Assistant Professor (PBG), Dept. of Pulses, CPBG, TNAU. Dr.D.Kavithamani, Assistant Professor (PBG), Dept. of Millets, CPBG, TNAU.	Jun,2017 to Jun , 2020	The progress is not upto to the level of expectation and approved plan of work. More consolidated efforts and planning are required. The Project may be Continued.
33.	BRNS/PBG/CBE/PUL/2018/R003: Isolation and characterization of mutants for durable resistance to powdery mildew in blackgram	Dr. D. Kumaresan, Assoc.Prof & Head Dr.V. Thiruvengadam, Asst.Prof (PBG) Dr. TKS. Latha, Asst. Prof (Pl.Path)	2018-2021	The Project may be Continued.
34.	GoI/CPBG/CBE/PUL/2017/R002:	PI : Dr. R. Sudhagar	Apr,2017 –	The Project may be

	Induced mutagenesis in horsegram (*Macrotyloma uniflorum* Lam. Verdc.) using gamma rays for isolation of short duration and compact high yield mutants	Assistant Professor (PBG), Co-PI : Dr. C.Vanniarajan Professor and Head	Mar,.2020	Continued.
35.	DST/CPMB/CBE/DPB/2016/R023: Understanding molecular basis of resistance against YMV in mung bean through transcriptome profiling	Dr. M. Sudha (PI), Asst. Prof., DPB, CPMB&B, TNAU, Coimbatore,	2016-2019	The Project may be continued.
36.	E28 ADQ-Understanding the molecular mechanism of defense in pigeon pea (*Cajanus cajan)* due to infestation by *Helicoverpa armigera, (*DBT-NER-GOI, New Delhi)	Dr. E.Kokiladevi Associate Professor	2018-21	*Helicoverpa* resistant donor line LRG 41 may be included in the study along with the proposed ICPL 332. The Project may be continued.
37.	BRNS: Development of a cowpea (*Vigna unguiculata* (L.) Walp) variety with terminal flowering habit suitable for mechanical harvest through gamma irradiation.	Dr. K. Thangaraj, (PI), Assistant Professor (PB&G)	April 2018-March 2021	The Project may be Continued.
C4. Core Projects				
38.	CPBG/ VMB/ PBG/ BGR/ 2018 /CP 112: Development of blackgram variety with multi bloom nature, high yield and MYMV disease resistance better	Dr. N. Manivannan, Professor (PBG) and Head, NPRC, Vamban CO-Project Leaders Dr. R. Manimaran,	April 2018 to March 2021	The Project may be Continued.

	than ADT 5 for Cauvery Delta Zone of Tamil Nadu	Assoc. Professor(PBG), TRRI, Aduthurai Dr. L.Subha, Asst. Professor (PBG), SWMRI, Thanjavur Dr. A.Bharathi. AP(PBG), ARS, Pattukottai		
39.	CPBG/ VMB/ PBG/ GGR/ 2018/ CP 050: Development of new Greengram variety better than ADT 3 suitable for rice fallow cultivation in delta district in Tamilnadu	Dr. A. Mahalingam, Assistant Professor (PBG) CO-Project Leader Dr. R. Manimaran, Assoc. Professor (PBG), TRRI, Aduthurai	April 2018 to March 2021	The Project may be Continued.
40.	CPBG/ VMB/ PBG/ GGR/ 2018/ CP 177: Identification of high yielding bold seeded greengram genotype through farmers participatory varietal selection	Dr. A. Mahalingam, Assistant Professor (PBG)	April 2018 to March 2021	The Project may be Continued.
41.	CPBG/PAI/PBG/HRM/2018/CP 175: Development of high yielding medium duration photoinsensitive horsegram genotypes suited to rainfed tracts of North Western Zone through EMS induced mutagenesis	Dr. K.Geetha, Professor (PB&G)	April 2018 to March 2021	The Project may be Continued.
42.	CPBG/PAI/PBG/RGR/2018/CP 178: Induced mutation to evolve an extra early redgram genotype (90-100 days) suitable for all seasons of Tamil Nadu	Dr. S. Lakshmi Narayanan Asst.Prof.(PBG) NPRC, Vamban	April 2018 to March 2021	The Project may be Continued.
43.	CPBG/VRM/PBG/RG/2018/CP 113: Development of wilt resistant short duration redgram variety	Dr. A.Gopikrishnan, Assistant professor (PBG) Dr. D. Dinakaran,	April 2018 to March 2021	The Project may be Continued.

		Professor, Plant Pathology and Head		
44.	CPMB/CBE/BIF/BGR/2018/CP 006: Whole genome sequencing of contrasting genotypes of black gram to identify novel genes/alleles and pathways contributing to disease resistance against MYMIV	Dr. M. Jayakanthan, Assistant Professor (Bioinformatics)	April 2018 to March 2021	Project may be continued

D. General remarks:

1. New pulse crops may be introduced (**Action**: Mothbean-ORS, Tindivanam, Rice bean-Dept. of Pulses, Coimbatore)

2. Grafting of perennial types redgram (**Action**: Dept. of Pulses, Coimbatore and Dept. of Vegetable crops, Coimbatore)

3. Evaluation of prerelease cultures may be taken up in co-ordination with crop management group (Action: Director, DCM, Director, NRM, Director, CPBG).

E. Action Plan (2019 – 2022)

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

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

List of cultures:

1. Special Multilocation Trial – Redgram (Short duration)

Design : RBD	No. of replications	:	Three
Plot size : 4 × 3.6 m^2	Seed Quantity	:	150 g/entry/location
Spacing : 60 x 30 cm*	Season	:	Kharif, Rabi, Summer

*** 90 x 30 cm for heavy soil**

S. No.	Culture	Parentage	Grain yield (kg/ha)	Duration (days)	Special features
1.	CRG 14-07 (R)	CO (Rg) 7 x TAT 93-47	1593	120-130	High yield, Resistant to SMD
2.	CRG 16-07 (N)	CO (Rg) 7 x AS 36	1546	120-130	High yield Resistant to SMD
3.	CRG 16-12 (N)	CO 5 x AL 1734	1513	120-130	Early duration Resistant to SMD
4.	CRG 16 - 01	CO (Rg) 7 x AL1738	1500	120-130	Early duration Resistant to SMD
5.	CRG 16 - 04	CO (Rg) 7 x H 2001 - 41	1470	120-130	Early duration Resistant to SMD
Checks		VBN(Rg)3, CO(Rg)7			
Locations (06)		Vamban, Coimbatore, Paiyur, Melalathur, Yethapur, Virinjipuram			

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

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

- Date of despatch: April 30th
- Expected date of sowing: May 15th
- Sowing report should be submitted to the P&H, Dept. of Pulses with a copy to the DCPBG, CBE and P & H, NPRC, Vamban

Theme No 2	**Fast track release of bold seeded greengram varieties suitable for sprout**			
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathikumar, Vamban Dr. A. Muthuswamy, Coimbatore Dr. R. Chandirakala, Madurai Dr. D. Malarvizhi, Bhavanisagar Dr. D. Shoba, Killikulam Dr. G. Hemalatha, Prof. (FSN), CSC&RI, Madurai Dr. K. Geetha, AP (FSN), ADAC&RI, Trichy	Collection of seeds from nominating centres (May 3rd week) Despatch of seeds (May 4th week)			Release of bold seeded greengram varieties suitable for sprout
	MLT (June-Sep)	ART/OFT (June-Sep)	Seed multiplication and Quality analysis	
	MLT (Sep-Oct)	ART/OFT (Sep-Oct)	Submission of variety release proposal	

List of cultures:

Design : RBD	No. of replications : Three
Plot size : 4 × 3 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: kharif, rabi

Sl. No	**Entry**	**Pedigree**	**Special features**
1	VGG 16-047	VBN (Gg) 2 x SM 47	High yield and bold seed
2	VGG 16-058	VBN (Gg) 2 x SM 47	High yield, early, synchronized maturity and bold seed
4	VGG 17-076	ML 2037 x EC 496841	High yield and bold seed
3	VGG 17-109	EC 496839 x ML 2037	High yield and bold seed
5	VGG 18-002	EC 496839 x IPM 409-4	High yield, synchronized maturity and bold seed
6	COGG 980	VBN(Gg) 2 x VC6157-B-70P	High yield. synchronized maturity and bold seed

7	COGG 17-02	SML 668 x Pusabold	High yield, synchronized maturity and bold seed
Check varieties: CO 7, CO 8 and VBN 4			

Locations	Kharif (Jun-Jul)	Vamban, Coimbatore, Bhavanisagar, Madurai and Killikulam
	Rabi (Sep-Oct)	Vamban, Coimbatore, Bhavanisagar, Madurai and Killikulam

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

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

- Sowing report should be submitted to the NPRC, Vamban with a copy submitted to the Director, CPBG, Coimbatore.

