

TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

41st Oilseeds Scientists Meet 2022 (May 9, 2022)

Lead Centre

Regional Research Station
Vridhachalam – 606 001

Directorate of Research

Tamil Nadu Agricultural University
Coimbatore 641 003

2022

PROCEEDINGS

The 41st Oilseeds Scientists Meet 2022 was held on May 09, 2022 through virtual mode. **Dr. V. Geethalakshmi**, Respected Vice Chancellor offered the opening remarks. Need for enhancing productivity of oilseeds, use of micronutrients, control measures for emerging pests and diseases, development of resistant varieties and management technologies for changing climate were emphasized. The Vice Chancellor insisted on developing monostem varieties in sesame suitable for mechanization and also to formulate suitable management technologies for cultivation of monostem sesame varieties. While addressing about castor, madam suggested popularizing the castor hybrids in nontraditional areas of Tamil Nadu.

Prior to this, **Dr. K.S. Subramanian**, Director of Research, TNAU, Coimbatore welcomed the gathering and presented the scenario on area and productivity of major oilseeds in Tamil Nadu. He had suggested to carry out impact analysis on spread of TNAU released oilseed varieties and to document the same. He had insisted the need for utilization of wild species of sesame and groundnut in the interspecific hybridization for the development of genotypes resistant to emerging pests and diseases. He had emphasized the plant protection scientists to develop technologies for white fly management in castor. He had also suggested exploring the feasibility of safflower cultivation in Tamil Nadu.

A total of 9 externally funded research projects, 45 ongoing University Research Projects, 23 Action Plan Projects and 32 AICRP projects were reviewed critically by the Director of Research and the Vice Chancellor.

The Action Taken Reports of the previous Oilseeds Scientists' Meet and Action Plan for 2022-23 were presented by **Dr. S. Geetha**, Director (CPBG), **Dr. S. Mohankumar**, Director (CPMB), **Dr. S. Sundareswaran**, Director, Seed Centre, **Dr. S. Paneerselvam**, Director (WTC & CM), **Dr. R. Santhi**, Director (NRM) and **Dr. K. Prabakar**, Director (CPPS).

Dr. K. Subrahmanian, Professor and Head, Oilseeds Research Station, Vridhachalam proposed formal vote of thanks.

The proceedings of the 41st Oilseeds Scientists Meet are furnished below in the following headings:

I. CROP IMPROVEMENT

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

II. CROP MANAGEMENT

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

III. CROP PROTECTION

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

IV. REMARKS

V. LIST OF PARTICIPANTS

I. CROP IMPROVEMENT

A. Entries for variety release proposal/ART/OFT/MLT (2022-23)

A1. Sesame: Variety Release

1. Monostem Sesame VS 19036

The monostem sesame culture VS 19036 is a cross derivative of VRI 3 x EC 370840. It matures in 75-80 days and suitable for cultivation in *Rabi* and summer seasons. Average seed yield is 783kg/ha which is 8.1 and 5.4 *per cent* increased yield over VRI 3 (724 kg/ha) and TMV 7 (743 kg/ha) respectively. Oil content is 52.0%. It is moderately resistant to phyllody and dry root rot diseases.

| | |
|---------------------------------|--|
| Parentage | VRI 3 x EC 370840 |
| Duration (in days) | 75-80 |
| Yield (kg/ha) | 783kg/ha (8.1 and 5.4 per cent increased yield over VRI 3 (724 kg/ha) and TMV 7 (743 kg/ha)) |
| Oil content (<i>per cent</i>) | 50-52% |

2. Sunflower CSFH 15020

The sunflower hybrid CSFH 15020 is a cross derivative of COSF 12A x IR 6. It matures in 85-90 days. It recorded mean seed yield of 2450 kg /ha which is 11.3 % yield increase over COH 3 and 37 % yield increase over GK 2002, respectively. It possesses a high oil content of 42% and high-volume weight (46g/100 ml).

A2. Groundnut: ART

1. Crop: Groundnut

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

Season: *Kharif* 2022 and *Rabi* /summer 2022-23

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 (R) | CTMG 7 x CS 19-1 | 105-110 | 2156 | High yield |
| 3 | TVG 17180 (N) | ICGV 07240 x R 2001-2 | 105-110 | 2108 | High yield |
| Checks: VRI 8, TMV 14, BSR 2, K 6 | | | | | |

Locations: 56

| | |
|-----------|--|
| Season | <i>Khari</i> f 2022 and <i>Rabi</i> /Summer 2022-23 |
| Districts | Thiruvallur, Kancheepuram, Villupuram, Vellore, Thiruvannamalai, Cuddalore, Salem, Namakkal, Erode, Coimbatore, Thiruchirappalli, Perambalur, Karur, Pudukkottai, Tanjore, Madurai, Theni, Virudhunagar, Sivagangai, Thirunelveli (80 Trials – Four 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 15-014 (R) | 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 2022-23 and Summer 2023 |
| 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* 2022 & *Rabi* / Summer 2022-23

Replication: Three

Spacing: 30 cm x 10 cm

Plot size: 4.0 x 3.0 m²

Features of the proposed culture

| Sl. No. | Culture | Parentage | Duration (Days) | Seed yield (kg/ha) |
|---|----------------|-----------------------|-----------------|--------------------|
| 1 | VG 34 (R) | VRI 6 x IVK 2013-16 | 95-100 | 2591 |
| 2 | VG 19809 (R) | VRI 2 x ISK 2016-14 | 95-100 | 2738 |
| 3 | VG 19812 (R) | VRI 2 x VG 13127 | 95-100 | 2899 |
| 4 | TVG 17204 (R) | ICGV 07240 x R 2001-2 | 110 | 2244 |
| 5 | COG 17-007 (R) | TMV 13 X ICGV 06146 | 105-110 | 2455 |
| 6 | VG20-001 | VRI 8 x GIRINAR 4 | 105-110 | 3840 |
| 7 | VG20-002 | VRI 3 x GIRINAR 4 | 105-110 | 3888 |
| Checks: VRI 8, VRI 9, VRI 10, GG7, BSR 2, TMV 14, GJG 33 and Lepakshi | | | | |
| Testing centres (11): Vriddhachalam, Tindivanam, Coimbatore, Bhavanisagar, Vazhavachanur, Aliyarnagar, Sandhiyur, Madurai, Killikulam, 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) Days to 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* 2022-23 and Summer 2023

Replication: Three

Spacing: 30 cm x 30 cm

Plot size: 4.0 x 3.0 m²

Features of the proposed culture

| Sl. No | Culture | Parentage | Seed yield (kg/ha) | Duration (Days) | Seed coat colour |
|---|---------------|-------------------|--------------------|-----------------|------------------|
| 1 | VS 19-045 (R) | VRI Sv 2 x E 8 | 995 | 80-85 | Black |
| 2 | VS 19-018 (R) | SVPR 1 x JCS 1942 | 986 | 85-90 | Black |
| 3 | VS 19-048 (R) | TMV 7 x DS 5 | 956 | 85-90 | White |
| 4 | VS 20-001 (N) | TMV 7 x GT 10 | 963 | 85-90 | Brown |
| 5 | VS 20-008 (N) | TMV 4 x TKG 506 | 927 | 85-90 | Brown |
| 6 | VS 20-040 (N) | TMV 7 x AT 374 | 914 | 85-90 | Brown |
| 7 | VS 19-054 (N) | TMV 7 x E 8 | 930 | 85-90 | White |
| Checks: TMV 7, VRI 3 and CO 1 | | | | | |
| Locations (9): Vriddhachalam, Tindivanam, Coimbatore, Srivilliputhur, Killikulam, Madurai, Bhavanisagar, Vazhavachanur and Kumulur (Rabi 2022-23 and Summer 2023) | | | | | |

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 <i>Cercospora</i> lead spot |

3. Sunflower: Multilocation Trial (MLT)

Season: *Kharif* 2022 & *Rabi* / Summer 2022-23

Replication: Four

Spacing: 60 x 30 cm

Plot size: 4.0 x 3.0 m²

Features of the proposed cultures

| S. No. | Hybrids | Parentage | Seed yield (kg/ha) | Duration (Days) | Special features |
|--|----------------|----------------------|--------------------|-----------------|------------------|
| 1 | CSFH 19004 (N) | COSF 6A x CSFI 1546 | 2479 | 90-95 | High yield |
| 2 | CSFH 19096 (N) | COSF 12A x CSFI 1874 | 2295 | 85-90 | High yield |
| 3 | CSFH 19087 (N) | COSF 6A x CSFI 1873 | 2229 | 85-90 | High yield |
| Checks: COH 3, CO2, DRSH 1 and Gangakaveri 2002 | | | | | |
| Testing centres (8): Coimbatore, Bhavanisagar, Vridhachalam, Vazhavachanur, Killikulam, Veppanthattai (<i>Rabi</i>), Tindivanam (<i>Rabi</i>) and Kovilpatti (<i>Rabi</i>) | | | | | |

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

| S. No. | Hybrids | Parentage | Seed yield (kg/ha) | Duration (Days) | Special features |
|--------|------------|----------------|--------------------|-----------------|---------------------------|
| 1 | YRCH 19014 | DPC 9 x JI 220 | 2425 | 180 | Early, and wilt resistant |

| | | | | | |
|--|------------|-----------------|------|-----|---|
| 2 | YRCH 19016 | DPC 9 x SKI 215 | 2340 | 180 | Early, wilt resistant and Basal branching |
| 3 | YRCH 20019 | Jp 65-1 x RG 43 | 1924 | 160 | Early, and wilt resistant |
| Checks: YRCH 1, YRCH 2 & DCH 519 | | | | | |
| Testing centres (7): Yethapur, Vriddhachalam, Tindivanam, Kovilpatti, Madurai, Killikulam, Santhiyur | | | | | |

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 2022-23

| Sl. | Name of the Entry / Check | Quantity of seed required (kg) | | Centre responsible for supply |
|------------------|---------------------------|--------------------------------|---------------------|-------------------------------|
| | | <i>Kharif</i> | <i>Rabi/ summer</i> | |
| GROUNDNUT | | | | |
| 1 | COG 0537 (R) | 152 | - | Coimbatore |
| 2 | VG 14019 (R) | 152 | 152 | Vriddhachalam |
| 3 | TVG 17180 (N) | 152 | 152 | Tindivanam |
| 4 | VRI 8 | 152 | 152 | Vriddhachalam |
| 5 | TMV 14 | 152 | 152 | Tindivanam |
| 6 | BSR 2 | 152 | 152 | Bhavanisagar |
| 7 | K6 | 152 | 152 | Vriddhachalam |
| 8 | VG 34 (R) | 12 | - | Vriddhachalam |
| 9 | VG 19809 (R) | 12 | - | Vriddhachalam |
| 10 | VG 19812 (R) | 12 | - | Vriddhachalam |
| 11 | TVG 17204 (R) | 12 | - | Tindivanam |
| 12 | COG 17-007 (R) | 12 | - | Coimbatore |
| 13 | VG20-001 | 12 | - | Vriddhachalam |
| 14 | VG20-002 | 12 | - | Vriddhachalam |
| 15 | VRI 8 | 12 | - | Vriddhachalam |
| 16 | VRI 9 | 12 | - | Vriddhachalam |

