TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

40th Horticultural Crops Scientists Meet
(23.05.2024)

LEAD CENTRE

Horticultural College and Research Institute
Coimbatore

VENUE

Horticultural College and Research Institute
Periyakulam

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore – 641 003

2024

PROCEEDINGS

40th Horticultural Crops Scientists Meet (23.05.2024)

The 40th Horticultural Crops Scientists Meet was held on 23.05.2024 at HC&RI, TNAU, Periyakulam under the chairmanship of **Dr. V. Geethalakshmi**, Vice Chancellor, TNAU, Coimbatore through hybrid mode. Madam suggested to explore the possibilities of introduction of Non-traditional and exotic horticultural crops. Extending shelf-life in perishables through non-chemical measures may be given priority. It was insisted to standardize Good Agricultural Practices for export oriented horticultural crops.

Dr. M. Raveendran, Director of Research offered welcome address and indicated the research gaps in horticulture. It was insisted that germplasm collection and genetic enhancement may be intensified in all horticultural crops. Efforts may be taken to popularize the newly released horticultural crop varieties and technologies. Availability of quality planting materials may be ensured in all crops.

Dr. P. Paramaguru, Dean, HC&RI (W), Trichy presented the action taken report of the recommendations made during the 39th Crop Scientist's Meet. **Dr. P. Irene Vethamoni**, Dean (Horticulture), HC&RI, Coimbatore presented the Research Highlights of the year 2023-2024. **Dr. J. Rajangam**, Dean, HC&RI, Periyakulam presented the action plan formulated for 2024 – 25. **Dr. M. Shanthi**, Director (CPPS), presented research highlights (2023-24 pertaining to crop protection of Horticulture crops.

Dr. M.S. Aneesa Rani, Nodal officer, HC&RI, Jeenur proposed formal vote of thanks.

The proceedings of the 40th Horticulture Scientists' Meet are furnished under the following headings.

I. Fruit Crops

A. Cultures under MLT/ART/OFT
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

II. Vegetable Crops

A. Cultures under MLT/ART/OFT
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

III. Spices and Plantation Crops

A. Cultures under MLT/ART/OFT
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

IV. Floriculture and Landscape Architecture
A. Cultures under MLT/ART/OFT
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

V. Medicinal and Aromatic Crops
A. Cultures under MLT/ART/OFT
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

VI. Crop Protection
A. Technologies for adoption/information
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

VII. Remarks

VIII. List of Participants

I. Fruit Crops

A. Cultures under MLT/ART/OFT

(i) Advanced cultures identified for release during 2025

Pickling mango (Vadumangai/ baby mango) (IC number-0638822)- MI-03

- Clonal selection from the plus tree of Agamalai forest region
- Semi-spreading branches with regular bearing habit
- Cluster bearing habit with 15-20 tender fruits / cluster
- Unique baby sized fruit of 16.29 g
- Number of fruits per tree – 4205
- Fruit yield - 68.50 kg/tree; 6.85 t/ha
- Tender fruits are soft with high acidity - 2.52 %,
- Ascorbic acid - 92.46 mg/100 g
- Total phenol content - 40.65 mg/100 g
- Shelf life of fruit is 10 days and pickle can be stored for one year.

Acid lime genotype SNKL 19 for year-round production

- Selection from germplasm maintained at CRS, Sankarankoil
- Average fruit weight-62.5 g
- Number of fruits per tree -1160
- Yield per tree -58.20 kg/tree
- Juice content- 54.10%,
- TSS content-8.3^{0}Brix
- Ascorbic acid -29.30mg/100 g
- yellow and smooth skin surface
- Fruits are available throughout the year
- Less incidence of leaf miner, citrus fruit fly, mites and less susceptible to dieback

Avocado (TKD PA 82)

- Selection from germplasm maintained at Horticultural Research Station, Thadiyankudisai
- Hass type and pear shape fruit with cluster bearing habit
- Average fruit weight is 280g to 330g/fruit
- Number of fruits/ tree -800 Nos
- Yield - 240 kg fruits /tree
- Pulp/seed ratio - 5.24
- Fat content -35.46 %

S. No.	Features	TKD 1	Hass	TKD PA 82
1.	Flowering type	A	A	A
2.	Flowering Season	Dec- Feb	Dec-Feb	Dec-Mar
3.	Fruit maturity period	8 months	9 months	9 months

4.	Number of fruits/ tree	146	138	800 Nos
5.	Fruit weight (g/fruit)	442.70	242.66	290.61
6.	Pulp/seed ratio	5.1	6.40	5.24
7.	Fruit shape	Round to oblong shaped	pear or oval-shaped	Pear shaped
8.	Bearing habit	Single fruited	Single fruited	Cluster bearing
9.	Skin colour	Dark green to yellow spotted green when ripe	greenish-black to purplish-black when ripe	Light green to yellowish green when ripe
10.	Skin Texture	Smooth	Rough	smooth
11.	Pulp colour	Creamy yellow	Pista Green	Yellowish green
12.	Fat content	35.20	36.40	35.46 %
13.	Yield (kg /tree)	64.49	33.49	240

Mango: MI-25 (Natham Paalpushpam) - IC 0638823

- Clonal Selection from germplasm maintained at Horticultural College and Rsearch Institute, Periyakulam.
- Semi spreading and regular bearing habit
- Average fruit weight -340 g /fruit
- High yielder -540 kg/tree
- Average yield is 54.0 t/ha with the high TSS-19.4° Brix.
- Brown colour tinge from stalk end to distal end
- Bearing in off season Sep - Oct (220 kg/tree)

Custard apple Sathambadi 1 (SB1)

- Selection from custard apple germplasm maintained at Regional Rsearch Stataion, Aruppukottai.

S. No.	Characters	APK (Ca)1 (2003)	Sathambadi 1 (SB1) Natham collection	Mel Malaiyur 2 (MM2) Dharmapuri collection
1.	Fruit weight	208 g	352 g	320 g
2.	No. of Fruits	72 fruits/tree	Peak season 220-250 fruits/tree Other months –15-25 fruits /tree	180 -210 fruits/tree
3.	TSS	24.5^0 B	23^0 B	24.8^0 B
4.	Season	Sep – Oct	Peak Season: Sep- Nov Year-round flowering & fruiting	Peak Season: Sep-January
5.	Drought tolerance	Yes	Yes	Yes

ii) Technologies recommended for release during 2024-2025

Preharvest fruit bagging Technology in Mango fruits

- Double layered paper bag was tested four varieties of mango *viz.*, Alphonso, Ratna, Mallika and Himampasand and different locations studied.
- The results reavealed that it is 100 % fruit fly free fruit and free from pesticide residues
- It increased all fruit physicochemical parameters *viz.*, fruit firmness, increased fruit shelf life, increased fruit weight, increased fruit retention, reduced no of days required for harvest,
- Reduced disease incidence and also uniform yellow colour peel at the time of harvest and higher Market Price

Parameters	**Alphonso**		**Ratna**		**Mallika**		**Himampasand**	
	Double layered Bag	**Control**	**Double layered Bag**	**Control**	**Double layered Bag**	**Control**	**Double layered Bag**	**Control**
No of days required for maturity (Days)	63	68	73	77.5	73	75	72	73.5
Fruit retention (%)	75.03	66.07	83.50	77.22	78.53	67.32	76.61	71.38
Fruit weight (g)	295.36	257.78	412.24	362.56	507.53	460.39	608.17	567.31
Fruit Firmness (N) at harvest	36.31	30.97	47.19	41.14	48.24	43.51	40.31	34.97
Fruit Shelf life (days) under Room Temperature	18.5	15	18	15.5	18	14	17	15
Fruit fly incidence (%)	0	13.4	0	12.02	0	12.20	0	12.72
Disease incidence (%)	4.77	40.12	4.27	36.51	4.83	41.20	5.06	42.94
Fruit Peel colour at harvest (Yellow/ Green)	Yellow	Green	Yellow	Green	Yellow	Green	Yellow	Green

Papaya: Grafting

- Number of fruits per plant - 42.16,
- Average fruit weight -1.25 kg
- Yiel 43.41 kg/plant
- Yield is higher in grafts than the plants raised from seedlings.
- The flowering characters *viz*., days to flowering (73.83 DAT), first bearing height (65 cm) and days to first harvest (259.83 days) registered lower in grafted plants than the seedlings

S. No.	Observations		Coimbatore centre
1	Days for achieving grafting thickness in rootstocks (Number)	:	90 days
2	Scion shoots produced after decapitation of mother plant (Number)	:	18 -20 /time
3	Days for achieving grafting thickness in scion (Number)	:	40 -45 days
4	Grafting success (%)	:	52

iii) Cultures recommended for MLT II /ART

Papaya: Promising gynodioecious culture C1-33

- Hybrid derivative is CP 96 x TNAU papaya CO 8
- Selection made during F_4 generation in to advanced generation in $F_{8.}$
- Number of fruits / plant -45
- Average fruit weight-1.50 kg
- Yield 60-70 kg/tree
- Yield 180-200 t/ha.
- TSS is 13^0 Brix and the cavity index is 23 % and resembles Red Lady with firm flesh and free from papain flavor

MI - CBE 5 - Genotype with year-round mango production (culinary purpose)

- Among 25 genotypes, only 10 genotypes flowered throughout the year.
- Among 10 genotypes, MI-CBE-3, MI-CBE-5, and MI-CBE-8 exhibited uniformity in flowering and fruiting in 3 seasons (Apr-May, Oct- Nov and Jan-Feb).
- Average fruit weight -110.5 g
- TSS -14.2^0 Brix
- Number of fruits/tree -453
- Fruit yield /tree -50.06 kg

Mango PMi-1

- Red fleshed and dessert type (akin to Mulgoa)
- Regular bearer
- Average fruit weight -575 g
- Fruit yield / tree -300 kg/tree
- TSS$^\circ$ Brix-23.4

Mango PMi-4

- High yielding pickling type mango with large size fruits
- Average fruit weight - 640 - 950 g
- Fruit yield / tree- 400 kg/tree
- Acidity- 1.28 %
- Ascorbic acid: 2.13 mg/100 g

Banana NPH-02-01

- Hybrid of H 201 (AB) X Anaikomban (AA) and akin to Ladan (AAB)
- Average bunch weight - 17-21 kg/bunch
- Total number of fingers -215 (75-80g/finger)
- TSS -16.8^{o} Brix
- Suitable for ratoon crop under mat system of cultivation in hills
- Resistant to nematodes (Root lesion index: 2)
- Tolerant to *Fusarium* wilt (Corm Lesion index:1)

Intergeneric hybrid progenies of papaya (*Carica papaya* L.) for PRSV resistance

- Five advanced intergeneric hybrids (8th generation) of papaya were evaluated along with their parents CP 50 and *Vasconcellea cauliflora.*
- Among them three promising advanced intergeneric hybrids with high yield potential, less PRSV score and good quality were selected for further evaluation under MLT.

S. No.	Advanced Inter generic Hybrids	Fruit weight (kg/fruit)	Yield (kg/tree/first crop)	PRSV score
1.	CPV-2-15-7-1-2	1.8	98	3
2.	CPV-2-12-7-1-19	1.5	72	3
3.	CPV-2-19-27-37-8	1.5	58	3

Guava Promising OP progenies PG 1-7 and PG 34-1

Features	Arka Kiran	Sel. PG 1-7	Sel. PG 34-1
Pulp colour	Pink	Pink	Dark Pink
Average fruit weight (g)	200-220	190-210	195-210
TSS (^{o}Brix)	11.50	12.60	11.90
TSS (^{o}Brix) at 3/4th maturity	10.70	11.50	11.00
Ascorbic acid (mg/ 100g pulp)	192.50	194.73	201.00
Lycopene content (mg/100g)	7.10	6.40	7.20
No. of seeds/ fruit	384	310	391
Seed hardiness (kgf)	5.28	5.08	6.18
Shelf life @ ambient temperature (days)	2 days	5 days	4 days

iv) Technologies proposed for OFT/ Large scale demonstration

I. Evaluation and validation of biofertilizer formulations in banana

75% RDF + 2ml each of of *Azospirillum brasilense* (Sp 7), *Bacillus megaterium* Pb 1, *Rhizobium pusense* KRBKKM1

T_1	Absolute control
T_2	75% RDF
T_3	75% RDF+5g of Azospirillum brasilense (Sp 7) +5g Bacillus megaterium Pb1 + 10g Rhizobium pusense KRBKKM1
T_4	50% RDF
T_5	50% RDF + 5g of Azospirillum brasilense (Sp 7) +5g Bacillus megaterium Pb1 + 10g Rhizobium pusense KRBKKM1
T_6	75% RDF+2ml each of of Azospirillum brasilense (Sp 7), Bacillus megaterium Pb1, Rhizobium pusense KRBKKM1
T_7	50 % RDF+2ml each of of Azospirillum brasilense (Sp 7), Bacillus megaterium Pb1, Rhizobium pusense KRBKKM1

Note: Bio-fertilizer Dose 2- same at 5th month of planting; T3, T5- Lignite based bio-fertilizer (dose per plant is given); T6, T7- Liquid base (dose per plant is given)

II. Nutrient formulation to enhance yield and to combat PRSV incidence in papaya

Parameters	Control (without spray)	NF spray (5 sprays: 3rd – 7th MAP)
First fruiting height (cm)	99.40	85.24
Number of fruits / plant	52.26	62.80
Average fruit weight (kg)	1.10	1.37
Estimated yield/plant (kg)	57.8	86.0
Estimated yield / ha (t)	170	245
% increase in yield	-	33.89%
PRSV incidence	45.87 (42.65)	30.76 (33.70)
Shelf life (days)	6.60	3.40
Dry latex yield/ fruit (g)	5.02	6.12
B:C ratio	1.5	3.8

III. Fertigation scheduling in mango (*Mangifera indica* L.) under UHDP var. Neelum and Imam Pasand

Neelum and Imam Pasand excelled well in 100 % of RDF through fertigation with highest number of fruits/tree (27.82 and 12.39), yield/tree (7.82 and 6.37 kg) and yield (13.04 and 10.62 t/ha) respectively.

