TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

40th Oilseeds Scientists Meet 2021
(April 22-23, 2021)

Lead Centre

Regional Research Station
Vridhachalam – 606 001

Directorate of Research

Tamil Nadu Agricultural University
Coimbatore 641 003

2021

PROCEEDINGS

40th Oilseeds Scientists Meet 2021
(April 22-23, 2021)

The 40th Oilseeds Scientists Meet was held during April 22-23, 2021 at the Tamil Nadu Agricultural University, Coimbatore, through on-line connecting all scientists across the University College Campuses, Research Stations and KVKs besides main campus. **Dr**. **K.S. Subramanian**, Director of Research greeted the gathering and provided basic statistics on current scenarios in oilseeds production in the country and the State of Tamil Nadu. **Dr. N. Kumar**, Vice Chancellor emphasized the need for a research collaborations to develop high yielding oilseed varieties. Despite, the oilseed productivity of the State has increased by 1.0 tonne over the past decade particularly groundnut, but other oilseeds such as sesame and sunflower need special attention.

TheDirector of Research flagged off a few researchable issues such as groundnut breeding of varieties with high oleic acid content, strategies to minimize damage caused by birds particularly in sunflower, development of zero monopodia sesame amenable for high density planting and machine harvest, molecular breeding to improve oil quality, re-introduction of safflower as a climate resilient crop, e-Nose technology for the on-site assessment / monitoring of seed quality of sunflower and groundnut, promotion of groundnut rich for yield enhancement, nano-fibre coating of seed kernel for balanced crop nutrition in groundnut and quick diagnostic tool to detect afflatoxins. The Action Taken Reports on the 39th Oilseeds Scientists Meets were presented by the lead scientists in Regional Research Station, Vridhachalam. During the pre-review, the technical directors had reviewed the on-going university research projects (32), action plan projects (25), core projects (10), AICRPs (7) besides externally funded projects (20).

The outcome of the review process was presented by **Dr. S. Geetha**, Director (CPBG), **Dr. S. Mohankumar** (CPMB), **Dr. S. Sundareswaran**, Director (Seeds), **Dr. V. Geethalakshmi**, Director (Crop Management), **Dr. R. Santhi**, Director (DNRM), **Dr. S. Panneerselvam,** Director (WTC) and **Dr. K. Prabakar**, Director (CPPS). In the closing remarks, the Vice Chancellor said that the oilseed scientists should work together in order to make use of the advanced tools and techniques to improve the productivity of crops. The Vice Chancellor suggested that the castor oil can be studied for alternative use as lubricants in addition to biodiesael which is considered not economical based on the preliminary analysis. The Director of Research summarized the activities of the Oilseeds meet and suggested potential areas of further research to way forward include hormonal manipulations to minimize in situ germination, classic and molecular breeding strategies to improve oil quality, strengthening of sesame research, evaluation of improved safflower varieties as a climate resilient crop, vertebrate pest

management to protect oilseed crop particularly sunflower and quick detection kit for afflatoxins in groundnut. **Dr. K. Karunanithi**, Professor (Plant Pathology), Regional Research Station, Vridhachalam, proposed a formal vote of thanks.

The proceedings of the 40th Oilseeds Scientists Meet are furnished below in the following headings:

1. **CROP IMPROVEMENT**

A. Entries for variety release proposal /OFT/ART/MLT
B. Action plan projects
C. Research projects and remarks

2. **CROP MANAGEMENT**

A. Technologies for adoption/OFT/ information
B. Action plan projects
C. Research projects and remarks

3. **CROP PROTECTION**

A. Technologies for adoption/OFT/information
B. Action plan projects
C. Research projects and remarks

4. **GENERAL REMARKS**

5. **LIST OF PARTICIPANTS**

1. CROP IMPROVEMENT

A. Entries for variety release proposal/ART/OFT/MLT (2021-22)

A1. Groundnut: Variety Release

1. Groundnut VG 13163 (Spanish Bunch)

The Spanish bunch Groundnut culture VG 13163 is a cross derivative between VG 0420 and VRI Gn 6. It matures in 110-115 days and suitable for cultivation in *Kharif* and *Rabi* seasons. During *Kharif* season, this culture has performed well by producing 2506 kg/ha of dry pod yield. The yield increase was 11.4 and 12.4 *per cent* over the best check varieties BSR 2 (2250 kg/ha) and TMV 14 (2230 kg/ha) respectively. In *Rabi* season, VG 13163 registered an overall mean dry pod yield of 2921 kg/ha with 10.5 and 18.8 *per cent* increase over TMV 14 (2644 kg/ha) and VRI 8 (2459 kg/ha) respectively. Mean shelling outturn is 70.0 per cent and a mean hundred kernel weight is 44 g. The oil content is 49-50 *per cent*. It is moderately resistant to late leaf spot and rust diseases (grade 4).

Parentage	VG 0420 x VRI Gn 6
Duration (in days)	110-115
Yield (kg/ha)	2506 kg/ha (Rainfed): 11.4 % yield increase over BSR 2 2921 kg/ha (Irrigated): 10.5 % yield increase over TMV 14
Shelling outturn (*per cent*)	70.0
Oil content (*per cent*)	49-50

2. Groundnut VG 17008 (Spanish Bunch)

The short duration Spanish bunch Groundnut culture VG 17008 is a cross derivative between VRI 2 and IVK-2013-5. It matures in 90-95 days. It recorded mean dry pod yield of 2069 kg /ha which is 30.0 and 36.7 *per cent* superior over the check varieties VRI 3 (1449 kg/ha) and GG 7 (1310 kg/ha) respectively under MLT. VG 17008 is moderately resistant to late leaf spot and rust diseases. Based on the yield superiority it has been promoted and being evaluated under ART and OFT during rabi 2020-21. After the compilation of results of ART and OFT trials VG 17008 will be proposed for variety release during 2021.

3. Sesame VS 13006

Brown seeded sesame culture VS 13-006 is a cross derivative between VRI Sv 2 x GT 10 and suitable for *Rabi / summer* seasoncultivationin all zones of India and matures in 85-90 days. Average seed yield of VS 13-006 is 957 kg/ha which is 11.0 and 14.5 *per cent* increased seed yield over national check varieties TKG 22 (852 kg/ha) and GT 10 (818 kg/ha) respectively. Average Oil yield of VS 13-006 is 380 kg/ha which is 8.0 and 11.6 *per cent* increased oil yield over national check varieties TKG 22 (350 kg/ha) and GT 10 (336 kg/ha) respectively. It is moderately resistant to *Macrophomina* root rot and phyllody diseases. Based on the increased

seed and oil yield and resistance to diseases and pests, VS 13-006 has been identified for central variety release through AICRP on Sesame. The same culture is under ART during rabi 2020-21 and summer 2021 seasons. After compilation of results, it will be proposed for variety release during 2021-22.

A2. Groundnut: ART

1. Crop: Groundnut

Habit Group: Spanish Bunch [Normal Duration (105-110 days)]

Season: *Kharif* 2021 and *Rabi* /summer 2021-22 Spacing: 30 x 10 cm

Sl. No	Entries/ Checks	Pedigree	Duration (Days)	Pod yield (kg/ha)	Special attributes
1	COG 0537 (R)	CO 7 X ICGV 03042	105-110	2883	High yield
2	VG 14019 (N)	CTMG 7 x CS 19-1	105-110	2156	High yield
Checks: VRI 8, TMV 14, BSR 2, K 6					

Locations: 56

Season	*Kharif* 2021 and *Rabi* /Summer 2021-22
Districts	Thiruvallur, Kancheepuram, Villupuram, Vellore, Thiruvannamalai, Cuddalore, Salem, Namakkal, Erode, Coimbatore, Thiruchirappalli, Perambalur, Karur, Pudukkottai, Tanjore, Madurai, Theni, Virudhunagar, Sivagangai, Thirunelveli (40 Trials – Two trials in each district)
KVK	KVK, Sandiyur, KVK, Vridhachalam, KVK, Tinidvanam, KVK, Erode, KVK, Paparapatti, KVK, Perambalur, KVK, Vamban, KVK, Karur (16 Trials –2 trials in each KVK)

2. Crop: Sesame

Sl. No	Entries/ Checks	Pedigree	Duration (Days)	Seed yield (kg/ha)	Special attributes
1	VS 19-036 (R)	VRI 3 x EC 370840	75-80	623	Monostem, Moderately resistant to root rot and phyllody diseases
2	VS 15-014 (N)	TMV 7 x Mutant 699	85-90	837	Moderately resistant to root rot and phyllody diseases
Checks: TMV 7, VRI 3					

Locations: 210

Season	Rabi 2021-22 and Summer 2022

Districts	Villupuram, Vellore, Kanchipuram, Tiruvallur, Thiruvannamalai, Cuddalore, Dharmapuri, Krishnagiri, Salem, Namakkal, Coimbatore, Tirupur, Erode, Trichy, Perambalur, Ariyalur, Karur, Pudukkottai, Madurai, Theni, Dindigul, Virudhunagar, Sivagangai, Thanjavur, Tiruvarur, Nagapattinam, Thoothukudi, Kallakurichi, Tenkasi, Chengalpattu, Tirupathur, Ranipet, Mayiladuthurai and Thirunelveli (170 Trials – five trials in each district)
KVK	Vamban, Sirugamani, Kuntrakudi, Madurai, Virudhachalam, Tindivanam, Vrinjipuram, Santhiyur, Paparapatti and Tirur (40 trials - Four trials in each KVK)

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

A3. MULTI LOCATION TRIAL (MLT)

1. Groundnut: Habit Group: SPANISH BUNCH

Season: *Kharif* 2021 &*Rabi* / Summer 2021-22 Replication: Three

Spacing: 30 cm x 10 cm Plot size: 4.0 x 3.0 m^2

Features of the proposed culture

Sl. No.	Culture	Parentage	Duration (Days)	Seed yield (kg/ha)
1	VG 18089 (R)	ICGV 00348 X ISK-2013-1	105-110	3765
2	VG 17046 (R)	CO 6 x IVK-2013-16	105-110	3975
3	TVG 17180 (R)	ICGV 07240 x R 2001-2	105-110	4412
4	VG 34 (N)	VRI 6 x IVK 2013-16	95-100	2591
5	VG 19809 (N)	VRI 2 x ISK 2016-14	95-100	2738
6	VG 19812 (N)	VRI 2 x VG 13127	95-100	2899
7	TVG 17204 (N)	ICGV 07240 x R 2001-2	110	2244
8	COG 17-007 (N)	TMV 13 X ICGV 06146	105-110	2455
Checks: VRI 8, GG7, BSR 2, TMV 14, K6, GJG 33 and Dharani				
Testing centres (8): Vridhachalam, Tindivanam, Coimbatore, Bhavanisagar, Vazhavachanur, Aliyarnagar, Chettinad (Kharif) and Paiyur (Kharif)				

***The seed materials sent for Kharif season should be used for rabi season sowing.**

Seeds will not be sent separately for rabi season sowing.

Observations to be recorded

(1) Plant stand at maturity. (2) Pod yield (kg/plot) (replication-wise), (3) Kernel yield (kg/plot) (replication-wise), (4) Shelling per cent (5) Pod yield (kg/ha) and (6) Kernel yield (kg/ha).
Note: Screening for the pests and diseases will be carried out by RRS, Vriddhachalam, Dept. of Oilseeds, TNAU, Coimbatore and CRS, Aliyarnagar.

Name of the centre	Pests	Diseases
RRS, Vriddhachalam	√	√
Dept. of Oilseeds, TNAU, Coimbatore	-	√
CRS, Aliyarnagar	-	√

2. Sesame: Multilocation Trial (MLT)

Season: *Rabi* 2021-22and Summer 2022 Replication: Three

Spacing: 30 cm x 30 cm Plot size: 4.0 x 3.0 m^2

Features of the proposed culture

Sl. No.	Culture	Parentage	Seed yield (kg/ha)	Duration (Days)	Seed coat colour
1	VS 17-030 (R)	TMV 3 x Nana Bhamodra 5	964	85-90	Brown
2	VS 18-005 (R)	TMV 3 x MT 10-23-3	1069	85-90	Brown
3	VS 19-045 (R)	VRI Sv 2 x E 8	995	80-85	Black
4	VS 19-008 (N)	SVPR 1 x JR 22	1026	85-90	Black
5	VS 19-018 (N)	SVPR 1 x JCS 1942	986	85-90	Black
6	VS 19-048 (N)	TMV 7 x DS 5	956	85-90	White
Checks: TMV 7, VRI 3 and CO 1					
Locations (9): Vridhachalam, Tindivanam, Coimbatore, Srivilliputhur, Killikulam, Madurai, Bhavanisagar, Vazhavachanur and Kattuthottam (Rabi 2020-21 and Summer 2021)					

Observations to be recorded

(1) Days to 50% flowering, (2) Days to maturity, (3) Plant stand at maturity, (4) Number of branches per plant, (5) Number of capsules per plant, (6) Seed yield (kg/plot) (replication-wise) and (7) Seed yield (kg/ha)

Note: Screening for the pests and diseases will be carried out by RRS, Vriddhachalam

Name of the centre	Pests	Diseases
RRS, Vriddhachalam	Leaf hoppers, Shoot and capsule borer	Phyllody, Root rot, Powdery mildew and *Cercospora* lead spot

3. Sunflower: Multilocation Trial (MLT)

Season: *Kharif* 2021 &*Rabi* / Summer 2021-22 Replication: Four

Spacing: 60 x 30 cm Plot size: 4.0 x 3.0 m^2

Features of the proposed cultures

S. No.	Culture	Parentage	Seed yield (kg/ha)	Duration (Days)	Special features
1	CSFH 18284 (R)	COSF11A x CSFI99	2457	80-85	High yield
2	CSFH 18280 (N)	COSF 10A x CSFI 8002	2006	80-85	High yield
Checks: COH 3, CO2, DRSH 1 and Gangakaveri 2002					
Testing centres (7): Coimbatore, Bhavanisagar, Vridhachalam, Veppanthattai, Killikulam, Tindivanam (*Rabi*) and Kovilpatti (*Rabi)*					

Observations to be recorded

(1) Days to 50% flowering, (2) Plant stand at maturity, (3) Head Diameter (4) Seed yield (kg/plot) (replication-wise) and (5) Seed yield (kg/ha).