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

Dr. L.Subha, Thanjavur Dr. R. Manimaran, Aduthurai	Seed multiplication	Seed multiplication	Submission of variety release proposal	replace ADT 5

List of cultures:

List of cultures:

Design : RBD	No. of replications : Three
Plot size : 4 × 3 m^2	Seed Quantity : 200 g/entry/location
Spacing : 30 × 10 cm	Season: Summer irrigated

Sl. No	Entry	Pedigree	Special features
1.	VBG 18081	Mutant of ADT 5	MYMV resistant
2.	VBG 18099	Mutant of ADT 5	MYMV resistant
3.	VBG 18108	Mutant of ADT 5	MYMV resistant
4.	VBG 18111	Mutant of ADT 5	MYMV resistant
5.	VBG 18116	Mutant of ADT 5	MYMV resistant
6.	VBG 18124	Mutant of ADT 5	MYMV resistant
7.	VBG 17026	KUG 365 x MDU 1	MYMV resistant
8.	VBG 17029	VBN (Bg) 5 x TU 17-14	MYMV resistant
Check varieties: VBN 6, VBN 8, ADT 5			

- Expected date of sowing: April 2019 last week
- Sowing report should be submitted to the NPRC, Vamban with a copy submitted to the DCPBG, CBE

Theme No 4	**Fast track release of new chickpea variety**			
Theme Leader	**Dr. Anantharaj, Assistant Professor (PBG), Dept. of Pulses, Coimbatore**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**

Dr. P.Anatharaj, Coimbatore Dr. K. Sakthivel, Veppanthattai Dr. S. Hari ramakrishnan, Kovilpatti Dr. P.S. Shanmugam, Programme Coordinator, KVK, Dharmapuri	MLT (Oct-Feb) Seed multiplication	ART/OFT (Oct-Feb) Seed multiplication	Seed multiplication and Quality analysis Submission of variety release proposal	Release of chickpea variety to replace CO 4.

List of cultures:

Design : RBD	No. of replications : Four
Plot size : 4 × 3 m^2	Seed Quantity : 250 g/entry/location
Spacing : 30 × 10 cm	Season: Rabi

S. No	Cultures	Pedigree	Duration (Days)	Grain yield (kg/ha)	Special features
1	COC 17-01	ICCV 03112 x Jaki 9218	80	989	High yield and Resistant to dry root rot
2	ICCV 181117	ICCV 96029 x (ICC 16644 x JG 11)	81	1093	High yield and Resistant to dry root rot
3	ICCV 181674	(Genesis836 x GG 2) x (ICC 4958 TM x JG 11)	80	1196	High yield and Resistant to dry root rot
Checks	CO3, CO 4				
Locations	Coimbatore, Paiyur, Veppanthattai, Kovilpatti and KVK Papparapatti				

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

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

- Date of seed despatch: August 1st week
- Expected date of sowing: October II fortnight
- Weather data should be recorded.
- Sowing report should be submitted to the NPRC, Vamban with a copy submitted to the DCPBG, CBE

Theme No 5	**Pyramiding of resistant genes for viral diseases (MYMV, ULCV) and powdery mildew diseases and bruchid resistance in blackgram**			
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathikumar, Vamban Dr. A. Muthuswamy, Coimbatore Dr. R. Manimaran, Aduthurai Dr. P. Ahila devi, Vamban Dr. P.Preethep kumar, Vamban Dr. Thilagavathy, Aduthurai Dr. L. Karthiba, Coimbatore Dr M. Sudha, CPMB&B, Coimbatore	Crossing block to develop F_1 of a) MDU 1 x Mash 114 b) VBN(Bg) 4 x LBG 17 c) ADT 3 x TU 68 d) Mash 114 x LBG 17	Evaluation of F_2 of DC	Evaluation of F_5 of DC for MYMV at Vamban	Promising genotypes with multiple resistance to MYMV, UCLV and powdery mildew diseases and bruchid resistance
	Evaluation of F_1s in crossing block	Evaluation of F_3 of DC	Evaluation of promising lines for UCLV (Vamban), Powdery mildew (Coimbatore) and Powdery mildew (Aduthurai) Confirmation of MYMV at CPMB and for bruchid resistance at NPRC, Vamban	

	Evaluation of F_1 of double cross Set 1: (MDU 1 x Mash 114) x (VBN(Bg) 4 x LBG 17) Set 2: (ADT 3 x TU 68) x (Mash 114 x LBG 17)	Evaluation of F_4 of DC	Evaluation for seed yield Seed multiplication of promising entries for MLT	

Theme No 6	**Identification of genotypes for salinity tolerance in greengram and blackgram**			
Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathikumar, AP(PBG), Vamban Dr.V. Babu Rajendra Prasad, AP(CRP), Coimbatore Dr. P. Kannan, AP(SS&AC), Madurai	Screening of germplasm / genetic stock for salinity at Laboratory (100 Nos. each)	Seed multiplication of salinity tolerant genotypes	Seed multiplication of selected entries	Release of blackgram/ greengram varieties with salinity tolerance
	Confirmation of salinity tolerance of selected entries	Evaluation of promising genotypes at target location-MLT (Sikkal, Karaikal, Kovilpatti and Ramnad)	Evaluation of promising cultures under OFT / ART at target locations Submission of variety release proposal	
Theme No 7	**Development of pre breeding population in blackgram and greengram**			

Theme Leader	**Dr. N. Manivannan, Professor and Head, NPRC, Vamban**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Dr. K.Bharathi kumar, Vamban Dr. A. Muthusamy, Coimbatore	Crossing block for the following crosses: Blackgram x *Vigna mungo* var. *silvestris* Greengram x *Vigna umbellata* Greengram x *Vigna sublobata*	Evaluation of F_3s	Evaluation of F_6 progenies for yield traits, pest and disease resistance	Development of promising genotypes in greengram and blackgram for breeding programme
	Evaluation of F_1s. Where ever possible inter crossing of interspecific hybrids mentioned in the first season may be attempted.	Evaluation of F_4s	Evaluation of F_7 progenies for yield traits, pest and disease resistance	
	Evaluation of F_2s	Evaluation of F_5s	Seed multiplication of promising progenies	

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

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II. CROP MANAGEMENT

A. Decisions made on Adoption / OFT

A1. For Adoption

1. Mechanized sowing and sprinkler method of irrigation for summer irrigated blackgram

- Machine sowing @ 25 kg/ha and sprinkler method of irrigation along with seed treatment of *Pseudomonas fluorescens* @ 10 g/kg seed + 3 packets (600 g) of *Rhizobium*- CRU 7 + 3 packets (600 g) of PGPR and 3 packets(600 g) of Phosphobacteria.

- Weed management: PE Isoprotron @ 0.5 kg/ ha followed by one hand weeding on 30 DAS

- Nutrient management : (STCR based or 25 kg N +50 kg P_2O_5 + 25 kg K_2O + 20 kg S/ha + Soil application of 25 kg $ZnSO_4$ / ha under irrigated condition + One time foliar spraying of Pulse wonder @ 5 kg/ha.

2. Best sowing time and method for enhancing winter pulses productivity in rainfed ecosystem

- For bengalgram, sowing at first week of November with seed drill at Coimbatore and for horsegram sowing during last week of October with seed drill at Paiyur is ideal.

3. Effect of biochar and phosphobacteria on carbon build-up, P availability and blackgram yield in rainfed *Alfisol*

- Application of redgram stalk biochar @ 5 t / ha and phosphobacteria @ 2 kg/ha with STCR based phosphorus application for *alfisol* under rainfed situation.

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

- Water soluble seed coat formulation (Freeze dried cells) of *Rhizobium* (10^{11} cells/g) and AM fungi (ROC based formulation- ten thousand spores + infective propagules) can be recommended for seed coating of pulses.

5. Evaluation of *Rhizobium* mutant (VM1) in enhancing nodulation and yield in blackgram grown under acid soils

- The stability of *Rhizobium* mutant (VM1) to be confirmed by proposing it for URP.