IV. Double hedge row system of planting in sapota var. PKM 4 to enhance the Productivity and quality

Spacing	No. of plants/ha	Yield / tree (kg)	Yield (t/ha)	CBR
8 x 4 x 4 m	416	94.93	39.49	1:37
8 x 8 m	156	133.87	20.88	1:2.1

Characters	**2017-18**		**2018-19**		**2019-20**		**2020-21**		**Pooled mean**	
	DHRS (8x4x4 m)	Normal spacing (8X8 M)	DHRS (8x4x4 m)	Normal spacing (8X8 M)	DHRS (8x4x4 m)	Normal spacing (8X8 M)	DHRS (8x4x4 m)	Normal spacing (8X8 M)	DHRS (8x4x4 m)	Normal spacing (8X8 M)
Plant height (m)	3.38	5.50	3.45	5.70	3.55	5.90	3.70	6.10	3.52	5.80
No of fruits per tree	915	1287	964	1462	1125	1751	1311	1692	1078.75	1548
Fruit length (cm)	13.00	11.22	13.54	11.56	13.2	11.4	13.15	11.81	13.22	11.50
Fruit girth (cm)	18.65	14.85	18.98	15.21	18.76	15.02	18.82	14.98	18.80	15.02
Fruit weight (g)	87.77	85.14	88.15	86.50	88.00	85.60	88.06	88.40	88.00	86.41
Yield per tree (kg)	80.31	109.58	84.98	126.46	99.00	149.89	115.45	149.57	94.93	133.87
Yield (t/ha)	33.41	17.09	35.35	19.73	41.18	23.38	48.03	23.33	39.49	20.88
TSS (° Brix)	25.20	24.80	25.60	24.00	25.00	24.80	25.60	24.40	25.35	24.50

B. Action Plan: 2024-2025

Crop	Centre	Action Plan (2024-2025)
Mango	HC & RI, CBE, PKM & Paiyur	• Evaluation of off- season (CO. MI 05) and pickling mango accessions Vadu mangai: (PKM MO -03) • Evaluation of seedling progenies and coloured mango genotypes / varieties/hybrids. • Evaluation of rootstocks 13-1, Saber & G-1 for problematic soil and drought hardiness
Banana	HC & RI, CBE	Breeding program in Rasthali and tetraploid Neypoovan (Nematode/wilt complex)
Papaya	HC & RI, CBE	Evaluation of gynodioecious papaya (C 1-33) for yield and PRSV tolerance
Acid lime	CRS, SKNL HC & RI, PKM	SNKL-19 Pre- release culture – Large scale plot and mass multiplication
		Evaluation of mutants, to develop thornless and seedless genotypes
Grapes	GRS, Theni (New)	• Evaluation of genotypes for table, juice, wine purpose and to identify region specific varieties. • Evaluation of rootstocks 110 R and 1103 R for biotic and abiotic stress management.

Jack fruit	HC & RI, PKM; VRS, Palur; AC & RI, KKL	Evaluation of the identified small sized fruit (5 kg) genotypes, with yellow flake, yield and high TSS content and for HDP systems
Guava	HC & RI, CBE	Identified PG - 1 - 7 red flesh seedling progenies of guava has to be studied under large scale level
Sapota	HC & RI, PKM	Evaluation of dwarf half - sib progenies (PKM MA - 9 - 2) under HDP (5 x 5m)
Jamun	HC & RI, PKM	Evaluation of mutants for seedlessness and early bearing (Jan-Feb - harvest)
Custard apple, Ber, Jamun, Manilla tamarind, Wood apple, Fig & Karonda	HC & RI, Coimbatore HC &RI (W), Trichy RRS, Aruppukottai	Evaluation of underutilized fruits for rainfed cultivation (Region specific)
Sweet orange (New)	CRS, Sankarankovil HC & RI, PKM	Augmentation of sweet orange genotypes from CRS, Tirupati and CCRI, Nagpur (Region specific)
Mandarin orange	HRS, TKD & YCD	Enrichment of Kinnow mandarin PAU, Pantnagar and Nagpur orange (CCRI) genotypes for yield.
Avocado	HRS, TKD	Hass type (TKD - PA - 04) - Small size, high pulp recovery & high yield large plot size and mass multiplication
Litchi	HRS, TKD (New)	Collection and evaluation of regular and off-season varieties from NRC, Litchi
Temperate fruits and nut crops	HRS, KKL & Ooty (New)	Evaluation of low chilling varieties of Pear, Peach, Plum, Kiwi, Strawberry, Apple, walnut and Macadamia nut.
Banana	HC & RI, CBE	Developed TC protocol to be validated for CO 2 and CO 3 varieties
Guava	HC & RI (W), Trichy, PKM & CBE	Performance study of nutrient formulation through foliar application for yield and nematode tolerance.
Grapes, Dragon fruit	HC & RI, PKM	Standardisation of postharvest management techniques to extend the shelf life - to be continued.
Grapes	GRS, Theni	Evaluation of commercial and coloured varieties under "Y" trellis for yield and quality

C. Remarks on the Research Projects

S. No.	Name of the Projects	Name of the Scientist	Period	Remarks
1.	**HCRI/ CBE/HOR/FRU/2020/002** Evaluation of mango varieties suitable for UHDP in mango	Dr. V. Sivakumar Dr. I. Muthuvel Dr. K. Vanitha	May, 2020 - Apr, 2023	• Project may be continued • May be compared with Bangalora and Himampasand varieties for next year

2.	**HORT/CBE/FRU/HOR/2023/001** Collection, conservation and evaluation of papaya (*Carica papaya.* L) germplasm	Dr. I. Muthuvel Dr. D. Vidhya	Sep, 2021 - Sep, 2024	• Project may be continued • May be included the IARI released varieties
3.	**HORT / CBE /FRU / HOR / 2023 / 003** Collection conservation and evaluation of grapes genotypes suitable for export under Coimbatore condition	Dr. C. Indurani Dr. K. A. Shanmugasundaram Dr. I. Muthuvel	Jan, 2023 – Dec, 2026	• Project may be continued • Project leader may be changed
4.	**HORT / CBE /FRU / HOR / 2023 / 002** Intra Interspecific graft compatibility studies on of guava nematode resistance / tolerance	Dr. K. A. Shanmugasundaram Dr. I. Muthuvel Dr. C. Indurani	Jan, 2023 - Dec, 2026	• Project may be continued • The guava rootstocks may be shared to HC & RI (W) for evaluation under sodic soil condition
5.	**HCRI/CBE/HOR/FRU/2021/002** Development of F_1 hybrids in gynodioecious papaya with tolerance to PRSV and thermo-stability suitable for tropical conditions	Dr. K. A Shanmugasundaram Dr. I. Muthuvel Dr. J. Auxcilia	Jan, 2021 - Dec, 2024	Confirmation may be ascertained through molecular markers Homogeneity of inbreeds has to be tested
6.	**DCM/CBE/FRU/HOR/2023/001** Management of Root Knot Nematode induced micronutrient deficiency in guava through nutrients and PGRs	Dr. K. Vanitha Dr. N. Seenivasan Dr. K. A Shanmugasundaram	April, 2023- March, 2025	Project may be continued
7.	**HCRI/PKM/HOR/FRU/2021/004** Collection and evaluation of Jamun genotypes (*Syzygium cumini* skeels) for identifying regular bearing types	Dr. S. Muthuramalingam	Aug, 2021- Dec,2024	IC Number may be obtained for kumbakarai local jamun and may be compared with PKM 1 jamun as a check
8.	**HCRI/PKM/HOR/FRU/2021/001** Evaluation of jackfruit (*Artocarpus heterophyllus*) genotype AH15 in large area plot	Dr. K. R. Rajadurai	Apr, 2021- Mar, 2024	IC Number may be obtained for AH 7 Quality parameters may be analysed for AH 7
9.	**HORT/PKM/FRU/HOR/2023/I00** Evaluation of Jackfruit (*Artocarpus heterophyllus* Lam.) genotypes for enhanced nutraceutical properties	Dr. K. R. Rajadurai Dr. T. Anitha	Jan, 2023 - Dec, 2025	Project may be continued
10.	**HCRI/PKM/HOR/FRU/2021/002**	Dr. S. Saraswathy	July 2021- Jun,2024	BCR may be worked out

	Standardization of fertigation scheduling in mango (*Mangifera indica* L.) under HDP *var*. Neelum and Imam Pasand.			Project may be closed
11.	**HCRI / PKM / HOR/ FRU/ 2021 /001** Evaluation of picking mango genotypes (*Mangifera indica* L.) in the existing field gene bank for yield and quality	Dr. J. Rajangam	Mar, 2021-Feb, 2024	The plus tree yield may be recorded Compare with already released pickling type variety from IIHR
12.	**HCRI/CBE/HOR/FRU/2020/004** Standardization of in vitro propagation protocol for mass multiplication in TNAU banana hybrids	Dr. C. Kavitha	Dec, 2020 - Nov, 2023	Project may be closed
13.	**HCRI/CBE/HOR/FRU/2021/001** Standardization of *in vitro* propagation protocol for dioecious papaya.	Dr. C. Kavitha Dr. I. Muthuvel	Mar, 2021 - Feb, 2024	Project may be closed
14.	**HORT/TRY/FRU/HOR/2023/001** Evaluation of commercial banana cultivars through tissue culture plants against conventional suckers for yield and quality	Dr. V. Krishnamoorthy	June, 2022 - July, 2024	Project may be continued Two more confirmation trials may be taken up The pest and disease incidence may be recorded BCR may be workout
15.	**HCRI/TRY/HOR/FRU/2021/001** Collection and evaluation of underutilized fruit crops suitable for dry tracts of Trichy region (Trichy, Ariyalur, Perambalur and Karur)	Dr. V. Jegadeeswari	July, 2021 - Dec,2025	Project may be continued for two more years Among the arid zone fruits, the variety suitable under sodic soil may be indentified
16.	**HORT/TRY/HOR/2023/001** Effect of foliar and bunch spray nutrition on yield and quality of banana cv. 'Ney Poovan' (AB) under Delta regions	Dr. R. Jayavalli, Dr. R. Arulmozhiyan Dr. P. Paramaguru	Dec, 2022 – Dec, 2025	Project may be continued Crop production guide recommendation may be included as one of the treatments Confirmation trial may be taken up
17.	**NRM/TRY/FRU SCI/HOR/2021/001**	Dr. T. Sherene Jenita Rajammal	Dec, 2021-Dec, 2024	Project may be continued

	Development of leaf nutrient norms and identification of yield-limiting nutrients using DRIS approach in Guava (*Psidium guajava L*)	Dr. Thangaselvabai Dr. M. Baskar		The study may be taken up in one variety with multiple locations Large scale confirmation study may be taken
18.	**HCRI/KDL/HOR/FRU/2017/001** Standardizing HDP for higher productivity and quality in Pear	Dr. C. Ravindran	Dec, 2017-~~Nov, 2021~~ Extension 2024	Project may be closed Completion report may be submitted
19.	**HCRI / KKL /HORT / 2021/ 002** Performance evaluation of strawberry varieties suitable for Upper Pulney Hills	Dr. C. Ravindran	May 2021-Mar, 2023	Project may be closed Completion report may be submitted
20.	**HCRI / KKL /HORT / 2021/ 001** Evaluation of released varieties of Pear suitable for Upper Pulney Hills	Dr. C. Ravindran	Apr, 2021 - Mar,2026	Project may be continued
21.	**HCRI/ PAI/ HOR/ FRU/ 2019/ 004** Survey, identification and evaluation of superior seedling progenies in mango	Dr. B. Senthamizhselvi	Oct, 2019 - Sep, 2023	Project may be continued and extension proposal may be submitted Planting materials of seedlings may be multiplying larger scale MLT may be taken up at Periyakulam, Trichy, Coimbatore, Madurai, Killikulam and Pechiparai Check as a Mulgoa variety
22.	**HORT/JEE/HOR/2023/ 001** Studies on the effect of plant growth regulators on the fruit retention and fruit drop of mango (*Mangifera indica* L.) cv. Bangalora and Alphonso	Dr. S. Srividhya Dr. P. Thilagam	Dec, 2022 - Dec, 2025	Project may be continued May be compared with crop production guide recommendation
23.	**HCRI/SAN/HOR/FRU/2017/001** Survey and identification of suitable acid lime genotypes for year-round production	Dr. M. Palanikumar,	Aug, 2017-Mar, 2023	Project may be closed IC Number may be obtained ART may be conducted
24.	**HCRI/KDM/HOR/FRU/2020/001**	Dr. R. Jayavalli Dr. P. Shanthi	Jan,2020 – Dec,2022	Project may be closed