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

Name of the centre	Pests	Diseases
Dept. of Oilseeds, Coimbatore	Leaf Hopper, Head borer	Necrosis, Powdery mildew and Alternaria

4. Castor: Multilocation Trial (MLT) Rabi 2021
Features of the proposed cultures

Sl. No.	Culture	Parentage	Seed yield (kg/ha)	Duration (Days)	Distinguishable morphological characters
1	YRCH 2019	JP 65-1 X RG 43	2630	160	R3SP
2	YRCH 19014	DPC 9 X JI 220	2379	160	G3sp
3	YRCH 19016	DPC 9 X SKI 215	1959	180	R2ssp
4	YRCH 1 (Ch)	DPC 9 X TMV 5	1861	160	R3sp
5	YRCH 2 (Ch)	M 619-1 x SKI 215	2089	180	R3ssp
6	DCH 519 (Ch)	M 574 X DCS 78	2200	160	G3SP
Locations (7) : Yethapur, Vridhachalam, Tindivanam, KVK, Sandhiyur, AC&RI, Madurai, AC&RI , Killikulam and ARS, Bhavanisagar *(Rabi 2021)*					

Observations to be recorded
(1) Days to 50% flowering, (2) Plant stand at maturity, (3) Seed yield (kg/plot) (replication-wise) and (5) Seed yield (kg/ha)
Note: Screening for the following pests and diseases will be carried out by TCRS, Yethapur

Name of the centre	Pests	Diseases
TCRS, Yethapur	Semilooper, Capsule Borer,Leaf hopper, White fly and Flower thrips	Botrytis Grey Mold & Wilt

SEED REQUIREMENT FOR CONDUCTING ART/MLT 2021-22

Sl. No	Name of the Entry / Check	Quantity of seed required (kg)		Centre responsible for supply
		Kharif	***Rabi*/ summer**	
GROUNDNUT				
1	COG 0537	152	152	Coimbatore
2	VG 14019	152	152	Vriddhachalam
3	VRI 8	152	152	Coimbatore
4	TMV 14	152	152	Tindivanam
5	BSR 2	152	152	Bhavanisagar
6	K6	152	152	Vriddhachalam
7	VG 18089	12	-	Vriddhachalam
8	VG 17046	12	-	Vriddhachalam
9	TVG 17180	12	-	Tindivanam
10	VG 34	12	-	Vridhachalam
11	VG 19809	12	-	Vridhachalam
12	VG 19812	12	-	Vridhachalam

13	TVG 17204	12	-	Tindivanam
14	COG 17-007	12	-	Coimbatore
15	VRI 8	12	-	Vriddhachalam
16	GG7	12	-	Vriddhachalam
17	BSR 2	12	-	Bhavanisagar
18	TMV 14	12	-	Tindivanam
19	K6	12	-	Vriddhachalam
20	GJG 33	12	-	Vriddhachalam
21	Dharani	12	-	Vriddhachalam
SESAME				
1	VS 19-036	15.0	15.0	Vriddhachalam
2	VS 15-014	15.0	15.0	Vriddhachalam
3	VRI 3	15.0	15.0	Vriddhachalam
4	TMV 7	15.0	15.0	Tindivanam
5	VS 17-030	1.0	1.0	Vriddhachalam
6	VS 18-005	1.0	1.0	Vriddhachalam
7	VS 19-045	1.0	1.0	Vriddhachalam
8	VS 19-008	1.0	1.0	Vridhachalam
9	VS 19-018	1.0	1.0	Vriddhachalam
10	VS 19-048	1.0	1.0	Vriddhachalam
11	VRI 3	1.0	1.0	Vridhachalam
12	TMV 7	1.0	1.0	Tindivanam
13	CO 1	1.0	1.0	Coimbatore
SUNFLOWER				
1	CSFH 18284 (R)	1.0	1.0	Coimbatore
2	CSFH 18280 (N)	1.0	1.0	Coimbatore
3	COH 3	1.0	1.0	Coimbatore
4	CO 2	1.0	1.0	Coimbatore
5	DRSH 1	1.0	1.0	Coimbatore
6	Gangakaveri 2002	1.0	1.0	Coimbatore
CASTOR				
1	YRCH 2019	1.0	-	Yethapur
2	YRCH 19014	1.0	-	Yethapur
3	YRCH 19016	1.0	-	Yethapur
4	YRCH 1	1.0	-	Yethapur
5	YRCH 2	1.0	-	Yethapur
6	DCH 519	1.0	-	Yethapur

Important Dates in conduct of MLT and ART

Activities	Season	Last date for receipts	Date of Despatch
Seed material of the proposed ART entries	Kharif	31.05.2021	15.06.2021
	Rabi	15.08.2021	05.09.2021
	Summer	30.12.2021	10.02.2022
Seed material of the proposed MLT entries	Kharif	31.05.2021	05.06.2021
	Rabi	15.08.2021	05.09.2021

	Summer	30.12.2021	10.02.2022
Sowing report	Kharif	30.07.2021	-
	Rabi	30.10.2021	
	Summer	31.03.2022	
Visit of MLT/monitoring teams	Kharif	Sep. 2021	-
	Rabi	Dec. 2021	
	Summer	May. 2022	
Date for receiving the trials results at Vriddhachalam for compilation	Kharif	15.12.2021	-
	Rabi	28.02.2021	
	Summer	30.06.2022	

Monitoring team to visit MLT 2020-21

Scientist	Crop	Season
Dr. M. Pandiyan, Professor (PBG), RRS, VRI Dr. R. Kanchana Rani, Asst. Prof. (PBG), ORS, TMV Dr. C. Vijayaraghavan, Asst. Prof. (Ento.), RRS, VRI Dr. G. Senthil Raja, Asst. Prof. (PP), RRS, VRI	Groundnut	Kharif 2021 and Rabi 2021-22
Dr. A. Mahalingam, Asst. Prof. (PBG), RRS, VRI Dr. A. Sangeetha, Asst. Prof. (PP), RRS, VRI Dr. L. Alwin, Asst. Prof. (Ento.), RRS, VRI	Sesame	Rabi 2021-22 and Summer 2022
Dr. PL.Viswanathan Prof.(PBG) and Head, DOS, TNAU, CBE Dr. R. Sasikala, Asst. Prof. (PBG) Dr. L. Rajendran Asst. Prof. (Plant Pathology)	Sunflower	Kharif 2021 and Rabi 2021-22
Dr. S.R.Venkatachalam, Prof. and Head, TCRS, Yethapur Dr. P.Arutchenthil, Assoc. Prof. (PBG), TCRS, Yethapur Dr. N.Indra, Asst. Prof. (Pathology)	Castor	Kharif 2021

B. 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	**Identification of high yielding, early duration (90-95 days) groundnut variety**			
Theme Leader	**Dr. M. Pandiyan, Professor (PBG), RRS, Vridhachalam**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Vridhachalam Dr. A. Pandiyan, **Coimbatore** Dr.PL.Viswanathan, **Bhavanisagar** Dr.B.Meena Kumari	(i) Seed multiplication at VRI & confirmation of earliness at VRI, CBE, YTP, MDU,	Seed increase of shortlisted entry during kharif 2020. Oil quality	OFT / ART (June-July)	Release of early duration (90-95 days) groundnut variety

Tindivanam Dr.Kanchanarani, **Vazhavachanur** Dr. M. Vaithiyalingan, **Aliyarnagar** Dr. C. Ushamalini **CPMB, Coimbatore** Dr. D. Uma,	BSR, VVR& TMV. (ii) Field screening at ALR (June-July)	analysis		
	MLT – I (Dec.-Jan) & Artificial screening for LLS & Rust resistance	Conduct of ART / OFT during rabi 2020-21	Submission of variety release proposal (Oct – Nov.)	

Multilocation Trial – Groundnut (Short duration)

Sl. No	Entries	Pedigree	Duration (Days)	Pod yield (kg/ha)	% Increase over GG7	Special attributes
1	VG 17008*	VRI 2 x IVK 2013-5	90	2500	20.4 (2075kg/ha)	Early, high yield
2	VG 17009	VRI 2 x IVK 2013-5	90	2408	16.0 (2075kg/ha)	Early, high yield
Checks: GG 7, K 6, Dharani, VRI 8, BSR 2						

*OFT / Participatory appraisal will be conducted in 40 locations during *Rabi* / Summer 2020-21.

Locations: 56

Season	*Rabi* / Summer 2020-21 and *Kharif 2021*
Districts	Thiruvallur, Kancheepuram, Villupuram, Vellore, Thiruvannamalai, Cuddalore, Salem, Namakkal, Erode, Coimbatore, Thiruchirappalli, Perambalur, Karur, Pudukkottai, Tanjore, Madurai, Theni, Virudhunagar, Sivagangai, Thirunelveli (40 Trials – Two trials in each district)
KVK	KVK, Sandiyur, KVK, Vridhachalam, KVK, Tinidvanam, KVK, Erode, KVK, Paparapatti, KVK, Perambalur, KVK, Vamban, KVK, Karur (16 Trials –2 trials in each KVK)

Note:

- Artificial screening for LLS & Rust resistance will be carried out by RRS, Vridhachalam
- Oil quality analysis will be carried out at Department of Biochemistry.

Theme No 2	**Farmers participatory selection of semi spreading groundnut cultures under farmers holdings in Dharmapuri, Salem, Erode, Namakkal and Perambalur districts**			
Theme Leader	**Dr. M. Pandiyan, Professor (PBG), RRS, Vridhachalam**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables /expected out come**
Vridhachalam Dr. M. Pandiyan,	FPVS of cultures *viz*., VG 16024,	Seed multiplication of	OFT / ART of promising	Release of semi

Coimbatore Dr.PL.Viswanathan, **Bhavanisagar** Dr.B.MeenaKumari **Yethapur** Dr.S.R.Venkatachalam, **Aliyarnagar** Dr.C. Ushamalini **Paiyur** MYRDA KVK and KVK, Perambalur	ICGV 07245, ICGV 07247, COG 0549 Checks: VRI Gn 7, ICGV 00348, CO 6 at Dharmapuri, Salem, Namakkal, Erode and Perambalur districts and natural screening at ALR (June-July)	promising entry ICGV 07247 Field and artificial screening for LLS & Rust disease resistance	entries Oil quality analysis Field and artificial screening for LLS & Rust disease resistance.	spreading groundnut variety for Dharmapuri, Salem, Erode, Namakkal and Perambalur districts
	Seed multiplication of promising entries (Dec-Jan)	Seed multiplication of promising entries	Submission of variety release proposal	

Note:

- Artificial screening for LLS & Rust resistance will be carried out by RRS, Vridhachalam and Dept. of Oilseeds, Coimbatore
- Oil quality analysis will be carried out at Department of Biochemistry

Theme No 3	**Development of high yielding groundnut genetic stocks with resistance to foliar diseases**			
Theme Leader	**Dr. M. Pandiyan, Professor (PBG), RRS, Vridhachalam**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Vridhachalam Dr. M. Pandiyan Dr. G. Senthilraja **Coimbatore** Dr.PL.Viswanathan **Tindivanam** Dr. Kanchanarani **Aliyarnagar** Dr.C. Ushamalini	Hybridization: TMV 7 x VRI 6 [CBE]; VRI 2 x VRI 6 [VRI] and TMV 2 x VRI 6 [TMV]	Evaluation of F_2 populations	Sharing of F_4 materials for screening at Vridhachalam (Root rot), and Aliyarnagar (Rust).	Development of groundnut genetic stocks with high yield and resistance to foliar diseases
	Fixing of F_1 and development of F_2	Evaluation of F_3 families	Observational trial at Vridhachalam, Tindivanam and Coimbatore.	

Theme No 4	**Development of pre-breeding lines of groundnut**			
Theme Leader	**Dr. M. Pandiyan, Professor (PBG), RRS, Vridhachalam**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**

Vridhachalam Dr. M. Pandiyan,	Hybridization VRI6 x *A.monticola* (for thin shell) VRI6 x *Arachis spp*. (stem rot/ collar rot)	Hybridization VRI6 x *A.monticola* (for thin shell) VRI6 x *Arachis spp*. (stem rot/ collar rot)	Raising of double cross F_1 (SSD), RRS, Vridhachalam	Development of groundnut genetic stocks
	Making double cross	Making double cross	Raising of F_2 (SSD) RRS, Vridhachalam.	

Theme No 5	**Evolution of high yielding, monostem / shy branching sesame varieties**			
Theme Leader	**Dr. A. Mahalingam, Asst. Professor (PBG), RRS, Vridhachalam**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Vridhachalam Dr. A. Mahalingam, **Coimbatore** Dr. PL.Viswanathan, Dr. R.Sasikala **Madurai** Dr. C. Parameswari **Bhavanisagar** Dr.B.MeenaKumari **Srivilliputur** Dr. K. Thiyagu **Thindivanam** Dr. Kanchanarani	Confirmation of mono stem / shy branching nature of genotypes (VRI, TMV, CBE, MDU, BSR & SVPR) and Seed multiplication of monostem / shy branching genotypes (COS 14017, COS 14018, VS 19036)	Seed multiplication of promising entry	Seed multiplication of promising entries	Release of high yielding, monostem / shy branching sesame varieties
	Evaluation under MLT & Spacing trials by Agronomist. (Vridhachalam and Coimbatore)	OFT / ART (Dec -Jan) OFT / ART (March - April)	Submission of proposal for release	

Theme No 6	**Development of maintainerline in sunflower with high oleic content using MAS**			
Theme Leader	**Dr. R. Sasikala, Asst. Professor (PBG), Dept. of Oilseeds, Coimbatore**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**

Coimbatore Dr. R. Sasikala, Asst. Professor (PBG)	Hybridization of promising maintainer with high oleic donor COSF6B x HO 5-29	BC_1F_1 evaluation	Evaluation of BC_1F_2 and generation of BC_2F_1	Identification high oleic maintainer lines
	Evaluation of F_1 and Development of BC_1F_1	-	Development of BC_3F_1 and evaluation of BC_3F_2 and identification high oleic maintainer lines	

Note:

- Sowing report should be submitted to the P&H, Dept. of Oilseeds, TNAU, Coimbatore with a copy to the DCPBG, CBE

Theme No 7	**Development of high yielding hybrids in sunflower with resistance to powdery mildew and alterneria leaf spot**			
Theme Leader	**Dr. R. Sasikala, Asst. Professor (PBG), Dept. of Oilseeds, Coimbatore**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Coimbatore Dr. R. Sasikala Dr.L.Rajendran	Confirmation of F_5 RILs (IR6xCSFI13022) and IR6xCSFI13023) for powdery mildew and A*lterneria* under artificial screening	F_1 evaluation under PHYT (Disease scoring were done under field condition)	F_1 evaluation under AHYT-2	Identification high yielding hybrids with disease resistance
	Hybridization of promising cms lines with promising RILs	F_1 evaluation under AHYT-1 (Disease scoring were done under field condition)	Propose promising hybrids for MLT	

Note:

- Sowing report should be submitted to the P&H, Dept. of Oilseeds, TNAU, Coimbatore with a copy to the DCPBG, CBE

Theme No 8	**Genetic enhancement and reconstitution of promising castor parental lines for the development of superior castor hybrids with wilt resistance**			
Theme Leader	**Dr.S.R.Venkatachalam, Professor (PB&G) and Head, TCRS, Yethapur**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Yethapur Dr.S.R.Venkatachalam Professor (PB&G) and Head Dr.P.Arutchenthil, Associate professor (PB&G) Dr. N. Indra, Asst. Prof.(Patho)	Existing intrinsic variability for wilt resistance available in parental inbred lines (Pistillate and monoecious) will be subjected for selection in wilt sick plot	Evaluation of selected wilt resistant individual plants in progeny row trial	Confirmation of wilt resistance for selected lines and generation of superior hybrids for further evaluation	Identification of wilt resistant lines for the development of heterotic castor hybrids

Note:

- Sowing report should be submitted to the P&H, TCRS, Yethapur with a copy to the DCPBG, CBE

Theme No 9	**Unlocking Native Genetic Diversity and Population Structure in Castor**			
Theme Leader	**Dr. M. Raveendran, Professor (Biotech), CPMB, Coimbatore**			
Name of the scientists and centre	**2019-20**	**2020-21**	**2021-22**	**Deliverables/expected out come**
Yethapur Dr.S.R.Venkatachalam, Professor (PB&G) and Head Dr. S. Rajesh, Asst. Prof.(Biotech)] Dr.P.Arutchenthil, Associate professor (PB&G)	Assembling diverse panel of castor lines at TCRS, Yethapur	Diversity analysis using DNA markers at CPMB	Population Structure Analysis and construction of AM Panel at CPMB	Identification of genetic marker associated with the trait of interest.