A2. For OFT

OFT 1. Redgram based crop intensification under rainfed ecosystem

Centres:

Dept. of Pulses, Coimbatore : Dr. S. Anitta Fanish, AP (Agronomy)
RRS, Paiyur : Dr. N. Tamilselvan , Prof. & Head
ARS, Bhavanisagar : Dr. K.Malarkodi AP, (SST)

Treatments

T_1. Redgram + Cotton (4:4)
T_2. Redgram + Blackgram (4:5)
T_3. Redgram

Observations to be recorded:

a) Plant height at harvest b) No of branches at harvest c) No. of pods/plant
d) No. of seeds /pod e) 100 seed weight f) Grain yield g) Crop equivalent yield
h) Economics i) Recording the weather data

OFT 2. Yield maximization in rice fallow blackgram

Centres:

Aduthurai: Dr. C. Umamageswari, Assoc. Prof. (Agronomy)
Killikulam: Dr. N. Senthilkumar, Asst. Prof. (Agronomy)

Treatments

T_1: Farmers' practice (sowing 7- 10 days before harvest with seed rate of 30 kg ha^{-1} and manual harvesting)

T_2: Sowing 6 days before paddy harvest with seed rate of 39 kg ha^{-1} and machine harvesting with chain type harvester

Sowing period: December 15 to January 15

Designer seed, post emergence herbicide, supplemental irrigation through mobile sprinkler and pulse wonder foliar spray are the common practices.

Observations to be recorded:

a) Plant height at harvest b) No of branches at harvest

c) No. of pods/plant d) No. of seeds /pod e) 100 seed weight

f) Grain yield g) Soil resistance h) Economics

OFT 3. Effect of growth regulating substances in improving crop establishment and Harvest Index in blackgram and greengram under sodicity.

Centres:

ADAC&RI, Trichy : Dr. S. Nithila, AP (CRP),

SRS, Cuddalore : Dr.R.Anitha, AP (CRP)

TNAU, Coimbatore : Dr.K.Krishna surendar, AP (CRP),

Treatments:

T_1: Control (without any seed treatment)

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

T_3: Seed treatment with GA3 (50 ppm) + foliar spray of Panchagavya (3 %) at flower initiation and pod initiation stages

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

Observations to be recorded:

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

B. Research Projects on Pulses

Crop	Centre	URP	AICRP	EFP	Total
Agronomy					
Blackgram	NPRC, Vamban	1	1	-	2
	Pulses, Coimbatore	-	-	-	-
	ARS, Kovilpatti	1	-	-	1
	TRRI, Aduthurai	1	1		2
	AEC&RI, Kumulur	1	-	-	1
	NPRC, Vamban	2	1	-	3
Greengram	ARS, Kovilpatti	1	-	-	1
	TRRI, Aduthurai	-	1	-	1
Redgram	Department of Agronomy, Coimbatore	1	-	-	1
	RRS, Paiyur	1	-	-	1
Bengalgram	Department of Agronomy, Coimbatore	1	-	-	1
Horsegram	Department of Agronomy, Coimbatore	1		-	1
	RRS, Paiyur	1	-	-	1
Total		12	4	-	16
Crop physiology					
Blackgram	Dept. of CRP, TNAU,Coimbatore	1	-	-	1
Greengram	AC&RI, Madurai	1	-	1	2
	RRS, Paiyur	2	-	-	2
Total		4	-	1	5
Seed Science and Technology					
Blackgram	Seed Centre, Coimbatore	3		-	3
Greengram	ARS, Bhavanisagar	2		-	1

Redgram	Seed Centre, Coimbatore	-	1	-	1
Field lablab	RRS, Paiyur	1		-	1
Total		**6**	**1**	**-**	**7**
Agricultural Microbiology					
Blackgram	NPRC, Vamban	1	1	-	2
	AC &RI, Madurai	1	-	-	1
Green gram	NPRC, Vamban	-	1	-	1
	AC& RI, Killikulam	1	-	-	1
Moth bean	ORS, Tindivanam	1	-	-	1
Pulses	AC&RI, TNAU, Coimbatore	-	-	2	2
Total		**4**	**2**	**2**	**8**

C. Ongoing URPs /AICRPs / Externally Funded Projects

Agronomy		
URP - Redgram		
No.	**Project No. and Title**	**Remarks**
1	DCM/CBE/AGR/RGR/2016/001: Study on redgram based crop intensification under different land configuration with supplemental irrigation to achieve sustainability in rainfed ecosystem (June 2016 to May 2019) **TNAU, CBE (Coordinating Centre)** Dr. K. Kalaiselvi, Asst. Prof. (Agronomy) Dr. K. Sathiyabama, Asst. Prof. (SS & AC). **RRS Paiyur** Dr. C. Sivakumar, Assoc. Prof. (Agronomy) Dr. M. Vijayakumar, Asst. Prof. (SS & AC) Dr. K. Krishna Surendar, Asst. Prof. (CRP)	• Project to be closed. Completion report may be submitted on or before 30 June 2019 • The intercrop treatment alone to be proposed for OFT

Agronomy		
	ARS, Virinjipuram:* (*The trial was conducted by the Ph.D., Scholar Department of Agronomy, TNAU, Coimbatore)	
URP - Blackgram		
2	DCM/KPT/AGR/BGR/2016/001: Integrated Drought Mitigation Technology (IDMT) for blackgram (June 2016 to May 2019**)** **ARS, Kovilpatti (Coordinating centre)** 1. Dr. S.Subbulakshmi, Asst. Prof. (Agronomy) 2. Dr. V.Sanjiv Kumar, Asst. Prof. (SS & AC) **KVK,Aruppukottai (sub centre)** 3. Dr. C. Raja Babu, Asst. Prof. (CRP).	• The project to be closed. • Completion report to be submitted
3	DCM/ADT/AGR/BGR/2016/001: Yield maximization in rice fallow blackgram (June 2016 to May 2019) **TRRI, Aduthurai** Dr. C. Umamaheswari, Assoc.Prof. (Agro.) Dr. K. Raja, Assoc. Prof. (SST) Dr. K. Vanitha, Asst. Prof. (CRP) Dr. A. P. Mohankumar, Asst. Prof. (FMP), AEC & RI, Kumulur	• The trial to be proposed for OFT
4	DCM/KUM/AGR/RGR/2014/001: Effect of plant density and method of irrigation on pulse (blackgram) productivity in CDZ (March, 2015 to Feb' 2017) Dr. S. Vallal Kannan, Asst. Prof. (Agron), AEC &RI, Kumulur	• The technology may be recommended for adoption. Project to be closed. Completion report to be submitted
5	DCM/VBN/AGR/BGR/2018/CP051: Response of blackgram varieties for morphological modification and graded levels of	• The project to be continued • The treatment with 150 % of recommended dose of NPK

Agronomy		
	nitrogen for higher productivity under Irrigated condition (September 2018 - August 2019) Dr.S.Marimuthu, Asst. Prof (Agron), NPRC, Vamban Dr. K.Nelson Navamaniraj, Asst. Prof. (SST), KVK, Vamban	and ADT 5 may be removed
URP - Greengram		
6	DCM/VMB/AGR/CGR/2016/001: Integrated Drought Mitigation Technology (IDMT) for greengram (June 2016 to May 2019) **NPRC, Vamban (Coordinating Centre)** Dr. S. Marimuthu, Asst. Prof. (Agron.) Dr. V. Babu Rajendra Prasad, Asst. Prof. (CRP) Dr.P. Kannan, Asst. Prof. (SS&AC) **DARS, Chettinad** Dr. P. Kannan, Asst. Prof. (SS&AC) Dr. C. Udayasoorian, Prof. (ENS)	• The project to be closed. • Completion report to be submitted.
7	DCM/CBE/AGR/GGM/2016/001: Evaluation of improved management practices for greengram under irrigated condition (June 2016 To May 2019) **TNAU, Coimbatore (Coordinating Centre)** Dr. M. Senthivelu, Asst. Prof. (Agronomy) Dr. A. Surendra Kumar, Prof. (FMP), AMRC Dr. S. Kavitha, Asst. Prof. (SS&T) Dr. K. Krishna Surendar, Asst. Prof. (CRP) **NPRC, Vamban** Dr. S. Marimuthu, Asst. Prof.(Agronomy) Dr. C. Vanitha, Asst. Prof. (SS&T) Dr. V. Babu Rajendra Prasad, Asst. Prof. (CRP)	• The project to be closed. • Completion report to be submitted.