| | | | | |
|------------------|------------------|------|------|---------------|
| 17 | VRI 10 | 12 | - | Vriddhachalam |
| 18 | GG7 | 12 | - | Vriddhachalam |
| 19 | BSR 2 | 12 | - | Bhavanisagar |
| 20 | TMV 14 | 12 | - | Tindivanam |
| 21 | GJG 33 | 12 | - | Vriddhachalam |
| 22 | Kadiri 1812 | 12 | - | Vriddhachalam |
| SESAME | | | | |
| 1 | VS 15-014 | 15.0 | 15.0 | Vriddhachalam |
| 2 | VRI 3 | 15.0 | 15.0 | Vriddhachalam |
| 3 | TMV 7 | 15.0 | 15.0 | Tindivanam |
| 4 | VS 19-045 (R) | 1.0 | 1.0 | Vriddhachalam |
| 5 | VS 19-018 (R) | 1.0 | 1.0 | Vriddhachalam |
| 6 | VS 19-048 (R) | 1.0 | 1.0 | Vriddhachalam |
| 7 | VS 20-001 (N) | 1.0 | 1.0 | Vriddhachalam |
| 8 | VS 20-008 (N) | 1.0 | 1.0 | Vriddhachalam |
| 9 | VS 20-040 (N) | 1.0 | 1.0 | Vriddhachalam |
| 10 | VS 19-054 (N) | 1.0 | 1.0 | Vriddhachalam |
| 11 | VRI 3 | 1.0 | 1.0 | Vriddhachalam |
| 12 | TMV 7 | 1.0 | 1.0 | Tindivanam |
| 13 | CO 1 | 1.0 | 1.0 | Coimbatore |
| SUNFLOWER | | | | |
| 1 | CSFH 19004 (N) | 1.0 | 1.0 | Coimbatore |
| 2 | CSFH 19096 (N) | 1.0 | 1.0 | Coimbatore |
| 3 | CSFH 19087 (N) | 1.0 | 1.0 | Coimbatore |
| 4 | COH 3 | 1.0 | 1.0 | Coimbatore |
| 5 | CO 2 | 1.0 | 1.0 | Coimbatore |
| 6 | DRSH 1 | 1.0 | 1.0 | Coimbatore |
| 7 | Gangakaveri 2002 | 1.0 | 1.0 | Coimbatore |
| CASTOR | | | | |
| 1 | YRCH 19014 | 1.0 | - | Yethapur |
| 2 | YRCH 19016 | 1.0 | - | Yethapur |
| 3 | YRCH 2019 | 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 | Kharif | 15.06.2022 | 20.06.2022 |

| | | | |
|---|--------|------------|------------|
| ART entries | Rabi | 15.08.2022 | 05.09.2022 |
| | Summer | 30.12.2022 | 10.02.2023 |
| Seed material of the proposed MLT entries | Kharif | 15.06.2022 | 20.06.2022 |
| | Rabi | 15.08.2022 | 05.09.2022 |
| | Summer | 30.12.2022 | 10.02.2023 |
| Sowing report | Kharif | 30.07.2022 | - |
| | Rabi | 30.10.2022 | |
| | Summer | 31.03.2023 | |
| Visit of MLT/monitoring teams | Kharif | Sep. 2022 | - |
| | Rabi | Dec. 2022 | |
| | Summer | May. 2023 | |
| Date for receiving the trial results at Vriddhachalam for compilation | Kharif | 15.12.2022 | - |
| | Rabi | 28.02.2023 | |
| | Summer | 30.06.2023 | |

Monitoring team to visit MLT 2022-23

| Scientist | Crop | Season | Centres |
|---|--|--|--|
| Dr. M. Pandiyan, Professor (PBG), RRS, VRI Dr. A. Mahalingam, Asst. Prof. (PBG), RRS, VRI Dr. A. Sangeetha, Asst. Prof. (PP), RRS, VRI Dr. C. Vijayaraghavan, Asst. Prof. (Ento.), RRS, VRI | Groundnut Sesame Sunflower Castor | <i>Kharif</i> 2022 and Rabi / Summer 2022-23 | Coimbatore Tindivanam Vazhavachanur Madurai Paiyur |
| Dr. T. Kalaimagal, Prof.(PBG) and Head, DOS, TNAU, CBE Dr. R. Sasikala, Asst. Prof. (PBG) Dr. L. Rajendran, Asst. Prof. (Plant Pathology) Dr. P. Indiragandhi, Asst. Prof. (Ento.), RRS, VRI | Groundnut Sesame Sunflower Castor | <i>Kharif</i> 2022 and Rabi / Summer 2022-23 | Vriddhachalam Bhavanisagar Aliyarnagar Yethapur |
| Dr. S.R.Venkatachalam, Professor, TCRS, Yethapur Dr. A. Yuvaraja, Assoc. Prof. (PBG), TCRS, Yethapur Dr. T.K.S. Latha, Asst. Prof. (Plant Pathology) | Groundnut Sesame Sunflower Castor | <i>Kharif</i> 2022 and Rabi / Summer 2022-23 | Veppanthattai Sandhiyur Kumulur Chettinad |

| | | | |
|--|--|--|--|
| Dr. A. Mahalingam, Asst. Prof. (PBG), RRS, VRI Dr. R. Sasikala, Asst. Prof. (PBG) Dr. L. Rajendran Asst. Prof. (Plant Pathology) Dr. C. Vijayaraghavan, Asst. Prof. (Ento.), RRS, VRI | Groundnut Sesame Sunflower Castor | <i>Kharif</i> 2022 and Rabi / Summer 2022-23 | Killikulam Srivilliputhur Kovilpatti |
|--|--|--|--|

B. Research Projects on Oilseeds

| Centres | University Sub-Projects | AICRP projects | Externally funded projects | Total | No. of Scientists |
|--------------------|--------------------------------|-----------------------|-----------------------------------|--------------|--------------------------|
| GROUNDNUT | | | | | |
| Vridhachalam | 5 | 1 | 1 | 7 | 1 |
| Tindivanam | 2 | 1 | - | 3 | 1 |
| Coimbatore | 2 | - | 1 | 3 | 2 |
| Kudimiyamalai | 1 | - | - | 1 | 1 |
| Bhavanisagar | 1 | - | - | 1 | 1 |
| Pattukottai | 1 | - | - | 1 | 1 |
| Vaigaidam | 1 | - | - | 1 | 1 |
| Vazhavachanur | 1 | - | 2 | 3 | 1 |
| Sub Total | 14 | 2 | 4 | 20 | 9 |
| SESAME | | | | | |
| Vridhachalam | 2 | 1 | 2 | 5 | 1 |
| Trichy | 1 | - | - | 1 | 1 |
| Kumulur | 1 | - | - | 1 | 1 |
| Vaigaidam | 1 | - | - | 1 | 1 |
| Sub Total | 5 | 1 | 2 | 8 | 4 |
| SUNFLOWER | | | | | |
| Coimbatore | 2 | 1 | 1 | 4 | 1 |
| Sub Total | 2 | 1 | 1 | 4 | 1 |
| CASTOR | | | | | |
| Yethapur | 2 | 1 | - | 3 | 2 |
| Sub Total | 2 | 1 | 0 | 3 | 2 |
| Grand Total | 23 | 5 | 7 | 35 | 16 |

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

LIST OF ONGOING RESEARCH PROJECTS AND ITS REMARKS

LIST OF ONGOING RESEARCH PROJECTS AND ITS REMARKS

| Sl. No | Project No. and Title | Project leaders | Duration | Remarks |
|------------------|--|--------------------------------------|--------------------------------|--|
| Groundnut | | | | |
| 1 | CPBG/VRI/PBG/GNT/2015/005 Collection, conservation and evaluation of genetic resources of groundnut (<i>Arachis hypogaea</i> 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 |
| 2. | CPBG/VRI/PBG/GNT/2016/001 Breeder seed production of high yielding groundnut varieties released from Regional Research Station, Vriddhachalam | Dr. M. Pandiyan Professor (PBG) | August 2016 to July 2021 | The target may be achieved without any shortfall. |
| 3. | CPBG/VRI/PBG/Oil/2021/002 Development of high Oleic content groundnut breeding lines | Dr. M. Pandiyan, Professor (PB&G) | July 2021 to June 2024 | Oleic content of parental lines may be assessed before attempting crossing |
| 4. | 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 |
| 5 | CPBG/VRI/PBG/Oil/2021/001 Development of high yielding drought and salinity tolerant groundnut breeding lines. | Dr. M. Pandiyan Professor (PBG) | July 2021- June 2024 | The project may be continued |

| | | | | |
|----|--|--|-------------------------------------|---|
| 6 | CPBG/CBE/PBG/GNT/2020/001 Evolving Short duration Spanish bunch groundnut varieties for groundnut growing tracts of Tamil Nadu | Dr.T.Kalaimagal Professor and Head, Oilseeds, CPBG, TNAU, Coimbatore. | June 2020 to May 2023 | The project may be continued. |
| 7 | 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 | Completion report should be submitted and the target may be achieved without any shortfall. |
| 8 | 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. |
| 9 | CPBG/VAZ/PBG/OIL/2021/001 Evolution of high yielding drought tolerant groundnut genotypes | Dr. M. Vaithiyalingan, ASP (PBG) | September 2021 to August 2026 | The project may be continued |
| 10 | CPBG/CBE/PBG/GNT/2020/002 Development of high oleic Spanish groundnut variety | Dr. N.Manivannan, Professor (PBG) | Nov 2020- Oct 2025 | The project may be continued |
| 11 | CPBG/PKT/PBG/BGR/2016/001 Breeder Seed Production in Pulses and Groundnut | Dr. A. Bharathi, Asst. Professor (PBG) | April 2016 to March 2021 | Completion report should be submitted and the target may be achieved without any shortfall. |
| 12 | CPBG/VGD/PBG/BSP/2020/001 Maintenance Breeding in Groundnut and Pulses | Dr. C. Parameswari, Assistant Professor (PBG) | Oct., 2020 to Sept., 2025 | The target may be achieved without any shortfall |
| 13 | CPBG/BSR/PBG/2020/001 Maintenance breeding in oilseed crop varieties released by TNAU | Dr. S. Utharasu Asst. Professor (PB&G) | September 2020 – August 2025 | The target may be achieved without any shortfall |
| 14 | NEW Breeder seed production in Groundnut and | Dr.N.A.Saravanan Asst. Professor | Nov 2021 to Oct 2024 | The target may be achieved without any shortfall. |

| | | | | |
|---------------|---|---|--|--|
| | Pulses | (PB&G) | | |
| Sesame | | | | |
| 15 | CPBG/VRI/PBG/SES/2019/001 Evolution of high yielding sesame varieties with resistance to <i>Macrophomina</i> root rot | Dr. A. Mahalingam Assistant Professor (PB&G) | September 2018 to August 2023 | TMV 4 and TMV 6 can be included as check varieties in the trials. Development of black seeded varieties may be hastened up. |
| 16 | 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 | Completion report should be submitted and the target may be achieved without any shortfall. |
| 17 | CPBG /TRY /PBG /SES /2020 /001 Development of high yielding sesame (<i>Sesamum indicum</i> L.) suitable for salt affected soils. | Dr. A. Mothilal, Professor (PBG) | November 2020 to October 2025 | The project may be continued. |
| 18 | CPBG/KUM/PBG/SES/2019/001 Development of Sesame (<i>Sesamum indicum</i> L.) varieties suitable for summer irrigated conditions | Dr. K. Thiyagu, Assistant Professor (PBG), IOA, Kumulur Dr. M. Dhandapani, Assistant Professor (PBG), TRRI, Aduthurai | February 2019 to June 2022 | The project may be continued. |
| 19 | 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),ARS, Vaigai Dam Dr.M.Theradi Mani Professor &Head, | June 2019 to May 2022 | The project may be continued. |

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| | | Department of Plant Pathology AC&RI, Madurai | | |
| Sunflower | | | | |
| 20 | CPBG/CBE/PBG/OIL/2021/001 Evolution of high yielding sunflower hybrids | Dr. R. Sasikala, Assistant Professor (Plant Breeding) | January 2021 to December 2025 | The project may be continued. |
| 21 | CPBG/CBE/PBG/OIL/2022/001 Maintenance and Evaluation of germplasm in Sunflower | Dr. R. Sasikala, Assistant Professor (Plant Breeding) | January 2022 to December 2024 | The project may be continued. |
| Castor | | | | |
| 22 | CPBG/ YTP/ PBG/ CAS/ 2021/ New: Evolution of Monoecious variety / male line in castor for earliness and wilt disease resistance | Dr.A.Yuvaraja Associate Professor (PB&G), Dr.V.Ravichandran Assistant Professor (Pl.Path) | September 2021 to August 2024 | The project may be continued. |
| 23 | 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 |

| 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 (D.32.C.I) | Dr. S.R.Venkatachalam Professor (PB&G) Dr. A. Yuvaraja Associate Professor (PB&G) | Continuous | The project may be continued |
| EXTERNALLY FUNDED PROJECTS | | | | |
| 29 | DST/CPBG/CBE/PBG/2021/R001 Development of high oleic Spanish bunch groundnut variety through marker assisted backcross | Dr. N. Manivannan, Professor (PBG) CO – PI Dr. A. Mothilal, Professor (PBG) | 30.12.2020 to 29.12.2023 | The project may be continued |
| 30 | Establishment of Centre of Excellence in | Dr. K. | 2020-2023 | The project may be |