Note:

- Report should be submitted to the P&H, TCRS, Yethapur with a copy to the DCPBG, CBE

Theme No 10	**Development of high yielding drought and salinity tolerant groundnut breeding lines**			
Theme Leader	**Dr. M. Pandiyan, Professor (PBG), RRS, Vridhachalam**			
Name of the scientists and centre	**2021-22**	**2022-23**	**2023-24**	**Deliverables/expected out come**
Vriddhachalam Dr. M. Pandiyan, **Coimbatore** Dr.PL.Viswanathan, **Virinjipuram** Dr. Gobikrishnan **Tindivanam** Dr. Kanchanarani **Vazhavachanur** Dr. M. Vaithiyalingan	Screening and identification of groundnut germplasm and released varieties for salinity and drought tolerance	Evaluation of F_1	Evaluation of F_3 for salinity	Development of groundnut genetic stocks with tolerance to salinity and drought
	Hybridization (TMV 2, TMV 7 with salinity tolerant lines)	Screening of F_2 population for salinity tolerance under natural condition	Evaluation F_4 progenies for drought tolerance (TMV & TVM) Identification of salinity and drought tolerant progenies	

Theme No 11	**Development of High Oleic groundnut breeding lines**			
Theme Leader	**Dr. N, Manivannan, Professor (PBG), CEMB, CPBG, Coimbatore**			
Name of the scientists and centre	**2021-22**	**2022-23**	**2023-24**	**Deliverables/expected out come**
Coimbatore Dr. N, Manivannan Dr. PL. Viswanathan	Hybridization (TMV 7, CO 7 x Girnar 4, Girnar 5) (CBE)	Evaluation of BC_1F_1 population (CBE) and back crossing	Evaluation of BC_3F_1 (CBE)	Identification high Oleic groundnut breeding lines
	Evaluation of F_1 (CBE) and back crossing	Evaluation of BC_2F_1 (CBE) and back crossing	Evaluation and identification of BC_3F_2 progenies with High Oleic content	

C. RESEARCH PROJECTS AND REMARKS

Research Projects on Oilseeds

Centers	University Sub-Projects	AICRP projects	Externally funded projects	Core projects	Total	No. of Scientists
GROUNDNUT						
Vridhachalam	3	1	-	-	4	1
Tindivanam	2	1	-	-	3	1
Coimbatore	4	-	1	-	5	1
Kudimiyanmalai	1	-	-	-	1	2
Bhavanisagar	1	-	-	-	1	1
Pattukottai	1	-	-	-	1	1
Vaigaidam	1	-	-	-	1	1
Vazhavachanur	-	-	2	-	2	1
Chettinad	-	-	-	1	1	1
Sub Total	**13**	**2**	**3**	**1**	**19**	**10**
SESAME						
Vridhachalam	2	1	1	-	4	1
Coimbatore	1	-	-	1	2	1
Madurai	1	-	1	-	2	1
Trichy	1	-	-	-	1	1
Kumulur	1	-	-	-	1	1
Vaigaidam	1	-	-	-	1	1
Sub Total	**7**	**1**	**2**	**1**	**11**	**6**
SUNFLOWER						
Coimbatore	2	1	-	-	3	1
Sub Total	**2**	**1**	**-**	**-**	**3**	**1**
CASTOR						
Yethapur	2	1	-	-	3	2
Sub Total	**2**	**1**	**-**	**-**	**3**	**2**
Grand Total	**24**	**5**	**5**	**2**	**36**	**19**

Sl. No	Project No. and Title	Project leaders	Duration	Remarks
C1. University Research Projects (URPs)				
Groundnut				
1	**CPBG/VRI/PBG/GNT/2012/003** Breeding of improved Spanish Bunch / Virginia Bunch cultivar with inbuilt resistance / tolerance to foliar fungal disease and drought.	Dr. M. Pandiyan Professor (PBG)	January 2012 to December 2016	Completion report should be submitted on or before 30.06.2021 and a new project proposal can be proposed. However, in the currently continued breeding work, Bunch x Bunch crosses only be attempted. Importance for early maturity may be given Genetic base of the parents in crossing programme should be widened Drought tolerance at critical stages should be studied for the advanced genetic material Proven drought tolerant donors reported by AICRP should also be used.

2	**CPBG/VRI/PBG/GNT/2016/001** Breeder seed production of high yielding groundnut varieties released from Regional Research Station, Vridhachalam	Dr. M. Pandiyan Professor (PBG)	August 2016 to July 2021	The target may be achieved without any shortfall.
3	**CPBG/VRI/PBG/GNT/2015/005** Collection, conservation and evaluation of genetic resources of groundnut (*Arachis hypogaea* L.)	Dr. M. Pandiyan Professor (PBG)	December 2015 to November 2020	In interspecific hybridization NAA or any other growth regulator in consultation with the Crop Physiologist may be used for increasing pod set The germplasm entries with unique agronomic traits or field resistance for major pests and diseases should be tagged and reported and utilised for further breeding programme
4	**CPBG/CBE/PBG/GNT/2018/001** Development of high yielding Foliar disease resistant groundnut varieties better than CO7	Dr.PL.Viswanathan, Professor (PB&G) and Head	October 2015 to September 2020	The project completion report should be submitted on or before 30.06.2021

5	**CPBG/CBE/PBG/GNT/2020/001** Evolving short duration Spanish bunch groundnut varieties for groundnut growing tracts of Tamil Nadu.	Dr. K. N. Ganesan Professor (PBG), Dept. of GPB Dr. PL. Viswanathan Professor and Head, Dept. of Oilseeds	June 2020 to May 2023	The project may be continued and a mid-term correction have to be sent for change of project leader from Dr. K. N. Ganesan to Dr. PL. Viswanathan
6	**CPBG/TVM/PBG/OIL/2018/001** Maintenance Breeding and Breeder Seed Production of groundnut Sesame, Castor and Pulses varieties released from TNAU	Dr. R. Kanchanarani, Assistant Professor (PB&G)	September 2018 to August 2021	The target may be achieved without any shortfall.
7	**CPBG/TVM/PBG/GNT/2018/001** Evolution of bunch groundnut varieties tolerant to early stage drought situations	Dr. R. Kanchanarani, Assistant Professor (PB&G)	June 2018-May 2023	In addition to TMV 14, TMV 2 and TMV 7 should be included as check varieties in all the yield trials in order to maintain the stock of these two varieties and also for evaluating the drought tolerance
8	**CPBG/PKT/PBG/BGR/2016/001** Breeder Seed Production in Pulses and Groundnut	Dr. A. Bharathi, Asst. Professor (PBG)	April 2016 to March 2021	More care and attention to be provided for achieving the target without any shortfall and seed quality deterioration
9	**CPBG/KDM/PBG/GNT/2017/001** Breeder seed production in Groundnut and Pulses	Dr.M.Madhan Mohan, Associate Professor Dr.P.Shanthi, Assistant Professor (PBG)	November 2017 to August 2021	The target may be achieved without any shortfall

10	**New Project** Development of high oleic Spanish groundnut variety	Dr. N.Manivannan, Professor (PBG)	November 2020 to October 2025	The project may be continued
11	**CPBG/BSR/PBG/2020/001** Maintenance breeding in oilseed crop varieties released by TNAU	Dr. S. Utharasu, Asst. Professor (PB&G)	September 2020 – August 2021	The target may be achieved without any shortfall
12	**CPBG/VGD/PBG/2020/001** Maintenance Breeding in Groundnut and Pulses	Dr. C. Parameswari, Assistant Professor (PB&G)	October 2020 to September 2025	The target may be achieved without any shortfall
13	**CPBG/CBE/PGR/2019/001** Collection, conservation, documentation, viability monitoring and exchange of germplasm in the Ramiah Gene Bank (RGB)	Dr. V. Thiruvengadam Assistant Professor (PBG) Dr.S. Manonmani Professor and Head (PGR)	July 2019 - June 2022	The project can be continued.
Sesame				
14	**CPBG/VRI/PBG/SES/2019/001** Evolution of high yielding sesame varieties with resistance to *Macrophomina* root rot	Dr. A. Mahalingam Assistant Professor (PB&G) Dr. A. Sangeetha Assistant Professor (Plant Pathology)	September 2018 to August 2023	TMV 4 and TMV 6 can be included as check varieties in the trials. *Sesamum yanamalaiyansis* can be collected from AC & RI, Madurai Interspecific recombinants should be advanced in a RGA manner. Development of black seeded varieties may be hastened up GT10 may be used as donor

15	**CPBG/VRI/PBG/SES/2016/001** Production of genetically pure nucleus and breeder seed of sesame varieties released from Vridhachalam	Dr. A. Mahalingam Assistant Professor (PB&G)	June 2016 to May 2021	The target may be achieved without any shortfall
16	**CPBG/MDU/PBG/SES/2019/001** Development of high yielding sesame (*Sesamum indicum* L.) suitable for southern districts of Tamil Nadu	Dr. C. Parameswari Assistant Professor (PBG) Dr. G. Anand Assistant Professor (PBG) Dr. K. Kalpana Assistant Professor (Pl. Path)	October 2018 to September 2021	Completion report should be submitted in time.
17	**CPBG/VGD/PBG/SES/2020/001** Genetic improvement of sesame to evolve phyllody resistant cultures/lines through induced mutation	Dr. M.Jayaramachandran Assistant Professor (PBG) Dr.M.Theradi Mani	June 2019 to May 2021	The alternate host *Vinca rosea* of phyllody disease may be confirmed at molecular level in consultation with the pathologist at AC&RI, Madurai. Extension proposal may be sent for approval.
18	**CPBG/KUM/PBG/SES/2019/001** Development of Sesame (*Sesamum indicum* (L.) varieties suitable for summer irrigated conditions	Dr. M. Dhandapani Assistant Professor (PBG) **Co-Project Leader** Dr. V. Alex Albert Assistant Professor (SST)	February 2019 to June 2022	The project may be continued.
19	**CPBG /TRY /PBG /SES /2020 /001** Development of high yielding sesame *(Sesamumindicum* L.) suitable for salt affected soils.	Dr. A. Mothilal, Professor (PBG) **Co-Project Leader** Dr. A. Mahalingam Assistant Professor (PB&G)	November 2020 to October 2025	The project may be continued.

Sunflower				
20	**CPBG/CBE/PBG/SNF/2018/001** Collection, Maintenance and Evaluation of Germplasm in Sunflower	Dr. R. Sasikala Assistant Professor (PB&G)	January 2018 to December 2020	The project completion report should be submitted on or before 30.06.2021 for approval
21	**CPBG/CBE/PBG/SNF/2015/004** Evolution of high yielding sunflower hybrids	Dr. R. Sasikala Assistant Professor (PB&G)	June 2015 to May 2020	Sunflower hybrid CO2 and national check hybrid DRSH 1 have to be included as checks in the hybrid evaluation trial. Likewise promising hybrids should be evaluated for major diseases viz., powdery mildew, necrosis and *Alternaria.* The project may be continued.
Castor				
22	**CPBG/ YTP/ PBG/ CAS/ 2020/ 001** Genetic diversification for development of Stable wilt resistant pistillate lines in castor	Dr.S.R.Venkatachalam, Professor (PB&G) and Head	November 2020 to October 2025	Emphasis may be given for the identification of early duration pistillate types. Non spiny types may be identified. The project may be continued

23	**New** Genetic diversification and development of Monoecious lines in Castor	Dr. P. Arutchenthil Associate Professor (PB&G)	November 2020 to October 2025	Concentrate on early maturing non spiny mono spike type for single harvest. The project may be continued
C2. AICRP Projects				
24	**AICRP/PBG/VRI/GNT/017** All India Evaluation of advanced breeding lines belonging to Spanish / Virginia bunch group through co-ordinated experiments.	Dr. M. Pandiyan Professor (PB&G) RRS, Vridhachalam	Continuous	The project may be continued
25	**AICRP/PBG/TVM/GNT/019 AICRP** – Oilseeds Groundnut ORS, Tindivanam	Dr. R. Kanchanarani, Assistant Professor (PB&G)	Continuous	The project may be continued
26	**AICRP/PBG/VRI/SES/021** All India Coordinated Research Project on Sesame	Dr. A. Mahalingam Assistant Professor (PB&G) Vridhachalam	Continuous	The project may be continued
27	**AICRP/PBG/CBE/SUN/020** AICRP on Oilseeds (Sunflower)	Dr. R. Sasikala, Asst. Professor (PBG)	Continuous	The project may be continued
28	**AICRP/PBG/YPR/CAS/022** All India Coordinated Research Project on castor – Breeding	Dr.S.R.Venkatachalam Professor (PB&G) TCRS,Yethapur Dr. P. Arutchenthil Associate Professor (PB&G) TCRS,Yethapur.	Continuous	The project may be continued
C3. Core projects				
29	**CPBG/CBE/PBG/SES/2018/CP122** Development of high yielding early maturing black seeded sesame genotype better than CO1 variety	Dr. S. Manonmani Professor (PB&G)	April 2018-March 2021	The project may be continued
30	**CPBG/ CTN/ PBG/ GNT/ 2018/ CP 103** Development of leaf spot and rust resistant variety in groundnut	Dr. R. Chandirakala Associate Professor (PBG)	2018 to March 2020	The project may be continued

31	**DST/CPBG/CBE/PBG/2021/R001:** Development of high oleic Spanish bunch groundnut variety through marker assisted backcross	Dr. N. Manivannan, Professor **CO – PI/**Dr. A. Mothilal, Professor (PBG)	30.12.2020 to 29.12.2023	The project may be continued
32	**ICRISAT / VOL / VVNR / GNT / 2021 / 001** Multilocation testing of groundnut	Dr. M. Vaithiyalingan Associate Professor (PBG)	01.08.2020 to 31.07.2021	The project may be continued
33	**ICRISAT/ACRI/VVNR/PBG/2019/R003** High oleic groundnut trail evaluation of ICRISAT under OFID activities	Dr. M. Vaithiyalingan Associate Professor (PBG) Dr. M. Pandiyan, Dean, AC&RI, VVNR	01.06.2019 to 31.05.2020	The project may be continued
34	**New Project** Establishment of Centre of Excellence in Groundnut (DR/P2/NADP / Groundnut /RRS, VRI / ASO / 2020 Dt. 07.10.2020)	Dr. K. Subrahmaniyan Professor and Head, RRS, VRI **CO-PIs** Dr. A. Mahalingam, Assistant Professor (PB&G) RRS, Vriddhachalam Dr. T. Parthiban, Assistant Professor (Agro.) RRS, Vriddhachalam Dr. G. Senthilraja, Assistant Professor (PP) RRS, Vriddhachalam Dr. C. Vijayaragavan, Assistant Professor (Ento.) RRS, Vriddhachalam Dr. K.Natarajan, Assistant Professor (SST), KVK, Vriddhachalam **Overall coordinators** Dr. S.Geetha, Director, CPBG Dr. V.Ambethgar, Director, TRRI, Aduthurai	2020-2021	The project may be continued Work on Molecular Assisted Breeding should be initiated with all good efforts

35	**DBT – NBPGR / CPBG / VRI / OIL / 2020 / D003** Mainstreaming sesame germplasm for productivity enhancement and sustainability through genomics assisted core development and trait discovery	Dr. A. Mahalingam, Assistant Prof. (PB&G) Dr. G. Senthilraja, Assistant Prof. (Pathology) **CO – PI** Dr. A. Mothilal, Professor (PB&G)	01.04.2020 to 31.03.2025	Germplasm with unique agronomic traits and field tolerance for pests and diseases should be enlisted The project may be continued
36	**BRNS/CPBG/MDU/SES/2018/R003** Development of Early Maturing Determinate White Seeded Sesame (*Sesamumindicum* L.) through gamma irradiation	Dr. C. Parameswari Assistant Professor (PB&G) **CO – PI** Dr. C. Vanniarajan Professor (PB&G) and Head	2018-2021	The project may be continued

2. CROP MANAGEMENT

The 40th Crop Scientists' Meet on Oilseeds 2021 was held on 23rd April 2021 at Tamil Nadu Agricultural University, Coimbatore through online mode in Zoom webinar. Research highlights and action taken on the Action Plan projects were presented by the Director (Crop Management). The session was chaired by the Honourable Vice-Chancellor and Co-chaired by the Director of Research, TNAU, Coimbatore.