Agronomy		
8	DCM/KPT/AGR/GGR/2017/001: Studies on planting geometry and foliar spray application for yield maximization in green gram under dryland *vertisols* condition (October 2017 to September 2019) Dr. S. Elamathi (2017-18) Asst. Prof.(Agronomy) Dr.S.Manoharan (2018-19) Asst. Prof.(Agronomy)	• The project to be continued and Proposal for extension of project duration has to be submitted.
URP - Other Pulses		
9	DCM/CBE/AGR/PUL/2016/001: Relook on sowing time and sowing method for enhancing the winter pulses productivity in rainfed ecosystem (June 2016 to May 2019) **TNAU, Coimbatore (Coordinating Centre)** Dr. S. Sanbagavalli, Assoc. Prof. (Agron) Dr. S. Panneerselvam, Director, WTC, TNAU, CBE Dr. A. Surendrakumar,Professor (FMP), AMRC **RRS, Paiyur** Dr. N. Tamilselvan, Professor & Head Dr. R. Thiyagarajan, Asst. Prof. (FMP)	• The technology may be recommended for adoption. • Project to be closed and completion report to be submitted.
10	DCM/CBE/AGR/HGM/2018/CP008: Influence of nipping on the productivity of rainfed horsegram under altered crop geometry (June 2018 to May 2020) Dr.S.Sanbagavalli, Assoc. Prof.(Agronomy) Department of Agronomy, TNAU, Coimbatore	• The project to be continued

Agronomy		
AICRP - Redgram		
11	AICRP/PBG/CBE/PIP/010: Response of pigeonpea to drip irrigation (June 2016 to May 2019) Dr. S.Anitta Fanish, Asst. Prof. (Agronomy) Dept. of Pulses, TNAU, Coimbatore	• The project to be continued.
12	AICRP/PBG/CBE/PIP/010: Drought mitigation strategies for pigeonpea (June 2016 to May 2019) Dr. S.Anitta Fanish, Asst. Prof. (Agronomy) Dept. of Pulses, TNAU, Coimbatore	• The project to be continued
13	AICRP/PBG/CBE/PIP/010: Compatibility studies of insecticides and growth regulators on growth and yield of pigeonpea (June 2018 to May 2019) Dr.S. Anitta Fanish, Asst. Prof. (Agronomy) Dept. of Pulses, TNAU, Coimbatore	• The project to be continued
14	AICRP/PBG/CBE/PIP/010: Enhancing production potential of Pigeonpea through foliar nutrition (June 2018 to May 2019) Dr.S. Anitta Fanish, Asst. Prof. (Agronomy) Dept. of Pulses, TNAU, Coimbatore	• The project to be continued
AICRP - Blackgram		
15	AICRP/PBG/VBN/MUL/013: Effect of fertilizer doses, organic manure and biofertilizer for yield maximization of Urdbean and their effect on succeeding *rabi* crop (cereal/oilseed)- Modified 2018 (June 2017 to May 2019) Dr. S. Marimuthu, Asst. Prof. (Agronomy) NPRC, Vamban	• The project to be continued
16	AICRP/PBG/VBN/MUL/013: Agronomic evaluation of AVT-2 urdbean genotypes under varied plant population (June 2018 to May 2019) Dr. S. Marimuthu, Asst. Prof. (Agronomy) NPRC, Vamban	• The project to be continued
17	AICRP/ PBG/ ADT/ MUL/ 015: Conservation technology and weed management	• The project to be continued

Agronomy		
	for rice fallow blackgram (April 2015 to March 2019) Dr. C. Umamageswari, Assoc. Prof. (Agronomy) TRRI, Aduthurai	
18	AICRP/ PBG/ ADT/ MUL/ 015: Efficacy of post emergence herbicides to manage weeds for higher productivity of summer urdbean (April 2017 to March 2019) Dr. C. Umamageswari, Assoc. Prof. (Agronomy) TRRI, Aduthurai	• The project to be continued • Salient findings to be given for information.
19	AICRP/ PBG/ ADT/ MUL/ 015: Effect of foliar nutrition on productivity of summer urdbean (April 2017 to March 2019) Dr. C. Umamageswari, Assoc Prof. (Agronomy) TRRI, Aduthurai	• The project to be continued
20	AICRP/ PBG/ ADT/ MUL/ 015: Performance of urdbean AVT- 2 genotypes under varied plant population for yield maximization in rice fallow situation (April 2017 to March 2019) Dr. C. Umamageswari, Assoc Prof. (Agronomy) TRRI, Aduthurai	• The project to be continued
AICRP - Greengram		
21	AICRP/PGBG/VBN/MUL/013: Effect of fertilizer doses, organic manure and biofertilizer for yield maximization of mungbean and their effect on succeeding *rabi* crop (cereal/oilseed)- Modified 2018 (June 2017 to May 2019) Dr. S.Marimuthu, Asst. Prof. (Agronomy) NPRC, Vamban	• The project to be continued
22	AICRP/ PBG/ ADT/ MUL/ 015: Effect of land configuration and weed management on mungbean productivity (April 2017 to March 2019) Dr. C. Umamageswari, Assoc. Prof. (Agronomy) TRRI, Aduthurai	• The project to be continued
23	AICRP/ PBG/ ADT/ MUL/ 015: Fertilizer dose, organic manure and biofertilizer for yield maximization of mungbean	• The project to be continued

Agronomy		
	(April 2017 to March 2019) Dr. C. Umamageswari, Assoc. Prof. (Agronomy) TRRI, Aduthurai	

No.	Project No. and Title	Remarks
Crop Physiology		
URP - Blackgram		
1	DCM/CBE/CRP/BGR/2016/001: Impact of PGRs and nutrients on mitigation of salinity stress effect in blackgram (June 2016 to Sep. 2018) Dr. K. Krishna Surendar,Asst. Prof. (CRP)	• Project to be closed. • Completion report to be submitted and follow up action by Dr.V.Babu Rajendra Prasad, AP,(CRP),TNAU, Coimbatore.
URP - Greengram		
2	DCM/MDU/CRP/GGR2017/001: Management of drought by osmolytes in greengram (Oct.2017 to Sep. 2020) Dr. R. Amutha, Professor (CRP)	• The project to be closed. • Completion report to be submitted.
URP - Horsegram		
3	DCM/PAI/CRP/HGR/2018/CP 106: Development of foliar formulation for enhancement of yield in horsegram under irrigated and rainfed environment (June 2018 - May 2020) Dr. R. Sivakumar, Asst. Prof. (CRP) Dr. M. Vijayakumar, Asst. Prof. (SS&AC)	• The project to be continued. • Finding may be given for information
4	DCM / PAI / CRP / HGM / 2019 / 001: Physiological manipulation of source and sink in horsegram (June 2019 to May 2021) Dr. R. Sivakumar, Asst. Prof (CRP)	• The project to be continued
Externally Funded Projects		
1	DST/DCM/VBN/CRP/2017/003: Physiological and molecular dissection of	• The project to be continued • Findings to be given for

	greengram (*Vigna radiata* (L.) Wilczek) genotypes for drought and high temperature stress tolerance (June 2017 to May 2020) Principal Investigator Dr. V. BabuRajendra Prasad, Asst. Prof. (CRP) Co-Principal Investigator Dr. A. Senthil, Assoc. Prof. (CRP)	information

No.	Project No. and Title	Remarks
Seed Science & Technology		
URP - Blackgram		
1.	SEED/CBE/SST/BGR/2016/001: Study on influence of seed priming with micro nutrients on seed vigour, field emergence and seed yield in blackgram and redgram (March 2016 to February 2019) Dr.S.Kavitha, AP (SST) (Dr.P.Srimathi, Professor (SST)	The project to be closed and findings to be given for information.
2.	SEED/KDM/SST/BGR/2016/001: Development of hydrophilic polymer seed coating technique for rainfed blackgram (*Vigna mungo* L.) (June 2016 - May 2018) Dr.V.Viayalakshmi, Asst. Professor (SST)	The project to be continued to confirm the results. Extension proposal to be submitted for approval.
3.	SEED/ADT/SST/BGR/2016/001: Seed invigouration studies to improve seedling vigour in blackgram seeds under rice fallow condition. (December 2016 - January 2019) Dr. N. Punithavathi, Assoc. Prof. (SST) Dr. K. Raja, Assoc. Prof.(SST)	The project to be closed and findings to be given for information.
URP - Greengram		
4.	SEED/BSR/SST/GGR/2017/001: Study on impact of seed priming and seed coating techniques on resistance to water stress in green gram	The project to be closed and findings to be given for information.

	(June 2017 to May 2019) Dr. K. Malarkodi, Assoc. Professor (SST)	
5.	SEC/TRY/SST/GGR/2018/CP 028: Development of polyherbal based greengram seed protectant against pulse beetle *Callosobruchus maculatus* (F.) (June 2018 to May 2019) Dr. T. Eevera, Asst. Prof.(SS&T) Dr. S. Sheeba Joyce Roseleen, AP (Agrl. Ento)	The project to be continued.
URP - Other Pulses		
6.	SEED/PAI/SST/FIB/2016/001: Standardization of seed crop management and storage techniques in mochai (*Lablab purpureus* var *Lignosus* (L.) genotype PYR-03-004 the pre released culture for rainfed condition (Dec.2016 to Mar 2020) Dr. P. Srimathi, Professor (SS&T) Dr. P. Suthamathi. Assoc., Prof. (PB&G)	The project to be closed and the findings to be given for information
AICRP - Redgram		
7.	AICRP/STR/CBE/SEP/001: AICRP on NSP (Crops) Seed Technology Research Use of nano-particles in enhancing seed quality and storability of seeds (May 2016 - April 2020) Dr.C.Vanitha, Asst. Professor (SS&T)	The project to be continued.