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|--|--|---|--|------------------|
| | <p>Groundnut (DR/P2/NADP / Groundnut /RRS, VRI / ASO / 2020 Dt. 07.10.2020)</p> | <p>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</p> | | <p>continued</p> |
|--|--|---|--|------------------|

| | | | | |
|----|--|--|---|---|
| 31 | ICRISAT / VOL / VVNR / GNT / 2021 / 001 Multilocation testing of groundnut | Dr. M. Vaithiyalingan Associate Professor (PBG) | 01.08.2020 to 31.07.2021 | The results may be submitted to ICRISAT with a copy to DR |
| 32 | ICRISAT / VOL / VVNR / GNT / 2021 / New Multilocation testing of groundnut | Dr. M. Vaithiyalingan Associate Professor (PBG) | 1.8.2021 to 31.3.22 | The results may be submitted to ICRISAT with a copy to DR |
| 33 | 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) | 01.04.2020 to 31.03.2025 | The project may be continued |
| 34 | DST – SERB / ADT / VRD / PBG / 2021 / R001 Marker Assisted backcross breeding for the improvement of dry root rot disease resistance in the popular sesame varieties TMV 3 and TKG 22" (E28AGT) | Dr. A. Mahalingam, Assistant Prof. (PB&G) Co-PI: 1. Dr. N. Manivannan (Mentor) Professor (PBG) CPBG, TNAU, Coimbatore 2. Dr. G. Senthilraja, Assistant Prof. (Pathology) | December 2021 to December 2024 | The project may be continued. |

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|----|--|--|--------------------------------|-------------------------------|
| 35 | <p>DST SERB/CPBG/OIL/2021/ R001 Redesigning of healthy fatty acid profile in sunflower by developing high oleic inbreds through MABC approach (E28AGQ)</p> | <p>PI: Dr. R.Sasikala Assistant Professor (Plant Breeding) Co-PI: 1. Dr. N. Manivannan (Mentor) Professor (PBG) Centre of Excellence in Molecular Breeding CPBG, TNAU, Coimbatore 2. Dr.M.Raveendran Professor and Head Dept.of Plant Biotechnology, CPMB, TNAU, Coimbatore</p> | December 2021 to December 2024 | The project may be continued. |
|----|--|--|--------------------------------|-------------------------------|

D. 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 | 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 | 2022-23 | Deliverables /expected out come |
| Vridhachalam Dr. M. Pandiyan, Coimbatore Dr.T. Kalaimagal, Bhavanisagar Dr.B.MeenaKumari Yethapur Dr.S.R.Venkatachalam, Aliyarnagar Dr. B. Meena | FPVS of cultures viz., VG 16024, 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) | Seed multiplication of promising entry ICGV 07247 Field and artificial screening for LLS & Rust disease resistance | OFT / ART of promising entries Oil quality analysis Field and artificial screening for LLS & Rust disease resistance. | Large scale OFT / ART of ICGV 07247 | Release of semi spreading groundnut variety for Dharmapuri, Salem, Erode, Namakkal and Perambalur districts |
| | Seed multiplication of promising entries (Dec-Jan) | Seed multiplication of promising entries | Seed multiplication of promising entries | Submission ova 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 2 | 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 | 2022-23 | Deliverables/expected out come |
| Vridhachalam Dr. M. Pandiyan Dr. G. Senthilraja Coimbatore Dr.T.Kalaimagal Tindivanam Dr. Kanchanarani Aliyarnagar Dr.B. Meena | 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). | Evaluation of root rot resistant progenies at Aliyarnagar for Rust resistance screening. Evaluation of rust resistant progenies at Vridhachalam for Rust resistance screening | 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. | Evaluation under yield trials | |

| Theme No 3 | 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 | 2022-23 | Deliverables/expected out come |
| Vridhachalam Dr. M. Pandiyan, | Hybridization VRI6 x <i>A.monticola</i> (for thin shell) VRI6 x <i>Arachis spp.</i> (stem rot/ collar rot) | Hybridization VRI6 x <i>A.monticola</i> (for thin shell) VRI6 x <i>Arachis spp.</i> (stem rot/ collar rot) | Hybridization VRI6 x <i>A.monticola</i> (for thin shell) VRI6 x <i>Arachis spp.</i> (stem rot/ collar rot) | Hybridization VRI6 x <i>A.monticola</i> (for thin shell) VRI6 x <i>Arachis spp.</i> (stem rot/ collar rot) using growth regulators | Development of groundnut genetic stocks |
| | Making double cross | Making double cross | Making double cross | Making double cross | |

| Theme No 4 | 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 | 2022-23 | Deliverables/expected out come |
| Vridhachalam Dr. A. Mahalingam, Coimbatore Dr.T.Kalaimagal, Dr. R.Sasikala Madurai Dr. C. Parameswari Bhavanisagar | Confirmation of mono stem / shy branching nature of genotypes (VRI, TMV, CBE, MDU, BSR & SVPR) and Seed multiplication of monostem / shy | Seed multiplication of promising entry | Seed multiplication of promising entries | Seed multiplication of promising entries | Release of high yielding, monostem / shy branching sesame varieties |

| | | | | | |
|---|--|---|---|------------------------------------|--|
| Dr.B.MeenaKumari Srivilliputtur Dr. K. Thiyagu Thindivanam Dr. Kanchanarani | branching genotypes (COS 14017, COS 14018, VS 19036) | | | | |
| | Evaluation under MLT & Spacing trials by Agronomist. (Vridhachalam and Coimbatore) | OFT / ART (Dec -Jan) OFT / ART (March - April) | OFT / ART (Dec -Jan) OFT / ART (March - April) | Submission of proposal for release | |

| Theme No 5 | Development of maintainer line 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 | 2022-23 | 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 ₁ F ₁ evaluation | Evaluation of BC ₁ F ₂ and generation of BC ₂ F ₁ | Evaluation of BC ₃ F ₂ population and identification of high oleic lines | Identification high oleic maintainer lines |
| | Evaluation of F ₁ and Development of BC ₁ F ₁ | - | Development of BC ₃ F ₁ | Evaluation of BC ₃ F ₃ progenies and identification of promising lines with high oleic content | |

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

| | | | | | |
|--|--|--|---|---|--|
| Theme No 6 | 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 | 2022-23 | Deliverables/expected out come |
| Coimbatore Dr. R. Sasikala Dr.L.Rajendran | Confirmation of F ₅ RILs (IR6xCSFI13022) and IR6xCSFI13023) for powdery mildew and <i>Alternaria</i> under artificial screening | F ₁ evaluation under PHYT (Disease scoring were done under field condition) | F ₁ evaluation under AHYT-2 | Evaluation of promising hybrid CSFH 19096 under MLT 2022-23 | 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) | A promising hybrid CSFH 19096 have been nominated 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 7 | Development of high yielding drought and salinity tolerant groundnut breeding lines | | | |
| Theme Leader | Dr. M. Pandiyan, Professor (PBG), RRS, Vriddhachalam | | | |
| Name of the scientists and centre | 2021-22 | 2022-23 | 2023-24 | Deliverables/expected out come |
| Vriddhachalam Dr. M. Pandiyan, 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 8 | 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 | Hybridization (TMV 7, CO 7 x Girnar 4, Girnar 5) (CBE) | Evaluation of BC ₁ F ₁ population (CBE) and back crossing | Evaluation of BC ₃ F ₁ (CBE) | Identification high Oleic groundnut breeding lines |
| | Evaluation of F ₁ (CBE) and back crossing | Evaluation of BC ₂ F ₁ (CBE) and back crossing | Evaluation and identification of BC ₃ F ₂ progenies with | |

| | | | | |
|--|--|--|--------------------|--|
| | | | High Oleic content | |
|--|--|--|--------------------|--|

| Theme No 9 | Evolution of high yielding black seeded sesame variety to replace TMV 3 | | | |
|---|--|-----------------------------|--|--|
| Theme Leader | Dr. A. Mahalingam, Assistant Professor (PBG), RRS, Vriddhachalam | | | |
| Name of the scientists and centre | 2022-23 | 2023-24 | 2024-25 | Deliverables/expected out come |
| Vriddhachalam Dr. A. Mahalingam, Coimbatore Dr. M. Umadevi Tindivanam Dr. Kanchanarani Bhavanisagar Dr. S. Utharasu Srivilliputhur Dr. G. Anand Vazhavachanur Dr. M. Vaithiyalingan IOA, Kumulur Dr. K. Thiyagu | MLT – I (7 centres: VRI, TVM, CBE, BSR, VVNR, SVPR, TRY-KUM) (June - July) | OFT / ART – I (June - July) | Large scale OFT / Seed multiplication | Release of black seeded sesame variety |
| | MLT – II (7 centres: VRI, TVM, CBE, BSR, VVNR, SVPR, TRY-KUM) (Dec -Jan) | OFT / ART – II (Dec -Jan) | Submission of variety release proposal | |

Multilocation Trial – Black seeded Sesame

| Sl. No | Entries | Pedigree | Duration (Days) | Seed yield (kg/ha) | Special attributes |
|--------------|-----------|-------------------|-----------------|--------------------|--------------------|
| 1 | VS 20-041 | VRI 2 x GT 10 | 80-85 | 889 | Black seed |
| 2 | VS 20-053 | VRI 2 x EC 346393 | 75-80 | 856 | Black seed |
| 3 | VS 21-012 | CO 1 x AT 377 | 80-85 | 914 | Black seed |
| 4 | VS 21-023 | CO 1 x RMT 485 | 80-85 | 937 | Black seed |
| Check: TMV 3 | | | | | |

| Theme No 10 | Evolution of high yielding early duration sesame variety suitable for rice follow ecosystem | | | |
|---|--|---|--|---|
| Theme Leader | Dr. A. Mahalingam, Assistant Professor (PBG), RRS, Vriddhachalam | | | |
| Name of the scientists and centre | 2022-23 | 2023-24 | 2024-25 | Deliverables/expected outcome |
| Vriddhachalam Dr. A. Mahalingam Aduthurai , Dr. M. Dhandapani IOA- Kumulur , Dr. K. Thiyagu Sirugamani , Dr. M. Sakila Killikulam , Dr. S. Saravanan Tirur , Dr. S. Banumathi KVK, Needamangalam Dr. V. Radha Krishnan | Seed multiplication of VS 20-001, VS 20-002, VS 21-012, VS 21-014, VS 21-078 and VRI 1 (VRI) | Seed multiplication of promising entry | Seed multiplication | Release of high yielding early duration sesame variety suitable for rice follow ecosystem |
| | MLT –(6 centres: ADT, NDM, IOA-TRY, SGM, TKM, KKM) under rice follow system (Dec -Jan) | OFT / ART (Dec -Jan) under rice follow system at Thanjavur, Thiruvarur and Nagapattinam districts | Submission of variety release proposal | |

Multilocation Trial – Black seeded Sesame

| Sl. No | Entries | Pedigree | Duration (Days) | Seed yield (kg/ha) | Special attributes |
|---|-----------|---|--|---|--|
| 1 | VS 20-001 | CO 1 x AT 324 | 80-85 | 889 | Early, Black seed |
| 2 | VS 20-002 | CO 1 x AT 324 | 75-80 | 856 | Early, Brown seed |
| 3 | VS 21-012 | CO 1 x AT 377 | 75-80 | 914 | Early, Black seed |
| 4 | VS 21-078 | Paiyur 1 x AT 324 | 80-85 | 937 | Early, Black seed |
| Check: VRI Sv 1 | | | | | |
| Theme No 11 | | Development of Castor hybrids / varieties suitable for synchronized maturity / mechanical harvesting | | | |
| Theme Leader | | Dr.S.R.Venkatachalam, Professor (PB&G) and Head, TCRS, Yethapur | | | |
| Name of the scientists and centre | | 2022-23 | 2023-24 | 2024-25 | Deliverables / expected out come |
| Yethapur Dr.S.R.Venkatachalam, Professor (PB&G) and Head Dr. A. Yuvaraja, Associate professor (PB&G) | | 1. Identification of castor genotypes for monospike and synchronised maturity. 2. Hybridization with monoecious lines JM6, RG 392 to develop pistillate x pistillate, pistillate x monoecious, monoecious x monoecious hybrids | Evaluation of F1s and backcross with JM 6 and RG 392 | Evaluation of promising hybrids and segregating generations | Identification of hybrids / varieties suitable for synchronized maturity / mechanical harvesting |

2. CROP MANAGEMENT

A. Technologies for Adoption/OFT/Information

A1. For Adoption

1. Modifying source - sink relationship for yield enhancement in rainfed sesame

- Terminal nipping of sesame at 30 DAS is recommended to enhance the yield (945 kg/ha) of rainfed sesame

(or)

- Foliar application of mepiquat chloride @ 200 ppm at 30 DAS for higher seed yield (871 kg/ha) of rainfed sesame

2. Optimizing plant population for higher productivity of mono stem sesame culture VS 19036

Spacing at 20 x 20 cm with a plant population of 2,50,000 plants/ha is optimum for higher productivity (762 kg/ha) of mono stem sesame culture VS 19036

3. Identification of remunerative groundnut based cropping system under rainfed situation

Groundnut + pigeonpea (8:1) is identified as suitable and profitable intercropping system for rainfed situation with maximum groundnut equivalent yield (2234 kg/ha) and BC ratio of 2.06.