	Multiplication and evaluation of identified elite Jackfruit genotypes in farmers holding of Pudukkottai district	Dr. T. Prabhu Dr. K. Kumanan		Completion report may be submitted
25.	**HCRI/YCD/HOR/FRU/2016/001** Survey, collection and evaluation of Mandarin orange varieties under Shervaroy condition	Dr. M. Malathy Dr. V.A. Sathiyamurthy	Jan, 2017-Jun, 2024	Project may be continued Change of PI proposal may be submitted
26.	**HORT/SNK/HOR/2022/001** Development of standard formulation with PGRs for citrus crop to boost crop growth and productivity	Dr. M. Palanikumar Dr. M. R. Backiyavathy	Feb,2022-Jan,2025	Project may be closed and propose a new project proposal
27.	**HCRI/TKD/HOR/FRU/2019/002** Evaluation of avocado (*Persea americana* Mill.) genotypes for yield and quality under the lower Pulney hills	Dr. R. Balakumbahan	Jan, 2019 - Dec, 2024	Project may be continued
28.	**HCRI/TKD/HOR/FRU/2019/001** Evaluation of Litchi (*Litchi chinensis* Sonn) genotypes/varieties for growth, yield and quality.	Dr. R. Balakumbahan	Aug, 2019 - July 2024	Project may be continued
29.	**HCRI/YCD/HOR/FRU/2019/002** Performance evaluation and identification of avocado (*Persea Americana* Miller), litchi (*Litchi chinensis*Sonn.) and Jamun (*Syzygium cuminii* Skeela) genotypes/ varieties for high yield and quality suitable for Shevaroy hills.	Dr. V. A. Sathiyamurthy	Dec,2019-Nov, 2022 Extension Dec, 2025	Project may be continued Change of PI proposal may be submitted
30.	**HCRI/APK/HOR/FRU/2021/001** Phenotypic evaluation and molecular characterization of Custard apple (*Annona squamosa*) for the selection of superior types suitable under dry vertisol condition	Dr. P. Balasubramaniyan	Oct, 2021 - Sep, 2024	Project may be continued
31.	**DEE/KVK, MDU/HOR/2021/001.** Influence of weather and soil parameters on yield and quality of banana cv.	Dr. P. Arul Arasu, Dr. S. Krishnakumar Dr. E. Subramanian	Mar, 2022-Feb, 2025	Project may be closed Completion report may be submitted

	Muppattai (Desi variety) at Madurai District.			
32.	**HORT/KKM/HOR/2022/001** Demonstration of TNAU Arid Zone fruit varieties under Killikulam condition	Dr. M. I. Manivannan	April 2022 - March 2025	Project may be continued

II. VEGETABLE CROPS

A. CULTURES UNDER MLT/ART/OFT

i) Advanced cultures identified for release during 2025

Tomato culture CBE-SL-19-14-34 (Flat Round segment)

- Hybrid derivative - CBE-SL-47 X CBE-SL-69
- Days to first flowering 58 days
- Short plant stature - 92.43 cm
- Yield per plant - 4.20 kg
- Single fruit weight -102.17 g
- Fruit number - 45.24

Quality parameters

- Pericarp thickness - 0.56 cm
- Ascorbic acid content - 29.50 mg /100g
- Lycopene content - 7.45 mg /100g
- β-carotene content - 8.81 mg /100g

Brinjal culture TrySM - 3

- Try SM - 3 recorded purple coloured and oblong non-spiny brinjal fruits with high yield
- Simiilar to Manapparai Local brinjal with alike taste and quality characters
- Yield per plant - 2.194 kg
- Earliness in flowering, early harvest with more plant height
- Tolerant to shoot and fruit borer infestation with 14.3 %
- Shoot infestation and 22.9 % fruit infestation

Okra AE-CBE-02-CO5

- F_1 hybrid between AE-CBE-92 x ABE-CBE-921
- Dark green fruits, single fruit weight 27.96 gm
- Fruit yield 1.1 kg / plant
- Resistant to both Yellow Vein mosaic virus and Enation Leaf Curl Virus

Brinjal Hybrid Sm (GL) 01

- F1 hybrid between IC 374928-1 X ABSR-2
- Long fruits borne in clusters of 4-5
- Green coloured fruits with white stripes at the bottom
- Shoot borer infestation 12.1 % and 13.0 % fruit borer infestation
- Yield 4.20 kg/plant
- Duration 150-160 days

Chilli-CC-CBE-003

- Maximum number of fruits per plant - 260.10
- Highest fresh fruit yield per plant / 621 g
- Highest capsaicin content - 1,70,264 SHU
- Suitable for industrial purpose.
- Duration: 9 months

Cucumber PCH 1

- Fruits are delicious
- Uniform cylindrical shape, dark green, glossy, non-hairy and crispy flesh
- Fruit yield per plant 6.52 kg
- Number of harvest 10-12 within 40-45 days.

Ash gourd – BH 2 (APP 2)

- Single fruit weight of 374 g
- Good taste without off flavour
- Compact type and suitable for salad purpose with sweeter taste
- Lesser seeds and more flesh
- High yield -32 t / ha with year-round availability

Sweet potato IB 73

- Culinary type suitable for vegetable purpose
- Attractive pink skin with white flesh with good storability
- Tuber yield 1.51 kg / vine
- Single tuber weight 209.32 g
- Suitable for planting during October – November, February-March and June - July season

Tapioca YTPH 1

- Hybrid is erect, medium growing and non branching type
- Long tubers, cylindrical with pinkish white skin and white flesh
- Cassava mosaic disease incidence grade 1 (No visible symptom)
- Crop duration is 270 -300 days
- Starch by specific gravity method 29.5 to 31.00 %
- Total starch content 45.27 % (chemical method)
- HCN content in Tuber 390.61 ppm

ii) Technologies for release during 2025

Grafting Technology in Moringa

- Suitable rootstock Moolanur moringa and scion PKM 1
- Wedge grafting Method
- Optimum stage of rootstock for grafting - 40 days
- Percentage of grafting Success - 66.54
- Days taken for graft union - 15.19,
- Days taken for first flowering -64.92 days
- Number of pods / tree - 89.05
- Pod yield / tree 21.73 kg

Organic manuring practices for quality improvement in Palak

Note: Basal soil application with Vermicompost (4 t/ha) + liquid nitrogenous biofertilizers (*Azospirillum* 200 ml/ac) + foliar spray of vermiwash (3 %) on the 15th day after sowing

- ❖ Keeping quality of the fresh produce more than 72 hrs in organic manuring protocol
- ❖ Yield -12.6 tons / ha
- ❖ Soil and Environment sustainability
- ❖ Easily available
- ❖ High Quality with more nutrients, enzymes, growth promoting substances
- ❖ Application cost is cheap
- ❖ Free from pesticides and heavy metal contamination
- ❖ Farm waste is being effectively utilized with low cost

Fulvic Acid Based Multi Nutrient Formulation for Tomato

- ❖ Foliar spray of multi nutrient formulation III @ 1 % thrice at 30, 60 and 90 DAP registered the highest fruit yield, quality and B:C ratio
- ❖ Foliar spray of multi nutrient formulation III @ 1 % thrice at 30, 60 and 90 DAP recorded higher fruit yield and Lycopene content over the foliar spray of micronutrients as per the existing recommendation (12.9 and 11.8 %, respectively) and application of NPK alone (24.8 and 17.3 %, respectively)

Standardization of crop specific organic farming package of practices for exotic and temperate vegetable crops

Modified organic package of practices (T_5) (Green manuring + FYM 25 Tonnes per ha + Top dressing vermi compost 2 tonnes per ha + panchagavya foliar spray + 2 kg each of Azospirillum + Phosphobacteria + Potash bacteria + VAM) recommended by DSOA.	Modified organic package of practices suited for Lettuce, Pokchoi, Bush beans and Radish.
Standard package of practices (T_2) as per crop production guide recommendation	Standard package of practices suited for Carrot, Beetroot, Garlic, Cabbage and Broccoli
Confirmatory trial is being conducted at wood house farm and farmers field	

iii) Cultures recommended for ART

Brinjal Hybrid Sm (GR) 01

- ❖ F1 hybrid between Namakkal Local x ABSR-2.
- ❖ Fruits are round type with cluster bearing, light green with white striped at the bottom.
- ❖ Heavy yielder and the shoot borer infestation is low compared to check
- ❖ Shoot borer infestation 7.19 % and 14.12 % fruit borer infestation
- ❖ Number of fruits per plant 78.91
- ❖ Yield per plant is 3.45 kg
- ❖ Duration 150-160 days

Cucumber CBE-CS-37

- ❖ Salad type cucumber
- ❖ Fruits per vine 5.2,
- ❖ Single fruit weight 120g

- Yield 625 gram / vine.
- Stability analysis is in progress

iv) Cultures under MLT

Brinjal SM 6

- Purple type identified from Tiruvallur Distrcit
- Highest per plant yield (3540.50 g per plant) followed by SM 11 (3100.50 g per plant) and SM 16 (2900.50 g per plant) (Bhavani type).
- Moderate resistance (11-20%) against shoot and fruit bore incidence.
- Under field conditions, showed resistance reaction against mosaic incidence
- Disease reaction will be confirmed after artificial screening for mosaic disease

v) Cultures recommended for MLT

Tomato hybrid SL 133 × SL 169

- Hybrid between SL133 × SL169
- Yields 6.1 kg fruits per plant
- Single fruit weight 91.36 g
- Fruit number 76.44
- Fruit pericarp thickness 0.62 cm
- Ascorbic acid 32.21 mg/100 g
- TSS Brix 5.33°
- Resistant to ToLCV and root knot nematode

Tomato culture H6 -48-44 – 17 – 16

- Hybrid derivative of Arka Vikas x *Solanum peruvianum* EC 519809.
- Plants are semi determinate
- Plant height of 170.50 cm.
- Days to 50 per cent flowering 30 days
- Cluster bearing type with four fruits per cluster
- Number of fruits per plant found 73 with 65 % fruit set
- Fruit shape oblong to round
- Single fruit weight 52 g
- Fruit yield per plant 3.80 kg
- Estimated fruit yield 80 t/ha
- Resistant to PBNV

Mundu Chilli PKM CA-08-05-08 (Chattii Mundu Type)

- Pureline selection collected from Virudhunagar Dist (Kathalampatti).
- Plant Height 71.3 cm,
- Number of fruits/ plant of 638,
- Fresh fruit yield /plant (362.3 g)
- Dry fruit yield /plant (67.2 g)
- Dry fruit yield - 3324 kg/ha
- Capsaicin (0.36 %), capsanthin: 210.7 (ASTA),
- Colour Value - 62.48 (ASTA),
- Oleoresin - 9.90 %
- Ascorbic acid - 160 mg/100g

Bottle Gourd LS CBE 01

- F1 hybrid between BG 1 X BG 6.
- Fruits are light green colour.
- Medium cylindrical in shape.
- Average fruit weight -850 g with 14 fruits/vine
- Average yield / vine 12 kg
- Average yield 30 t / ha
- Small sized fruits, suitable for packaging and long distant transport

Ash gourd – BHM 9

- Selection from Mizoram type
- Average vine length -s 3.50m
- Internodal length - 7- 8 cm
- Days to 50 per cent flowering-67 days
- Sex ratio -6.85
- Average fruit weight -600 to 700 g
- Length of the fruit 15 cm and width 40 cm
- Number of fruits per vine - 6
- Fruit yield per vine -6.0 kg
- Estimated yield per hectare - 15 -20 t
- Suitable for commercial cultivation and home garden.

Sweet potato IB 74

- Pink skinned yellow flesh
- Rich in carotene content - 7.20 mg / 100 g
- tuber yield per vine 1.63 kg
- Single tuber weight 325.67 g
- Dense foliage with weed smothering effect
- Suitable for planting during Jun- July and Oct – Nov

Aggregatum Onion (White)

- Selection from Aca 1
- Free flowering and seed setting type
- Average clump weight is 60.30 g with 6.20 bulbs / clump
- Dual purpose variety suitable for salad and culinary purpose

Broad bean

- Selection from Accession Vf 8.
- Highest green pod yield of 245.83 g / plant
- Number of pods per cluster- 3.35.
- Seed yield per plant -76.50 g.
- Protein content - 26.13 %.

Butter beans

- Selection from Accession Pv SL-4.
- Average Pod length is 14.34 cm with 4.12 pods per cluster.
- Average number of pods per plant - 96.48
- Highest fresh seed yield/plant -350.27g

- ❖ Highest dry seed yield per plant - 192.46g
- ❖ Protein content of 14.24%
- ❖ Magnesium content -f 754.32 ppm.

Green round fruited brinjal (resistant to shoot and fruit borer)

- ❖ F_1 hybrid between Namakkal local x CBE-SM-GWS-2
- ❖ Plant height -135-140 cm
- ❖ Cluster bearing habit
- ❖ Fruit length -6.5 to 7.0 cm
- ❖ Ffruit weight -65.2 g
- ❖ Number of fruits per plant -78.91
- ❖ Fruit yield per plant -3.02 kg
- ❖ Colour of the fruit is green with white striped
- ❖ Shoot borer infestation -7.19 %
- ❖ Fruit borer infestation -13.92 %

B. Action Plan: 2024-2025

Vegetables		
Tomato	HC&RI, Coimbatore HC&RI, Periyakulam	Identified tomato hybrid SL133 × SL169 to be tested under MLT.
		Evaluation of interspecific hybrid derivative H6 -48-47-17-16 (*Arka Vikas* x *Solanum peruvianum*) under MLT for resistant to peanut bud necrosis virus.
Brinjal	HC&RI, Coimbatore HC&RI (W), Trichy AC&RI, Vazhavachanur	Conducting ART for Green long fruited brinjal F1 hybrid - IC 374928-1 X ABSR-2 resistant to shoot and fruit borer
		Conducting ART for Green round fruited brinjal F1 hybrid Namakkal Local x ABSR-2 resistant to shoot and fruit borer
		Identified culture TRYSM-3 to be tested under MLT II/ART
		Development of big sized brinjal with less seeds for curry purpose
Chilli	HC&RI, Coimbatore HC&RI, Periyakulam	Identified high capsaicin chilli genotype CC-CBE-003 to be tested under ART (Only for industrial purpose)
		Identified mundu chilli PKM CA 08-05-08 (Chatti Mundu Type) to be tested under MLT (Both irrigated and rainfed conditions)
		Evaluation of F5 generation of mundu chilli hybrid derivative for yield and quality suitable for rainfed areas.
Bottle gourd	HC&RI, Coimbatore	Small sized bottle gourd suitable for market and nuclear family will be developed from the existing genotypes
Ash gourd	HC&RI, Periyakulam VRS, Palur	The BHM 9 Small fruited (600g) accession will be tested under MLT
		Small fruited salad type ash gourd (200g) will be tested under MLT/ART