A. TECHNOLOGIES FOR ADOPTION/OFT/INFORMATION

I. Technologies for OFT

1. Identification of remunerative groundnut based cropping system under rainfedsituation

Treatments
T_1 - Groundnut + Maize (4:1)
T_2 - Groundnut + SD Redgram (6:1)
T_3 - Groundnut + SD Redgram (8:1)

Coordinating Centre:
RRS, Vridhachalam
Dr.T.Parthipan,
Asst. Prof. (Agronomy)

Centres:
ORS, Tindivanam
Dr.K. Thiruvarassan,
Asst. Prof. (Agronomy)
DARS, Chettinad
Dr.T.Myrtle Grace,
Professor (Agronomy)

Season: Kharif 2021

Observations to be recorded
- Groundnut Equivalent yield
- Economics

II. Technologies for information

1. Crop geometry and pod priming for rainfed cultivation

Pod priming with 1 % $CaCl_2$ andsown at a spacing of 30 x 10 cm in VRI 8 recorded higher dry pod yield (2087 kg/ha), net return (Rs. 40472/ha) and BCR (1.54) as compared to the variety GG 7.

2. Drought management strategies for improving yield in rainfed groundnut

Sowing of groundnut during 20-30 June with foliar application of 1 % PPFM at 20 DAS & 0.5 % KCl at 45 DAS recorded higher pod yield of 1928 kg/ha with a BCR of 1.73

3. Remunerative groundnut based inter cropping systems

Western Zone

Groundnut intercropped with redgram at 6:1 ratio during 2ndfortinight of June produced higher groundnut equivalent yield (2928 kg/ha and 2640 kg/ha) and B:C ratio (2.43 and 1.97) under irrigated and rainfed conditions respectively in Western Zone.

North Eastern Zone

Groundnut intercropped with maize at 4:1 ratio produced higher groundnut equivalent yield of 2246 kg/ha and BCR of 1.96 in North Eastern Zone.

Cauvery Delta Zone – New Ayacut

Groundnut paired row with varagu recorded higher groundnut equivalent yield of 2400 kg/ha and B : C ratio of 3.94 in the new ayacuts of Cauvery Delta Zone.

4. Optimizing plant population for monostem sesame

Spacing at 20 x 20 cm with a plant population of 2,50,000 plants/hais observed to be optimum for higher productivity of mono stem sesame culture VS 19036.

5. Modifying source – sink relationship for yield enhancement in rainfed sesame

Terminal nipping of sesame at 30 DAS recorded higher number of branches (10.8) and number of capsules (137) resulting in higher seed yield (1022 kg/ha).

6. Crop specific foliar formulation for yield enhancement in Sesame

Normal condition

Foliar spray of Formulation I@ 1.5 % at 40 and 55 DAS recorded higher SPAD value (36.9), soluble protein content (16.9 mg/g) and seed yield (777 kg/ha).

Mositure stress condition

Under moisture stress condition, foliar spray of Formulation I @ 1% recorded higher SPAD value (31.1), NR-ase activity (8.56 µg NO2g hr^{-1}**)** and seed yield (476 kg/ha) compared to control.

7. Novel tools and technologies for yield maximization in sesame

Hill placement of seeds with terminal nipping along with root pruning at 30 DAS produced higher sesame seed yield of 839 kg/ha and water use efficiency (4.66 kg/ha-mm)

8. Best management practices for sesame under rice-sesame cropping system

Sowing of sesame after harvest of rice with ploughing twice followed by rotavator (In the light soil) recorded higher sesame seed yield (477 kg/ha), however reduced tillage recorded higher B:C ratio of 1.81.Nutrient management with 100 % RDF recorded higher seed yield (447 kg/ha) and B: C ratio (1.79).

9. **Weed management in sunflower (Alternative for Pendimethalin)**
   Application of Oxadiargyl @ 125g ai/ha as pre emergence spray followed by hand weeding at 30 DAS was found be productive (2291 kg/ha) and economical (B:C ratio 1.47) integrated weed management practice

10. **Evaluation of pre and post emergence herbicides for weed management in sesame**
    Application of Pendimethalin @ 0.75 kg a.i./ha + HW at 20 DAS recorded higher seed yield (818 kg/ha), higher WCE (86.4), lesser weed count (12.9/m^2) and lesser WI (3.5). However, application of pre emergence herbicide Pendimethalin @ 0.75 kg a.i./ha at 3 DAS + POE Quizalopfop ethyl @ 50 g a.i/ha at 20 DAS recorded higher B:C ratio (2.62).

11. **Castor-cucurbits relay cropping for resource conservation and profit maximization**
    Altered castor plant architecture through nipping and pruning, resulted in shorter plant height of 83.9 cm and profuse branching (23.2/plant) with lengthier spike of 66.4 cm and compact spike (95.3 capsules/spike) in nipped plant. Cucurbits as intercrop in castor, curtails the expenditure on trellis & stake support system of Rs.87500/ha under traditional panthal/bower/inverted V trellis method against trailing of tendrils on pruned castor YTP 1 (Rs.13500).

B. ACTION PLAN PROJECTS

Action Plan 1

DCM/TVM/AGR/GNT/2020/001 Drought management strategies for improving yield in rainfed Groundnut

Coordinating scientist	Proposed activity for 2021-2022	Deliverables
Dr. P. Sridhar, Professor (Agron.) & Head ORS, Tindivanam	Second year Preliminary trial will be carried out To be correlated with daily weather parameters	Drought management strategy for yield improvement in rainfed groundnut

Action Plan 2

Developing technology package for castor-cucurbits relay cropping for resource conservation and profit maximization.

Coordinating scientist	Proposed activity for 2021-2022	Deliverables
Dr.P.Kathirvelan, Asst. Prof. (Agronomy) TCRS, Yethapur	Second year Preliminary trial wiil be carried out.	Technology package for castor – curubits relay cropping.

Action Plan 3 **DCM/TVM/AGR/GNT/2020/002/Effect of green manure incorporation on yield of a subsequent groundnut crop**		
Coordinating scientist	**Proposed activity for 2021-2022**	**Deliverables**
Dr.S.Thiruvarassan Asst. Prof.(Agronomy) ORS, Tindivanam	Third year confirmatory trial wiil be carried out. Mositure content to be studied at the time of green manure incorporation	Improvement in peg penertration, pod development and yield improvement.
Action Plan 4 **Studies on microclimate modifications in groundnut - redgram intercropping system**		
Coordinating scientist	**Proposed activity for 2021-2022**	**Deliverables**
Dr. SP. Ramanathan, Professor (Agron.) & Head ACRC, TNAU, Coimbatore	Third year confirmatory trial wiil be carried out.	An agronomic package for microclimate modifications in groundnut - redgram intercropping system
Action Plan 5 **Modifying source – sink relationship for yield enhancement in rainfed sesame**		
Coordinating scientist	**Proposed activity for 2021-2022**	**Deliverables**
Dr. S. Srinivasan Asst. Prof. (CRP) ARS, Aruppukottai	Third year confirmatory trial wiil be carried out.	A technology capsule to enchance source – sink relationship in sesame
Action Plan 6 **DCM/VRD/AGR/2021/001 Optimizing plant population for higher productivity of mono stem sesame culture - VS 19036**		
Coordinating scientist	**Proposed activity for 2021-2022**	**Deliverables**
Dr. C. Harisudan, Asst. Prof. (Agronomy) RRS, Vridhachalam	Third year confirmatory trial wiil be carried out.	Optimum plant geometry and plant population will be evolved.

C. RESEARCH PROJECTS AND REMARKS

S.No	Projects	Groundnut	Sesame	Sunflower	Castor	Total
1.	Agronomy	11	8	3	5	27
2.	Agricultural Meteorology	1	-	-	-	1
3.	Crop Physiology	-	2	-	-	2
	Total	12	10	3	5	30

S.No.	Project No. & Title	Coordinating Scientist	Duration	Remarks
ACTION PLAN PROJECTS (2020-21)				
1.	**DCM/TVM/AGR/GNT/2020/001** Drought management strategies for improving yield in rainfed Groundnut	Dr. P. Sridhar, Professor (Agron.) & Head	June 2020 to December 2022	• Rabi &*Kharif* experiments may be compared • Daily weather data from date of sowing to harvest may be reported • The project may be continued.
2.	Developing technology package for castor-cucurbits relay cropping for resource conservation and profit maximization.	Dr.P.Kathirvelan, Asst. Prof. (Agronomy)	June 2020 to May 2021	• The project may be continued.
ACTION PLAN PROJECTS (2019-20)				
3.	**DCM/TVM/AGR/GNT/2020/002**/Effect of green manure incorporation on yield of a subsequent groundnut crop	Dr.S.Thiruvarassan Asst. Prof.(Agronomy)	July 2020 to June 2022	• Both RDF and STCR is mentioned, hence go with RDF • Moisture content during incorporation may be recorded • The project may be continued.
4.	Studies on microclimate modifications in groundnut - redgram intercropping system	Dr. SP. Ramanathan, Professor (Agron.) & Head	July 2019 to June 2021	• The project may be continued.

S.No.	Project No. & Title	Coordinating Scientist	Duration	Remarks
5.	Modifying source – sink relationship for yield enhancement in rainfed sesame	Dr. S. Srinivasan Dept. of Crop Physiology, TNAU, Coimbatore	July 2019 to June 2022	• Nipping node should be mentioned • Impact on quality parameters may be analysed • BC ratio may be calculated • Number of rainy days may be recorded • The project may be continued.
6.	**DCM/VRD/AGR/2021/001** Optimizing plant population for higher productivity of mono stem sesame culture - VS 19036	Dr. C. Harisudan, Asst. Prof. (Agronomy)	June 2020 to May 2022	• The results may be given for information • To be continued
ON FARM TRIAL				
1.	Identification of remunerative groundnut based cropping system under rainfed situation	Dr.T.Parthipan, Asst. Prof.(Agronomy) RRS,Vriddhachalam	2020-2021	• To be continued for one more year with suggested modification.
GROUNDNUT				
UNIVERSITY RESEARCH PROJECTS				
AGRONOMY				
7.	DCM/VRI/AGR/GNT/2020/001 Standardization of crop geometry and seed priming method for pod sowing in rainfed groundnut.	Dr.T.Parthipan, Asst. Prof. (Agronomy)	June 2020 to May 2022	• The results may be given for information
8.	DCM/EKT/AGR/GNT/2020/001 Identification of Ground nut + small millets inter cropping system for alfisols under Irrigated condition	Dr.K.Venkatalakshmi Asst. Prof. (Agronomy)	Jan 2020 to May 2022	• The results may be given for information
SESAME				
AGRONOMY				
UNIVERSITY RESEARCH PROJECTS				

S.No.	Project No. & Title	Coordinating Scientist	Duration	Remarks
9.	**DCM/KKM/AGR/SES/2020/001** Agronomic options to enhance the productivity of transplanted sesame	Dr. J.Bhuvaneswari Asst.Prof. (Agronomy)	November 2020 - May 2022	• The crop duration in main field should be assessed. • Seedling establishment percentage should be recorded. • Water saving to be accounted. • Cost involved in land configuration should be calculated. • Additional labour required to be calculated. • Yield advantage over conventional method should be compared. • The project may be continued.
CORE PROJECT				
10.	**DCM/VRI/AGR/SES/2018/CP045** Exploitation of novel tools and technologies for yield maximization in sesame	Dr. C.Harisudan Asst. Prof. (Agronomy)	June 2018 to May 2020	• The results may be given for information. • The project may be closed and completion report may be submitted.
CROP PHYSIOLOGY				
11.	**DCM/CBE/CRP/CSF/2018/CP009** Development of Crop specific foliar formulations for yield enhancement in selected crops (rice, redgram, sesame and finger millet) under normal and water deficit environments	Dr. P. Jeyakumar Professor (Crop Physiology)	June 2018 to September 2021	• The project may be closed and completion report may be submitted.