A2. Technologies for information

1. Agronomic options to enhance the productivity of transplanted sesame

Ridge planting of 20 days old seedling recorded higher number of capsules plant⁻¹ (82.5 Nos), no. of seeds capsule⁻¹ (55.2 Nos.) and seed yield (880 kg ha⁻¹) which was significantly on par with ridge planting of 16 days old seedling.

2. Developing best management practices for sesame cultivation (after rice) under rice-sesame cropping system

Sowing of sesame after harvest of rice with ploughing twice followed by rotavator recorded higher sesame seed yield (492 kg/ha), however reduced tillage recorded higher BC ratio of 1.81. Nutrient management with 100% RDF recorded higher seed yield (465 kg/ha) and BC ratio (1.79).

3. Effect of seed pelleting and crop establishment methods on growth and yield of sesame

Sesame pelleting with neem leaf powder 760 g + 120 g *Azospirillum* + 120 g Phosphobacteria for 1 kg of seed with rice gruel as adhesive recorded higher sesame seed yield (737 kg/ha) and BC ratio (2.38).

Dibbling pelleted seeds in ridges and furrow method of crop establishment recorded higher seed yield (888 kg/ha) and BC ratio (2.63).

4. Effect of foliar application of water-soluble fertilizer on growth, yield & nutrient uptake of summer groundnut

Soil application of 75% RDF & foliar application of 2.0% WSF (19:19:19) at 45, 60 and 75 DAS produced higher pod yield of 2954 kg/ha with BCR of 2.70 which was comparable with soil application of 100% RDF (2833 kg/ha).

5. Performance evaluation of sulphur oxidizing bacterial (SOB) inoculums on sunflower

RDF @ 60:90:60 kg N P₂O₅ K₂O / ha + Sulphur @ 20 kg/ha in combination with SOB inoculums as seed treatment @ 1 kg/ha + soil application @ 1 kg/ha recorded significantly higher head diameter (18.0 cm), grain/head (971 Nos.), seed yield (2264 kg/ha) & maximum gross return (Rs.101871/ha), net return (Rs.40479/ha) and BC ratio (1.66) when compared to application of RDF alone and absolute control. However, it was on par with the application of RDF and sulphur @ 20 kg/ha combined with SOB inoculums as soil application @ 2 kg/ha.

6. Response of sunflower to nano-nitrogen

RDN (60 kg) through urea as 50% basal & 50% at 45 DAS significantly recorded higher plant height (194.4 cm) & DMP (5060 kg/ha), head diameter (18.8 cm), grain/head (988 Nos.), seed yield (2397 kg/ha), maximum net return (Rs.45715/ha) and BC ratio (1.74) when compared to nitrogen free absolute control. However, was on par with the application of 50% RDN through urea as basal + foliar spray of nano urea 4ml/lit at 45 DAS.

On Farm Testing (OFT)

OFT 1. Drought management strategies for improving yield in rainfed groundnut

Objectives

- To study the effect of different foliar applications in drought management for rainfed groundnut

Treatments

T₁ - Control

T₂ - 1% PPFM foliar spray at 20 DAS & 0.5 % KCl foliar spray at 45 DAS

T₃ - 0.5% KCl foliar spray at 20 DAS & 1% PPFM foliar spray at 45 DAS

Note: 100% RDF & recommended dose of groundnut rich is common for all treatments

Sowing window: June 20th to 30th

Coordinating Centre: ORS, Tindivanam

Dr.K. Thirumarassan
Assistant Professor (Agronomy)
Dr. S. Nithila
Assistant Professor (Crop Physiology)
KVK, Sirugamani

Sub Centres:

RRS, Vridhachalam

Dr.T. Parthipan
Assistant Professor (Agronomy)

DARS, Chettinad

Dr. A. Gurusamy
Professor and Head

Season: *Kharif*, 2022

Observations to be recorded

- Rainfall data during the cropping period
- Growth and physiological parameters relevant to drought
- Yield attributes and yield
- Economics

OFT 2. Standardisation of seed priming method for pod sowing in rainfed groundnut

Objectives

- To standardize the pod priming method for pod sowing in groundnut.

Treatments

T₁ - Pod priming with water
T₂ - Pod priming with 0.5% CaCl₂

Coordinating Centre:

RRS, Vridhachalam

Dr.T. Parthipan
Assistant Professor (Agronomy)

Sub Centres:

ORS, Tindivanam

Dr. K. Thirumarassan
Assistant Professor (Agronomy)

DARS, Chettinad

Dr. A. Gurusamy

Professor (Agronomy) and Head

Season: *Kharif*, 2022

Observations to be recorded

- Rainfall data during the cropping period
- Growth and physiological parameters relevant to drought
- Yield attributes and yield
- Economics

RESEARCH PROJECTS AND REMARKS

| S. No. | Projects | Groundnut | Sesame | Sunflower | Castor | Total |
|--------|-----------------|-----------|--------|-----------|--------|-------|
| 1. | Agronomy | 9 | 7 | 2 | 5 | 23 |
| 2. | Crop Physiology | 1 | 1 | - | - | 2 |
| | Total | 10 | 8 | 2 | 5 | 25 |

| 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 & Head Dr. E. Jamuna Asst. Prof. (AGM) ORS, Tindivanam Dr. T. Parthipan Asst. Prof. (Agronomy) RRS, Vridhachalam Dr. A. Gurusamy Professor and Head DARS, Chettinad | June 2020 to December 2022 | <ul style="list-style-type: none">• Project to be closed• Results given for OFT |
| 2. | Developing technology package for castor -cucurbits relay cropping for resource conservation and profit | Dr. P. Veeramani Asst. Prof. (Agronomy) Dr.P.S. Kavitha Asst. Prof. (Hort.) T&CRS, Yethappur | June 2020 to May 2022 | <ul style="list-style-type: none">• Short duration intercrops to be included before cucurbits• The project to be continued |

| S. No. | Project No. & Title | Coordinating scientist | Duration | Remarks |
|---------------------------------------|---|---|------------------------|---|
| | maximization | Dr.C. Harisudan Asst. Prof. (Agronomy) Dr. G. Sathish Asst. Prof.(Horticulture) RRS, Vridhachalam | | |
| 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 | <ul style="list-style-type: none"> • Rainfall data to be presented • Post-harvest soil sample to be analysed • The project to be continued |
| 4. | DCM/APK/CRP/SEA/2021/002 Modifying source - sink relationship for yield enhancement in rainfed sesame | Dr. S. Srinivasan Asst. Prof. (CRP) Dr. C. Harisudan, Asst. Prof. (Agronomy) Dr.S. Thiruvarassan Asst. Prof. (Agronomy) | July 2019 to June 2022 | <ul style="list-style-type: none"> • The results given for adoption • The project to be closed |
| 5. | DCM/VRD/AGR/2021/001 Optimizing plant population for higher productivity of mono stem sesame culture - VS 19036 | Dr. C. Harisudan, Asst. Prof. (Agronomy) Dr. A. Mahalingam Asst. Prof. (PB&G) Dr.K. Subrahmaniyan Professor and Head | June 2020 to May 2022 | <ul style="list-style-type: none"> • The results given for adoption • The project to be closed |

GROUNDNUT

UNIVERSITY RESEARCH PROJECTS

AGRONOMY

| | | | | |
|----|--|---|-----------------------|---|
| 6. | DCM/VRI/AGR/GNT/2020/001 Standardization of crop geometry and seed priming | Dr.T. Parthipan, Asst.Prof.(Agronomy) Dr. K. Natarajan Asst. Prof. (SST) | June 2020 to May 2022 | <ul style="list-style-type: none"> • The results given for OFT • The project to be closed |
|----|--|---|-----------------------|---|

| | | | | |
|----|--|--|-----------------------|--|
| | method for pod sowing in rainfed groundnut. | | | |
| 7. | 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 | <ul style="list-style-type: none"> • Results given for information • The project to be continued |
| 8. | DCM/APK/CRP/GNT/2021/001 Development of suitable chemical formulation to arrest late formed flowers and enhance the yield of Groundnut | Dr. S. Srinivasan, Assoc. Prof. (CRP) Dr. C. Harisudan Asst.Prof.(Agronomy) Dr. M. Senthivelu Asst. Prof. (Agronomy) | May 2021 to June 2023 | <ul style="list-style-type: none"> • Groundnut rich is to be added in all the treatments • The project to be continued |

| S. No. | Project No. & Title | Coordinating scientist | Duration | Remarks |
|----------------------------------|---|---|--------------------------|---|
| SESAME | | | | |
| AGRONOMY | | | | |
| 9 | DCM/KKM/AGR/SES/2020/001 Agronomic options to enhance the productivity of transplanted sesame | Dr. J. Bhuvaneshwari Asst. Prof. (Agronomy) | November 2020 - May 2022 | <ul style="list-style-type: none"> • Seed requirement and nursery area required to be mentioned • The results given for information • The project to be closed |
| EXTERNALLY FUNDED PROJECT | | | | |
| 10 | Developing best management practices for sesame cultivation (after rice) under | Dr. C. Harisudan Asst.Prof. (Agronomy) Dr.K. Subrahmaniyan | April 2019 - March 2022 | <ul style="list-style-type: none"> • The results given for information • The project to |

| S. No. | Project No. & Title | Coordinating scientist | Duration | Remarks |
|-----------------------|---|---|--------------------------|----------------------------|
| | rice-sesame cropping system | Professor and Head | | be closed |
| AICRP Projects | | | | |
| GROUNDNUT | | | | |
| 11 | Improving phosphorus use efficiency in groundnut with microbial cultures. | Dr. T. Parthipan Asst. Prof. (Agronomy) | 2018-19 to 2020-21 | • The project to be closed |
| 12 | AICRP/PBG/VRI/GNT/017 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 to be closed |
| 13 | AICRP/PBG/TVM/GNT/019 Improving phosphorus use efficiency in <i>rabi</i> -summer groundnut with microbial cultures. | Dr. S. Thiruvarassan Asst. Prof. (Agronomy) | 2019-21 | • The project to be closed |
| 14 | 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) | 2019-21 | • The project to be closed |
| 15 | 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 closed |
| SESAME | | | | |

| S. No. | Project No. & Title | Coordinating scientist | Duration | Remarks |
|------------------|--|--|------------------------|-------------------------------|
| 16. | AICRP/PBG/VRI/SES/02 1 Optimization of nutrient requirement for AVT genotypes | Dr. C. Harisudan Asst. Prof. (Agronomy) | July 2019 to May 2022 | • The project to be closed |
| 17. | AICRP/PBG/VRI/SES/02 1 Effect of seed pelleting and crop establishment method on growth and yield of sesame | Dr. C. Harisudan Asst. Prof. (Agronomy) | July 2019 to May 2022 | • The project to be closed |
| 18. | AICRP/PBG/VRI/SES/02 1 Effect of mulch and herbicides on weed dynamics of sesame | Dr. C. Harisudan Asst. Prof. (Agronomy) | July 2019 to May 2022 | • The project to be closed |
| 19. | AICRP/PBG/VRI/SES/02 1 Development of full Organic package of practice for export quality Sesame | Dr. C. Harisudan Asst. Prof. (Agronomy) | June 2021 to May 2024 | • The project to be continued |
| SUNFLOWER | | | | |
| 20. | AICRP/DCM/CBE/AGR/S NF/2020/002 Performance evaluation of Sulphur Oxidizing Bacterial (SOB) Inoculums on Sunflower | Dr. M. Senthivelu Asst. Prof. (Agronomy) | June, 2021 - May, 2022 | • The project to be continued |
| 21. | AICRP/DCM/CBE/AGR/S NF/2020/003 Response of Sunflower to Nano-Nitrogen | Dr. M. Senthivelu Asst. Prof. (Agronomy) | June, 2021 - May, 2022 | • The project to be continued |
| CASTOR | | | | |
| 22. | AICRP/DCM/CBE/AGR/S NF/2020/003 Influence of Conservation Agricultural practices in castor based intercropping systems | Dr. P. Veeramani Asst. Prof. (Agronomy) | June, 2021 - May, 2022 | • The project to be closed |
| 23. | AICRP/PBG/YTR/CAS/02 2 Studies on High Density Planting in <i>Rabi</i> Castor | Dr. P. Veeramani Asst. Prof. (Agronomy) | June 2021 - May 2022 | • The project to be closed |

| S. No. | Project No. & Title | Coordinating scientist | Duration | Remarks |
|--------|---|--|----------------------------|-------------------------------|
| 24. | AICRP/PBG/YTR/CAS/02 2 Agronomic requirements of pre-release castor varieties of AVT-II | Dr. P. Veeramani Asst. Prof.(Agronomy) | June 2021 - May 2022 | • The project to be closed |
| 25. | AICRP/PBG/YTR/CAS/02 2 Frontline Demonstrations | Dr. P. Veeramani Asst. Prof. (Agronomy) | June 2021 - May 2022 | • The project to be continued |