No.	Project No. and Title	Remarks
Agricultural Microbiology		
URP - Blackgram		
1.	NRM/VBN/AGM/BGR/2012/001: Response of bacterial and fungal bioinoculants on nodulation, seed yield and enhancing the qualitative parameters in blackgram (Aug'2018 to July'2020) Dr.M. Gnanachitra, Ass. Prof. (Ag. Microbiology), Dept. of Agrl. Microbiology, TNAU, Cbe-3.	The project is to be continued by Dr R. Parimala devi, AP (Agrl. Micro.)

2.	NRM/MDU/AGM/PUL/2016/001: Shelf life studies of the newer (water soluble) formulation of *Rhizobium* and AM fungi for seed coating of pulses (Sep 2016- Aug 2018) Dr. K. Kumutha, Professor and Head, Department of Agrl. Microbiology, AC & RI, Madurai Dr. R. Parimala devi, Asst. Professor, NPRC, Vamban.	The technology is to be given for adoption.
3.	NRM / KKM / AGM / GGR / 2015 / 001: Evaluating the efficiency of AM fungal inocula in combination with *Rhizobium* on the growth of green gram (April 2015 to March 2019) Dr. M. Gomathy Assistant Professor (Microbiology), Dept. of SS&AC,AC & RI, Killikulam	The technology is to be given for adoption.
URP - Moth bean		
4.	NRM/TVM/AGM/MOB/2017/001: Isolation and screening of efficient rhizobial strains and evaluation of their efficiency in Moth bean (*Vigna aconitifolia).* (April 2017- March 2021) Dr. R. Brindavathy , Associate Professor (Ag. Microbiology) ORS, Tindivanam 604 002.	The project is to be continued.
AICRP - Blackgram		
5.	AICRP/PBG/VBN/MUL/013: Study on the effect of bio-inoculants on blackgram (January 2015 to December 2019) Dr. R. Parimala devi, Assistant Professor (Agrl. Micro.), NPRC, Vamban.	The project is to be continued.
AICRP - Greengram		
6.	AICRP/PBG/VBN/MUL/013: AICRP on MULLaRP (Mung bean) (January 2015 to December 2019) Dr. R. Parimala devi, Assistant Professor (Agrl. Micro.), NPRC, Vamban.	The project is to be continued.

Externally Funded Project - Blackgram		
7.	MHRD/NRM/CBE/AGM/2014/R015: Centre of Excellence in Frontier areas of Science and Technology (FAST) on MICROBES TO FEED THE WORLD: Plant-Microbe interactions to boost Agricultural Production (E28 YJ) (2014-2020) PI- Dr. U. Sivakumar, Prof., Dept. of Agrl. Microbiology, TNAU, CBE	The findings are to be given for information. The project is to be continued.
8.	BRNS/NRM/CBE/AGM/ 2018/R024: Gamma irradiated mutants of *Bacillus* spp. and Actinobacteria consortium to control the wilt and root rot diseases of pulses. **(**April 2018- March 2021**)** Dr. R. Anandham, Assistant Professor, Department of Agrl. Microbiology, TNAU, Coimbatore-641003.	The project is to be continued.

D. General Remarks:

- Agro technologies may be developed for Rice fallow pulses (Action: Director, TRRI, Aduthurai)

- Technology for drought mitigation in pulses may be developed (Action: Dept. of Crop Physiology, Coimbatore)

- Mechanization may be involved for sowing/ weeding/ harvesting of pulses (Action: Director, Crop Management).

- Biofortification of pulses with reference to S nutrition may be taken up (Action: Dept. of SS&AC, Coimbatore).

- The possibility of using encapsulated seeds suitable for mechanized sowing of pulses may be explored (Action: Dept. of SST, Coimbatore).

E. Action Plan (2019-2022)

Action plan 1 : Piloting pulse producer support system through ICT enabled services					
Theme leader: Dr. V. Geethalakshmi, Director, Crop Management					
Activity	**Name of the scientist and centre**	**2019-20**	**2020-21**	**2021-22**	**Deliverables / expected out come**
• To study the Piloting pulse producer support system through ICT enabled services **Treatments** • Customized (Seamless) weather based AAS • Market intelligence • Pest and disease early warning system	**Operating Centres** ACRC, Coimbatore (Irrigated pulses – Dr.Ga.Dheepakaran) TRRI Aduthurai (Rice fallow pulses – Dr.C. Umamaheshwari ARS, Kovilpatti (Rainfed pulses) – Dr.B.Arthi Rani **Common Centres** CARDS (Market intelligence – Dr.K.M.Sivakumar) CPPS (Pest & Disease surveillance, prediction and management – Dr. L. Rajendran)	• Project proposal and approval • Experiment layout and sowing • Crop management, monitoring and observation • Harvest and data processing	• Confirmative trial	• On-Farm Trial (OFT) • Report preparation	• Reduce the cost and doubling the yield and return

Action plan 2: Standardization of drip fertigation schedule for blackgram					
Theme leader: Dr.S.Panneerselvam, Director, WTC, TNAU, Coimbatore					
Activity	**Name of the scientist and centre**	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
To study the standardization of drip fertigation schedule for blackgram **Treatments** **A. Forms and dose of fertilizers** T_1: N & K by straight fertilizer through drip & P- soil application T_2: 75 % RDF through WSF T_3: 100 % RDF through WSF T_4: Farmers practices **B. Time of application** a) Vegetative stage (0-20 DAS) 60:80:20 % of NPK	**Coordinating Centre :** WTC, TNAU, Coimbatore **Implementing Centres:** Dept of Pulses, TNAU- Dr. S. Anitta Fanish, Asst. Prof. (Agron) AEC & RI, Kumulur- Dr.S.Vallalkannan, Asst. Prof. (Agron), NPRC, Vamban- Dr.S.Marimuthu. Asst. Prof .(Agron) AC&RI, Vazhavachanur- Dr. C. Sivakumar Assoc. Prof (Agron)	• Project proposal and approval • Experiment layout and sowing • Crop management, monitoring and observation • Harvest and data processing	• Confirmative trial	• On-Farm Trial (OFT) • Report preparation	• Doubling the yield and economic return

b) Flowering stage (21-40 DAS) 40:10:40 % of NPK c) Pod formation stage 41-55 DAS) 0:10:40 % of NPK d) Maturity stage (55 DAS to harvest)					
Action plan 3: Development of foliar formulations for yield enhancement in redgram under normal and water deficit conditions					
Theme Leader	Dr. P. Jeyakumar, Professor and Head, Department of Crop Physiology, TNAU, Coimbatore.				
Activity	**Name of the Scientists and Centre**	**2019-2020**	**2020-21**	**2021-22**	**Deliverables / expected out come**
Methodology: Foliar formulations at flowering initiation and 15 days after first application • To develop foliar formulations for yield enhancement in redgram • To test and identify the foliar formulations based on the source-sink relationship and	**Department of Crop Physiology, Coimbatore** Dr. V. Babu Rajendra Prasad, Assistant Professor (Crop physiology) **AC &RI Kudumiyanmalai** Dr. Anderson Amalan Kumar Assistant Professor (Crop physiology)	• Development of foliar formulations for yield enhancement in redgram	• Identification and testing of suitable foliar formulations for redgram based on the source-sink relationship and translocation efficiency in redgram under normal and water deficit	• Confirming the efficacy of identified foliar formulations for normal and water deficit conditions and sustained yield in redgram. • Finding out	• Suitable foliar formulations will be identified for enhancing yield in redgram under normal and water deficit conditions

translocation efficiency in redgram under normal and water deficit conditions • To find out the cost effective foliar formulation for better yield and quality in red gram			environments	the cost effective foliar formulations for better yield and quality in redgram	
Action plan 4: Seed encapsulation for mechanized sowing of greengram					
Activity	**Name of the centre**	**2019-20**	**2020-21**	**2020-21**	**Deliverables / expected outcome**
Studying the performance of primed encapsulated seeds for seed drill sowing on productivity of greengram **Treatment details** T_1 - Control T_2 - Primed seeds (0.5 % $MnSO_4$) T_3 - Primed encapsulated seeds	**DSST, TNAU, Coimbatore** Dr.K.Raja Assoc. Prof. (SST) Dr.G.Sasthri Assoc. Prof. (SST) **AEC&RI, Kumulur** Dr.V.Alex Albert Asst. Prof. (SST) Dr.A.P.Mohankumar Asst. Prof. (Farm Machinery) **AC & RI, Kudumiyanmalai** Dr.V.Vijayalakshmi	Seed priming with 0.5 percent $MnSO_4$ Standardization of methods for seed encapsulation	Evaluation of primed encapsulated seeds for productivity	Confirmation study of the previous year	Assured emergence and establishment of seedlings for optimum population maintenance