Sweet potato	HC&RI, Coimbatore	Identified carotene rich, yellow fleshed sweet potato culture Ib 74 to be tested under MLT
Moringa	HC&RI, Periyakulam	Evaluation of moringa mutant (M4 generation) for high leaf biomass production
Underutilized vegetables	HC&RI, Periyakulam HC&RI, Coimbatore	Evaluation of protein rich velvet bean, yard long bean, winged bean and minor cucurbits, *Momordica charantia* var. *muricata* accessions for high yield and quality

Crop Management		
Tomato	HC&RI, Coimbatore	Screening of rootstocks, for drought resistance through grafting
Cucumber	HC&RI, Coimbatore	Screening of rootstocks for biotic and abiotic resistance through grafting technology
Cucumber, Pumpkin & Bottle gourd	HC&RI, Periyakulam	Screening of rootstocks for Cucumber Mosaic Virus tolerance through grafting technology
Moringa	HC&RI, Coimbatore HC&RI, Periyakulam	Screening of rootstocks (*Moringa concanensis*) for drought tolerance

C. Remarks on the Research Projects

I. CROP IMPROVEMENT

S. No.	Project Number, Title and Period	Project Investigator	Remarks
BRINJAL			
1.	**HCRI/PLR/HOR/VEG/2020/001** Development of cluster bearing brinjal types for yield and quality specific to North-Eastern zone Period: Mar 2023 to March 2025	Dr. K. S. Vijai Selvaraj Assoc. Professor (Hort.) and Head	Project may be continued
2.	**HC&RI/VVNR/HOR/VEG/2019/001** Improvement of locally preferred brinjal types for North Eastern Zone of Tamil Nadu Period: November, 2022 to October, 2024	Dr. M. Kavino Assoc. Professor (Hort.)	Project may be continued
3.	**HC&RI/ KDM/ HORT/ HORT.CROPS / 2023 / 249** Development of region specific brinjal variety/hybrid for yield and quality traits Period: October 2023 to September 2026	Project Leader: Dr. K. Kumanan, Assoc. Prof. & Head Dr. M. Shanmuganathan, Assoc. Prof. (PBG) Dr. M. Chandrasekaran, Prof. (Ento.)	Project may be continued
4.	**HORT/KKM/HOR/HOR/2022/001** Development of F_1 hybrid in white Brinjal suitable for southern districts of Tamil Nadu Period: April 2023 to December 2025	Dr. M. I. Manivannan Asst. Prof. (Hort.)	Project may be continued
CHILLI			
5.	**HCRI/PKM/HOR/VEG/2019/001**	Dr. K. Nageswari, Professor (Hort.)	Project may be closed

	Purification of Mundu chilli (*Capsicum annuum L.*) genotypes and evaluation for high yield and suitable for rainfed conditions Period: September 2022 to August 2023		
6.	**HCRI/CBE/HOR/VEG/2021/001** Development of chilli (*Capsicum chinense* Jacq.) genotype with high yield and capsaicin for industrial purpose. Period: Nov. 2020 to Dec. 2023	Dr. H. Usha Nandhini Devi Assoc.Prof.(Hort.)	Project may be closed
7.	**HORT/CBE/VEG/HOR/2022/001** Development of F_1 hybrids in chilli for high capsaicin content through interspecific hybridisation Period: March 2022-February 2024	Dr. H. UshaNandhini Devi Assoc.Prof. (Hort.)	Project may be closed
8.	**HORT/CBE/VEG/HOR/2023/002** Performance assessment and selection of Ramnad mundu chilli (*Capsicum annum*) genotypes with high yield and quality Period: Nov. 2022 – Oct. 2025	Dr. S. Praneetha, Prof (Hort.)	Project may be continued
9.	**HC&RI/KKM/HORT/HORT.CROPS/2023/234** Development of improved variety in Chilli (*Capsicum annuum*) for high yield with pungency suitable for Southern Districts of Tamil Nadu Period: July 2023 - June 2026	Dr. V. Premalakshmi Assoc. Professor and Head	Project may be continued and KKM 1 Chilli may be included
OKRA			
10.	**HCRI/CBE/HOR/VEG/2019/001** Development of high yielding F_1 hybrids with yellow vein mosaic (YVMV) and enation leaf curl virus resistance (ELCV) in bhendi (*Abelmoschus esculentus*) Period: January 2019 to August 2024	Dr. H. Usha Nandhini Devi Assoc. Prof. (Hort.)	Project may be continued.
11.	**HORT/CBE/VEG/HOR/2023/001** Comparative performance of Okra hybrids for resistance to YVMV and ELCV Period: January 2023 to December 2024	Dr. M. Kavitha Assoc.Prof. (Hort.)	Project may be continued
BOTTLE GOURD			
12.	**HCRI/CBE/HOR/VEG/2021/002** Development of Consumer attractive small size round shape F1 hybrids in bottle gourd for Tamil Nadu Condition Period: July 2021 – June 2023	Dr. M. Kavitha Associate Prof. (Hort.)	Project may be closed
ASH GOURD			
13.	**HCRI/PAC/HOR/VEG/2022/NEW** Collection and evaluation of ash gourd (*Benincasa hispida*) germplasm for identification of small fruited salad type for urban families. Period: Dec 2022 to Dec 2025	Dr. K. S. Vijai Selvaraj Assoc. Prof. (Hort.) & Head Dr. P. Irene Vethamoni Dean (Hort.)	Project may be continued and IC No. may be obtained for the identified culture.

CUCUMBER			
14.	**HC&RI/CBE/HOR/VEG/2020/001** Development of salad varieties in *Cucumis sps* (Cucumber and Snap melon Period: March 2020 to April 2023	Dr. H. Usha Nandhini Devi Assoc. Prof. (Hort.),	Project may be closed
COW PEA			
15.	**HCRI/KVK/VRI/HOR/VEG/2021/001** Evaluation of vegetable cowpea (*Vigna unguiculata* (L). Walp. Varieties suitable to Cuddalore District Period: June 2021 - May 2024	Dr. K. Sundharaiya AP (Hort.) Dr. K. Bharathi kumar ASP (PBG)	Research materials may be taken to Periyakulam
16.	HC&RI/PKM/HOR/HORT.CROPS/2023/232 Evaluation of Yard long bean yield (*Vigna sesquipedalis*) genotypes for growth and yield Period: August 2023 – December, 2024	Dr. K. Sundharaiya Assoc. Prof. (Hort.) Dr. K. Nageswari Professor (Hort.) Dr. A. Vijaya samundeeswari Assoc. Prof. (PAT)	Project may be continued.
17.	**HORT/JEE/HOR/2023/002** Developing Bush type Vegetable Cowpea (*Vigna unguiculata* L. Walp) through mutation	Dr. A. Sankari Professor (Hort.)	The project may be transferred to HC&RI, Cbe from HC&RI, Jeenur.
TAPIOCA			
18.	**HOR//TRY/HOR/VEG/2022/001** Evaluation and identification of suitable high starch tapioca varieties for Pachamalai hills of Trichy district Period: April 2022 - March 2024	Dr. A. Nithya Devi Associate Professor (Hort.)	Project may be closed.
MORINGA			
19.	**HCRI/CBE/HOR/VEG/2021/001** Evaluation of intervarietal hybrids of *Moringa oleifera*" for yield and quality Period: August 2021 - November 2024	Dr. T. Saraswathi Professor (Hort.)	Project may be continued

II. CROP MANAGEMENT

S. No.	Project Number, Title and Period	Project Investigator	Status
BRINJAL			
1.	**NRM/TRY/FRU.SCI/HOR/2021/002** Development of Customized Fertilizer Formulations for Brinjal (*Solanum melongena* L.) under Sodic soils Period: January 2022 to January 2024	Dr. T. Sherene Jenita Rajammal Associate Professor (SS&AC)	Project may be closed
CHILLI			
2.	**DCM/PMK/AGR/VEG/2021/001** Evolving Agronomic Practices for Ramanathapuram 'Mundu chilli' under rainfed and irrigated agro-eco system	Dr. T. Ragavan Professor and Head	Project may be continued .

	Period: November 2020 to July 2023* (Extension requested up to July'24)		
BHENDI			
3.	**DSC/CBE/SST/HORT.CROP/2023/101** Development of organic seed production techniques for bhendi **Period:** March 2023 to February 2025	Dr. J. Renugadevi Professor (Seed Science & Technology)	Project may be continued
ONION			
4.	**SEC/CBE/SST/HOR/2022/001** Standardization of seed priming and pelleting technique to improve seed germination and seedling vigour in onion **Period:** March 2022 to February 2024	Dr. D. Thirusendura Selvi Assistant Professor (SST)	Project may be closed
5.	**DCM/TRY/VS/HOR/2022/001** Physiological evaluation of small onion for increasing yield through growth regulators and nutrient mixture **Period:** August 2022 to July 2024	Dr. S. Nithila Assoc. Professor (Crop Physiology) Dr. A. Nithya Devi Assoc Professor (Hort.)	Project may be continued
ATHALAKKAI			
6.	**HORT/ PKM/ PSTC/ N O N/20 23/001** Standardization of postharvest treatments and value addition techniques to extend the shelf life of Athalakkai (*Momordica cymbalaria*) Period: January 2023 to December 2025	Dr. A. Beaulah, Asst. Professor (Horticulture),	Project may be continued
TAPIOCA			
7.	**DCM/YTP/AGR/HOR/2021/001** Effect of Weed Management practices on growth and yield in Tapioca Period: November 2020 to October 2023	Dr. S. K. Natarajan, Associate Professor (Agronomy)	Project may be closed
8.	**HOR/YTP/HOR/2023/001** Cassava based intercropping system for maximum profitability under irrigated ecosystem - Period: January, 2023 to December, 2024	Dr. M. Velmurugan Assoc. Professor (Hort.) Dr. S. K. Natarajan Assoc. Professor (Agronomy)	Project may be continued
MORINGA			
9.	**SEC/PKM/ VEG/HOR/2022/ 001** Assessment of seed invigouration technique for enhancing vigour status of annual moringa PKM1 Period: July 2022 to June 2025	Dr. P. Geetharani Professor (SS& T)	Project may be continued
AMARANTHUS			
10.	**HORT/TIR/HOR/2023/001** Efficacy of organic cultivation in *Amaranthus tristis* at Tiruvallur District. Period: November 2022 to December 2024	Dr. A. Punitha, Asst.Prof.(Hort.)	Project may be closed
11.	**NRM/KVLI/SAC/HORT.CROPS/2023/238**	Dr. A. Anuratha Assoc. Professor (SS & AC) Dr. P. R. Kamalakumaran Assoc. Professor (Hort.)	Project may be continued

	Evaluation of Amaranthus spp for promotion and suitable to saline soils of Nagapattinam district Period: June 2023 - May 2025		
MICRO GREENS			
12.	**SEC/MDU/SST/HOR/2022/001** Standardization of pre sowing seed treatment to improve biomass yield and quality of micro greens/ baby greens Period: April 2022 to March 2024	Dr. R. Geetha Professor (SST)	Project may be closed
FRESH AND CUT VEGETABLES			
13.	**AC&RI/MDU/AGM/HOR/2022/001** Improving the quality and shelf life of fresh and cut vegetables using a cocktail of bioprotective lactic acid bacterial metabolites Period: August 2022 to July 2024	Dr. R. Subhashini Assoc. Prof (Agrl. Microbiology)	Project may be continued.
GREEN LEAFY VEGETABLES			
14.	**DCM/CBE/NOFRC/HOR/2023/001** Standardization of bio formulation for improving growth and yield in greens Period: January 2023 to March 2024	Dr. P. S. Kavitha, Assoc. Prof (Hort)	Project may be closed
15.	**DCM/CBE/NOFRC/HOR/2023/002** Development of organic pot mixture supplements for home gardens Period: January 2023 to March 2024	Dr. P. S. Kavitha, Assoc. Prof (Hort)	Project may be closed
SEED			
16.	**SEC/CBE/SST/HOR/2023/001** Spin priming technology for enhanced seed vigour and crop productivity in vegetables Period: January 2023 to December 2024	Dr. K. Malarkodi Professor (SST)	Project may be continued.

III. SPICES AND PLANTATION CROPS

A. Cultures under MLT/ART/OFT

i. Advanced cultures identified for release during 2025

Turmeric CL 258 & CL 95

Genotypes	Fresh rhizome yield (g/plant)	Dry recovery (%)	Dry rhizome yield (g/plant)	Estimated yield (t / ha)	Curcumin content (%)	Oleoresin (%)
CL 258	341.25	20.92	71.38	50.84	5.09	35.70
CL 95	381.78	21.42	81.77	47.00	4.66	33.07
CO 2	-	-	-	43.00	4.30	-
BSR 3	-	-	-	51.00	4.80	-

- CL 258 and CL 95 had high yield and high curcumin content
- MLT is in progress

Cashew semi-dwarf F_1 Hybrid HC 6 (RRS, Vridhachalam)

- Parentage : VRI 3 X KGN 1
- Nut Yield : 6.3 kg/tree
- Nut weight : 5.90 g, 3 - 5 nuts/cluster
- Suitable for UHDP - 1250 plants /ha

Nutmeg – MF 4 (HRS, Pechiparai)

- Number of fruits - 685 fruits /tree
- Single fruit weight - 53.55 g
- Mace yield - 288.89 g / tree

Local check (Viswashree)

- No. of fruits - 499 fruits /tree,
- Single fruit weight - 50.3 g
- Mace yield - 163.22 g /tree

Coconut – Madhusudhanapuram local – IC 610371

- Number of nuts/year – 137 (Check: WC Tall – 93)
- Nuts/ha - 19000 (Check: WC Tall – 17500)
- Weight of ruit – 1.63 kg (Check: WC Tall – 1.32 kg)
- Copra content – 152.6 g/nut (Check: WC Tall – 141.5 g/nut)
- Copra yield – 2.90 t/ha (Check: WC Tall – 2.0 t/ha)

ii. Technologies recommended for release during 2024-2025

Yield intensification in Bush Pepper (HRS, Pechiparai)

- Highest number of spikes per plant (143.10), spike length (16.24 cm)
- highest green berry yield of 1.100 kg/bush was recorded in spacing of - 2.0 x 2.0 m
- NPK 19:19:19 spray @ 0.2% at fortnightly intervals.