S.No.	Project No. & Title	Coordinating Scientist	Duration	Remarks
EXTERNALLY FUNDED PROJECT				
12.	Developing best management practices for sesame cultivation (after rice) under rice-sesame cropping system	Dr. C.Harisudan Asst. Prof. (Agronomy)	April 2019- March 2022	• The results may be given for information. • The project may be continued.
AICRP Projects - GROUNDNUT				
13.	AICRP/PBG/VRI/GNT/017 Integrated weed management in *Kharif* Groundnut	Dr. T. Parthipan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project may be closed.
14.	AICRP/PBG/VRI/GNT/017 Improving phosphorus use efficiency in groundnut with microbial cultures.	Dr. T. Parthipan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project to be continued.
15.	AICRP/DCM/VRI/AGR/GNT/2020/001 Effect of foliar application of water soluble fertilizer on growth, yield and nutrient uptake of summer groundnut	Dr. T. Parthipan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project may be closed.
16.	AICRP/PBG/TVM/GNT/019 Improving phosphorus use efficiency in rabi-summer groundnut with microbial cultures.	Dr.S.Thiruvarassan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project to be continued.
17.	AICRP/PBG/TVM/GNT/019 Effect of foliar application of water soluble fertilizer on growth, yield and nutrient uptake of summer groundnut	Dr.S.Thiruvarassan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project may be closed.
18.	AICRP/PBG/TVM/GNT/019 Improving phosphorus use efficiency in *Kharif* groundnut with microbial cultures.	Dr.S.Thiruvarassan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project to be continued.
19.	AICRP/PBG/TVM/GNT/019 Integrated weed management in Kharif Groundnut	Dr.S.Thiruvarassan Asst. Prof. (Agronomy)	2018-19 to 2020-21	• The project to be continued.
SESAME				
20.	AICRP/PBG/VRI/SES/021 Optimization of nutrient requirement for AVT genotypes	Dr. C. Harisudan Asst. Prof (Agronomy)	2019-20 to 2021-22	• The project may be continued.
21.	AICRP/PBG/VRI/SES/021	Dr. C. Harisudan	2019-20 to	• The project may be

S.No.	Project No. & Title	Coordinating Scientist	Duration	Remarks
	Effect of seed pelleting and crop establishment method on growth and yield of sesame	Asst. Prof (Agronomy)	2021-22	continued.
22.	AICRP/PBG/VRI/SES/021□ Effect of mulch and herbicides on weed dynamics of sesame	Dr. C. Harisudan Asst. Prof (Agronomy)	2019-20 to 2021-22	• The project may be continued.
23.	AICRP/PBG/VRI/SES/021□ Evaluation of pre and post emergence herbicides for weed management in sesame	Dr. C. Harisudan Asst. Prof (Agronomy)	2018-19 to 2020-21	• The results may be given for information • The project to be closed
SUNFLOWER				
24.	AICRP/DCM/CBE/AGR/SNF/2020/001 Integrated weed management in sunflower (Alternative for Pendimethalin)	Dr.T.Selvakumar Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project may be continued.
25.	AICRP/DCM/CBE/AGR/SNF/2020/002 Performance evaluation of Sulphur Oxidizing Bacterial (SOB) Inoculums on Sunflower	Dr.T.Selvakumar Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project to be continued.
26.	AICRP/DCM/CBE/AGR/SNF/2020/003 Microbial consortia for drought mitigation in sunflower	Dr.T.Selvakumar Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project may be continued.
CASTOR				
27.	AICRP/PBG/YTR/CAS/022 Yield maximisation of castor through Best Management Practices	Dr. P. Kathirvelan Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project may be continued.
28.	AICRP/PBG/YTR/CAS/022 Technology Validation - Best Management Practices (BMP) Vs farmers practices	Dr. P. Kathirvelan Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project may be continued.
29.	AICRP/PBG/YTR/CAS/022 Influence of Conservation Agricultural practices in castor based intercropping systems	Dr. P. Kathirvelan Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project may be continued.
30.	AICRP/PBG/YTR/CAS/022 Studies on High Density Planting in *Rabi* Castor	Dr. P. Kathirvelan Asst. Prof. (Agronomy)	2019-20 to 2021-22	• The project may be continued.

2.NATURAL RESOURCE MANAGEMENT

The 40th Crop Scientists Meet on Oilseeds - 2021 was held on 23rd April 2021 at Tamil Nadu Agricultural University, Coimbatore by online mode through Zoom webinar. Research highlights and action taken on the Action Plan projects were presented by the Director (NRM). The session was chaired by the Honourable Vice-Chancellor and Co-chaired by the Director of Research, TNAU, Coimbatore.

2.1.Technologies for adoption/OFT/ information

I. Technology for adoption

- In sesame, application of 75 % RDN + seed treatment with *Azospirillum* and SOB (*Dyellathiooxydans* ATSB10) (600 g ha^{-1} seed) + soil application of SOB (2 kg ha^{-1}) recorded higher seed yield (839 kg ha^{-1}), gross return (Rs.67,080 ha^{-1}), net return (Rs.41,580 ha^{-1}) and B: C ratio (2.63).

II. On Farm Trial Proposed for 2021-2022

OFT 1: Evaluation of TNAU Foliar Micronutrient Mixture for the management of multi-micronutrient deficiencies in groundnut

Treatments

T_1: Soil test based NPK+ water spray

T_2: Soil test based NPK+ TNAU Foliar Micronutrient mixture @ 1% twice (vegetative & flowering stage)

T_3: Soil test based NPK+ 0.5% $ZnSO_4$ + 1 % $FeSO_4$ + 0.1% Citric acid thrice (Existing recommendation

Observations

- Growth attributes
- Pod and kernel yield
- Dry Matter production
- Micronutrients content
- Uptake
- BCR

Centres & Scientist Incharge

Lead centre: **Dept. of SS&AC, TNAU, CBE**

Dr. D.Jegadeeswari,
Assoc. Prof., (SS&AC)

Coordinating centres

CRS, Aliyarnagar

Dr. C.Sudhalakshmi,
Asst. Prof. (SS&AC),

AC&RI, Kudumiyanmalai

Dr. P. P. Mahendran,

Professor (SS&AC) & Head (CM)
Dr. R.Jagadeeswaran,
Assoc.Professor (SS&AC),

III. Technologies for information

- **Iron Nutrition for Groundnut in Red Calcareous soils:** In iron deficient red calcareous soil, among the five groundnut genotypes(TAG 24, CO 7, VRI 8, VRI 13113 and VRI 5) , CO 7 and of the five iron management strategies (control, foliar application of ferrous sulphate and three siderophore producing bacteria *viz*., *Bacillus subtilis, Bacillus licheniformis and Ochrobactrum grignonens*), foliar application of ferrous sulphate (1%) + citric acid (0.1%) during three critical (vegetative, flowering and pegging) stages recorded higher pod yield (2789 kg ha^{-1}; 16% increase over NPK alone), iron uptake (79.25 g ha^{-1}), Fe transport to kernel (15.38%) and Benefit - Cost ratio (2.50). Under NPK alone, among the genotypes, CO7 and VRI 8 performed better in terms of pod yield and BCR, showing the efficiency of these varieties under iron deficientcalcareous conditions. VRI 5 was found to be inefficient under Fe deficient calcareous condition.

- **Field evaluation of Zinc efficient genotypes of Groundnut**: In a zinc deficient soil, among the three genotypes of groundnut (CO 7, VRI 8 and Dharani) studied, CO 7 recorded significantly higher pod (2740 kg ha^{-1}), kernel (1976 kg ha^{-1}), and haulm yield (3298 kg ha^{-1}), zinc uptake (227.7 g ha^{-1}), apparent Zn recovery (3.2 g Zn uptake per kg Zn applied) and B:C ratio (2.38) when Zn was applied @ 5 kg ha^{-1} ($ZnSO_4$ @ 25 kg ha^{-1}) along with recommended dose of NPK. Next to CO 7, VRI 8 and Dharani performed better as Zn efficient genotypes.

- **Permanent Manurial Experiment (PME) on Rainfed Groundnut and Cold Weather Sesame :** In the 30 years old permanent manurial experiment on rainfed Groundnut and cold weather gingelly at ORS, Tindivanam, results revealed that the INM package *i.e*. application of 100% NPK (10: 10: 45 kg ha^{-1}) + FYM@12.5 t ha^{-1} + herbicide application for rainfed groundnut (kharif) and FYM @ 12.5 t ha^{-1} + 100% NPK (23: 13: 13 kg ha^{-1}) for cold weather gingelly (rabi) along with herbicide application could be recommended for sustainable soil health and yield. It is superior than other treatments with either organic or inorganics alone and was comparable with the treatment which received 100% NPK + FYM @12.5 t ha^{-1} followed by 100% N + Enriched FYM with optimum P & K. Further, over 3 decades the changes in soil fertility were: (i) INM recorded higher SOC 7.2 g kg^{-1} (initial SOC 3.5 g kg^{-1}), SOC stock of 9.24 Mg C ha^{-1} and sequestered 308.2 kg ha^{-1} yr^{-1}; (ii) positive nutrient balance was observed in INM and balanced nutrient practices (Initial available NPK: 153 :16.2: 124 kg ha^{-1}); (iii) N alone has reduced the yield of Sesame (-16.9 %) and Groundnut (-21.4 %) over 100 % NPK.

- **Zinc solubilizing bacteria as bioinoculant for Groundnut:** Application of Zinc solubilising bacteria @ 1 kg ha^{-1} as seed treatment and 2 kg ha^{-1} for soil application along with $ZnSO_4$ @ 12.5 kg ha^{-1} with STCR based fertilizer recommendation recorded maximum number of pods $plant^{-1}$ (18.11) and pod yield with 1893 kg ha^{-1} (7.5% increase over NPK alone) with BCR of 1.89.

ACTION PLAN PROJECTS

New Action Plan Projects for 2021 -2022

Action Plan 1:Iron Management Strategies for groundnut in calcareous soil

Project Period : 1 Year (2021-2022)

Objectives

- To study the response of groundnut to chemical and biological approaches of iron management

Treatment Details

Factor I

T_1 - NPK alone (STCR)

T_2 - T_1+Ferrous sulphate @ 12.5 kg ha^{-1} + 12.5 t ha^{-1} FYM

T_3 - T_1+Ferrous sulphate @ 25 kg ha^{-1} + 12.5 t ha^{-1} FYM

T_4 - T_1+Ferrous sulphate @ 37.5 kg ha^{-1} + 12.5 t ha^{-1} FYM

T_5 - T_1+ Ferrous sulphate @ 50 kg ha^{-1} + 12.5 t ha^{-1} FYM

T_6 - T_1+ Ferrous sulphate 1% + 0. 1 % CA at vegetative, flowering and pegging stages

T_7 - T_1+ Ferrous sulphate 1% + 0. 1% CA at flowering and pegging stages

Factor II

B_1 - Control (No Siderophore Producing Bacteria)

B_2 - Siderophore Producing Bacteria - seed treatment + soil application @ 500 g ha^{-1}

Design : RBD

Replication : Three

Lead centre: **Dept. of SS&AC, TNAU, CBE**

Dr. S. Meena
Professor (SS &AC)
Dr. S. Karthikeyan
Professor (Agricultural Microbiology)
Dept. of REE, AEC & RI, TNAU, Coimbatore

Coordinating Centre : AC & RI, Vazhavachanur

Dr. V. Arunkumar
Asst. Prof. (SS &AC)

Observations to be recorded

- Pod yield,
- Harvest index
- Available iron in soil &Active iron
- Iron content and uptake
- Iron efficiency
- Protein content in kernel
- Oil yield
- Economics

Action Plan 2:

Assessment of quality parameters of TNAU Sesame varieties and Land races

Project Period : 1 Year (2021-2022)

Objective:

To evaluate the nutritional, fatty acid and phytochemicals of TNAU sesame varieties and landraces.

Sesame varieties to be studied:

TMV 1 , TMV 2, TMV 3, TMV 4, TMV 5, TMV 6, TMV 7, CO 1, VRI (Sv 1), VRI (Sv 2), VRI 3, Paiyur 1 & Land races

Analysis

- Proximate analysis (protein, carbohydrates)
- Ultimate analysis (Major and micronutrients)
- Oil content
- Fatty acid profiling
- Omega 6 - Omega 3 ratio
- Flavinoids
- Phenols
- Antioxidant ligans : Tocopherol, Sesamin, Sesamol, sesamolin

Scientists involved

Dept.of SS&AC, DNRM, Coimbatore

Dr. S.Meena, Professor (SS&AC)
Dr. M.R.Latha , Assoc. Professor (SS&AC)

Dept.of Bio Chemistry, CPMB, Coimbatore

Dr. D. Uma, Professor and Head (Biochem.)

REMARKS FOR THE ONGOING RESEARCH PROJECTS REVIEWED

List of projects reviewed

S.No	Projects	Groundnut	Sesame	Sunflower	Castor	Total
1.	Soil Science & Agrl. Chemistry	4	1	-	-	5
2.	Agrl. Microbiology	1	1	-	-	2
	Total	5	2	-	-	7

S. No	Project No. & Title	Coordinating scientist	Duration	Remarks
GROUNDNUT				
UNIVERSITY RESEARCH PROJECTS				
SOIL SCIENCE AND AGRICULTURAL CHEMISTRY				
1.	NRM/TVM/SAC/PMT/IS/001. Permanent Manurial Experiment (PME) on Rainfed Groundnut and Cold weather Gingelly	Dr.P.G.Lavanya Professor (SS&AC)	July.2020 - June 2025	• To be continued • Given for information • Compendium on the research findings from the project has to be prepared for the release during TNAU Golden Jubilee Celebrations.
2.	NRM/CBE/SAC/GNT/2019/00 1. Studies on the direct and residual effect of sulphur levels and sulphur oxidizing bacteria on yield and biochemical composition of groundnut-onion and groundnut-blackgram cropping sequence.	Dr.M.R.Latha, Assoc.Prof. (SS&AC)	May, 2019 - April, 2022	• To be continued • Sulphur fractions are to be analysed in the pre and post-harvest soil samples.
Agricultural Microbiology				
1.	**New :** Evaluation of Zinc solubilizing bacteria as bioinoculant for Groundnut and Sesame	Dr.E. Jamuna Asst. Prof. (Agricultural Microbiology)	November, 2020 - June, 2023	• To be continued • One soil scientist may be involved and analysis of available Zn has to be carried out in pre and post-harvest soil samples. • Zinc use efficiency may be studied. • 75 % of recommended $ZnSO_4$ may be

				included as one of the treatment in the schedule.
SESAME				
UNIVERSITY RESEARCH PROJECTS				
SOIL SCIENCE AND AGRICULTURAL CHEMISTRY				
1.	**NRM/CBE/SAC/BSP/2020/** 001 (Action Plan 2020-2022) Refining sulphur recommendation for yield maximization in sesame under sesame – greengram / blackgram cropping Sequence	Dr.M.R.Backiyavathy, Professor (SS&AC), TNAU, Cbe Dr.P.G.Lavanya Professor (SS&AC) ORS, Tindivanam Dr. K. SathiyaBama, Assoc. Professor (SS&AC) TRRI, Aduthurai Dr.M. Baskar Assoc.Professor (SS&AC), IoA, Kumulur	September, 2020 - August, 2022	• To be continued • In the pre and post-harvest soil samples soil sulphur fractions is to be analysed. • The second crop of the sequence, Black gram /Green gram has to be taken up ontime, after harvest of the first crop.
Agricultural Microbiology				
1.	**New :**Studies on the isolation of elite sulphur oxidising bacteria and its effect on the yield and quality of sesame in rice fallow system.	Dr.E. Jamuna Asst. Prof. (Agricultural Microbiology)	November, 2020 - June, 2023	• Comparison studies with existing cultures of SOB may be carried out before going to field evaluation.
Externally funded projects				
1	DST/NRM/CBE/SSAC/2018/ R007 Screening Iron Efficient Groundnut Genotypes and Assessing Contribution of Microbial Siderophores in a Calcareous Soil using Iron -59 Radiotracer	Dr. S. Meena Professor (SS&AC) Dr. S.Karthikeyan Professor (AGM)	April, 2018 - September, 2021	• Given for information • Action plan may be proposed • Completion report may be submitted.
2.	DST / NRM / CBE / SSAC / 2018 / R008: GOI-DST: Understanding and exploiting genotypic variation in groundnut for selecting zinc efficient cultivars for soils of low zinc status	Dr.K.Radhika DST -WOS -A Dr. S.Meena Professor (SS&AC) (Mentor)	April, 2018 - October, 2021	• Given for information • Project work may be completed as per schedule and completion report may be submitted.