New Action Plan for 2022-2023

| No. | Title | Centre and Scientists | Period | Remarks |
|--|---|-----------------------|-----------------------|---------|
| 1. Response of groundnut (<i>Arachis hypogaea</i>) to foliar nutrition of nano urea and urea phosphate | | | | |
| Objectives: | | | | |
| 1. To study the effect of foliar application of nano urea and urea phosphate on growth, yield and quality of groundnut | | | | |
| Centre & Scientist | RRS, Vridhachalam Dr. T. Parthipan Assistant Professor (Agronomy) | | June 2022 to May 2024 | |
| In-charge | ORS, Tindivanam Dr. K. Thiruvvarassan Assistant Professor (Agronomy) | | | |

Treatments:

T₁ -100% RDN (25 kg N/ha) through Granular Urea (GU) (50% as basal, 25% at FS and 25% at PF stages)

T₂ - 50% RDN through GU as basal + 50% RDN through Nano urea (NU) at FS

T₃ - 50% RDN through GU as basal + 50% RDN through NU at PF

T₄ - 50% RDN through GU as basal + 25% RDN through NU at FS + 25% RDN through NU at PF

T₅ -50% RDN through GU as basal + 30% RDN through NU at FS + 20% RDN through NU at PF

T₆ -50% RDN through GU as basal + 40% RDN through NU at FS + 10% RDN through NU at PF

FS - Flowering stage, PF - Peg formation stage

Note:

900 ml of NU supply 25 kg of nitrogen

100% recommended dose of P, K and groundnut rich is common for all treatments

Design: RBD

Replications: Four

Season: *Kharif, 2022*

Observations

- Growth and yield parameters
- Nutrient status (Initial & Final) and nitrogen use efficiency

| No. | Title | Centre and Scientists | Period | Remarks |
|--|--|-----------------------|-----------------------|---------|
| 2. Optimizing nutrient requirement for mono stem sesame culture VS 19036 | | | | |
| Objectives: | | | | |
| <ul style="list-style-type: none"> • To optimize nutrient requirement for mono stem sesame culture VS 19036 | | | | |
| Centre & Scientist | RRS, Vridhachalam Dr. C. Harisudan Assistant Professor (Agronomy) | | June 2022 to May 2024 | |
| In-charge | ORS, Tindivanam Dr. K. Thiruvarassan Assistant Professor (Agronomy) | | | |

Treatments

T₁ - 100% RDF (35: 23: 23 kg NPK/ha)

T₂ - 75 % RDF

T₃ - T₁ + 1 % DAP + 1% KCl + 0.5% MnSo₄ at 30 & 45 DAS

T₄ - T₁ + 1 % (19: 19: 19 NPK) + 0.5% MnSo₄ at 30 & 45 DAS

T₅ - T₂ + 1 % DAP + 1% KCl + 0.5% MnSo₄ at 30 & 45 DAS

T₆ - T₂ + 1 % (19: 19: 19 NPK) + 0.5% MnSo₄ at 30 & 45 DAS

Design: RBD
2023

Replications: Three

Season: *Summer,*

Observations

- Growth and yield parameters
- Nutrient status, Nutrient use efficiency

| No. | Title | Centre and Scientists | Period | Remarks |
|---|---|-----------------------|-----------------------|---------|
| 3. Assessment of mono stem sesame culture VS 19036 for abiotic stress tolerance (Drought, high temperature and salinity) | | | | |
| Objectives: | | | | |
| <ul style="list-style-type: none"> To assess the abiotic stress tolerance ability of mono stem sesame culture VS 19036 | | | | |
| Centre & Scientist In-charge | DCM, TNAU, Coimbatore Dr. R. Sivakumar Associate Professor (Crop Physiology) Dr. R. Karthikeyan Assistant Professor (Agronomy) | | June 2022 to May 2024 | |

Observations

- Agronomical, physiological and biochemical traits associated with abiotic stress tolerance
- Growth and yield parameters

NATURAL RESOURCE MANAGEMENT

About 9 projects comprising 3 action plans, 1 OFT, 5 URPs on Oilseeds were reviewed. Seventeen scientists attended the review and presented the salient findings of the project on online mode. The following findings are forwarded for adoption / information/OFT.

A. Technologies for Adoption/OFT/Information

A1. For Adoption

1. TNAU Foliar Micronutrient Mixture for the management of multi micronutrient deficiencies in Groundnut

- TNAU Foliar MN mixture @1%, twice (Vegetative & flowering stage) is recommended for obtaining higher plant height, number of pods plant⁻¹, pod yield 2264 kg ha⁻¹, besides alleviating micronutrient deficiencies in groundnut. The yield increase over NPK alone treatment was 12 % increase and the BCR was 1.96.

A2. Technologies for information

1. Iron Management Strategies for Groundnut in Calcareous soil

- In calcareous soils of low iron status, application of Ferrous sulphate 1% + 0.1 % Citric Acid at vegetative, flowering and peg formation stages + siderophore application [(seed coating (200 g ha⁻¹) + soil application @ 500 g ha⁻¹)] recorded higher pod yield (2890 kg ha⁻¹) [18 % increase over NPK alone], Iron uptake (473 g ha⁻¹), B:C ratio (2.56).

2. Quality parameters of TNAU Sesame varieties and land races

- Ten TNAU sesame varieties (TMV 3, TMV 4, TMV 5, TMV 6, TMV 7 , CO 1, VRI 1, VRI 2, VRI 3 and SVPR 1 and three land races (Kulithalai, Thirukattupalli and Madurai) were tested. The major nutrient composition of sesame varieties /land races showed wide variation and followed the order nitrogen (2.70 -3.56 %) > calcium (1.12 -1.76 %) > potassium (0.642 -1.098 %) > phosphorus (0.323 - 0.593 %) > magnesium (0.096 - 0.672 %) . The micro nutrient composition was in the order of iron > zinc > manganese > copper. Thirukattupalli land race had higher zinc (142 mg g⁻¹) and iron (268 mg g⁻¹) content. VRI 2 (50 mg g⁻¹) and SVPR 1 (40 mg g⁻¹) had higher manganese and copper content. TMV 4 had higher crude protein content (22.25 %) and the lowest was in Kulithalai land race (16.88%). Variation was observed among the varieties and land races with respect to total phenol and flavonoid content. Total phenol content varied from 3.15 mg g⁻¹ (VRI 1) to 5.82 mg g⁻¹ (land race 2 - Thirukattupalli). VRI 2 recorded the highest flavonoid content (4.00 mg g⁻¹) followed by TMV 6 (3.25 mg g⁻¹) .

3. Revised recommendation of Sulphur for Yield Maximization in Sesame under Sesame-Greengram/Blackgram Cropping Sequence

- Application of S @ 40 kg ha⁻¹ as gypsum increased the seed yield and quality of sesame followed by pulse crop (greengram/blackgram) in a cropping sequence which was on par with higher levels of Sulphur. The soil available Sulphur, water soluble S and adsorbed S were increased by the graded levels of Sulphur.

4. Permanent Manurial Experiment (PME) on Rainfed Groundnut and Cold Weather Sesame

- At ORS, Tindivanam, Seed yield of Gingelly was observed high in INM (212 kg ha⁻¹) plots with 16.9% yield increase over 100% NPK alone. In Groundnut, the pod yield was observed higher in STCR – IPNS (1252 kg ha⁻¹) plots which showed 14% yield increase over 100 % NPK and 5.3 % over INM (FYM @ 12.5 t ha⁻¹ + 100% NPK (10: 10: 45 kg ha⁻¹ + Herbicide). The soil organic carbon (SOC) was observed high in INM (7.2 g kg⁻¹) in gingelly and for Groundnut, STCR – IPNS plot showed higher SOC (7.43 g kg⁻¹).

5. Zinc solubilizing bacteria as bioinoculant for Groundnut (TMV13)

- Application of Zinc solubilising bacteria @ 1 kg ha⁻¹ as seed treatment and 2 kg ha⁻¹ for soil application along with 12.5 kg ha⁻¹ ZnSO₄ with STCR based fertilizer recommendation under rainfed condition, recorded maximum pods/plant (15.5) and pod yield (1771 kg ha⁻¹) with 17% and 18.2%

increase over RDF (STCR) alone under rainfed& irrigated conditions, respectively. It has recorded an increase of 5.7 % & 4.8 % yield over RDF (STCR) + ZnSO₄ (25 kg/ha) under rainfed& irrigated conditions, respectively.

6. Zinc solubilizing bacteria as bioinoculant for Sesame (TMV 7)

- Application of Zinc Solubilising Bacteria @ 1 kg ha⁻¹ as seed treatment and soil application @2 kg ha⁻¹ + 12.5 kg ha⁻¹ ZnSO₄ with STCR based NPK fertilizer recommendation recorded maximum capsules of 109.5 per plant and yield (808 kg ha⁻¹) with 18.1% & 6.5 % increase over RDF (STCR) alone &RDF (STCR) + ZnSO₄ (25 kg ha⁻¹), respectively under rainfed condition.

B. On Farm Tests (new OFTs)

OFT 1. Iron Management Strategies for Groundnut in Calcareous Soil

Objectives

- To evaluate chemical and biological approaches of iron management strategies in Groundnut

Treatments

T₁ : NPK alone

T₂ : NPK + FeSO₄ @ 50 kg ha⁻¹

T₃ : NPK + Foliar application of 1 % ferrous sulphate + 0.1 % citric acid at vegetative, flowering and peg formation stages

T₄ : T₃ + Siderophore (seed coating(200 g ha⁻¹)and soil application (500 g ha⁻¹)

Variety: CO 7 / VRI 8

Observations and Analysis

- Pod yield ; Harvest index; Available iron in soil; Iron content and uptake in plants
- Iron efficiency; Economics

Lead centre & Scientists In-charge

Department of SS&AC, TNAU, Coimbatore

Dr. S. Meena, Professor (SS&AC), ADAC&RI, Trichy

Dr.S. Karthikeyan, Professor (AGM), Dept. of REE, AEC &RI, Cbe

Co-ordinating centres & Scientists In-charge

AC&RI, Vazhavachanur

Dr. V. Arunkumar, Asst. Professor (SS&AC)

KVK, Tindivanam

Dr. G. Gomathi, Asst. Professor (SS&AC)

KVK, Sandhiyur

Dr. M. Malarkodi, Asst. Professor (SS&AC)

OFT 2.Validation of Sulphur Recommendation for Yield Maximization in Sesame under Sesame- Green gram/Black gram Cropping Sequence**Objectives**

- To validate the sulphur recommendation for yield maximisation in sesame
- To assess the residual effect of sulphur on yield and quality of green gram/ black gram.