	Asst. Prof. (SST) **AC&RI, Killikulam** Dr.B.Venudevan Asst. Prof. (SST)				
Action plan 5. Multi nutrient foliar fertilization for irrigated greengram					
Theme Leader: Dr. R.K. Kaleeswari, Professor (SS&AC), TNAU, Coimbatore -3					
Activity	**Name of the scientist and centre**	**2019-20**	**2020-21**	**Deliverables/ expected out come**	
• For synchronized flowering in Green gram in adverse soil conditions	**Dept. of SS&AC, TNAU, Coimbatore (Coordinating centre)** Dr. R.K. Kaleeswari, Professor (SS&AC), TNAU, Coimbatore **(Inceptisol);** Dr. P. Kannan, Asst.Professor (SS&AC), AC&RI, Madurai **(Alfisol);** Dr.R.Jagadeeswaran , Assoc. Professor (SS&AC), AC&RI,	• Project proposal and approval • Experiment layout and sowing • Harvest and data Processing	• Confirmative trial • Report preparation	• Technology for synchronized flowering in greengram in adverse soil conditions	

	Kudumiyanmalai **(Alfisol);** Dr. S. Suresh, Professor (SS&AC), AC&RI, Killikulam **(Alfisol)**; Dr.K.Sathya Bama, Assoc. Professor (SS&AC), TRRI, Aduthurai **(Vertisol);** Dr.M.Vijayakumar, Asst.Professor (SS&AC), RS, Paiyur			
Action plan 6. Evaluation of N utilization potential of prominent blackgram varieties of TNAU				
Theme Leader: Dr. R.K. Kaleeswari, Professor (SS&AC), TNAU, Coimbatore				
Activity	**Name of the scientist and centre**	**2019-20**	**2020-21**	**Deliverables/ expected out come**
• Nitrogen use efficiency (NUE) is both an economically and an environmentally desirable trait. • Indicative parameter of	**Dept. of SS&AC, TNAU, Coimbatore (Coordinating centre)** Dr. R.K. Kaleeswari, Professor (SS&AC), **TNAU,**	• Project proposal and approval • Experiment layout and sowing • Harvest and data	• Confirmative trial • Report preparation	Assessment of N utilization potential of prominent blackgram varieties of TNAU

protein accumulation in pulse seeds.	**Coimbatore** Dr. P. Kannan, Asst.Professor (SS&AC), **AC&RI, Madurai** Dr.R.Jagadeeswaran , Assoc. Professor (SS&AC), **AC&RI, Kudumiyanmalai** Dr. S. Suresh, Professor (SS&AC), **AC&RI, Killikulam** Dr.K.Satya Bama, Assoc. Professor (SS&AC), **TRRI, Aduthurai** Dr.M.Vijayakumar, Asst.Professor (SS&AC), **RRS, Paiyur**	processing		
Action plan 7: Unravelling tri-partriate interaction of *Rhizobium* sp. VRE1 and non-rhizobial endophytic yeast (NREY), *Candida tropicalis* VYW1 for crop health and sustainable productivity of blackgram				
Theme Leader: Dr U. Sivakumar, Professor (Agrl. Micro.), TNAU, Coimbatore				
Activity	**Name of the scientist and centre**	**2019-20**	**2020-21**	**Deliverables/ expected out come**
To unravel the tri-partriate interaction of *Rhizobium* sp. VRE1 and non-rhizobial	**Dept. of Agrl. Microbiology, Coimbatore(Coordinating centre) :**	• Project proposal and approval • Laboratory	Pot culture and field trial	Identification of the key interacting metabolite and its functional role for plant health

endophytic yeast (NREY), *Candida tropicalis* VYW1 for crop health and sustainable productivity of blackgram	Dr U. Sivakumar, Professor (Agrl. Micro.), TNAU, Coimbatore-3.	experiments		
Action 8: Validation of stability of *Rhizobium* mutant VM -1				
Theme Leader: **Dr. M. Gnanachitra, Associate Professor (Agrl. Micro.), TNAU, Coimbatore**				
Activity	**Name of the scientist and centre**	**2019-20**	**2020-21**	**Deliverables/ expected out come**
• To validate the stability of *Rhizobium* mutant VM1 under acid soils	**Dept. of Agrl. Microbiology (Coordinating centre) :** Dr. M. Gnanachitra, Associate Professor (Agrl. Micro.), TNAU, Cbe-3.	• Project proposal and approval • Laboratory experiments to check the stability of *Rhizobium* mutant	Pot culture and field trial	• The stability and viability of *Rhizobium* mutant VM1 will be known both under *in vitro* and field conditions for blackgram grown under acid soils.

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III. CROP PROTECTION

A. Decisions Made on OFT

A1. For Adoption

Management of Pulse beetle

- TNAU SWEET FLAG 6EC @ 10ml/kg of pulse seeds (Greengram, Blackgram, Bengalgram and Cowpea) caused cent per cent mortality of pulse beetle on third to fifth day after six months of treatment. Germination of treated seeds was not affected after six months of storage.

- Pongamia oil derived formulation @ 10ml/kg of pulse seeds was effective against the pulse beetle. Effective for long term storage (6 months) of pulses.

A2. For OFT

OFT-1 : Evaluation of IPM module for pod borer complex in Redgram (Irrigated)
IPM Module

- Growing pod borer tolerant variety – CO8
- Two rows of maize as border crop
- Application of Azadirachtin 1% @ 500 ml /ha at vegetative phase
- Pheromone trap @ 12 Nos./ha for monitoring *H.armigera*
- Erecting bird perches @ 50 Nos./ha

Chlorantraniliprole 18.5 SC @ -150ml/ha (50 % bud initiation stage)
Flubendiamide 480 SC @ -125ml/ha (Flowering)
Dimethoate 30 EC @ 1000ml/ha (Pod maturation)

Farmers Practice

- Need based application of two Spray of Chlorpyriphos @1000ml/ha
  Plot size: 25 cents each for IPM Module and Farmers Practice

Observations to be recorded

- Number of *Maruca* webbing per 20 rachis during flowering
- Number of *Helicoverpa armigera* per 20 rachis during pod formation stage

- Per cent pod damage at harvest (*Maruca vitrata*, *Helicoverpa armigera*, *Melanagromyza obtusa, Exelastis atomosa*); Yield (kg/ha) and BC ratio

Participating Centres:

- NPRC, Vamban (Dr. P. Pretheep Kumar)
- Department of Pulses, TNAU, Coimbatore (Dr. D. Rajabaskar)
- ARS, Virinjipuram (Dr. P. Thilagam)
- KVK, Dharmapuri (Dr. P. Shanmugam)

OFT-2: Evaluation of the efficacy of newer insecticides for the management of *Maruca vitrata* in redgram

Treatmen	Details	Dose
T_1	Novaluron 10 EC	2 ml/l
T_2	Flubendiamide 480 SC	0.2 ml/l
T_3	Indoxacarb 15.8 EC	0.7 ml/l
T_4	Untreated control	

Spray schedule

- First spray after the appearance of *Maruca* web
- Second spray after 15 days of first spray

Observations to be recorded

- Pretreatment count (No. of webs/25 rachis)
- Number of *Maruca* webs per 25 rachis at 7 and 14 days after first spraying.
- Number of *Maruca* webs per 25 rachis at 7 and 14 days after second spraying.
- Per cent pod damage at harvest.
- Yield (kg/ha) and BC ratio

Participating Centres:

- NPRC, Vamban (Dr. P. Pretheep Kumar)
- Department of Pulses, TNAU, Coimbatore (Dr. D. Rajabaskar)
- ARS, Virinjipuram (Dr. P. Thilagam)
- AC & RI, Madurai (Dr. Zadda Kavitha)
- RRS, Paiyur (Dr.S.Mohamed Jalaluddin)

OFT-3 Biological management of chickpea wilt

Treatments

T_1	Seed treatment with *Pseudomonas chlororaphis* (CPs3) @10g / kg of seeds + soil application @ 2.5kg /ha
T_2	Seed treatment with *Bacillus subtilis* (CaB5) @10g / kg of seeds + soil application @ 2.5kg /ha
T_3	*Seed treatment with Pseuodomonas fluorescens* (Pf1) @ 10 g/ kg + soil application @ 2 .5 kg/ha
T_4	Seed treatment with Carbendazim @ 2g / kg of seeds + soil drenching @ 0.1%
T_5	Untreated Control

Observations to be recorded

- Per cent disease incidence of wilt
- Yield

Note:

The formulations of *P. chlororaphis* (CPs3) and *B. subtilis* (CaB5) to be supplied by Dr. S. Vanitha, Professor (Plant Pathology) and Dr. E. Rajeswari, Associate Professor (Plant Pathology) respectively to all the centres.