Ultra-High-Density Planting in Cashew (RRS, Vridhachalam)

- Spacing : 4 x 2 m (1250 plants /ha)
- Variety : VRI 3
- Nut yield : 1500 kg/ha in 4 x 2 m
- (compared to 609 kg/ha in 7x7 m and 804 kg/ha in 5 x 4 m)

Off season production of leafy coriander under shade net condition (HC&RI, Coimbatore)

- Season : March – April
- Shade level : 50 % agro shade net
- Variety : CO (CR) 4
- Harvest : Physiologically matured leaf on 45th day of sowing

Herbage yield of coriander in different seasons (kg/200m^2) variety: CO (CR) 4

Shade levels	2008-09	2009-10	2010-11	Mean
35% shade	84.40	63.00	63.20	70.20
50% shade	123.40	124.00	102.80	116.73
75% shade	87.60	82.40	77.00	82.33
Control (open)	56.80	40.00	52.40	49.73

iii. Technologies proposed for MLT/OFT

TNAU composite micronutrient mixture for cocoa under coconut intercropping system (CRS, Aliyar Nagar)

TNAU Composite Micronutrient mixture for cocoa @ 200 g per plant per year in two equal splits during July and January increased pod yield by 20-35 % and bean quality in cocoa.

Particulars	Pods per plant	Pod Weight (g)	Beans per pod	Dry bean weight (g per bean)	Bean yield (kg/ plant)	BCR
Control	32.0	330.0	30.0	0.87	1.12	2.01
MN mixture	50.0	460.0	46.0	1.18	2.04	2.28

Optimization of fertilizer dose (N-P-K) for dwarf varieties in coconut (CRS, Aliyar Nagar)

- $N_{700}\,P_{400}\,K_{1800}$ g/palm (+25 % N, P and 50 % K_2O) results in increased nut yield by 19.4 % in Chowghat Orange Dwarf and 13.3 % in ALR (CN)3 variety over the existing recommendation ($N_{560}\,P_{320}\,K_{1200}$ g per palm per year)

- ❖ Benefit cost ratio was 4.20 and 3.97 in COD and ALR (CN)3 varieties on 50 % incremental application of NPK as against 3.90 and 3.89 in the existing recommendation

TNAU COCONUT OIL SOAP (COMMERCIAL)

- ❖ Conversion of oil to commercial product
- ❖ 100% pure coconut oil
- ❖ 1kg of oil can be converted to 15-17 soaps of 65-75g each
- ❖ The pH of the soap after curing: 6-7
- ❖ TFM: 79% (Grade I soap)
- ❖ Cost Benefit Ratio: 1:1.96

iv. Cultures recommeded for MLT /ART

1. Curry leaf Acc. 9, 13 and 11 (HC&RI, CBE)

Genotypes	Herbage yield / plant / harvest (g)	Estimated yield (t/ha) (4 harvests in a year)	Essential oil (%)	Leaf Petiole colour
Acc. 9	760.31	30.41	0.80	Pink
Acc. 13	752.93	30.12	0.76	Pink
Acc. 11	723.52	28.94	0.70	Pink

B. Action plan (2024-2025)

Crop Improvement		
Turmeric	HC&RI, CBE	Evaluation of identified promising cultures (CL 258 and CL 95) with high yield and curcumin content (MLT)
	TRC, BSR	Evaluation of turmeric genotypes for high yield and curcumin content.
Ginger	HC&RI, CBE	Evaluation of ginger varieties for yield, quality and tolerance to soft rot under coconut ecosystem
Black pepper	HRS, Yercaud, TKD & Pechiparai	Evaluation of genotypes/varieties for high yield, quality, tolerance to wilt resistance (Region specific).
Curry leaf	HC&RI, CBE	Evaluation of Pink petiole type (Acc. 13, 11 and 9).
Nutmeg	HRS, Pechiparai	Pre-release Culture MF 4 under large scale multiplication
Cinnamon	HRS, TKD, HRS, Pechiparai	Collection & Evaluation for leaf, bark and coumarin content.
Cashew	RRS, Vridhachalam	F_1 hybrid HC 6 may be proposed for variety release and large-scale multiplication.
Coconut	CRS, Aliyarnagar & CRS, Veppankulam	Evaluation of existing hybrids of D x T, T x D and D x D for high quality tender nut, copra and nut yield.
	CRS, Veppankulam	Assessment of coconut varieties / hybrids suitable for yield, higher tender nut water powder (TNWP), virgin coconut oil recovery.
Palmyrah	VOC AC&RI, KKM & HC&RI, CBE	Study on sex linked markers in palmyrah

Crop Management		
Bush pepper	HRS, Pechiparai	Standardization of Bush Pepper under forest ecosystem and shade net. (OFT)
Turmeric	TRC, Bhavanisagar	Standardisation of Organic farming practices for quality and export
Clove	HRS, Pechiparai	Standardisation of HDP system (4 x 2 m) for higher yield and stability
Coriander	HC&RI, Coimbatore	Off season production of leafy coriander under shade net condition (OFT)
		Effect of bio-stimulants on yield and quality and standardization of storage techniques to enhance shelf life
Curry leaf	HC&RI, Coimbatore	INM studies and minimizing disorder during off season in curry leaf with MRL
Coconut	CRS, Aliyarnagar	Optimization of fertilizer dose (N-P-K) for dwarf varieties (MLT)
		Studying the soil nutrient status under coconut intercropping system
	CRS, Aliyarnagar Veppankulam HC&RI, CBE	Standardisation of fertigation schedule for dwarf, tall and hybrid varieties for yield
	CPMB & B, CBE	Production of quality seedlings of coconut varieties (Tall, dwarf and hybrid) through *in vitro* culture techniques
Cashew	RRS, Vridhachalam	UHDP (4 X 2 m – 1250 plants/ha) technology to increase the production to be brought for technologies release

C. Remarks on the Research Projects

S. No	Project No. title and period	Name of the scientist	Remarks
CROP IMPROVEMENT			
1.	**HCRI / TKD / HOR / SPC / 2019 / 001** Collection and evaluation of black pepper (*Piper nigrum* L.) genotypes for yield and quality under the lower Pulney conditions. (Jan. 2019 to Dec. 2024)	Dr. R. Balakumbahan Associate Professor & Head	The project may be continued
2	**HC&RI/ CBE/ HORT/ HORT.CROPS/ 2023 / 062** Evaluation of mango ginger genotypes (*Curcuma amada Roxb*) (January 2024 to March 2026)	Dr. V. Rajasree Professor and Head	The project may be continued
3	**HC & RI/BSR/HORT/HORT. CROPS/ 2023/228** Evaluation of turmeric (*Curcuma longa* L.) germplasm for high yield and quality attributes (July 2023 to June 2026)	Dr. K. Shoba Thingalmaniyan Assoc. Prof. (Hort.) Dr. S. Sundaravadana Assoc. Prof. (Pl. Patho.)	The project may be continued
4	**HC&RI/CBE/HORT/HORT. CROPS/ 2023/ 224**	Dr. M. Mohanalakshmi Assoc. Prof. (Hort.) Dr. V. Rajasree	The project may be continued

	Evaluation of curry leaf genotypes for yield and quality (Sept. 2023 to Nov. 2025)	Prof. & Head	
5	**HC&RI/CBE/HORT/HORT. CROPS/ 2023/ 226** Identification of low chilling saffron genotypes for cultivation under Nilgiris and Yercaud Hills (August 2023 to July 2026)	Dr. P. Irene Vethamoni Dean (Hort.) Dr. G. V. Rajalingam Professor (Hort.) Dr. P. Balasubramanian Associate Professor (Hort.) Dr. S.P. Thamaraiselvi Associate Professor (Hort.)	The project may be continued
6	**HOR/VPK/HOR/2023/002** Assessment of coconut varieties / hybrids suitable for higher tender nut water yield and quality (November 2022 to March 2025)	Dr. R. Arun Kumar Associate Professor (Hort.) Dr. M. Anand Associate Professor (Hort.) Dr. K. Gurusamy Assistant Professor (Biochemistry) Dr. R. Babu Professor and Head (Agronomy)	The project may be continued
7	**HOR/VPK/HOR/2023/003** Assessment of coconut varieties/hybrids suitable for higher Virgin Coconut Oil yield recovery and identification of potential probiotics from coconut milk waste (November 2022 to March 2025)	Dr. R. Arun Kumar, Associate Professor (Hort.) Dr. G. Amuthaselvi Assistant Professor (FPE) Dr. J. Ejilane Assistant Professor (Ag. Microbiology) Dr. R. Babu Professor and Head (Agronomy)	The project may be continued
8	**CPMB/DBT/DPMB/2022/R002 (E28AHL)** Establishing efficient platform for genetic engineering in Indian tea (2022 – 2024)	Dr. N. Manikanda Boopathi (Prof. (Biotech.), Dr. V.P. Santhanakrishnan, Associate Professor Dr. KeisarLourdusamy, Professor Dr. P. Meenakshisundaram, Associate Professor, Dr. S. Varanavasiappan, Asst. Professor	The project may be continued
CROP MANAGEMENT			
9	**HC & RI/BSR/HORT/HORT. CROPS/ 2023/ 227** Standardization of organic farming practices for Turmeric (*Curcuma longa* L.) (July 2023 to June 2026)	Dr. K. Shoba Thingalmaniyan Associate Professor (Hort.) Dr. S. Sundaravadana Associate Professor (Pl. Pathology)	The project may be continued
10	**DCM/CBE/CRP/HORT.CROPS/2023/173** Enhancing the yield potential and quality of turmeric through foliar	Dr. P. Boominathan Professor (Crop Physiology) Dr. R. Sivakumar Professor (Crop Physiology)	The project may be continued

	application of nutrients and plant growth regulators (June 2023 to December 2025)	Dr. P. S. Kavitha Associate Professor (Hort.) Dr. K. Ramah, Assoc. Professor (Agronomy)	
11	**HC&RI/PKM/HOR/2023/001** Soil carbon dynamics, enhancement of yield and quality of ginger under organic cultivation (July 2022 to July 2025)	Dr. M. R. Backiyavathy, Professor (SS&AC) Dr. R. Balakumbahan Associate Professor and Head	The project may be continued
12	**HC&RI/OTY/HORT/HORT. CROPS/ 2023/ 230** Studies on Storage and post harvest value chain of Garlic (*Allium sativum* L.) (August 2023 to December 2024)	Dr. S. P. Thamaraiselvi Assoc. Professor (Hort.) Dr. C. CinthiaFernandaz Assoc. Prof. (Extension) Dr. P. Raja Assoc. Professor (Micro)	The project may be continued
13	**HCRI/PPI/HOR/SPC/2020/001** Assessment of yield in high density planting of clove (01.02.2022 to 31.01.2025)	Dr. A. Jaya Jasmine Professor and Head	The project may be continued
14	**HC&RI/ CBE/ HORT/ HORT.CROPS/ 2023 / 225** Effect of foliar application of stimulants, micronutrients and fungicides on curry leaf to overcome physiological disorder during off season and studies on Integrated nutrient management (April 2023 to March 2026)	Dr. G. V. Rajalingam Professor (Hort.) Dr. V. Rajasree Professor and Head Dr. P. Irene Vethamoni Dean (Hort.)	The project may be continued
15	**HCRI/CBE/HOR/SPC/2019/002** Effect of fertigation on growth, yield and productivity of tall varieties of coconut (June 2019 to September 2024)	Dr. K. Venkatesan Professor (Hort.)	The project may be continued
16	**HOR/VPK/HOR/2023/001** *Inter-se* variety and hybrid seedling production in Coconut (November 2022 to march 2025)	Dr. R. Arun Kumar Associate Professor (Hort.) CRS, Veppankulam Dr. R. Babu Prof. & Head (Agronomy)	The project may be continued
17	**DCM/ALR/AGR/HORT.CROPS/2023/253** Performance Evaluation of Different Intercrops Under Tall Coconut (October 2023 to September 2025)	Dr. N. Thavaprakaash Professor (Agronomy) Dr. J. Suresh Professor and Head	The project may be continued
18	**NRM/ALR/SAC/ HORT.CROPS/ 2023 I 248** Standardization of Fertigation Recommendation for Dwarf Varieties of Coconut (September 2023 to August 2026)	Dr. C. Sudhalakshmi Assoc. Professor (SSAC) Dr. N. Thavaprakash Professor (Agronomy) Dr. J. Suresh Professor and Head	The project may be continued
19	**DCM/ALR/AGR/HORT.CROPS/2023/252**	Dr. N. Thavaprakaash Professor (Agronomy)	The project may be continued

	Rapid Composting Technique of Coconut Plantation Residues for Sustaining Soil Health and Fostering Circular Economy (September 2023 to August 2025)	Dr. J. Suresh Professor and Head	
20	**HCRI/CBE/HOR/SPC/2019/004** Evaluation of combined effect of micro nutrients and fungicides to control leaf spot in curry leaf (Murraya koenigi Spreng) (December 2019 to June 2022)	Dr. S. Velmurugan Professor (Hort.)	Completion report may be submitted