Treatments

T₁ - Absolute Control

T₂ - RDF alone

T₃ - RDF+ S @ 45 kg ha⁻¹

RDF–STCR based / Sulphur source: Gypsum / (S in SSP will be adjusted)

Observations and Analysis**Sesame**

Seed yield (kg ha⁻¹)

Sulphur uptake in plant

Oil content in seeds

Available S & S fractions in soil

Greengram / Blackgram

Seed yield (kg ha⁻¹)

Sulphur uptake in plants

Protein content in seeds

Available S & S fractions in soil

Lead centre & Scientists In-charge**Lead centre: Dept. of SS&AC, TNAU, Coimbatore**

Dr. M.R.Backiyavathy,

Professor (SS&AC)

Dr.K.Sathya Bama,

Assoc.Prof.(SS&AC),

Coordinating centre:

TRRI, Aduthurai

Dr.K. Manikandan, Asst. Prof.(SS&AC)

ADAC&RI, Trichy

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

KVK, Tindivanam

Dr.Gomadhi, Asst. Prof. (SS&AC),

ORS, Tindivanam

Dr.E.Jamuna, Asst.Prof.(AGM),

C. RESEARCH PROJECTS AND REMARKS

| Projects | Soil Science & Agricultural Chemistry | Agricultural Microbiology | Total |
|------------------------------|--|----------------------------------|--------------|
| Action Plans | 3 | - | 3 |
| University Research Projects | 2 | 3 | 5 |
| On Farm Trial | 1 | - | 1 |
| Total | 6 | 3 | 9 |

Project wise remarks:

| S. No. | Activity | Duration | Scientist(s) | Remarks |
|-----------------------------|---|--------------------|---|---|
| ACTION PLAN PROJECTS | | | | |
| 1. | Iron Management Strategies for groundnut in calcareous soil | Jul 2021- Mar.2022 | Dr.S.Meena, Professor (SS &AC) Dr. S. Karthikeyan Professor (AGM) Dr.V.Arunkumar Asst. Prof.(SS&AC) | <ul style="list-style-type: none">• The action plan is completed.• OFT may be proposed |
| 2. | Refining sulphur recommendation for yield maximization in sesame under sesame - greengram / blackgram cropping Sequence | Sept.2020 Aug.2022 | Dr.M.R.Backiyavathy Professor (SS&AC) Dr.M. Baskar, Professor (SS &AC) Dr.P.G.Lavanya Professor (SS&AC) Dr.K.Sathyabama Assoc.Prof.(SS&AC) | <ul style="list-style-type: none">• The action plan is completed.• OFT may be proposed |

| | | | | |
|-------------------------------------|--|------------------------|--|--|
| 3. | Assessment of quality parameters of TNAU Sesame varieties and land races | Jul 2021 Mar.2022 | Dr.S.Meena Professor (SS&AC) Dr. M.R. Latha Assoc. Prof. (SS&AC) | <ul style="list-style-type: none"> • The project may be continued. • The findings may be given for information |
| UNIVERSITY RESEARCH PROJECTS | | | | |
| 1. | NRM/TVM/SAC/GNT/2015/001. Permanent Manurial Experiment (PME) on Rainfed Groundnut and Cold weather Gingelly | July 2020 June 2025 | Dr.P.G.Lavanya Professor (SS&AC) | <ul style="list-style-type: none"> • The project may be continued • The findings may be given for information |
| 2. | NRM/CBE/SAC/GNT/2019/001 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. | May2019 Apr 2022 | Dr.M.R.Latha Assoc.Prof. (SS&AC) | <ul style="list-style-type: none"> • The project may be continued • The extension proposal for the project period may be submitted |
| 3. | NRM/TVM/AGM/OIL/2022/002 : Influence of potassium releasing bacterium Paenibacills mucilaginous (KRB 9) & K rich mineral source on growth promotion and nutrient acquisition in Groundnut | Jan 22 to Feb 24 | Dr. R.Brindavathy Assoc. Prof. (AGM) Dr. G. Gomathi Asst. Prof. (SS & AC) | <ul style="list-style-type: none"> • The project may be continued as per the technical programme |
| 4. | NRM/TVM/AGM/GNT & SES/2021/001 Evaluation of Zinc solubilizing bacteria as bioinoculant for Groundnut and Sesame | Nov. 2020 Jun 2023 | Dr.E. Jamuna Asst. Prof. (AGM) | <ul style="list-style-type: none"> • The project may be continued • The findings may be given for information |

| | | | | |
|----|--|-----------------------|---|---|
| 5. | NRM/TVM/AGM/SES/2021/001 Studies on the isolation of elite sulphur oxidising bacteria and its effect on the yield and quality of sesame in rice fallow system. | Nov. 2020 June2023 | Dr. E. Jamuna Asst. Prof. (AGM) Dr. G. Gomathi Asst. Prof. (SS & AC) | <ul style="list-style-type: none"> • The project may be continued • Identification and characterization of the SOB may be studied |
|----|--|-----------------------|---|---|

SEED CENTRE

RESEARCH PROJECTS AND REMARKS

| Projects | Seed Science and Technology |
|------------------------------|-----------------------------|
| Action Plan Project | 1 |
| University Research Projects | 8 |
| Externally funded projects | 1 |
| Total | 10 |

I. Plan of work for Action plan project 2022-23

| S. No | Work plan 2022-23 | Duration | Scientist in-charge | Remarks |
|----------------------------|--|--------------|--|---|
| Action Plan Project | | | | |
| 1 | Development of e-nose sensor for quick detection of seed quality | 2019 to 2022 | Dr. S. Sundareswaran Director, Seed Centre Dr. K. Raja Asst. Prof. (SST) Dr. K. S. Subramanian Director of Research | <ul style="list-style-type: none"> • The project may be continued for one more year. |

University Research Projects

| | | | | |
|---|---|--------------------------------|---------------------------------------|--|
| 1 | SEC/BSR/SST/GNT/2019/001 Influence of mechanical harvester and strippers on seed quality and storability of groundnut seed | December 2019 to November 2021 | Dr. R. Jegathambal Professor (SST) | <ul style="list-style-type: none"> • The project may be closed and completion report may be |
|---|---|--------------------------------|---------------------------------------|--|

| | | | | |
|---|--|-------------------------------|---|---|
| | | | | <p>submitted.</p> <ul style="list-style-type: none"> • Publication may be made in NAAS rated journals. |
| 2 | SEC/CBE/SST/GNT/2020/001 Seed storability of groundnut under ultra-dry storage | April 2020 to March 2022 | Dr. K. Raja Professor (SST) | <ul style="list-style-type: none"> • The experiment may be conducted at different centres for confirmation of results. • The project may be closed and completion report be submitted. • Publication may be made in NAAS rated journals. |
| 3 | SEC/BSR/SST/2020/001 Seed yield maximization studies in castor hybrid YRCH 2 | September 2020 to April 2022) | Dr. V. Vakeswaran Asst. Prof. (SST) | <ul style="list-style-type: none"> • The project may be closed. • Publication may be made in NAAS rated journals. |
| 4 | SEC/VVR/SST/GNT/2020/001 Drill box survey of groundnut in Thiruvannamalai District | February 2020 to January 2022 | Dr. T. Eevera Asst. Prof. (SST) | <ul style="list-style-type: none"> • The project may be closed. • Publication may be made in NAAS rated journals. |
| 5 | SEC/TVM/SST/GNT/2020/001 Studies on prevention of in-situ germination in groundnut var. VRI 8 | April 2020 to December 2022 | Dr. K. Parameswari Asst. Prof. (SST) | <ul style="list-style-type: none"> • The project may be continued. |
| 6 | SEC/TRY/SST/GNT/2021/001 Development of FTIR | October 2020 to August 2022 | Dr. T. Eevera Asst. Prof. (SST) | <ul style="list-style-type: none"> • The project may be closed and |

| | | | | |
|--|--|--|--|--|
| | based methodology to determine the quality of groundnut seeds during storage | | | the completion report be submitted. • Publication may be made in NAAS rated journals. |
|--|--|--|--|--|

| | | | | |
|---|---|---------------------------------|-----------------------------------|---------------------------------|
| 7 | SEC/KKM/SST/OIL/2021/001 Standardization of seed pelleting techniques for mechanical sowing of Gingelly | (September 2021 to August 2023) | Dr.K.Indira Professor (SST) | • The project may be continued. |
| 8 | SEC/CBE/SST/OIL/2021/001 Study on seed dormancy, insitu germination and storage potential of pre-release cultures of groundnut | (March 2021 to February 2023) | Dr.V.Manonmani Professor (SST) | • The project may be continued. |

Externally funded scheme

| | | | | |
|---|---|--|--|---------------------------------|
| 1 | PPV/SC/CBE/SST/2003/R001 DUS test for Rice and Sunflower under PPV & FR Authority at the Department of Seed Science and Technology, TNAU, Coimbatore | (13.02.2004 to 31.03.2022) (Annually continued) | Dr.R.Jerlin Professor and Head Dr.R.Vigneshwari Asst. Prof. (SST) | • The project may be continued. |
|---|---|--|--|---------------------------------|

Action Plan for 2022-2023

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

| | |
|----------------------------------|---|
| Duration | From 2019 to 2023 |
| Location and scientist in-charge | TNAU, Coimbatore : Dr. S. Sundareswaran Director, Seed Centre Dr. K. S. Subramanian Director of Research Dr. K. Raja, Asst. Prof. (SST) |
| Objectives | To develop e-nose sensor for quick deterioration of seed quality. |
| Treatments | <ul style="list-style-type: none">• Quantification of closely associated volatiles for seed deterioration of groundnut and sunflower• Development and validation of e-nose device for sensing the volatile signals associated with seed deterioration. |

3. CROP PROTECTION

A. TECHNOLOGY FOR ADOPTION /OFT / INFORMATION

I. For Adoption:- Nil

II. For On Farm Testing

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

Treatments:

T1-Neem cake 250 kg/ha + 3 rows of maize in border

T2-Neem cake 250 kg/ha + 3 rows of maize in border + spray of Azadirachtin 1500 ppm @ 5 ml/lit on 40 DAS

T3-Recommended Practice

T4-Sesame alone

Variety: Popular variety in the Region

Season: *Kharif* 2022 and *Rabi* 2022-2023 (Two Trials)

Replication: Seven

Lead Centre: RRS, Vriddhachalam

| Centres | Scientist identified |
|--------------|---|
| RRS, VRI* | : Dr. P.Indiragandhi, Asst. Professor (Entomology) Dr. A. Sangeetha, Asst. Professor (Pl. Pathology) |
| ADAC&RI, TRY | : Dr.M.Chandrasekaran, Asst. Profesor |

| | | |
|---------------|---|--|
| | | (Entomology) Dr. V.K.Sathya, Asst. Professor (Pl. Pathology) |
| AC & RI, ECK | : | Dr.V.G.Mathirajan, Assoc. Prof (Entomology) Dr.S.Mathiyazhagan, Asst. Professor (Pl.Pathology) |
| AC & RI, VVNR | : | Dr.S.Douresamy, Professor (Entomology) Dr.D.Dinakaran, Professor and Head (Crop Protection) |

* Monitoring Scientist

Observation to be recorded

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

OFT 2. Management of castor capsule borer

Treatment Details

T1- IPM capsule

- Intercropping with Blackgram
- Application of Azadirachtin 1% @ 1.5 ml/lit as prophylactic (75DAS)
- Spraying of Beauveria bassiana 2.5 kg/ha @ 90&105 DAS
- Need based application of chlorantraniliprole 18.5 SC @ 0.3ml/lit (When capsule damage reaches 10%)

T2-Farmer practice

- Spraying of profenophos 50% EC @ 2ml/lit on 75DAS and Chlorantraniliprole 18.5 SC @ 0.3 ml/lit @ 105 DAS

T3- Control

Replication: 7; Design: RBD; Season: *Kharif* 2022

Lead Centre: TCRS, Yethapur

| Centre | Scientists identified |
|----------------------|--|
| TCRS, Yethapur | Dr. P.A.Saravanan, Asst. Professor (Entomology) |
| RRS, Vriddhachalam | Dr. C.Vijayaraghavan, Asst. Professor (Entomology) |
| KVK, Santhiyur | Dr. M. Ravi, Asst. Professor (Entomology) |
| AC&RI, Vazhavachanur | Dr.S.Douresamy, Professor (Entomology) |

OFT 3: Biological management of root rot of sesame Treatments

- T1: Seed treatment with of *Trichoderma asperellum* @ 4g/kg of seed + 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

Season: *Kharif* and *Rabi*; Variety: VRI
 Replications: 7, 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) |
| SRS, Cuddalore | Dr. S. Thangeshwari, Asst. Professor (Plant Pathology) |
| AC&RI, Madurai | Dr.P. Mahalashmi, Assistant Professor (Plant Pathology) |
| CRS, Aliyarnagar | Dr. B. Meena, Professor (Plant Pathology) |

OFT 4: 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

Season: Kharif / Rabi; Plot size: 4 x 3m; Variety/Hybrid: TNAU Sunflower Hybrid CO 2; Replications: 7; 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. TKS. Latha, Asst. Professor (Plant Pathology) |
| AC & RI, Killikulam | Dr. M. Paramasivan, Asst. Professor (Plant Pathology) |
| ADAC & RI, Trichy | Dr. M. Rajesh, Asst. Professor (Plant Pathology) |

III. For information

A. Agricultural Entomology

Groundnut

- Out of 21 entries screened VG19817 and VG 19802 showed resistant reaction against thrips and four entries viz., VG 265, VG 19805, VG 19812 and VG 19806 showed resistance against leafhopper. VG19815 and VG 12; and VG19811 and VG19802 showed resistant reaction against leafminer and *Spodoptera litura* respectively.