Participating Centres:

TNAU, Coimbatore (Dr. S.Vanitha & Dr. T.K.S. Latha)
RRS, Paiyur (Dr. N. Indra)
CRS, Aliyarnagar (Dr. E. Rajeswari)

OFT-4 Management of root rot and wilt diseases in redgram with biocontrol agent

Treatment details

T_1	Seed treatment *with B. subtilis* (CcB7) @ 10 g/ kg + soil application twice @ 2 .5 kg/ ha first at basal and second at 45 DAS
T_2	Seed treatment with Pf-1 @ 10 g/ kg + soil application @ 2 .5 kg/ha
T_3	Seed treatment with Carbendazim @ 2g / kg of seeds + soil drenching @ 0.1%
T_4	Untreated Control

Observations to be recorded

- Per cent disease incidence of wilt and root rot
- Yield

Note: The formulation of *B. subtilis* (CcB7) to be supplied by Dr. E. Rajeswari, Asociate Professor (Plant Pathology), CRS, Aliyarnagar to all the centres.

Participating Centres:

TNAU, Coimbatore (Dr. L. Karthiba)
ARS, Virinjipuram (Dr. D. Dinakaran)
CRS,Aliyarnager (Dr. E. Rajeswari)

OFT-5 Revalidation of IPM package for YMD and its vector in blackgram

Treatments

- IPM Module
- Farmers Practice

IPM Module

- Seed soaking with borax @ 2g / kg + 10% notchi leaf extract @ 300ml/kg followed by seed treatment with imidacloprid 600FS @ 5g/kg
- Soil application of *Pseudomonas fluorescens* (Pf1) @ 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 notchi leaf extract 10% at 30DAS
- Need based spraying of acetamiprid 20 WP @ 250g / ha

Observations to be recorded

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

Participating Centres:

TNAU, Coimbatore (Dr. G. Karthikeyan & Dr. D. Rajabaskar)
NPRC, Vamban (Dr. P. Akiladevi & Dr. P. Pretheep Kumar)
ARS, Virinjipuram (Dr. D. Dinakaran & Dr. P. Thilagam)

A3 For Information

Agricultural Entomology

- *B. tabaci* genotype Asia II 8 and Asia I are present in Tamil Nadu
- Asia II 8 was closely associated with MYMV hotspot region and Asia I was closely associated with vegetable crops grown in Tamil Nadu
- Black cage method was very effective than manual counting method for counting whiteflies

Plant Pathology

- Chickpea chlorotic stunt virus disease in Tamil Nadu has been observed in recent years. Preliminary studies on the etiology of the disease revealed the involvement of geminivirus.
- Resistant genotypes in redgram (for SMD - CRG 2016-12, IPA 8F, MA6, BDN2), Blackgram (for YMD - KUP18-351, KUP18-352, KUP18-353) and Greengram (for YMD - KMP18-29) have been identified and will be handed over to breeder for further development.

B. Research Projects on Pulses

Crop	Centre	URP	AICRP	EFP	Total
Agrl. Entomology					
Redgram	NPRC, Vamban	2	-	-	2
	Dept. of Pulses	-	1	-	1
	ARS, Virinjipuram	-	1	-	1
	Seed Centre	-	1	-	1
Blackgram and Greengrar	NPRC, Vamban	2	1	-	3
Plant Pathology					
Redgram	ARS, Virinjipuram	1	-	-	1
	Dept. of Pulses	-	1	-	1
Blackgram and Greengrar	NPRC, Vamban	-	1	-	1
	Seed Centre	-	2	-	2
	Dept. of Plant Pathology, Coimbator	-	-	1	1
Chickpea	Dept. of Pulses	-	1	-	1
	Tota	**5**	**9**	**1**	**15**

On-going URP / AICRP / Externally funded projects

Agricultural Entomology

No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
University Research Project				
Redgram				
1.	CPPS/VBN/ENT/RGR/2016/001 Development of an IPM module for the management of the legume pod borer *Maruca vitrata* (Geyer) in redgram	Dr. Zadda Kavitha Assistant Professor (Agrl. Entomology)	July 2016 to June 2019	Project to be closed and the completion report to be submitted on or before 30.07.2019.
2.	CPPS/VBN/ENT/RGR/2016/002 Management of pod fly *Melanagromyza obtusa* (Malloch) in redgram	Dr. Zadda Kavitha Assistant Professor (Agrl. Entomology)	July 2016 to June 2019	Project to be closed and the completion report to be submitted on or before 30.07.2019 .
Balckgram				
3.	CPPS/VMB/ENT/BGR/2016/002 Exploration of resistant sources of bruchids and their management in blackgram	Dr. V. R. Saminathan Assistant Professor (Agrl. Entomology)	January 2016 to December 2018	Project to be closed and the completion report to be submitted on or before 31.05.2019.
4.	CPPS/VMB/ENT/BGR/2016/003 Development of a forewarning system for the key pests infesting blackgram	Dr. V. R. Saminathan Assistant Professor (Agrl. Entomology)	January 2016 to December 2018	Project to be closed and the completion report to be submitted on or before 31.05.2019.

No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
AICRP				
Redgram				
5.	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea (Entomology)	Dr. D. Rajabaskar Assistant Professor (Agrl. Entomology)	January 2015 to December 2019	The project to be continued and a new URP to be proposed on or before 31-5-2019.
6.	AICRP/PBG/VRM/PIP/011: All India Co-ordinated Research Project on Pigeonpea	Dr. P. Thilagam Asst. Professor (Agrl. Entomology)	April 2018 to March 2020	The project to be continued.
Blackgram and Greengram				
7.	AICRP/PBG/VBN/MUL/013 AICRP on MULLaRP (Entomology)	Dr. V. R. Saminathan Assistant Professor (Agrl. Entomology)	January 2015 to December 2019	The project to be continued. Dr. P. Pretheep Kumar will continue the experiments.
8.	AICRP/STR/CBE/SEP/001 - AICRP on NSP (Crops) Effect of solarization on bruchids (pulse beetle) infestation and quality of pulse seeds	Dr. R. Arulprakash Assistant Professor (Agric. Entomology)	2018 - 2019	The project to be continued.

PLANT PATHOLOGY

No.	Project Number and Title	Name and Designation of the Project leader	Duration	Remarks
University Research Project				
1	CPPS/ VRM/ PAT/ RGR/ 2018/ 001. Studies on identification of resistant genotypes to wilt and root rot diseases for pigeonpea	Dr. D. Dinakaran Professor (Plant Pathology) and Head	April 2018 to March 2021	The project to be continued
AICRP				
Redgram				
2	AICRP/PBG/CBE/PIP/010 AICRP on Pigeonpea (Plant Pathology)	Dr. L. Karthiba Assistant Professor (Plant Pathology)	January 2015 to December 2019	The project to be continued. A new URP to be proposed on or before 31-5-2019
Blackgram & Greengram				
3	AICRP/PBG/VBN/MUL/013 AICRP on MULLaRP (Plant Pathology)	Dr. P. Ahila Devi Assistant Professor (Plant Pathology)	January 2015 to December 2019	The project to be continued.
4	AICRP/STR/CBE/SEP/001 AICRP on NSP (Crops) - Seed Technology Research Standardization of detection methods for seed borne pathogens of significance	Dr. N. Indra Assistant Professor (Plant Pathology)	2016 - 2019	The project to be continued. Dr. T. Anand will continue the experiments.
5	AICRP/STR/CBE/SEP/001 AICRP on NSP (Crops) - Seed Technology Research.	Dr. N. Indra Assistant Professor (Plant Pathology)	2016 - 2019	The project to be continued. Dr. T. Anand

	Impact of different storage conditions and longevity on seed associated mycoflora of greengram / blackgram			will continue the experiments.
Chickpea				
6	AICRP / PBG / CHP / 012 AICRP on Chickpea (Plant Pathology)	Dr. T.K.S. Latha Assistant Professor (Plant Pathology)	April 2015 to March 2020	The project to be continued. A new URP to be proposed on or before 31-5-2019
Externally Funded Project				
Blackgram				
7	DBT/CPPS/PAT/2018/R019 Unraveling etiology of leaf crinkle disease in urdbean and development of diagnostics	Dr. T.K.S. Latha Assistant Professor (Plant Pathology)	September 2018 to September 2021	The project to be continued

C.GENERAL REMARKS

- Resistant lines of entomology and pathology entries need to be screened by both Entomologists and Pathologists.
- Common methodology has to be devised for the observation of insect pests and diseases of pulses by the Professor & Head (Agrl. Entomology) and Professor & Head (Plant Pathology) and send to all the Entomologists and Pathologists working on pulses.
- The new URPs should be proposed by all the pulses scientists on or before 20.04.2019.
- Focus should be on bringing out deliverable outcome after the completion of University Research Project.
- Details on resistant entries need to be submitted to the Director (CPPS) before the Crop Scientist Meet every year.