IV. FLORICULTURE AND LANDSCAPE ARCHITECTURE

A. MLT/ART/FLD/OFT DETAILS

(i) Advanced cultures identified for release during 2025

***Nerium indicum* (Acc. NI-15)**

- Selection from Rasipuram type
- Higher flower yield: 3.87 kg/plant/year (24.51 % higher yield over check variety)
- Single type flowers
- Pink coloured showy flowers
- Hardy and moderately resistant to leaf caterpillar (low incidence of 11.12 %)
- MLT and ART in progress
- MLT centres – AC&RI, Killikulam, CRS, Vannikonethal, RRS, Vridhachalam and DFLA, Coimbatore
- ART Centres - Kanyakumari and Thoothukudi (10 locations)

***Jasminum auriculatum* - Large clustered (Acc. Ja-5)**

- Selection from germplasm
- Higher flower yield: 2.06 kg/plant/year (64.8 % higher yield over check variety)
- Large clusters - facilitates easy harvesting
- Longer buds (2.56 cm); longer corolla tube (2.01 cm)
- Highly fragrant

Parameter	Acc.Ja-5	Check variety (CO 1 Mullai)
Flower bud yield (kg/plant/year)	1.25	2.06
Inflorescence length (cm)	27.66	42.28
No. of flower buds/inflorescence	103.33	331.98
Flower bud length (cm)	2.56	3.11
Flower bud width (cm)	0.53	0.73
Corolla tube length (cm)	1.91	2.01
Open flower diameter (cm)	2.78	3.01
Concrete content (%)	0.27	0.25

***Jasminum sambac* multi-whorled flower type (Acc. Js-35)**

- Selection from germplasm
- Multi-whorled flowers (2 to 3 whorls of petals)
- Higher flower yield: 1.86 kg/plant/year (39.85 % higher yield over check variety)
- Highly fragrant

Parameter	Acc.Js-35	Check variety (Ramanathapuram Gundumalli)
Flower bud yield (kg/plant/year)	1.33	1.86
Estimated flower bud yield (t/ha/year)	8.53	8.43
No. of flower cymes / plant	70.87	65.79
No. of flower buds/plant	416.24	360.17
Single flower bud weight (g)	0.560	0.460
Flower bud length (cm)	2.70	2.23
Flower bud width (cm)	1.17	0.98
Corolla tube length (cm)	1.13	1.01
Shelf life (hr)	33.67	31.67

(ii) Technologies identified for release during 2025

Bulblet Protray Nursery for Rapid Multiplication of Tuberose

The bulblet portray nursery for rapid multiplication of tuberose is proposed for OFT. The salient features of the technology are:

- 100 % field establishment
- Longest spike (109.52 cm)
- Largest floret (length 6.9 cm, dia 4.35 cm)
- No. of days for flower spike emergence
    - Protray method : 142.56 days
    - Conventional method : 103.35 days

Parameter	Protray method	Conventional bulb propagation
Multiplication rate	1:5	1:1
Planting material cost (Rs. per acre)	24,000 (80 % reduction)	1,20,000

TNAU Jasmine foliar consortia (micro nutrients)

- **OFT centres:** ICAR KVK, Madurai, Department of Crop Physiology, Coimbatore, Department of Floriculture and Landscaping, Coimbatore, TCRS, Yethapur.
- **Farmers' fields at** Madurai, Coimbatore, Sathyamangalam, Salem and Krishnagiri district

Salient finding:

- Flower yield parameters *viz.,* flower bud weight, flower bud diameter, flower bud length, flower yield per plant (g/plant), and estimated flower yield (t/ha)

are maximum in TNAU Jasmine foliar consortium sprayed plants than the farmers practice.

- The yield increase in TNAU Jasmine foliar consortium is recorded as 18.52 % over control. Harvesting of flower buds is under progress in all the centers.

(iii) Cultures proposed for MLT/ART

***Jasminum auriculatum* Green tinged flower bud type (Pacha Mullai) (Acc. Ja-4)**

- Selection from germplasm
- Green tinged flower buds - have a niche market
- Relatively tolerant to gall mite (*Acereria jasmini*)
- Flower yield: 1.77 kg/plant/year (on par with check variety CO.2 Mullai)
- Highly fragrant

***Hibiscus rosasinensis* (Acc. Hr-1)**

- Single whorled deep red coloured flowers (AR 53 Deep red – RHS)
- Petal length 7.1 cm, Petal width – 5.0 cm
- Single flower weight 10.60 g
- Flower diameter – 12.17 cm
- Flower yield 1809 g per plant per year
- Total monomeric anthocyanin content – 67.82 mg/l
- Potential for loose flower and biopigment extraction

Yellow Crossandra (Acc. CI 3)

- Selection from Periyakulam
- Novel yellow colour
- Increased flower yield / plant/ year (240g)
- Number of flowers/spike: 10.60
- Flower diameter (1.14cm)

B. Action Plan: 2024-2025
CROP IMPROVEMENT

Crop	Activity	Centre	Action Plan for 2024-2025	Deliverables
Theme: Breeding for development of improved varieties of flower crops				
Jasmine	Collection, characterization andevaluation of double flower type *Jasminum sambac* genotypes	Coimbatore	• Identification and selection of promising double flower types for commercial cultivation • Evaluation for flower yield, quality, consumer and market preferences.	Novel types of *J. sambac* will be available for commercial cultivation.

	Collection, characterization andevaluation of *J. auriculatum* genotypes	Coimbatore	• Morphological and molecular characterization of of *J. auriculatum* genotypes assembled in the germplasm to establish distinctiveness of the genotypes. • Evaluation for flower yield, quality, pest reaction (gall mite), consumer and market preferences.	Novel and gall mite tolerant/resistant genotypes of *J. auriculatum* will be available for commercial cultivation.
	Collection, characterizatio n and evaluation of *Jasminum grandiflorum* genotypes	Periyakulam	Collection and evaluation of *Jasminum grandiflorum* for flower yield, quality, consumer and market preferences	Promising *J. grandiflorum* genotypes for high yield and essential oil content will be identified
	Polyploidy breeding in *Jasminum grandiflorum* for important economic traits	Coimbatore	Induction of polyploidy in *J. grandiflorum for* desirable traits	Improved polyploids of jasmine *J. grandiflorum* will be developed for commercial cultivation
Nerium	Evaluation of the promising Nerium culture NI-15	Thovalai	• MLT and ART of the promising culture NI-15 will be continued	A new promising variety of Nerium will be available for commercial cultivation by farmers
Crossandra	Evaluation of local accessions	Periyakulam	Evaluation of two promising Crossandra genotypes CI-3 (Nilakottai Orange) & CI-1 (Periyakulam Yellow) under MLT/ART during 2024-25	• Novel types of Crossandra will be evolved for commercial cultivation.
Celosia	Collection and evaluation of genotypes	Thovalai	Evaluation of genotypes for flower yield, quality and flood tolerance will be continued	• Flood tolerant types of Celosia for will be identified.
Tabernae montana	Collection and evaluation of	Coimbatore	Collection and evaluation of	• Ideal types of *Tabernae*

	diverse genotypes		genotypes for flower yield, quality, consumer and market preferences to be continued	*montana* for commercial cultivation as loose flower will be identified.

CROP MANAGEMENT

Theme: Standardization of improved agro-techniques for flower and ornamental crops

Crop	Activity	Centre	Action Plan for 2024-2025	Deliverables
Jasmine	Development of improved package of practices (plant population, spacing, pruning techniques) for *J. sambac* cultivars to enhance yield and induce year-round flowering	Coimbatore	Validation of pruning techniques (pruning frequency, pruning height, canopy table, etc.) to induce year-round flowering.	Development of improved package of practices (plant population, spacing, pruning techniques) for *J. sambac* cultivars to enhance yield and induce year-round flowering
	Standardization of foliar nutrition formula for improving yield and quality in *Jasminum sambac*	Paiyur	Large scale demonstration of the technology to be conducted	Availability of a technology for foliar nutrition formula for improving yield and quality in *Jasminum sambac.*
	Standardization of foliar nutrition formula for improving yield and quality in *Jasminum grandiflorum*	Periyakulam	Standardisation of foliar nutrient formula for *J. grandiflorum*	Availability of a technology for foliar nutrition formula for improving yield and quality in *Jasminum grandiflorum*
Ixora	Standardisation of foliar nutrient formula for mitigating deficiency in Ixora	Coimbatore	Validation of standardized micronutrient formula under OFT	Availability of a micronutrient formula for Ixora
Tuberose	Protray technology for large scale multiplication of Tuberose	Coimbatore	Validation of standardized protray technology under OFT	Multiplication of tuberose bulblets in portray technology will be standardized

C. Remarks on the Research Projects

(i) CROP IMPROVEMENT

S. No.	Project Number, Title & Period	Centre	Remarks
1.	**HORT/CBE/FLA/HOR/2022/001** Evolving promising Gundumalli (*Jasminum sambac* L.) genotypes for high flower yield and quality (Jan 2022 to Dec 2024)	HC&RI, Coimbatore	The project may be continued.
2.	**HC&RI/ CBE/ HORT/ HORT.CROPS/2023/231** Evaluation of promising mutant of white *Jasminum grandiflorum* (White Pitchi) for flower yield, quality and economic viability (Aug 2023 to July 2026)	HC&RI, Coimbatore	The project may be continued.
3.	**HC&RI/CBE/ HORT/ HORT.CROPS/ 2024 / 069** Selection of a novel double type Gundu Malli (*Jasminum sambac)* for commercial cultivation (Mar 2024 to Feb 2026)	HC&RI, Coimbatore	The project may be continued.
4.	**HC&RI/CBE/ HORT/ HORT.CROPS /2024 / 067 -** Performance of *Jasminum auriculatum prerelease culture* under varied agro climatic conditions (Mar 2024 to Feb 2026)	HC&RI, Coimbatore	The project may be continued.
5.	**HC&RI/CBE/ HORT/ HORT.CROPS /2024 / 068** Evaluation and clonal selection in *Hibiscus rosa sinensis* to identify viable types for commercial cultivation (Mar 2024 to Feb 2026)	HC&RI, Coimbatore	The project may be continued.
6.	**HCRI/CBE/HOR/FLO/2021/001** Strengthening germplasm, conservation, documentation and characterization of Ixora (Jan 2021 to Jan 2024)	HC&RI, Coimbatore	The project may be continued.
7.	**HC&RI/CBE/HORT/ HORT.CROPS/2023/229** Developing high yielding *Tabernaemontana* for commercial use and landscaping (Aug 2023 to July 2025)	HC&RI, Coimbatore	Change of project leader may be submitted. The project may be continued.
8.	**HORT/THO/NON/2023/001** Evaluation of Celosia accessions and identification of a climate resilient type for flood tolerance (*Celosia argentea* var. *cristata*) (Jan 2023 to Dec 2025)	FRS, Thovalai	The project may be continued.

(ii) CROP MANAGEMENT

S. No.	Project Number & Title	Centre	Remarks
1.	**HORT/CBE/FLO/HOR/2023/001** Standardization of pruning practices and nutrient requirement under modified planting system of nine budded clone (Acc. Js-36) of *Jasminum sambac* (Nov 2022 to Nov 2024)	HC&RI, Coimbatore	The project may be continued.

2.	**DCM / CBE/ PHY/ HOR/ 2022/001** Nutrio-hormonal manipulation of offseason flowering in Jasmine (Dec 2022 to Nov 2024)	Dept. of Crop Physiology, Coimbatore	The project may be continued.
3.	**HORT/CBE/FLA/HOR/2022/002** Standardization of high-density planting techniques in tuberose (*Agave amica* Medik.) (Feb 2022 to March 2023)	HC&RI, Coimbatore	The project may be continued.

V. MEDICINAL AND AROMATIC CROPS

A. Cultures under MLT/ART/OFT
B. Action plan: 2024 – 2025
C. Remarks on University Research Projects

Variety identified for release (2025)

***Gymnema sylvestre* (HC&RI, Coimbatore)**

- Promising accession, TNGsy 14 was found to be superior
- Dry leaf weight of 0.75 kg / plant and
- Gymnemagenin content of 0.72%.

Technology for On Farm Trial (HC&RI, Periyakulam)
Influence of Foliar Spray of Plant Growth Regulators and Nutrients on Davana (*Artemisia pallens*)

- The nutrient mixture + 200ppm GA_3 + 50ppm Salicylic acid recorded increased plant height (69.3 cm), increased soluble protein content (12.1 mg g-1 fresh weight) and yield (1550 kg ha-1).

A. Cultures under MLT
Crop Improvement
Pirandai (*Cissus quadrangularis*) (HC&RI, Coimbatore)

- In *Cissus quadrangularis*, 31 accessions were evaluated for higher biomass yield and quality.
- The accession TNCq 54 was found to be superior in terms of plant weight (8.10 kg/plant), leaf length (2.74 cm), leaf width (3.27 cm), internodal length (6.91 cm), stem width (1.73 cm), stem girth (2.08 cm), vine length (1.46 m) and tendril length (20.22 cm) as compared to grand mean of other accessions.

Yellow Berried Nightshade (*Solanum surattense* L.) (HC&RI, Coimbatore)

- 54 accessions were evaluated in Yellow Berried Nightshade (*Solanum surattense* L,).
- The accession Ss -13 followed by Ss -14 recorded more number of berries / plant (138.63 and 135.43 respectively).
- The accession Ss -13 recorded highest fresh and dry berry yield/Plant (396.72 g and 110.54g respectively.) followed by Ss -14 which recorded fresh berry yield of 391.20 and dry berry yield of 107.19 g.
- Solasodine content was highest in the accession Ss – 48 (2.05%).

Cultures under large scale demonstration
Large scale evaluation of the improved senna (*Cassia angustifolia* L,) mutant culture namely M3 4 - 1-3 (T5) for assessing its yield potential is to be taken up.