2. SEED CENTRE

The 40thCrop Scientists Meet on Oilseeds 2021 was held on 23rdApril 2021 at Tamil Nadu Agricultural University, Coimbatore by online mode through Zoom webinar. Action taken on the recommendations of 39thCSM on Oilseeds-2020, research highlights of 2020-2021 and action plan for 2020-2021 pertaining to Seed Science and Technology were presented by the Director, Seed Centre. The session was chaired by the Hon'ble Vice-Chancellor and co-chaired by the Director of Research, TNAU, Coimbatore.

2.1 Technologies for adoption/OFT/ information

I. Technologies for information

1. Development of e-nose sensor for quick detection of seed quality

The volatile compounds of ethanol, acetaldehyde, 1, 2-ethanediol, hexanal and acetic acid, were found to be the most closely associated VOCs with seed deterioration and these components may be considered as the signature components for detecting the viability during storage in sunflower.

2. Influence of mechanical harvester and strippers on seed quality in groundnut

The groundnut variety BSR 2, pods harvested by both manual and machine followed by manual stripping recorded higher germination (80%); whereas, the pods stripped by strippers in both the harvest methods recorded lower germination (75%).There was no significant difference in mechanical damage of pods due to manual and mechanical harvest. The benefit cost ratio was 1.67 by machine and 1.48 by manual method.

2.2. ACTION PLAN PROJECTS

Action Plan 1

Development of e-nose sensor for quick detection of seed quality

Objectives:

To develop e-nose sensor for quick deterioration of seed quality.

Crop : Sunflower and Groundnut

Centre : TNAU, Coimbatore

Dr.S.Sundareswaran,
Director, Seed Centre
Dr.K.S.Subramanian,
Director of Research
Dr.K.Raja,
Assistant Professor (SST)

Duration : Three Years (2019-2022)

Observations to be recorded

- VOC profiling.

List of projects received

S.No	Projects	Groundnut	Sesame	Sunflower	Castor	Total
1.	Seed Science & Technology	7	-	1	1	9
	Total	7	-	1	1	9

2.3. REMARKS ON THE ONGOING PROJECTS REVIEWED

S.No.	Project No. & Title	Coordinating scientist	Duration	Remarks
ACTION PLAN PROJECTS (2020-21)				
1	Development of e-nose sensor for quick detection of seed quality	Dr.S.Sundareswaran Director, Seed Centre Dr.K.S.Subramanian Director of Research Dr.K.Raja Asst. Prof.(SST)	2019 - 2022	The project may be continued.
UNIVERSITY RESEARCH PROJECTS				
1	SEC/BSR/SST/GNT/2019/001 Influence of mechanical harvester and strippers on seed quality and storability of groundnut seed	Dr.R.Jegathambal Professor (SST)	December 2019 to November 2021	The project may be continued.
2	SEC/CBE/SST/GNT/2020/001 Seed storability of groundnut under Ultra-dry storage	Dr.K.Raja Assoc. Prof. (SST)	April 2020 to March 2022	The project may be continued.
3	SEC/TRY/SST/GNT/2021/001 Development of FTIR based methodology to determine the quality of groundnut seeds during storage	Dr.T.Eevera Asst. Prof. (SST)	October 2020 to August 2022	The project may be continued.
4	SEC/BSR/SST/2020/001 Seed yield maximization studies in castor hybrid YRCH 2	Dr.V.Vakeswaran Asst. Prof. (SST)	September 2020 to April 2022	The project may be continued.
5	SEC/VVR/SST/GNT/2020/001 Drill box survey of groundnut in Thiruvannamalai District	Dr.V.Paramasivam Professor (SST)	June 2020 to May 2022	The project may be continued.
6	SEC/TVM/SST/GNT/2020/001 Studies on prevention of in-situ germination in groundnut var. VRI 8	Dr.J.Yogalakshmi Asst. Prof. (SST)	April 2020 to December 2022	The project may be continued.

CORE PROJECT				
1	SEC/CBE/SST/GNT/2018/CP141 Studies on fatty acid profile and their influence on seed storability of groundnut varieties	Dr.P.R.Renganayaki Professor and Head	February 2019 to January 2021	The project maybeclosed and completion report may be submitted.
EXTERNALLY FUNDED PROJECT				
1	PPV/SC/CBE/SST/2003/R001 DUS test for Rice and Sunflower under PPV & FR Authority	Dr.P.R.Renganayaki Professor and Head Dr.R.Vigneshwari Asst. Prof. (SST)	13.02.2004 to 31.03.2021 (Annually continued)	Theprojectmaybe continued.
STUDENT THESIS				
1	Assessing seed ageing through volatile compound analysis in sunflower (*Helianthus annus* L.)	Student G.Meenakshi 2018601811 Chairman Dr.K.Raja Asst. Prof. (SST) Department of Nano Science and Technology, TNAU, CBE - 3	2020-2021	Thesis was submitted.
2	Effect of crop management techniques to maximize seed yield and yield attributes of sesame cv. VRI2 & VRI3	Student K.N.Vinoth 2018601807 Chairman Dr.K.Sasikala Professor (SST) Institute of Agriculture, Kumulur-621 712	2020-2021	Thesis was submitted.

3.CROP PROTECTION

The review of the University Research Projects pertaining to crop protection in oilseeds was conducted on 23rd April 2021 at Tamil Nadu Agricultural University, Coimbatore through online mode in Zoom webinar.

A. TECHNOLOGY FOR ADOPTION /OFT / INFORMATION

I. For Adoption

1. IPM capsule for leaf miner management in groundnut

IPM module (Application of neem cake @ 250 kg/ha; Installation of light trap @ 1/ha; monitoring with pheromone trap @12/ha; *Metarhizium anisopliae* @ 4g/lit (CFU 10^8 / ml); Cumbu as intercrop (6:1) & cowpea as border crop; Azadirachtin 1% @ 1.5 ml/lit; Need based application of Novaluron 10 EC @ 2 ml / lit.) registered the lowest leaf miner damage (3.52%) and larval population (0.18/leaf) compared to farmers practice (4.88% & 0.38/leaf) and control plots (10.07% & 0.78/leaf) with the highest pod (1650.58 Kg/ha), haulm yield (2083.20 Kg/ha) and BC ratio of 1:2.01

II. For On Farm Testing

OFT 1: Management of sesame pests through border crops and organic amendment

Treatments:

T1: Sesame + maize as border crop (3 rows closely sown)+ neem cake @ 250 kg/ha

T2: Sesame + sorghum as border crop (3 rows closely sown)+ neem cake @ 250 kg/ha

T3: Untreated check (Sesame alone)

Variety	Sesame -popular variety
Season	*kharif* 2021 and *rabi* 2021-22 (Two trials)
Replication	Seven
Lead centre	RRS, Vriddhachalam

Centres		Scientist identified
AC & RI, VVNR (MS)*	:	Y. S. Johnson Edward Thangaraj, Professor (Entomology) Dr. P. Deivamani, Asst. Professor (Pl. Pathology)
AC & RI, ECK	:	Dr. M. Kalyanasundaram, Assoc. Professor(Entomology) Dr. Yamunarani, Asst. Professor (Pl. Pathology)
IOA, KMR	:	Dr. W. Baby Rani, Professor (Entomology) Dr. P. Mahalakshmi, Asst. Professor (Plant Pathology)
RRS, VRI	:	Dr. L. Allwin, Asst. Professor (Entomology) Dr. A. Sangeetha, Asst. Professor (Pl. Pathology)
ADAC&RI, TRY	:	Dr. Sheeba Joyce Rosleen, Asst. Profesor (Entomology) Dr. T. Saravanan, Asst. Professor (Pl. Pathology)

* Monitoring Scientist

Observation to be recorded

- Pest population, Damage (%), Phyllody incidence,
- Natural enemies population in main and border crop
- Pest defender ratio (PDR)
- Yield and BCR

OFT 2: Management of foliar diseases of groundnut
Treatments

T1: Seed treatment with *Trichoderma asperellum*@4 g/kg + foliar spray of tebuconazole 50% + trifloxystobin 25% WG @ 1.32 g/L (0.035%) at 40 and 65 DAS
T2:Seed treatment with *T. asperellum* @ 4 g/kg + foliar spray of carbendazim 12% + mancozeb 63% @ 2 g/L at 40 and 65 DAS
T3: Farmers' Practice
T4: Control

Season: Kharif and Rabi; Variety: VRI 2 Design: RBD
Spacing: 30 x 10 cm; Plot size: 5x4 m; Replications: 6

Observations to be recorded

1. Early and late leaf spot (PDI), rust (PDI) and all foliar and soil borne diseases
2. Pod yield (kg/ha) and haulm yield (kg/ha)
3. CB Ratio

Centres involved

Co-ordinating centre: RRS, Vriddhachalam
(Dr. G. Senthilraja, Asst. Professor (Plant Pathology))

Centre	Scientists identified
RRS, Vriddhachalam	Dr. G. Senthilraja, Asst. Professor (Plant Pathology)
KVK, Tindivanam	Dr. S. Thangeshwari, Asst. Professor (Plant Pathology)
Department of Oilseeds, TNAU, Coimbatore	Dr. L. Rajendran, Asst. Professor (Plant Pathology)
CRS, Aliyarnagar	Dr. B. Meena, Assoc. Professor (Plant Pathology)

OFT 3: Biological management of root rot of sesame

Treatments
T1: Soil application of *Trichoderma asperellum* (2.5kg/ha) mixed with FYM @150kg/ha and VAM @ 10kg/ha as basal application
T2: Soil drenching with carbendazim @1g/lit at 30 DAS
T3: Farmers' Practice
T4: Control

Season: Kharif and Rabi; Variety: VRI 2
Replications: 6, Design: RBD; Plot size: 5x4 m

Observations to be recorded

1. Root rot incidence (%)
2. Population of *Trichoderma* and VAM at monthly interval

3. Seed yield (kg/ha)
4. CB Ratio

Centres involved

Co-ordinating centre: RRS, Vriddhachalam

(Dr. A. Sangeetha, Asst. Professor (Plant Pathology))

Centre	Scientists identified
RRS, Vriddhachalam	Dr. A. Sangeetha, Asst. Professor (Plant Pathology)
KVK, Tindivanam	Dr. S. Thangeshwari, Asst. Professor (Plant Pathology)
IOA, Kumulur	Dr. P. Mahalakshmi, Asst. Professor (Plant Pathology)
CRS, Aliyarnagar	Dr. B. Meena, Assoc. Professor (Plant Pathology)

OFT 4: Effect of bacterial antagonists and VAM for the management of leaf blight and root rot of sesame

Treatments

T1: Seed treatment with *Bacillus subtilis* (TNAU-Bs1) @ 20 ml /kg + soil application of VAM @ 50 kg/ha 15 DAS + Foliar application of liquid formulation of *Bacillus amyloliquefaciens* (TNAU-PP-CC-B-0171) @0.75% on 45 DAS

T2: Seed treatment with carbendazim @ 2 g/kg + soil drenching with carbendazim @ 1 g/l 15 DAS + foliar application of mancozeb @ 1 kg/ha 45 DAS

T3: Farmers' Practice

T4: Control

Season: Kharif and Rabi; Variety: CO 1; Replications: 6, Design: RBD; Plot size: 5x4 m

Observations to be recorded

1. Incidence of root rot (%) and leaf blight (PDI)
2. Population of *Bacillus* and VAM at monthly interval
3. Seed yield (kg/ha)
4. CB ratio

Centres involved

Co-ordinating centre: Dept. of Plant Pathology, TNAU, Coimbatore

(Dr. M. Muthamilan, Professor (Plant Pathology))

Centres	Scientists identified
Dept. of Plant Pathology, TNAU, Coimbatore	Dr. M. Muthamilan, Professor (Plant Pathology)
KVK, Tindivanam	Dr. S. Thangeshwari, Asst. Professor (Plant Pathology)
RRS, Vriddhachalam	Dr. A. Sangeetha, Asst. Professor (Plant Pathology)
CRS, Aliyarnagar	Dr. B. Meena, Assoc. Professor (Plant Pathology)

OFT 5: IDM for major diseases of sunflower

Treatments

T1: Seed treatment with salicylic acid @100 ppm, neem oil @3% during 30 DAS, foliar spray of zineb + hexaconazole @ 2.5g/lit during 45 and 60 DAS

T2: Seed treatment with imidacloprid 70WS @ 2g/kg seed + two sprays of mancozeb @ 1kg/ha during 45 and 60 DAS

T3: Farmers' Practice

T4: Control

Season: Kharif and Rabi; Plot size: 4 x 3m; Variety/Hybrid: TNAU Sunflower Hybrid CO 2; Replications: 6; Design: RBD

Observations to be recorded

1. Germination percentage
2. Incidence of stem necrosis (%), leaf spot (PDI), powdery mildew (PDI)
3. Yield(kg/ha)
4. CB ratio

Centres involved

Co-ordinating centre: Dept. of Oilseeds, TNAU, Coimbatore **(**Dr. L. Rajendran, Asst. Professor (Plant Pathology))

Centre	Scientists identified
Dept. of Oilseeds, TNAU, Coimbatore	Dr. L. Rajendran, Asst. Professor (Plant Pathology)
RRS, Vriddhachalam	Dr. G. Senthilraja, Asst. Professor (Plant Pathology)
AC & RI, Killikulam	Dr. M. Paramasivan, Asst. Professor (Plant Pathology)
ADAC&RI, Trichy	Dr. T. Saravanan, Asst. Professor (Plant Pathology)

III. For information

A. Agricultural Entomology
Groundnut

- Out of ten MLT entries, MLT–GnSB 2021-03 and MLT–GnSB 2021-05 were found to be resistant and MLT– GnSB 2021-09 is moderately resistant to groundnut leaf hoppers
- Among 36 groundnut genotypes screened, VG 18002 was recorded as moderately resistant to groundnut bruchid, *Caryedon serratus.* Higher pod shell thickness, high phenol, low carbohydrate and protein content offered resistance against *Caryedon serratus*
- The groundnut thrips population collected from eight different locations were aligned to *Frankliniella schultzei* based on morphological features.

B. Plant Pathology
Groundnut

- Three wild *Arachis* species *viz*., *Arachis ipaensis*, *A. duranensis* and *A. monticola* were found to be resistant to late leaf spot, rust and root rot diseases. Biochemical analysis of resistance mechanism revealed that the wild species *viz*., *Arachis ipaensis*, *A. duranensis*, and *A. monticola* had expressed significantly higher amount of phenols, protein, tannin and less reducing sugars when compared to check VRI2
- Groundnut germplasms *viz*., VG19561 and VG19654 were found to be resistant against late leaf spot and rust diseases.
- The PGPR isolate GB 08 (*Pseudomonas putida*) showed highest inhibition of mycelial growth of groundnut pathogens, *Macrophomina phaseolina* (53.93%) and *Sclerotium rolfsii* (46.06%). Which also enhanced the shoot length, root length and vigour index of groundnut.
- Seed bacterial endophyte, *Pseudomonas* spp. (ENG1) was found to be effective against stem rot of groundnut under greenhouse conditions. Which enhanced the

total length of the root, tips and forks and increased the vigour index of groundnut seedlings.