D. AGRICULTURAL ENTOMOLOGY

Action Plan 1: Influence of weather parameters on major insect pests of pulses

Theme leader	**Dr. P. Pretheep Kumar, Asst. Professor (Agrl. Entomology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected outcome**
Monitoring the incidence of important insect pests of pulses	**Vamban** Dr. P. Pretheep Kumar (Blackgram, Greengram, Redgram) **Coimbatore** Dr. D.Rajabaskar (Redgram, Greengram, Blackgram, Chickpea) **Virinjipuram** Dr. P. Thilagam (Redgram, Blackgram, Greengram) **AC & RI, Madurai** Dr. Zadda Kavitha (Redgram) **TRRI, Aduthurai** Dr. P. Anandhi (Blackgram, Greengram) **AC & RI, Killikulam** Dr. K. Elancheziyan (Blackgram, Greengram)	Incidence of sucking pests, pod borers, pod fly and pod bugs has to be monitored throughout the crop period Incidence of pests have to be correlated with the weather parameters.	Forecasting the time of maximum incidence level of important insect pests of pulses.
	Dr. S. Kokilavani, **ACRC, Coimbatore.**	Correlation of pest incidence with weather parameter.	

Action Plan 2: Identification of resistant sources and mechanism of resistance for major insect pests in pulses

Theme Leader	**Dr. D. Rajabaskar , Asst. Professor (Agrl. Entomology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected outcome**
Field screening of AICRP, AVT, IVT, MLT and ART entries (Vamban, Coimbatore, Virinjipuram)	**Vamban** Dr. P. Pretheep Kumar (Blackgram & Greengram) **Coimbatore** Dr. D. Rajabaskar (Redgram) **ARS, Virinjipuram** Dr. P. Thilagam (Redgram)	Observations have to be taken in the field on the incidence of pests of redgram, blackgram and greengram and to be screened following standard procedure.	Promising resistant entries against major insect pests.
Artificial screening of whitefly resistant entries in greengram may be attempted (Coimbatore)	**Coimbatore** Dr. D. Rajabaskar (Greengram)		
	Dr.M.Sudha, Dr. S.Varanavasiappan, **CPMB&B,TNAU, Coimbatore**	Molecular mechanism of resistance for identified resistant entries against major pest to be studied.	

Action Plan 3: Standardization of seed treatment for stem fly management in blackgram

Theme Leader	**Dr. P. Pretheep Kumar, Asst. Professor (Agrl. Entomology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Treatment and observations to be recorded**	**Deliverable/ expected outcome**

Evaluation of insecticides for seed treatment	**Vamban** Dr. P. Pretheep Kumar **Coimbatore** Dr. D.Rajabaskar **Virinjipuram** Dr. P. Thilagam	1) Imidacloprid 600 FS @10g/kg 2) Chlorpyriphos 20 EC @ 4ml/kg 3) Dimethoate 25 EC @ 10 ml/kg 4) Control Stem fly damage will be assessed.	Effective insecticide for seed treatment will be identified.

Action Plan 4: Identification and evaluation of pheromone for *Maruca vitrata* in redgram

Theme Leader	**Dr. D.Rajabaskar, Asst. Professor (Agrl. Entomology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Identification of pheromone component	**Coimbatore** Dr. D. Rajabaskar	Conducting behavioral bioassay in response to sex pheromone and host volatile.	Pheromone based management strategy for *Maruca vitrata* will be developed.

Action Plan 5: Screening of indigenous Bt isolates for toxicity against *Maruca vitrata*

Theme Leader	**Dr. V.Balasubramani, Professor (Agrl. Entomology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected outcome**
Indigenous Bt collection available at CPMB&B will be screened for their toxicity against spotted pod borer	**Coimbatore** 1)Dr. V.Balasubramani 2) Director, CPMB&B 3) Dr. N. Balakrishnan AC & RI, Killikulam	Bioassay with spore crystal mixture Mortality of first and second instar larva.	Effective isolates will be identified.

PLANT PATHOLOGY

Action Plan 1: Influence of weather parameters on major diseases of pulses

Theme leader	**Dr. P. Ahila Devi, Asst. Professor (Plant Pathology), NPRC, Vamban**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Monitoring the incidence of important diseases of pulses	**Vamban** Dr. P. Ahila Devi (Blackgram, Greengram, Redgram) **Coimbatore** Dr.L.Karthiba (Redgram, Greengram, Blackgram) Dr.T.K.S.Latha (Chickpea) **Virinjipuram** Dr.D.Dinakaran (Redgram, Blackgram, Greengram) **AC & RI, Madurai** Dr. L.Harish (Redgram) **TRRI, Aduthurai** Dr.R.Thilagavathi (Blackgram & Greengram) **AC & RI, Killikulam** Dr. Rajinimala (Blackgram, Greengram)	• Incidence of diseases, *viz.,* yellow mosaic virus, wilt, sterility mosaic disease, root rot have to be monitored throughout the crop period • Incidence of disease has to be correlated with the weather parameters	Forecasting the time of maximum incidence level of important diseases of pulses.
	Dr. S. Kokilavani, **ACRC, Coimbatore.**	Correlation of disease incidence with weather parameter	

Action Plan 2: Identification of resistant sources and mechanism of resistance for major diseases in pulses

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

Action Plan 3: Monitoring and characterization of chlorotic stunt virus disease in chickpea

Theme Leader	**Dr. T.K.S. Latha, Asst. Professor (Plant Pathology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Characterization of chlorotic stunt disease in chickpea	**Coimbatore** Dr. T.K.S. Latha	• Monitoring the prevalence of chlorotic stunt virus • Delineating the causal agent and its characterization • Documenting the vector	The virus causing chlorotic stunt disease and vector transmitting the disease will be characterized.

Action Plan 4: Unraveling the etiology of leaf crinkle disease in blackgram and development of diagnostics

Theme Leader	**Dr. T.K.S. Latha, Asst. Professor (Plant Pathology), Coimbatore**		
Activity	**Name of the Scientist and Centre**	**Observations to be recorded**	**Deliverable/ expected out come**
Identification of the etiology of leaf crinkle disease in blackgram	**Coimbatore** Dr. T.K.S. Latha	• Molecular characterization of virus through NGS and PCR. • Identification of vector.	The etiology of leaf crinkle pathogen will be resolved and diagnostic methods will be developed.

Action Plan 5: Characterization of causal agent of Pigeonpea sterility mosaic disease in Tamil Nadu

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

IV Closing Remarks & Way Forward

Vice Chancellor

- Rice fallow area to be assessed in Tamil Nadu (Agronomist, Crop Physiologist, Microbiologist and Seed Technologist to form a team)
- Resistant breeding to be addressed for virus
- Breeders, may explore the possibilities to release varieties by studying the promising culture within four cycles to fasten the release process
- Agricultural Engineering scientists to be consulted by the Agronomist for mechanisation of sowing, based on the available machineries
- Study may be continued in non Rhizobial Endophytes through seed treatment in pulses from farmer point of view
- Mycorrhization elicits defence response in blackgram against *Sodoptera litura* infestation can be done in second instar
- Field level study to be taken for hydropriming and seed coating in greengram rather than controlled study

- Pre-released culture to be tested by DNRM, DCM and Dean, Agrl. Engg., Coimbatore
- Multiple resistance through pyramiding and Fast Track approach is appreciated and need to be ensured in main campus and research stations
- Compatibility of pulse wonder with other formulations may be studied and recommended as single product
- Lab and field scale study to be done before releasing of a variety for pest resistance
- Biofortification of pulses may be taken up by DNRM
- Grafting technique in pulses with redgram as root stock may be explored
- Preliminary study can be taken up in new pulse crop if any.

Director of Research

- **Classic breeding** in conjunction with **molecular tools** and techniques to evolve genotypes resistant to YMV and pod borers
- **Capsule of management strategies** to improve pulses productivities under various production systems
- Exploit **legume – microbial interactions** to promote abiotic and biotic stress tolerance in pulses
- Smart delivery of **nano-agri inputs** to boost pulses productivity while ensuring environmental safety
- **Technology capsule** for managing devastating pests (pod borers and pulse beetle) and diseases (YMV, Wilt, Root rot)

IV) CONTACT DETAILS OF SCIENTISTS PARTICIPATED IN THE CSM ON PULSES, 2019

Crop Improvement

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