B. Action Plan: 2024-2025

A) CROP IMPROVEMENT

Theme 1. Breeding for development of varieties in medicinal plants

S. No.	Activity	Centre	Action plan for 2024- 2025
Sub theme 1: Evaluation and clonal selection			
1.	Evaluation and clonal selection of *Gymnema sylvestre*	Dept. of Medicinal & Aromatic Crops, Coimbatore	To conduct ART and large-scale demonstration and submission of variety release proposal for the promising genotype, TNGsy- 14
2.	Evaluation and clonal selection of *Centella asiatica* L.	HC & RI (W), Tiruchirappalli	Evaluation of agro-morphological and chemotypic variability among the Indian Pennywort (*Centella asiatica* (L.) Urban) genotypes
Sub Theme 2: Evaluation and characterization			
1.	Evaluation and characterization of *Rosemarinus officinalis*	Dept. of Medicinal & Aromatic Crops, Coimbatore	Evaluation and characterization of Rosemary genotypes for high yield chemo profiling for therapeutic qualities
2.	Evaluation and characterization of *Cissus quadrangularis*	Dept. of Medicinal & Aromatic Crops, Coimbatore	Study of genetic diversity and identification of *Cissus quadrangularis* accessions with high yield and quality
3.	Evaluation and characterization of *Tylophora asthmatica*	HC&RI, Periyakulam	Collection, evaluation and characterization of *Tylophora asthmatica* genotypes for exploiting medicinal properties
Sub theme 3: Development of mutant in senna (*Cassia angustifolia* L) for high yield and quality			
1.	Evaluation of M3 generations of Senna	Dept. of Horticulture, AC&RI, Killikulam	Large scale evaluation (25 cents area) of the improved senna mutant culture namely M3 4 - 1-3 (T5) for assessing its yield potential
Sub theme 4: Development of hybrids in glory lily for high yield and quality			
1.	Hybridization of glory lily	Dept. of Medicinal & Aromatic Crops, Coimbatore	Development of hybrids in glory lily by crossing specific high yielding parents in the existing germplasm

B) CROP MANAGEMENT

Theme 1. Development of agro techniques & Post harvest technology

S. No.	Activity	Centre	Action plan for 2024- 2025
Sub Theme 1: Development of agro techniques in medicinal plants			
1.	Conduct of On- Farm Trials	HC&RI, Periyakulam	OFT will be conducted for foliar application of PGRs and nutrients for yield improvement in Davana

Sub Theme 2: Development of post harvest technology of medicinal plants			
1.	Quality analysis and Phyto chemical profiling of *Cassia auriculata* for antidiabetic property	Dept. of Medicinal & Aromatic Crops, Coimbatore	Standardization of drying techniques and qualitative analysis of bioactive compounds in *Cassia auriculata*
2.	Metabolite profiling of the *Orthosiphon stamineus* (Java tea)	Dept. of Medicinal & Aromatic Crops, Coimbatore	The phytochemical profiling will be done for *Orthosiphon stamineus* (Java tea)
Sub theme: 3. Research focus on screening of medicinal plants for nutritional value			
1.	Screening of medicinal plants for nutritive values and pharmaceutical properties	Dept. of Medicinal & Aromatic Crops, Coimbatore	Nutritive profiling of *Cissus quadrangralis* bioactive salt

C. Remarks on the Research Projects

S. No.	Name of the Project	Scientist	Period	Remarks
	CROP IMPROVEMENT			
1.	**HORTI/KKM/HOR/NON/2022/001** Evaluation of M_2 and M_3 generation of senna (*Cassia angustifolia*) for yield and quality traits	Dr. V. Premalakshmi Associate Professor & Head	April 2023 to Dec 2024	To be continued
2.	**HC&RI/TRY/HOR/HORT. CROPS/2023/067** Evaluation of agro-morphological and chemotypic variability among the Indian Pennywort (*Centella asiatica* (L.) Urban) genotypes	Dr. K. Indhumathi Associate Professor (Hort.)	Nov 2022 – Oct 2025	To be continued
3	**HC&RI/CBE/HORT/HORT. CROPS/2023/243** Development of hybrids in Glory Lily for high seed yield and alkaloid content	Project Leader Dr. S. T. Bini Sundar, Asst. Prof. (Hort.) Co-Project Leader(s) Dr. L. Nalina, Professor (Hort.) Dr. P. Irene Vethamoni, Dean (Horticulture),	June 2023 to Sep 2026	To be continued
	CROP MANAGEMENT			
1.	**HCRI/PKM/HOR/FLO/2021/001** Foliar spray of plant growth regulators and nutrients to enhance the yield and yield character of Davana (*Artemisia pallens Wall.*,)	Dr. K. Venkatesan Professor (CRP)	Sep 2020 to Aug 2023	Project may be closed and completion report may be submitted
2.	**HC&RI/MTP/HORT/HORT.CROPS/2024/041**	Project Leader Dr. P. Hemalatha	Jan 2024 to Dec 2025	To be continued

	Evaluating the suitability of medicinal plants for *Melia dubia* and *Toona ciliata* based agroforestry system	Associate Professor (Horticulture) Co-Project Leaders 1. Dr. P. Radha Assistant Professor (Biochemistry) 2. Dr. M. Murugesh Professor and Head		
3.	Post harvest handling, Phytoscreening and Characterization of Bio-active Compounds identified in HPTLC analysis of Avaram Poo (*Cassia auriculata*) extract	Project Leader Dr. M. Visalakshi Assistant Professor (Horticulture) Co-Project Leader Dr. V. P. Santhanakrishnan, Associate Professor (Organic Chemistry)	Nov 2023 to Oct 2026	To be continued
4.	Metabolite profiling of *Orthosiphon stamineus* (Java tea) with *Camellia sinensis* (Nilgiri tea) types	Project Leader Dr. V. P. Santhanakrishnan, Associate Professor (Organic Chemistry) Co-Project Leader Dr. T. Saraswathi Professor and Head	2024-25	To be continued

VI. CROP PROTECTION

A. TECHNOLOGIES FOR ADOPTION/OFT/INFORMATION

I. Fruit Crops

I. For Adoption:

1. Integrated Management strategies for Greening disease in acid lime

Adoption of integrated management strategies comprising

- Recommended dose of fertilizers (50% N during March & 50% N, 100 % P&K during October)
- Soil application of $ZnSO_4$ & $FeSO_4$ @ 200 g / tree during October
- Two applications of FYM (5Kg) enriched with bioagents *viz.,* VAM (200 g) & *Bacillus subtilis* Bbv 57 (50 g) + *Azospirillum* (50 g) + Phosphobacteria (50 g) / tree +neem cake (500 g) during March and October
- Three sprays of *Bacillus subtilis* Bbv 57(0.5%) during March, July and October after the emergence of new flushes
- Imidacloprid 17.8SL (@ 0.3 ml/lit- 2 sprays during April & June with foliar spraying of $ZnSO_4$ @ 0.5% (15g/tree) & $FeSO_4$ @ 0.5% (15 g/tree)

The IPDM module was found to be very effective in managing citrus greening disease (CGD) in acid lime with 49.96 PCCI (Percent crop canopy infected) and increasing yield (21.34 t/ha) which is 40.57 percent increase over control and maximum benefit cost ratio (1: 3.22).

2. Management of citrus nematode (*Tylenchulus semipenetrans*) in acid lime

Soil drenching with neem seed kernel extract (NSKE) 5% @ 4 lit/tree + liquid *Purpureocillium lilacinum* @ 60 ml/tree 15 days after application of NSKE is recommended for the management of citrus nematode (*Tylenchulus semipenetrans*) in acid lime (population of citrus nematode is reduced in soil by 62.3% and in roots by 61.2% and fruit yield is increased by 22.4% with C: B ratio of 1: 2.3).

II. For On Farm Trial

OFT 1: Biointensive Management of *Psyllids* in citrus

Treatments

T1- IPM module

1. Yellow sticky trap (30×15cm) @ 50/ha for psyllid on new fleshes.
2. Release of *Chrysoperla zastrowi sillemi* @ 10,000 eggs ha^{-1} (two release at 15 days interval on new flushes)
3. Use of NSKE 5% spraying in between two release of *C. zastrowi sillemi* to suppress psyllids (Preferably one week after first release of *Chrysoperla*)
3. Need based application of Thiamethoxam 25WG @ 25g a.i. ha^{-1}

T2- Chemical Control (Farmer approach) two rounds of chemical spraying immediately after new flushes, imidacloprid 17.8% SL@20g a.i. ha^{-1}

T3- Untreated control

Observations to be recorded

- Number of live nymphs & adults/tree or terminal shoot (4 shoots/tree)
- Number of natural enemies/tree
- Per cent reduction over control
- Yield and BC Ratio

Design: Randomized Block Design; Replications: Seven (5 no. of trees/ replication)
Centres to be involved:
Dr. C. Muthiah, Professor, HC & RI, PKM*
Dr. K. Suresh, ASP, KVK, MDU
Dr. S. Sheeba Joyce Roseleen, AP, HC&RI (W), Trichy
Dr. L. Allwin, ASP - RRS, ASD

OFT 2: Efficacy of *Bacillus amyloliquefaciens* (B.s 2) gel formulation for the management of greening disease in acid lime (New)

Treatment details

S. No.	Treatments
T1	RDF (50% N during March & 50% N, 100 % P&K during October) - FYM (5kg) +VAM (200 g) + neem cake (200g) + 50% excess recommended dose of 'P'+ $ZnSO_4$ (200g) + $FeSO_4$ (200g) per tree during October; imidacloprid 17.8SL @ 0.3ml/lit - 2 sprays during April & June; *Bacillus amyloliquefaciens* (B.s 2) (0.3%) gel formulation- 3 sprays during March, July andOctober.
T2	RDF (50% N during March & 50% N, 100 % P&K during October) + two applications of FYM (5Kg) enriched with bioagents *viz.,* VAM (200 g) & *Bacillus subtilis* Bbv 57 (50 g) + Azospirillum (50 g) + Phosphobacteria (50 g) /tree + neem cake (500 g) during March and October & three sprays of *Bacillus subtilis* Bbv 57(0.5%) during March, July and October after the emergence of new flushes + imidacloprid 17.8SL (@0.5 ml/lit- 2 sprays during April & June) with foliar spraying of $ZnSO_4$ @ 0.5% (15g/tree) & $FeSO_4$ @ 0.5%(15g/tree) and soil application of $ZnSO_4$ & $FeSO_4$ @ 200 g each during October].
T3	Farmers practice - RDF + FYM – 5kg/tree + imidacloprid 17.8SL @0.5 ml/ lit

Design: RBD; Replications: 7; No. of trees per replication: 3

Observations to be recorded:

- Disease severity (Per cent Crop Canopy Incidence (PCCI))–to be recorded during February
- Vector population (Nos./leaf)
- Yield (t/ha)
- Benefit Cost Ratio (BCR)

Coordinating scientist: Dr. K. Manonmani, Assoc. Prof. (Plant Pathology), AC&RI, Madurai

Centre		Scientist in charge
AC&RI, Madurai	:	Dr. K. Manonmani, Assoc. Prof. (Pl. Pathology), AC&RI, Madurai Dr. B. Usha Rani, Assoc. Prof. (Agrl. Entomology), AC&RI, Madurai
TNAU, Coimbatore		Dr. N. Indra, Associate Prof. (Pl. Pathology), Dept. of Fruit Crops, HC&RI, Coimbatore Dr. E. Sumathi, Professor (Agrl. Entomology), TNAU, Cbe
HC & RI, Periyakulam	:	Dr. K. Kalpana, Assoc. Professor (Pl. Pathology), HC&RI, Periyakulam

		Dr. C. Muthiah, Prof. (Agrl. Entomology), HC&RI, Periyakulam.
CRS, Sankarankoil, Tenkasi Dt.	:	Dr. V. Jaiganesh, Assoc. Prof. (Pl. Pathology), CRS, Sankarankoil. Dr. C. Vijayaraghavan, Assoc. Prof. (Agrl. Entomology), CRS, Srivilliputhur.

OFT 3: Management of banana Sigatoka leaf spot using new fungicides (New)

Treatment details

S. No.	Treatments
T1	Pyraclostrobin 20%WG (750 ml/ha)
T2	Metiram 55% + Pyraclostrobin 5% WG (1.5 kg/ha)
T3	Propiconazole (500 ml/ha)
T4	Farmers practice

Design: RBD; Replications: 7; No. of plants per replications-3

Observations to be recorded:

- Disease severity (0-6 scale) Gaul's modification of Stover's scoring system
- Bunch weight (kg)
- Fingers/bunch (Nos.)
- Hands/bunch (Nos.)
- Yield (t/ha)
- Benefit Cost Ratio (BCR)
- Residue analysis for the best treatment

Note: First spray should be given at five months after planting or immediately after the onset of disease. A total of 5 to 7 sprays at 25 days interval should be given.

Coordinating Scientist: Dr. N. Indra, Associate Prof. (Plant Pathology), Dept. of Fruit Science, HC&RI, TNAU, Coimbatore

Centre		Scientist in-charge
TNAU, Coimbatore	:	Dr. N. Indra, Assoc. Prof. (Pl. Pathology)
HC & RI, Periyakulam	:	Dr. A. Vijayasamundeeswari, Assoc. Prof. (Pl. Patho.)
AC&RI, Madurai	:	Dr. K. Manonmani, Assoc. Prof. (Pl. Pathology)
TRC, Bhavanisagar	:	Dr. S. Maruthasalam, Assoc. Prof. (Pl. Pathology)

III. For Information

1	The sporadic occurrence of mango looper, *Perixera illepidaria* was recorded at HC & RI, Periyakulam during December 2023 (2.00-3.00/leaf) and Tenkasi district (3.00-4.5/leaf) during January 2024. A total of 1780 pest images of major fruit crops submitted for AI based diagnosis. In Uthangarai block of Theni district, maximum thrips population (12.50 Nos. per panicle) was recorded followed by Kaverpattinam (11.60 Nos./panicle).