- Antagonistic potential of four isolates of *Actinomycetes* were tested against the mycelial growth of *Sclerotium rolfsii*. Among them, isolate AG1 was highly effective in inhibiting the growth of the pathogen by 75.4% over control.

Sesame

- Sesame germplasm, MLT-SI-R-20-03 showed moderate resistant reaction to powdery mildew and *Alternaria* leaf blight diseases.
- Among the seaweeds *viz*., *Gracillaria* sp., *Sargassum* sp., *Caulerpa* sp., *Turbinaria* sp., *Kappaphycus* sp., and *Chaetomorpha* sp. tested, *Sargassum* sp. showed highest inhibition of mycelial growth of *Alternaria sesami*
- The phyllody like symptoms were recorded on sixteen different weed hosts *viz*., *Acalyphaindica, Acanthospermum hispidum, Alternanthera sessilis, Cardiospermum halicacabum, Cleome gynandra, Cleome monophyla, Cleome viscosa, Crotalaria juncea, Croton sparsiflorus, Eclipta alba, Euphorbia hirta, Leucas aspera, Merremia tridentate, Mollugo disticha, Phyllanthus niruri* and *Oldenlandia auricularia* in sesame ecosystem

Sunflower

- Sunflower germplasm, CSFH18284 showed moderate resistant reaction to necrosis, leaf spot and powdery mildew diseases
- Liquid formulation of *Ampelomyces quisqualis* (TNAU-AQ213) has been standardized for the management of sunflower powdery mildew.Glycerol 10% as additive was found to be effective for liquid formulation.

Castor

- Castor germplasms *viz*., 19014 and 19016 were found to be resistant against wilt disease.

B. ACTION PLAN PROJECTS

Action Plan 1. Monitoring pests and diseases of groundnut, sesame, castor and sunflower

a. Pests

Theme leaders	**Dr. E. Sumathi, Assoc. Professor (Entomology), Dept. of Agrl. Entomology, TNAU, Coimbatore**		
Activity	**Name of the Scientist(s) and Centre(s)**	Observations to be made	**Deliverables**
1. 744Monitoring the pests of oilseeds on regular and emerging pests. 2. Assessment of insect pests and natural enemies population *in situ* • Fixed and rowing survey in the district identified during specific crop season • On campus fixed plot study at weekly interval in identified	RRS, VRI Dr. C. Vijayaraghavan, Asst. Professor (Entomology) (Groundnut-Cuddalore, Villupuram and Kallakurichi Dts.) RRS, VRI Dr. L. Allwin, Asst. Professor (Entomology) (Sesamum- Cuddalore, Villupuram and Kallakurichi Dts.) KVK, VRM Dr. K. Sasikumar, Asst. Professor (Entomology) (Groundnut & Sesamum-Thiruvannamalai & Vellore Dts.) IOA, KMR Dr. W. Baby Rani, Professor (Entomology) (Groundnut & Sesamum-Perambalur & Ariyalur Dts.) CRS, ALR Dr. M. Alagar, Asst. Professor (Entomology) (Groundnut & Sesamum-Tiruppur Dt.) ARS, BSR Dr. K. Ganesan, Asst. Professor (Entomology) (Groundnut & Sesamum-Erode Dt.) AC&RI, KDM Dr. K. Chandramani, Professor (Entomology) (Sesamum & Groundut-Pudukottai & Thanjavur Dt)	Incidence of pest and diseases are to be monitored throughout the crop period during *kharif* and *rabi* Pest and disease incidence is to be correlated with weather parameters.	Forecasting seasonal occurrence of major insect pests/diseases

crops at VRI, CBE, KMR, BSR, ALR, VVNR, KDM by the identified Scientists Roving plot study at fortnightly interval by all the participating Scientists in the identified Centres	KVK, SGM Dr. Sheeba Jasmine, Asst. Professor (Entomology) (Groundnut, Sesamum & Sunflower-Trichy Dt.) TNAU, CBE Dr. E. Sumathi, Asst. Professor (Entomology) (Sunflower & Groundnut-Coimbatore & Namakkal Dts.) TCRS, YPR Dr. B. Geetha, Assoc. Professor (Entomology) (Castor, Groundnut, Sesamum-Salem Dt) KVK, RMD Dr. K. Elanchezhyan, Asst. Professor (Entomology) (Groundnut & Sesamum-Ramanathapuram Dt.) KVK, APK Dr. J. Ramkumar, Asst. Professor (Entomology) (Sesamum & Sunflower-Virudhunagar Dt.) AC&RI, MDU Dr. K. Suresh, Asst. Professor (Entomology) (Groundnut & Sesamum-Madurai Dt.)		

b. Diseases

Theme leader	**Dr. G. Senthilraja, Asst. Professor (Plant Pathology), RRS, Vriddhachalam and Dr. B. Meena, Assoc. Prof. (Pl. Path.), CRS, Aliyarnagar**		
Activity	**Name of the Scientist(s) and Centre(s) - Proposed**	**Observations to be made**	**Deliverables**
Monitoring the incidence of important pests and diseases through fixed and roving surveys.	**Groundnut** Dr. B. Meena, CRS, Aliyarnagar Dr. G. Senthilraja, RRS, Vriddhachalam	• Incidence of pest and diseases are to be monitored throughout the crop period during *kharif* and *rabi*/summer • Pest and disease incidence is to be correlated with weather parameters.	• Forecasting seasonal occurrence of major insect pests/diseases • Monitoring of invasive pests if, any?

	Sesame Dr. A. Sangeetha, RRS, Vriddhachalam **Castor** Dr. N. Indra, TCRS, Yethapur **Sunflower** Dr. L. Rajendran, Dept. of Oilseeds, TNAU, Coimbatore Dr. S. Kokilavani, ACRC, TNAU, Coimbatore		
A forewarning model for leaf spot and rust diseases of groundnut has to be developed	Dr. B. Meena, CRS, Aliyarnagar	• The available data on weather conditions and disease severities may be used	• A forewarning model will be available for revalidation

Action Plan 2. Identification of resistant sources and mechanisms of resistance for insect pests and diseases

a. Pests

Theme leader	**Dr. R. Vishnupriya, Professor (Entomology), Dept. of Agrl. Entomology, TNAU, Coimbatore**		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observations to be made**	**Deliverables**
Identification of resistant sources for defoliators, sucking pests	TNAU, CBE Dr. E. Sumathi, Asst Professor (Ento.) (Sunflower: to be done along with Pl. Pathologist working in Oilseeds in his experimental plot) RRS, VRI Dr. C. Vijayaraghavan, Asst Professor (Ento.) (Groundnut) RRS, VRI Dr. L. Allwin, Asst Professor (Ento.) (Sesame) CRS, ALR Dr. M. Alagar, Asst Professor (Ento.) (Groundnut) TCRS, YPR Dr. B. Geetha, Asst Professor (Ento.) (Castor)	❖ Screening of cultures in pipeline at research stations. ❖ Biochemical and molecular mechanisms of resistance Physical: Trichome length & density, leaf size & thickness, leaf colour Biochemical: phenols, protein, tannin, carbohydrate and reducing sugars, ❖ Confirmation of resistance in most promising entries through artificial screening	Mechanism of resistance explored in pre-release cultures anchor the release of new variety

b. Diseases

Theme leader	**Dr. A. Sangeetha, Asst. Professor (Plant Pathology), RRS, Vriddhachalam**		
Activity	**Name of the Scientist(s) and Centre(s) - Proposed**	**Proposed Activities for 2021-2022**	**Deliverables**
Identification of resistant sources for diseases in MLT / pipeline cultures of TNAU.	**Groundnut** Dr. G. Senthilraja, RRS, Vriddhachalam	• Cultures in pipeline in TNAU will be screened. • Biochemical and molecular	Mechanism of resistance explored in pre-release cultures anchor the

	Dr. B. Meena, CRS, Aliyarnagar **Sesame** Dr. A. Sangeetha, RRS, Vriddhachalam **Castor** Dr. N. Indra, TCRS, Yethapur **Sunflower** Dr. L. Rajendran, Dept. of Oilseeds, TNAU, Coimbatore	mechanisms of resistance will be studied **Observations** • Physical: Trichome length & density, leaf size & thickness, leaf colour • Biochemical: phenols, protein, tannin, carbohydrate and reducing sugars, • Confirmation of resistance in most promising entries through artificial screening.	release of new variety

Action plan 3. Management of castor capsule borer

Theme leader	**Dr. Y. S. Johnson Edward Thangaraj, Professor (Entomology), AC&RI, Vazhavachanur**		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observations to be recorded**	**Deliverables/ expected outcome**
Management of capsule borer in Castor *Kharif*&*Rabi* season Hybrid: YRCH 1 Treatments T1 - IPM capsule • Intercropping with cowpea / Blackgram Application of azadirachtin 1% @1.5ml/lit as prophylactic (75 DAS) + of *Beauvaria bassiana* 2.5 kg/ha at 1 week interval sequentially • Application of chlorantraniliprole @ 0.3ml/lit at 10% capsule damage, proper agronomic practice T2 – Farmer's practice T3 – Control	AC & RI, VVNR Dr. Y. S. Johnson Thangaraj Edward, Professor (Entomology) TCRS, YPR Dr. B. Geetha, Assoc. Professor (Entomology) RRS, VRI Dr. L. Allwin, Asst. Professor (Entomology) KVK, VRM Dr. K. Sasikumar, Asst. Professor (Entomology)	Capsule borer Damage (%), Natural enemies population, yield and BCR	• Effective management strategy will be evolved for castor capsule borer

Replication: 7			

Action Plan 4. Management of white fly and leafhopper in castor

Theme leader	**Dr. B. Geetha, Assoc. Professor (Ento.), TCRS, Yethapur**		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observations to be recorded**	**Deliverables/ expected outcome**
Development of IPM method for castor whitefly and leafhopper *Rabi* season cultivar - YRCH1 T1- IPM capsule • Border crop – Okra • Installation of yellow sticky trap (25/ha) • Application of azadirachtin1% @1.5ml/lit • Application of cyantraniliprole 10.3% D @ 1ml/lit when population exceeds grade 1 (101 to 200 pupae/leaf) T2- Farmer's practice T3 – Control Replication: 7	TCRS, YPR Dr. B. Geetha, Assoc. Professor (Entomology) (Salem, Dharmapuri/Krishnagiri: Each location one trial) RRS, VRI Dr. C. Vijayaraghavan,Asst. Professor (Entomology) (Villupuram, Ariyalur/Perambalur: Each location one trial) Dr. L. Allwin, Asst. Professor (Entomology) (Cuddalore, Thiruvannamalai/Vellore: : Each location one trial)	Whitefly and leafhopper population, Damage (%) and grade, Natural enemies population, yield and BCR	Effective management practices for castor whitefly and leafhopper

Action Plan 5. IPM capsule for managing major insect pests of sunflower

Theme leader	**Dr. S. Jeyarajan Nelson, Professor (Entomology), Dept. of Agrl. Entomology, TNAU, Coimbatore**		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observation to be recorded**	**Deliverables/ expected outcome**

Integrated pest management strategy for sunflower pest Treatment T1- IPM capsule Soil application of neem cake @ 250 kg/ha, Seed treatment with thiamethoxam (4gm/kg), Need based application of systemic insecticides (30DAS), Need based application of Flubendiamide (0.4 ml/lit) at capitulam formation T2 – Farmer's practice T3 - Control	TNAU, CBE Dr. S. Jeyarajan Nelson, Professor (Entomology) AC&RI, KKM Dr. Abdul Razak, Professor (Entomology) AC&RI, MDU Dr. G. Srinivasan, Assoc. Professor (Entomology) ADAC & RI, TRY Dr. Sheeba Joyce Rosleen, Asst. Professor (Entomology)	Sucking and borer pest population, Damage (%), Natural enemies population, yield and BCR	Effective management strategy will be evolved for sunflower insect pest

Action Plan 6. Documentation of species complex of leafhopper transmitting sesame phyllody

Theme leader	**Dr.M.Murugan , Professor (Ento.), TNAU, Coimbatore**		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observation to be recorded**	**Deliverables/ expected outcome**
Identifying the species complex of leafhopper responsible for sesame phyllody transmission by Entomologist Confirmation of phyllody disease by Plant Pathologist Molecular characterization of vector and disease by both the discipline Scientists	TNAU, CBE Dr. M. Murugan, Professor (Ento.) Dr. L. Karthiba, Asst. Professor (Pl. Path.) RRS, VRI Dr. L. Allwin, Asst. Professor (Ento.) Dr. A. Sangeetha, Asst. Professor (Pl. Path.) AC&RI, KDM Dr. R. Nalini, Professor (Entomology) Dr. Vijayasamundeeswari, Asst. Professor (Pl. Path.)	Documentation of species complex of leafhopper	Effective management strategy will be evolved for vector and phyllody disease of sesame

	ADAC&RI, TRY Dr. Sheeba Joyce Rosleen, Asst. Professor (Entomology) Dr. V. K. Satya, Asst. Professor (Pl. Path.)		

Action Plan 7. Integrated disease management in sesame

Theme leader	**Dr. A. Sangeetha, Asst. Professor (Pl. Path), RRS, Vriddhachalam**		
Activity	**Name of the Scientist(s) and Centre(s)**	**Observation to be recorded**	**Deliverables/ expected outcome**
Integrated disease management of sesame Activity T1 – ST with *Trichoderma asperellum* @ 4g/kg + FS of propiconazole @ 1 g/l on 30 & 45 DAS T2 – ST-*T. asperellum* 4g/kg + FS of Thiamethoxam 25 WG @ 0.5 g/l on 30 DAS + FS of propiconazole @ 1 g/l on 45 DAS T3 – ST- *Bacillus subtilis* 10g/kg + FS of propiconazole @ 1 g/l on 30 & 45 DAS T4 – ST- *B. subtilis* 10g/kg + FS of Thiamethoxam 25 WG @ 0.5 g/l on 30 DAS + FS of propiconazole @ 1 g/l on 45 DAS T5 – ST - Thiamethoxam 30FS @ 5 g/kg + FS of chlorpyriphos 20 EC @ 2ml/l or dimethoate 30 EC @ 2ml /l on 30 DAS + FS of propiconazole @ 1 g/l on 45 DAS T6 – Control	RRS, VRI Dr. A. Sangeetha, Asst. Professor (Pl. Pathology), Dr. L. Allwin, Asst. Professor (Entomology) CRS, Aliyarnagar Dr. B. Meena, Assoc. Prof. (Pl. Path.) Dr. M. Alagar, Asst. Prof (Ag. Ento)	Effect of bioagents, fungicides and insecticides will be evaluated against major diseases of sesame Observations: • Root rot incidence • Phyllody incidence and vector population • Leaf spot disease intensity • Powdery mildew disease intensity • Seed yield& BC ratio	Effective management strategy will be evolved for major diseases of sesame

Action Plan 8. Bio-intensive management of soil-borne diseases of groundnut by *Actinomycetes*