SESAME

- Five Leafhopper species viz., *Hishimonus sp.*, *Exitianus sp.*, *Orosius sp.*, *Thomsonia porrecta* & *Balclutha sp.* were documented from Sesamum ecosystem at Regional Research Station, Vriddhachalam.
- Application of neem cake 250kg/ha+ 3 rows of maize in border recorded the least shoot webber damage with the highest yield and BCR (1:1.83).

CASTOR

- In castor out of 12 entries YRCH 19016, YRCH 2102 and YRCH 2123 were found to be resistant against leafhopper.
- IPM capsule (Intercropping with blackgram, application of azadirachtin 1% @1.5ml/lit as prophylactic (75 DAS), spraying of *Beauveria bassiana* 2.5 kg/ha at 90 and 105 DAS, need based spraying of chlorantraniliprole @ 0.3ml/lit at 10% capsule damage) recorded the least capsule borer damage with the highest yield and BCR (1:2.46).

B. Plant Pathology

Groundnut

- Groundnut germplasms viz., VG-12 and VG-19817 were found to be resistant against leaf spot and rust diseases.
- Seed treatment with talc-based formulation of *Actinomyces* @ 10g/kg of seed followed by Soil application of enriched talc-based formulation of *Actinomyces* @ 1kg/acre (15, 30 and 45 DAS) was found to be effective against soil borne diseases of groundnut
- Seed treatment with *Bacillus subtilis* (Bbv57) talc formulation @ 10 g/kg followed by foliar spray of tebuconazole 50% + trifloxystrobin 25% @ 1 g/l at 40 and 60 DAS was found to be effective in managing the late leaf spot and rust diseases of groundnut with increased pod yield and haulm yield.

- Seed treatment with *Pseudomonas* sp @ 10g/kg + Soil Application of *Pseudomonas* sp @ 2.5kg + Neemcake 150kg/ha was highly effective in reducing the root rot and stem rot diseases (70.01 and 64.85%) with increased the yield.

Sesame

- Sesame germplasms *viz.*, VS19018 and VS19048 showed moderate resistant reaction to root rot and powdery mildew diseases
- Seed treatment with *T. asperellum* @ 4g/kg + Foliar spray of thiamethoxam 25 WG @ 0.5 g/l on 30 DAS + Foliar spray of propiconazole @ 1 g/l on 45 DAS was found to be effective against root rot, leaf spot, powdery mildew and phyllody diseases
- Seed treatment with *Bacillus subtilis* (TNAU-Bs1) @ 20 ml / kg + Soil application of VAM @ 50 kg/ ha at 15 DAS + Foliar application of liquid formulation of *B. amyloliquefaciens* (TNAU-PP-CC-B-0171) @ 0.75% on 45 DAS was found to record less root rot disease incidences and increased the yield with high CBR.

Sunflower

- Sunflower entry, CSFH 18280 showed moderate resistant reaction to leaf spot and powdery mildew diseases.
- The mycoparasite, *Ampelomyces quisqualis* (AQ003) liquid formulation @ 3.0% is found to be effective for sunflower powdery mildew disease

Castor

- Castor germplasms *viz.*, YRCH 19014, YRCH 2106, YRCH 2107 and YRCH 2109 were found to be resistant against wilt disease.
- Foliar spray of propiconazole @ 0.1 % at 45, 60 and 75 DAS recorded minimum incidence of *Botrytis* gray mold (22.26 PDI) with maximum yield of 1882 kg /ha with higher CB ratio of 2.98.

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 Agri. Entomology, TNAU, Coimbatore | | |
|--|--|---|---|
| Activity | Name of the Scientist(s) and Centre(s) | Observations to be made | Deliverables |
| <p>1. Monitoring the pests of oilseeds on regular and emerging pests.</p> <p>2. Assessment of insect pests and natural enemies population <i>in situ</i></p> <ul style="list-style-type: none"> • Fixed and rowing survey in the district identified during specific crop season • On campus fixed plot study at weekly interval in identified | <p>RRS, VRI Dr. C. Vijayaraghavan, Asst. Professor (Entomology) (Groundnut-Cuddalore, Villupuram and Kallakurichi Dt)</p> <p>Dr. P. Indiragandhi, Asst. Professor (Entomology) (Sesamum- Cuddalore, Villupuram and Kallakurichi Dt)</p> <p>KVK, VRM Dr. K. Sasikumar, Asst. Professor (Entomology) (Groundnut & Sesamum-Thiruvannamalai & Vellore Dt)</p> <p>IOA, KMR Dr. W. Baby Rani, Professor (Entomology) (Groundnut & Sesamum-Perambalur & Ariyalur Dts.)</p> <p>CRS, ALR Dr. B.Vinothkumar, Asst. Professor (Entomology) (Groundnut & Sesamum-Tiruppur Dt.)</p> <p>ARS, BSR Dr. K. Ganesan, Asst. Professor (Entomology) (Groundnut & Sesamum-Erode Dt.)</p> | <p>Incidence of pest and diseases are to be monitored throughout the crop period during <i>kharif</i> and <i>rabi</i> Pest and disease incidence is to be correlated with weather parameters.</p> | <p>Forecasting seasonal occurrence of major insect pests/diseases</p> |

| | | | |
|--|---|--|--|
| <p>crops at VRI, CBE, KMR, BSR, ALR, VVNR, KDM by the identified Scientists</p> <p>Roving plot study at fortnightly interval by all the participating Scientists in the identified Centres</p> | <p>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. P.A.Saravanan, Asst. 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. Zadda Kavitha, Asst. Professor (Entomology) (Groundnut & Sesamum-Madurai Dt.)</p> | | |
|--|---|--|--|

b. Diseases

| Theme leader | Dr. T.K.S .Latha , Asst. Professor (Plant Pathology) and Dr. A. Sangeetha , Asst.Professor (Pl. Path.), RRS, Vriddhachalam | | |
|--|--|---|--|
| 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. | <p>Groundnut Dr. B. Meena, CRS, Aliyarnagar Dr. T.K.S.Latha RRS, Vridhachalam</p> <p>Sesame Dr. A. Sangeetha, RRS, Vriddhachalam</p> <p>Castor Dr.V,Ravichandran TCRS, Yethapur</p> <p>Sunflower Dr. L. Rajendran, Dept. of Oilseeds, TNAU, Coimbatore</p> | <ul style="list-style-type: none"> • Incidence of pest and diseases are to be monitored throughout the crop period during <i>kharif</i> and <i>rabi</i>/summer • Pest and disease incidence is to be correlated with weather parameters. • A forewarning model has to be developed leaf spot and rust diseases of groundnut with available data by CRS, Aliyarnagar centre (Dr. B. Meena, Professor Plant Pathology) | <ul style="list-style-type: none"> • Forecasting seasonal occurrence of major insect pests/diseases • Monitoring of invasive pests if, any |

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 Agri. 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 | <p>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. P. Indiragandhi, Asst Professor (Ento.) (Sesame) CRS, ALR Dr.B. Vinothkumar, Asst Professor (Ento.) (Groundnut) TCRS, YPR Dr. P.A.Saravanan, Asst Professor (Ento.) (Castor)</p> | <ul style="list-style-type: none"> ❖ 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 |

Action Plan 3. Exploration of bacterial endophytes for late leaf spot and rust disease in groundnut (New)

| | | | |
|---|--|---|---|
| Theme leader | Dr. T.K.S. Latha, Asst. Professor (PI Pathology) RRS, Vridhachalam | | |
| Activity | Name of the Scientist(s) and Centre(s) - Proposed | Proposed Activities for 2022-2023 | Deliverables |
| Isolation and morpho-molecular characterization of bacterial endophytes from resistant lines and germ plasm | Dr. T.K.S. Latha, RRS, Vridhachalam Dr. B. Meena, CRS, Aliyarnagar Dr. L. Rajendran, TNAU, Coimbatore | <ol style="list-style-type: none"> 1. Isolation, identification of bacterial endophytes from peanut germplasm 2. Molecular characterization by using 16sRNA 3. Efficacy study under <i>in vitro</i> pot culture and field conditions | Potential bacterial endophyte will be obtained for LLS and rust diseases management |

Action Plan 4. Characterization of phytoplasma causing phyllody and its vector in sesame and phyllody vector management

| Theme leader | Dr. A. Sangeetha, Assistant Professor (PI. Path), RRS, Vriddhachalam Dr. P.Indiragandhi (Entomology), RRS, Vriddhachalam | | |
|--|---|---|--|
| Activity | Name of the Scientist(s) and Centre(s) | Observations to be recorded | Deliverables/ expected outcome |
| <p>Pathology : Morph-molecular characterization of phyllody disease in sesame</p> <p>Entomology:</p> <ul style="list-style-type: none"> • Identification of leafhopper species complex • Management of phyllody vector in sesame <p>IPDM T1 – ST with <i>Bacillus subtilis</i> @ 10gm/kg+imidacloprid 600FS @7.5gm/kg Installation of yellow sticky trap Roguing of infected plants Foliar spray with thiamethoxam 25WG @ 0.5g/lit on 30 DAS and imidacloprid 17.8 SL@ 3 ml/10lit T2- Farmers practice T3-Control Replication: 7 Season: <i>Kahrif</i> 2022 and <i>Rabi</i> 2022-2023</p> | <p>TNAU, Coimbatore Dr. L.Rajendran, Asst Professor (PI Path) Dr.N. Chitra, Professor (Entomology)</p> <p>RRS, VRI Dr. A. Sangeetha, Asst. Professor (PI Path) Dr. P. Indiragandhi, Asst. Professor (Entomology)</p> <p>ADAC&RI, Trichy Dr.M.Rajesh, Asst Professor (PI Path) Dr.P.Yasotha, Asst. Professor (Entomology)</p> <p>TCRS, YPR Dr.V.Ravichandran, , Asst. Professor (PI Path) Dr.P.A. Saravanan, Assistant Professor (Entomology)</p> <p>AC&RI, Madurai Dr.P.Mahalakshmi, Asst Professor (PI Path) Dr.Zadda kavitha, Assistant Professor (Entomology)</p> | <p>Entomology component</p> <ul style="list-style-type: none"> ➤ collection of leafhoppers samples for identification ➤ Leafhopper population/ plant ➤ Pest defender ratio ➤ Yield and BCR | <ul style="list-style-type: none"> • Vector complex for phyllody will be made available • Effective management strategy will be evolved for phyllody in sesame |

Action Plan 5. Management of Botrytis gray mold in castor (New)

| Theme Leader: | Dr. V.Ravichandran, Asst. Prof. (Pl. Path.) TCRS, Yethapur | | |
|--|--|---|---|
| | Name of the Scientist and Centre | Observations to be recorded | Deliverables |
| <p>T₁- Seed treatment with <i>Bacillus subtilis</i> (Bbv57) @ 10g/kg and foliar spray (0.1 %) of carbendazim at 45 DAS, propiconazole at 60 and azoxystrobin at 75 DAS</p> <p>T₂- Seed treatment with <i>Bacillus subtilis</i> (Bbv57) @ 10g/kg and foliar spray (0.1 %) of propiconazole 45 DAS, carbendazim at 60 and azoxystrobin 75 DAS</p> <p>T₃- Seed treatment with carbendazim@ 2g/kg and foliar spray (0.1 %) of propiconazole at 45 DAS and carbendazim at 60 and azoxystrobin 75 DAS</p> <p>T₄- Seed treatment with <i>Bacillus subtilis</i> (Bbv57) @ 10g/kg and foliar spray of B. subtilis @ 0.2 per cent at 45, 60 and 75 DAS</p> <p>T₅- Control</p> | <p>1. Dr. V. Ravichandran, TCRS, Yethapur</p> | <ul style="list-style-type: none"> • Percent Disease index • Capsule borer infestation • Yield (kg/ha) • CB ratio | <p>To develop suitable management practices</p> |