Theme leader	**Dr. S. Thangeshwari, Asst. Professor (Plant Pathology), KVK, Tindivanam**		
Activity	**Name of the Scientist(s) and Centre(s) - Proposed**	**Proposed Activities for 2021-2022**	**Deliverables**
Bio-intensive management of soil-borne diseases of groundnut by *Actinomycetes*	Dr. S. Thangeshwari, Asst. Prof (Pl.Path.), KVK, Tindivanam	Isolation, characterization, formulation development and evaluation of talc based formulation of *Actinomycetes* against soil-borne diseases of groundnut **Observations**: 1. Germination percentage 2. Nodule and root length 3. Disease incidence (dry root rot, stem rot and collar rot etc.,) 4. Plant biomass 5. Pod yield	Effective management strategy will be evolved for soilborne diseases of groundnut

Action Plan 9. Bio-management strategy for powdery mildew disease of sunflower and sesame

Theme leader	**Dr. A. Sangeetha, Assistant Professor (Pl. Path), RRS, Vriddhachalam**		
Activity	**Name of the Scientist(s) and Centre(s) - Proposed**	**Proposed Activities for 2021-2022**	**Deliverables**
Biological management of powdery mildew in sunflower and sesame using *Ampelomyces* spp	**RRS,Vriddhachalam** Dr. A. Sangeetha, Asst. Prof (Pl. Path.) **TNAU, Coimbatore** Dr. L. Rajendran, Asst. Prof (Pl. Path.)	Isolation, characterization, *in vitro* efficacy and formulation development, field evaluation of *Ampelomyces* spp. **Work to be done** 1. Isolation and characterization of *Ampelomyces* 2. *In vitro* efficacy against powdery mildew of sunflower and sesame 3. Formulation development and greenhouse and field testing	Eco-friendly management strategy will be evolved for sunflower and sesame powdery mildew

Action Plan 10. Eco-friendly management of rust disease in groundnut

Theme leader	**Dr. G. Senthilraja, Asst. Professor (Plant Pathology), RRS, Vriddhachalam**		
Activity	**Name of the Scientist(s) and Centre(s) - Proposed**	**Proposed Activities for 2021-2022**	**Deliverables**
Eco-friendly management of rust disease in groundnut using Mycoparasitic fungus *Sphaerellopsis* spp.	**RRS,Vriddhachalam** Dr. G. Senthilraja, Asst. Prof (Pl. Path.) **CRS, Aliyarnagar** Dr. B. Meena, Assoc Prof (Pl. Path)	Isolation, characterization, *in vitro* efficacy and formulation development, field evaluation of *Sphaerellopsis* spp. **Work to be done** 1. Isolation and characterization of *Sphaerellopsis* 2. *In vitro* efficacy against rust pathogen 3. Formulation development and greenhouse and field testing	Effective management strategy will be evolved for groundnut rust disease.

Action Plan 11 . Management of *Botryotinia* grey mold in castor

Theme leader	**Dr. N. Indra, Asst. Professor (Pl. Path), TCRS, Yethapur**		
Activity	**Name of the Scientist(s) and Centre(s) - Proposed**	**Proposed Activities for 2021-2022**	**Deliverables**
Development of suitable management practices for the control of *Botryotinia ricini* in castor	**TCRS, Yethapur** Dr. N. Indra, Asst. Prof (Pl. Path.)	Confirmation field trial will be carried out. **Observations**: 1.Disease incidence 2.Seed yield 3. CB ratio	Effective management strategy will be evolved for grey mold in castor.

C. RESEARCH PROJECTS AND REMARKS

List of URP/AICRP/ERP

Discipline	URP	AICRP	Total
Agricultural Entomology	3	3	6
Plant Pathology	9	5	14

1. AGRICULTURAL ENTOMOLOGY

a. University Research Projects

Sl. No	Project No. and Title	Remarks
1.	**CPPS/KDM/ENT/GNT/2020/001** "Effect of water stress on the above-below ground herbivore interactions and natural enemies' performance in Groundnut ecosystem." (2020 - 2023) Dr.R.Nalini Professor and Head DCP,AC&RI, Kudumiyanmalai Dr.I.Cannayane Asst. Professor (Nematology) KVK, Vamban	• The project may be continued
2.	**CPPS/VRI/ENT/GNT/2020/001:** Screening of wild Arachis Species for resistance against insect pests and diseases (2020-2023) Dr.C.Vijayaraghavan, Assistant Professor (Agrl. Entomology) Dr.G.Senthilraja Assistant Professor (Plant Pathology) RRS, VRI	• The project may be continued
3.	**CPPS/YTP/PAT/CAS/2020/001** Evaluation of Biological and Chemical Management practices for Botryotinia Grey mold and Capsule borer in Castor (2020-2021) Dr.N.Indra, Assistant Professor (Plant Pathology) Dr.B.Geetha, Assoc. Professor (Agrl. Entomology) TCRS, Yethapur	• The project may be continued

2. Plant Pathology

a. University Research Projects

Sl. No	Project no and Title	Project Leader	Duration	Remarks
Groundnut				
1.	CPPS/VRI/PAT/GNT/2020/001 Management of groundnut foliar diseases through integrated approach	Dr. K. Karunanithi Professor (Plant Pathology), RRS,Vriddhachalam	July 2019 to June 2021	Completion report has to be submitted on or before 30.06.2021.
2.	CPPS/ALR/PAT/GNT/2020/001 Integration of bio agent and fungicides for the management of foliar diseases of groundnut and study of mechanism of ISR	Dr. B. Meena Associate Professor (Plant Pathology), CRS, Aliyarnagar	September 2020 to August 2023	The research may be intensified in order to get technology for adoption. An interim report may be submitted to the Director, CPPS. The project to be continued.
3.	CPPS/CTN/PAT/GNT/2020/001 Organic amendment and biocides for the management of soil borne diseases of groundnut under rainfed conditions	Dr. M. Paramasivan, Assistant Professor (Plant Pathology), AC&RI, Killikulam	April 2020 to March 2023	The project to be continued
4.	CPPS/VRI/ENT/GNT/2020/001 Screening of wild *Arachis* species for resistance against insect pests and diseases	Dr. G. Senthilraja Assistant Professor (Plant Pathology), RRS,Vriddhachalam	June 2020 to May 2023	The wild species may be tested for all the diseases under artificial conditions. The mechanism of resistance may be explored in detail at molecular level. The project to be continued
Sesame				
5.	CPPS/KUM/PAT/2021/001. Seaweeds and bio agents as integrated biocide treatments for controlling Root rot, *Alternaria* leaf spot and powdery mildew in sesame	Dr. P. Mahalakshmi, Assistant Professor (Plant Pathology), IOA, Kumulur	June 2020 - May 2023	The project to be continued
6.	CPPS/CBE/PAT/SES/2017/001 Effect of liquid formulation of *Pseudomonas fluorescens* and *Bacillus amyloliquefaciens*on the management of leaf blight and charcoal rot of sesame (*Sesamum*	Dr. M. Muthamilan Professor Department of Plant Pathology, TNAU, Coimbatore	April 2017 to March 2020	Completion report has to be submitted on or before 30.06.2021 and a new URP may be proposed based on the theme area on or before

	indicum L.)			30.06.2021
7.	CPPS/CBE/PAT/SES/2019/001 Studies on seed borne fungi in sesame	Dr. T. Anand, Assistant Professor (Plant Pathology), Seed Centre, TNAU, Coimbatore	September 2019 to August 2022	The routine identification of seed borne pathogens may not be enough. The scientist may concentrate on prevention of seed borne inocula and its management. The project to be continued
Sunflower				
8.	CPPS/CBE/PAT/SNF/2018/001 Effect of *Ampelomycesquisqualis* on the management of sunflower powdery mildew caused by *Golovinomycescichoracearum*	Dr. L. Rajendran, Assistant Professor (Plant Pathology), Department of Plant Pathology, TNAU, Coimbatore	April 2018 to March 2021	The extension proposal may be submitted immediately. A new URP may be proposed based on the theme area on or before 30.06.2021
Castor				
9.	CPPS/YTP/PAT/CAS/2020/001 Evaluation of Biological and Chemical Management practices for *Botryotinia Grey*mold and Capsule borer in Castor	Dr. N. Indra, Assistant Professor (Plant Pathology) TCRS, Yethapur	August 2020 to July 2023	Proposal may be submitted for mid-term correction on or before 30.06.2021to exclude the capsule borer part.

b. AICRP Projects

S.N	Project no and Title	Project Leader	Duration	Remarks
Groundnut				
1.	AICRP/PBG/VRI/GNT/017. AICRP on Groundnut •Monitoring of major diseases of groundnut •Screening of IVT-I, IVT-II, AVT and other Co-ordinated trial materials for resistance/ tolerance to major diseases •Screening of peanut germplasm for diseases and major pests •Validation of management modules for soil borne diseases •Evaluation of different IPM modules for management of major insect-pest and diseases in groundnut	Dr. G. Senthilraja Assistant Professor (Plant Pathology) Regional Research Station Vriddhachalam	Continuous	The project may be continued as per the technical programme of AICRP
2.	AICRP/PBG/ALR/GNT/018. AICRP on Groundnut •Monitoring the major diseases of groundnut	Dr.B. Meena Associate Professor (Plant Pathology)	Continuous	The project may be continued as per the technical programme of AICRP

S.N	Project no and Title	Project Leader	Duration	Remarks
	•Screening of IVT-I & II, AVT and other coordinated trial material for resistance/ tolerance to major diseases •Validation of management modules for soil borne diseases •Evaluation of different IDM modules for management of major diseases in groundnut	Coconut Research Station, Aliyarnagar		
Sesame				
3.	AICRP/PBG/VRI/SES/02. AICRP on Sesame •Survey for sesame diseases •Uniform disease nursery and sesame germplasm •Disease assessment in co-ordinated trials of other disciplines •Biopriming and integrated management of major diseases of sesame •Biological management of sesame diseases through organics	Dr. A. Sangeetha Assistant Professor (Plant Pathology), Regional Research station, Vriddhachalam	Continuous	The project may be continued as per the technical programme of AICRP
Sunflower				
4.	AICRP/PBG/CBE/SUN/020. AICRP on Sunflower • Survey for diseases of sunflower • Screening of entries of coordinated trials (*Kharif* and *Rabi*) • Screening the promising CMS & R lines/NCP material for major diseases under field conditions • Evaluation of plant defense inducers for the management of diseases of sunflower • Management of Alternaria leaf spot using available fungicides (combi products) • Management of sunflower diseases using Plant Growth Promoting Rhizobacteria (PGPR)	Dr. L. Rajendran Assistant Professor (Plant Pathology) Department of Oilseeds, TNAU, Coimbatore	Continuous	The project may be continued as per the technical programme of AICRP
Castor				
5.	AICRP/PBG/YPR/CAS/022. AICRP on Castor •Disease scenario in different agroclimatic regions	Dr.N.Indra Assistant Professor (Plant Pathology) TCRS, Yethapur	Continuous	The project may be continued as per the technical programme of AICRP

S.N	Project no and Title	Project Leader	Duration	Remarks
	•Influence of weather parameters on *Botryotinia*graymold development •Screening of entries of Coordinated trials against major diseases •Integrated management of wilt of castor •On-farm demonstration of management of *Botryotinia* gray mold •On-farm demonstration of management of wilt/root rot of castor			
Seed Pathology				
6.	AICRP/STR/CBE/SEP/001. AICRP on NSP (Crops): Seed technology research. •Studies on seed health status of farmers saved groundnut seeds	Dr. T. Anand, Assistant Professor (Plant Pathology) Seed Centre, TNAU, Coimbatore	Continuous	The project may be continued as per the technical programme of AICRP

c. Externally Funded Projects

S.N	Project no and Title	Project Leader	Duration	Remarks
1.	DBT-NBPGR/CPBG/VRI/OIL/2020/D003 Mainstreaming sesame germplasm for productivity enhancement and sustainability through genomics assisted core development and trait discovery Sub-project 2: Identification of biotic stress (phyllody & dry root rot) tolerant sesame genotypes	Dr. G. Senthilraja Assistant Professor (Plant Pathology) Regional Research Station Vriddhachalam	April 2020 to March 2025	An interim report on the progress of work may be submitted to the Director, CPPS. The project may be continued as per the objectives of the DBT

Recommendations of Director CPPS

a. The scientists are instructed to monitor the insect pests and diseases of oilseeds in their districts regularly. If any outbreak of existing pests, disease and nematodes or occurrence of new insect pests, diseases and nematodes of pulses is noticed report to the Director (CPPS) immediately.

b. The Scientists identified for pest and disease surveillance in the state are requested to upload the data in the Google Forms for consolidation by the Head of the Departments. The Heads of the Department are instructed to submit the monthly pest and disease surveillance report to the Director CPPS on or before 2ndof every month without fail.

c. The monthly progress made under the OFT and Action Plans should be submitted to the respective Head of the Departments by the Monitoring Scientist/Theme Leader o/b 25th of every month and a consolidated report of the progress made should be made by the respective Head of the Departments to Director CPPS along with the Monthly Reports.

d. The TNAU entries alone can be taken account for the resistance screening and wherever possible artificial screening may be done. Entries found to be resistant to pests and diseases have to be handed over to Breeders. The action taken should be intimated to the Director CPPS and concerned Heads of the Departments at CPPS, TNAU, Coimbatore.

e. The microbial culture collections have to be deposited with the University Repository available at the Plant Pathology Department by all the Scientists working on microbial organisms.

f. The natural enemies of pests other than coccinellids and spiders have to be recorded. Wherever required, the entomophages, especially the parasitoids have to be documented. Eggs, larval/nymphal, pupal and adult stages of insect pests have to be observed under laboratory conditions for the emergence of parasitoids and documented.

g. Entomopathogens when observed in field studies have to be recorded and identified. The cultures have to be sent to the Professor and Head, Dept. of Agrl. Entomology, TNAU, Coimbatore for further studies. The Professor and Head, Dept. of Agrl. Entomology, TNAU, Coimbatore is instructed to work out modalities for further studies.

h. The Monitoring Scientists and Theme Leaders are instructed to monitor the allotted programmes and report the action taken.

4. GENERAL REMARKS

- In-situ germination of groundnut cultures may be test verified before releasing as variety(**Action**: Director, CPBG)
- Priority to be focused for development of high olelic groundnut varieties(**Action**: Director, CPBG)
- Oil content of pre release groundnut cultures may be assessed at least in two laboratories before releasing as variety(**Action**: Director, CPBG)
- Priority may be given for the release of monostem sesame culture as variety(**Action**: Director, CPBG)
- Powdery mildew resistant sunflower inbreds may be identified(**Action**: Director, CPBG)
- Emphasis may be given for the development of early breeding lines in castor(**Action**: Director, CPBG)
- Varietal registration may be done for groundnut promotion and export for suitable varieties (**Action**: Director, CPBG)

- Impact of technology demonstration in Tribal Sub Plan may be assessed for Sesame cultivation and economic benefits (**Action**: Director, Crop Management)
- Crop establishment through centrifuged broadcaster in sesame may be assessed(**Action**: Director, Seed Centre)
- Study in drip fertigation in prominent oilseed crops may be standardized(**Action**: WTC, TNAU, Coimbatore)
- Complete mechanization in Groundnut (**Action**: Director, Crop Management & Dean, AEC & RI)
- Forewarning model has to be developed for important pests and diseases in groundnut by utilising the services of Statistician, Mathematician and agro-climatic research centre scientists (**Action:** Director, CPPS)

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