Action Plan 6. Exploitation of *Ampelomyces* (AQ 003) for the powdery mildew management in sunflower and sesame

| Theme leader | Dr. L. Rajendran, Assistant Professor (Pl. Path), TNAU, Coimbatore | | | | | | | | | | | | | | |
|--|---|---|--------------|------------|----------------|---|----------------|---|----------------|---|----------------|--|----------------|---------|--|
| Activity | Name of the Scientist(s) and Centre(s) - Proposed | Proposed Activities for 2021-2022 | Deliverables | | | | | | | | | | | | |
| Testing the liquid bio formulation of <i>Ampelomyces</i> (AQ 003) for the powdery mildew disease | Dr. L. Rajendran, TNAU, Coimbatore Dr. A. Sangeetha, RRS, Vridhachalam | <p>Study the efficacy of liquid formulation under pot culture and field conditions using 3.0% formulation along with standard fungicide</p> <table border="1"> <thead> <tr> <th>T. No</th> <th>Treatments</th> </tr> </thead> <tbody> <tr> <td>T₁</td> <td>Foliar application of <i>Ampelomyces</i> @ 1ml/lit during the onset of disease initiation</td> </tr> <tr> <td>T₂</td> <td>Foliar application of <i>Ampelomyces</i> @ 2ml/lit during the onset of disease initiation</td> </tr> <tr> <td>T₃</td> <td>Foliar application of <i>Ampelomyces</i> @ 3ml/lit during the onset of disease initiation</td> </tr> <tr> <td>T₄</td> <td>Standard fungicide check – difenoconazole @ 0.5ml/lit or wettable sulphur @ 2g/lit</td> </tr> <tr> <td>T₅</td> <td>Control</td> </tr> </tbody> </table> | T. No | Treatments | T ₁ | Foliar application of <i>Ampelomyces</i> @ 1ml/lit during the onset of disease initiation | T ₂ | Foliar application of <i>Ampelomyces</i> @ 2ml/lit during the onset of disease initiation | T ₃ | Foliar application of <i>Ampelomyces</i> @ 3ml/lit during the onset of disease initiation | T ₄ | Standard fungicide check – difenoconazole @ 0.5ml/lit or wettable sulphur @ 2g/lit | T ₅ | Control | Effective management strategy will be evolved for powdery mildew disease in sesame and sunflower |
| T. No | Treatments | | | | | | | | | | | | | | |
| T ₁ | Foliar application of <i>Ampelomyces</i> @ 1ml/lit during the onset of disease initiation | | | | | | | | | | | | | | |
| T ₂ | Foliar application of <i>Ampelomyces</i> @ 2ml/lit during the onset of disease initiation | | | | | | | | | | | | | | |
| T ₃ | Foliar application of <i>Ampelomyces</i> @ 3ml/lit during the onset of disease initiation | | | | | | | | | | | | | | |
| T ₄ | Standard fungicide check – difenoconazole @ 0.5ml/lit or wettable sulphur @ 2g/lit | | | | | | | | | | | | | | |
| T ₅ | Control | | | | | | | | | | | | | | |

Action Plan 7. Evaluation of *Pseudomonas putida* for the management of soil borne diseases in rainfed groundnut

| Theme leader | Dr. M. Paramasivan, Assistant Professor (Pl. Path), Killikulam | | | | | | | | | | | | | | |
|--|---|---|---------------------------------------|------------|----------------|--|----------------|---|----------------|---------------------------------|----------------|---|----------------|---------|---|
| Activity | Name of the Scientist(s) and Centre(s) - Proposed | Proposed Activities for 2022-2023 | Deliverables/ expected outcome | | | | | | | | | | | | |
| Testing the efficacy of <i>P. putida</i> for root rot and stem rot management in groundnut | <p>Dr. T.K.S. Latha, RRS, Vridhachalam</p> <p>Dr. B. Meena, CRS, Aliyarnagar</p> <p>Dr. K. Kalpana AC&RI, Madurai (To be continued at Chettinad)</p> | <p>Study the efficacy of talc formulation <i>in vitro</i> and pot culture</p> <table border="1"> <thead> <tr> <th>T. No</th> <th>Treatments</th> </tr> </thead> <tbody> <tr> <td>T₁</td> <td>Seed treatment of <i>Pseudomonas putida</i> @ 10g/kg of seed</td> </tr> <tr> <td>T₂</td> <td>Soil application of <i>Pseudomonas putida</i> @ 2.5 kg/ha</td> </tr> <tr> <td>T₃</td> <td>T₁ + T₂</td> </tr> <tr> <td>T₄</td> <td>Standard fungicide check – carbendazim @ 1g/lit</td> </tr> <tr> <td>T₅</td> <td>Control</td> </tr> </tbody> </table> <p>Field level testing using seed treatment, soil application of talc formulation along with standard fungicide</p> | T. No | Treatments | T ₁ | Seed treatment of <i>Pseudomonas putida</i> @ 10g/kg of seed | T ₂ | Soil application of <i>Pseudomonas putida</i> @ 2.5 kg/ha | T ₃ | T ₁ + T ₂ | T ₄ | Standard fungicide check – carbendazim @ 1g/lit | T ₅ | Control | Effective management strategy will be evolved for soil borne disease in groundnut |
| T. No | Treatments | | | | | | | | | | | | | | |
| T ₁ | Seed treatment of <i>Pseudomonas putida</i> @ 10g/kg of seed | | | | | | | | | | | | | | |
| T ₂ | Soil application of <i>Pseudomonas putida</i> @ 2.5 kg/ha | | | | | | | | | | | | | | |
| T ₃ | T ₁ + T ₂ | | | | | | | | | | | | | | |
| T ₄ | Standard fungicide check – carbendazim @ 1g/lit | | | | | | | | | | | | | | |
| T ₅ | Control | | | | | | | | | | | | | | |

C. RESEARCH PROJECTS AND REMARKS

List of URP/AICRP/ERP

| Discipline | URP | AICRP | Total |
|-------------------------|-----|-------|-------|
| Agricultural Entomology | 2 | 3 | 5 |
| Plant Pathology | 8 | 4 | 12 |

1. AGRICULTURALENTOMOLOGY

a. University Research Projects

| S. 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, Kudumiyamalai Dr.I.Cannayane, Asst Prof (Nematology), Vamban | <ul style="list-style-type: none">The project may be continued |
| 2. | CPPS/VRI/ENT/GNT/2020/001: Screening of wild <i>Arachis</i> Species for resistance against insect pests and diseases (2020-2023) Dr.C.Vijayaraghavan, Asst. Professor (Agrl. Entomology) Dr. T.K.S. Latha, Asst. Professor (Plant Pathology), RRS, Vriddhachalam | <ul style="list-style-type: none">The project may be continued |
| 3. | 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. (September 2020 to August 2023) Dr. B. Meena Professor (Plant Pathology) CRS, Aliyarnagar | <ul style="list-style-type: none">The project may be continued |

| | | |
|----|---|--|
| 4. | CPPS/CTN/PAT/GNT/2020/001 Organic amendment and biocides for the management of soil borne diseases of groundnut under rainfed conditions. (April 2020 to March 2023) Dr. M. Paramasivan, Asst. Professor (Plant Path), AC&RI, Killikulam | <ul style="list-style-type: none"> The project may be continued |
| 5. | CPPS/KUM/PAT/2021/001 . Seaweeds and bio agents as integrated biocide treatments for controlling Root rot, <i>Alternaria</i> leaf spot and powdery mildew in sesame Dr. P. Mahalakshmi, Asst. Professor (Plant Path), AC&RI, Madurai | <ul style="list-style-type: none"> The project may be continued |
| 6. | CPPS/CBE/PAT/SES/2017/001 Effect of liquid formulation of <i>Pseudomonas fluorescens</i> and <i>Bacillus amyloliquefaciens</i> on the management of leaf blight and charcoal rot of sesame (<i>Sesamum indicum</i> L.) (April 2017 to March 2020) Dr. M. Muthamilan, Professor (Plant Path), Department of Plant Pathology, TNAU, Coimbatore. | <ul style="list-style-type: none"> The project may be continued |
| 7. | CPPS/CBE/PAT/SNF/2018/001 Effect of <i>Ampelomyces 60uisqualis</i> on the management of sunflower powdery mildew caused by <i>Golovinomyces cichoracearum</i> (April 2018 to March 2021) Dr. L. Rajendran, Asst. Professor (Plant Pathology), Department of Plant Pathology, TNAU, Coimbatore | <ul style="list-style-type: none"> Completion report was submitted. |
| 8. | CPPS/CBE/PAT/SES/2019/001 Studies on seed borne fungi in sesame (September 2019 to August 2022) Dr. T. Anand, Asst. Professor (Plant Path), Seed Centre, TNAU, Coimbatore | <ul style="list-style-type: none"> The project may be continued |
| 9. | CPPS/YTP/PAT/CAS/2020/001 Evaluation of Biological and Chemical Management practices for <i>Botryotinia Grey</i> mold and Capsule borer in Castor. Dr.V. Ravichandran, Asst. Professor (Plant Path) TCRS, Yethapur | <ul style="list-style-type: none"> The project may be continued |

| | | |
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| 10. | <p>CPPS/VNR/CPS/SES/ 2021/ 001 Characterization of <i>Candidatus</i> Phytoplasma inciting sesame phyllody and its integrated management. (April 2021 to March 2024) Dr. M. Deivamani, Asst. Prof(Plant Path) Dr. Y. S. Johnson Thangaraj Edward, Professor (Entomology), AC & RI, Vazhavachanur</p> | <ul style="list-style-type: none"> The project may be continued |
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IV. REMARKS

a. General recommendations

- Spread of TNAU released oilseed varieties may be carried out (Action: CARDS)
- Suitable bird scaring machinery may be developed for Sunflower seed production (Action: AEC&RI)
- Combined harvester for groundnut for may be developed (Action: AEC&RI).
- New oilseed crop for Tamil Nadu may be explored (Action: CPBG).
- AC&RI, Eachangkottai may be included for conducting MLT in oilseed crops (Action: CPBG)
- *In situ* germination in groundnut may be studied and addressed (Action: Dept. of SS&T, Dept. of CRP & CPMB&B).
- Effective storage technology may be developed for groundnut (Action: AEC&RI).
- All 19 (NPK) water soluble fertilizer production facility may be established (Action: NRM).
- Beneficial microbial cultures identified may be deposited with the University Repository (Action: All Directorates)
- All the scientists working in oilseeds may be encouraged to submit proposals for external funding.

b. Crop Improvement

- High yielding bunch groundnut varieties suitable for rainfed cultivation may be evolved (Action: RRS, VRI, ORS, TVM & Dept. of Oilseeds, CPBG).
- Other state varieties in groundnut popular in Tamil Nadu may be used as check varieties (Action: RRS, VRI & ORS, TVM)
- Sesame varieties suitable for rice fallow ecosystem may be identified for area expansion (Action: RRS, VRI)
- Research on development of monostem varieties in sesame suitable for mechanization may be intensified (Action: RRS, VRI)
- Innovative breeding in sesame for evolving phyllody / dry root rot resistant varieties (Action: RRS, VRI & CPMB&B)
- Development of castor varieties / hybrids / parental lines for synchronized maturity may be intensified (Action; TCRS, YTPR)

- Development of restorer lines with high oleic acid content in sunflower may be focused (Action: Dept. of Oilseeds, CPBG & CPMB&B).
- Feasibility of safflower cultivation in Tamil Nadu may be explored (Action: Dept. of Oilseeds, CPBG)
- Genetic improvement of groundnut for oleic acid content and disease resistance may be given priority (Action: CPBG & CPMB&B)

C. Crop Management

- Agronomic technologies suited for mechanization in monostem sesamum variety may be developed (Action: RRS, VRI& AEC&RI)
- Castor hybrids may be popularised in non-traditional areas of Tamil Nadu (Action; TCRS, YTPR)

D. Crop Protection

- Technologies for white fly management in castor may be developed (Action; TCRS, YTPR)
- Identification and utilization of resistant sources for new pests and diseases in sesame and groundnut (Action: RRS, VRI, ORS, TVM & Dept. of Oilseeds, CPBG)
- Wherever possible artificial screening for pests and diseases in oilseed crops may be carried out (All ORSs).

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