	But in Kaverpattinam and Mathur blocks, hopper incidence (11.60 and 11.42 Nos./panicle) was high on mango
2.	In mango, IPM module *viz.,* Soil application of neem cake @ 3 kg / tree (November 3rd week) + installation of blue sticky traps @ 6 / acre (November 3rd week) + first spray of Azadirachtin 1500 ppm @ 5 ml / litre + followed by *Verticillium* or *Lecanicillium lecanii* wettable powder (WP) $2x10^8$ CFU @ 10g / litre and Tolfenpyrad 15 EC @ 2 ml / litre (Need based application) reduced thrips population (6.44 Nos./ panicle) with 72.47 per cent reduction and hoppers (4.00 Nos./ panicle) with 76.46 per cent population reduction.
3.	In Jamun, minimum incidence of leaf twisting weevil (8.64%), helmet caterpillar (4.93/10 trees), fruit fly (6.36%) and webber (1.79%) was recorded in local cultivar (Thothukudi local), while whiteflies (3.50/10 trees) and leaf caterpillars (2.59-20.86%) was found maximum in var. Andipatti Local.
4.	Thrips (*Frankliniella occidentalis*), Mites (*Tetranychus urticae*), Ash weevil (*Myllocerus subfasciatus*), *Spodoptera litura*, Aphids (*Myzes persicae*), Flea beetle (*Monolepta signata*), painted bug (*Bagrada hilaris*) were recorded on strawberry grown under polyhouse condition. The crude aqueous extract of *Ageratina adenophora* 1% showed significantly higher per cent reduction of thrips, mites and *Spodoptera litura*
5.	In banana, Glafenine Hydrochloride produced by *Bacillus licheniformis* having nematicide activity for the management of root knot nematode infecting banana was submitted for patenting through Dean SPGS.
6.	In grapes, prophylactic spraying of cinnamon oil 40 EC at 0.1% thrice at 7 days interval starting from 5th leaf stage recorded minimum incidence of powdery mildew (5.5 PDI) with the highest yield (7537 kg/ha) and C: B ratio of 2.95.
7.	The gel formulation of *B. amyloliquefaciens* (B.s 2) at 0.5% sprayed as a prophylactic during March, July and October along with the IDM practices was very effective in managing Citrus Greening Disease by recording 31.70 per cent reduction in the CGD incidence in the field with the highest yield of 19.59 t/ha. The benefit cost ratio of this treatment was also found to be the highest (3.12).
8.	Mangoes dipped with 2% sodium benzoate for 5 minutes recorded maximum reduction of both anthracnose (93.02%) and stem end rot (90.70%) with increased shelf life by 7 days.
9.	In avocado, integrated pest and disease management (IPDM) package (Removal and destruction of all the unwanted/infested parts and spraying of tree trunks with *Beauveria bassiana* @ 5g/litre , Application of *Bacillus subtilis* Bb57 (10^8 cfu) + *Trichoderma asperellum* Tv 1 (10^7 cfu) at kg/ha mixed with FYM (50 kg) + Neem cake (1kg/tree) applied around the root zone, drenching with Bordeaux mixture 0.1% with onset of monsoon (need based) followed by drenching with 0.25 % metalaxyl + mancozeb or 0.2 % fosetyl Al) after 15 days recorded the lowest incidence of wilt (7.35 %), borer damage (4.65%)

10.	In guava, application of *Bacillus firmus* @ 30 ml + *Lycinibacillus fusiformis* @ 30 ml + *Pochonia chlamydosporia* @ 30 ml + *Trichoderma asperellum* @ 5g/tree thrice at monthly intervals recorded 49.8 % and 66.4 % reduction in nematode population in soil and root respectively and wilt incidence was 70 % lower compared to untreated control.
11	In guava, soil application of micro-emulsion formulation of *Pochonia chlamydosporia* 30 mL + *Trichoderma asperellum* 15 mL + 10 g jaggery mixture in 1 L of water four times at 30 days interval suppressed the nematode and wilt disease complex in guava.
12.	Wild guava species, *Psidium eugeniaefolia* was found to be highly resistant to *Meloidogyne enterolobii*. *Psidium cattleianum* var. *lucidum* showed resistance and Local variety from a nursery in Peelamedu showed moderate resistance. Root exudates of *Psidium eugeniaefolia* showed repellent effect on *M. entrolobii*.
13.	In banana, soil application of turmeric leaf powder @ 50 g/plant thrice at planting, two and four months after planting reduced the lesion nematode populations by 52.6-53.0% in soil and 53.9-55.8% in roots with 24% more bunch weight under field conditions.
14.	In banana, paring and dipping with consortia (*Lysinibacillus fusiformis* + *Psudomonas geniculata*) of liquid formulation @ 10 ml/sucker followed by soil application of consortia @ 5 lit at second, fourth and six months after planting significantly reduced the nematode population in soil (64.48%) with lowest root lesion index of 2.5 and increased the yield by 51.80%.

II. Vegetables

I. For Adoption

In cucumber, IPDM module

- Soil application of *Bacillus subtilis* (Bbv57) @ 2.5 kg + *Pochonia chlamydosporia* @ 5 kg/ha
- Spraying of Azadirachtin 1% EC 2 ml/L @ 15 and 45 DAP; Imidacloprid 70 WG @ 50g/ha @ 30 DAP.
- Installation of Yellow Sticky trap 50 Nos/ ha @ 30 days interval Drenching of *P. chlamydosporia* @ 1lit /ha through drip at 30, 60 and 90 DAP
- Foliar spaying of micronutrient mixture (0.2% each of ferrous sulphate, zinc sulphate, copper sulphate, magnesium sulphate and 0.1 per cent borax) at 25 DAP.
- Need based application of Captan 70 % + Hexaconazole 5 % WP @ 1g/l followed by spraying Tebuconazole 50% + Trifloxystrobin 25% @ 1 g/ L and Spiromesifen 22.90 SC 0.75ml/L against mite; Fosetyl-Al @ 0.1% against powdery mildew

The IPDM module recorded lowest population of sucking pests *viz*., thrips, whiteflies, aphids and mites population (6.38, 3.68, 5.93 nos/leaf and 5.08 nos./cm^2, respectively) and 4.63 per cent leaf miner damage. Incidence of root rot, downy mildew and powdery mildew was also low in IPDM plot with 1.75 per cent 5.81 and 2.38 PDI, respectively. Gall index due to nematodes was 3.0 in IPDM plot as against 5.0 in IPDM plot. The IPDM module also recorded a higher fruit yield of 34.6 ton / ac with a BC ratio of 2.86. The residue analysis revealed imidacloprid and spiromesifen residues at below quantifiable limit.

1. In chilli, IPM module comprising
    - Border cropping with cowpea, lab-lab and coriander
    - Erection of bird perch @ 20/ha
    - Erection of yellow / blue sticky trap at 20/ha
    - Erection of pheromone trap at 12 Nos./ha
    - Need based foliar application of any one of the following: Azadirachtin 1% or NSKE@5% or 3G extract @ 5% or Five leaves herbal extract @ 10 %
    - Need based foliar application of *Bacillus subtilis* @0.5%

    Thrips population was less in IPM module (0.65 Nos./leaf) followed by Insecticide module (1.31 Nos./leaf). The yield of green chilli and BC ratio were found to be high in IPM module (19.18 t/ha and 3.21) followed by Insecticide Module (17.09 t/ha and 2.67) and farmer's practice (11.10 t/ha and 1.81).
2. In ridge gourd, installation of TNAU food baited traps @ 20/acre in Coimbatore, Trichy, Krishnagiri and Theni distrcits reduced the mean incidence of female fruit flies up to 70.25 per cent with highest fruit yields of 6.9 tons/acre and cost benefit ratio 7.8 of respectively.
3. In ridge gourd, total catches of adult male fruit flies was higher in nano parapheromone (methyl eugenol) traps in Coimbatore, Madurai, Trichy, Theni and Krishnagiri (1152 males/trap/12 weeks) than commercial traps in all the locations. Nano parapheromone (methyl eugenol) trap attracted fruit flies for 12 weeks than commercial trap with 7 weeks.

4. In tomato, the BIPM module – (Pheromone trap @ 40 / ha + *Trichogramma achaea* @ 5 cc / ha + spinetoram 11.7 % SC @ 500 ml /ha + cyantraniliprole 10.26 OD @ 150 ml / ha) recorded highest per cent reduction in fruit damage (67.56%) with highest fruit yield (15.92 t ha^{-1}) & BC ratio (1:2.6), respectively at Madurai, Erode, Thiruppur and Vridhachalam. Farmer's practice recorded 35.01, 50.50, 44.82 & 41.79 per cent reduction in fruit damage with a yield of 12.57, 9.75, 14.00 and 11.36 t ha^{-1} and BC ratio of 1:2.3, 1:1.16, 1: 2.0 and 1:2.0, respectively at Madurai, Erode, Thiruppur and Vridhachalam.
5. In cassava, use of biorational inputs - Azadirachtin 0.15% @1.5 litre/acre on 60 DAP followed by release of *Anagyrus lopezi* and *Apertochrysa astur* significantly reduced the mealybug population to 1.6 colonies/ plant at 30 DAT with low rosette damage of 0.8 per cent with highest average tuber yield of 36.8 t/ha than control (33.3t/ha). And BC ratio of 3.61.
6. In Tomato, seed treatment (10 ml/kg), nursery drench (10 ml/lit), soil application (drip) (2.5 lit/ha) at 30 DAT + foliar application (2.5 lit/ha) of *Bacillus subtilis* (Bbv57) recorded only 8.90% damping off, 7.3% of wilt with increased yield of (64.69 t / ha) after 45and 60th day after treatment.
7. The oyster mushroom (*Pleurotus djamor*), TNAU-KKM-20-01 recorded early harvest (11 days), shortest cropping period (30.7 days) with a maximum yield of 636.5 g per 500 g substrate (129.3% bio-efficiency) and overall acceptability. Hence, oyster mushroom TNAU-KKM-20-01 is found to be suitable for commercial cultivation.

II. For MLT

MLT 1. Large scale evaluation of TNAU food bait traps for female fruit flies management in Ridge gourd

Treatments:

T1 - TNAU food baited female fruit fly trap @ 20 numbers/ acre
T2 - Cue lure trap @ 10 numbers /acre
T3 - Control (Trap without food lure)

Observation to be recorded:

No. of female and male fruits flies/trap/week
Per cent fruit fly damage
Per cent reduction over control
Yield and BC Ratio

Note: Replacement of food bait once in a week & Traps and lures will be supplied by Dr. T. Elaiyabharathi

Centres to be involved:

Centre	:	Scientist in-charge
TNAU, Coimbatore	:	Dr. T. Elaiyabarathi
KVK, Pongalur	:	Dr. P.A. Saravanan
HC &RI, PKM	:	Dr B. Suganya Kanna
HC& RI (W), TRY	:	Dr. Sheeba Joyce Rosaleen
RRS, Paiyur	:	Dr. M. Govindan

AC&RI, Killikulam	:	Dr Elenchezhiyan

MLT 2: Eco-friendly bio-formulation for the management of chilli anthracnose

Treatment details

S. No.	Treatments
T1	Thyme oil 5EC -1 % - Three (Once at flowering followed by two spays at 15 days interval)
T2	Farmers practice - Carbendazim - 0.1%
T3	Untreated control

Design: RBD, No. of Replications: 7

Observation to be recorded

- Fruit rot incidence (PDI)
- Yield (t/ha)
- Benefit Cost ratio (BCR)

Coordinating scientist: Dr. A. Kamalakannan, Professor (Plant Pathology), TNAU, Coimbatore

Centre	Scientist in-charge
KVK, Ramnad (10 Trials)	Dr. Vallalkannan, Assoc. Prof. (Pl. Pathology) Dr. J. Ramkumar, Assoc. Prof. (Pl. Pathology)
KVK, Aruppukottai (5 Trials)	Dr. R. Akila, Associate Professor (Pl. Pathology)
AC&RI, Killikulam (5 Trials)	Dr. J. Sheela, Prof. & Head, Dept. of Plant Pathology

III. For OFT

OFT 1 Management of mealy bugs in tapioca (Confirmatory additional trials)

Treatments:

T1: Spraying of azadirachtin 0.3% @ 3 ml/l on 60 DAP + Inoculative release of *Apertochrysa* @1000 eggs/ha + Inoculative release of *Anagyrus lopezi* @250/ha immediately after infestation of melaybugs

T2. Spraying of Thiomethoxam 25WG @ 0.5g/l at 60 DAP followed by flonicamid 50WG @ 0.3g/l immediately after infestation of melaybugs at 15 days interval

T3. Untreated control

Observation to be recorded:

No. of mealybug colonies/plant from 15 DAT at fortnightly intervals

Mealybug species record

Per cent rosette damage 15 DAT at fortnightly intervals

No. of natural enemies, Tuber yield (Kg) and BC Ratio

Centres to be involved:

Lead Scientist: Dr. S. Jeyaprabhavathi, TCRS, Yethapur

Centre	:	Scientist in-charge
KVK, Dharmapuri	:	Dr. K. Sasikumar

KVK, SDR	:	Dr. M. Ravi
RRS, PYR	:	Dr. P. Thilagam

OFT 2 Field evaluation of *Citrullus* 20% EC formulation against brinjal mite other pests

Treatments

S. No.	Treatments
1.	*Citrullus* 20% EC formulation @ 4 ml/lt
2.	Azadirachtin 1500 ppm @ 5 ml/lit
3.	Spiromesifen 22.9 % SC @ 8.0 ml/10 lit. (two sprays during vegetative stage after the occurrence of mite at 10 days interval
4.	Untreated check

- Design: RBD
- Replication: Five

Observations to be recorded:

Vegetative stage

- No. of mites/2.5 cm window card (to be recorded in the leaves of top canopy of the plant on 0,3,7 and 10 days after each spray)
- Per cent infestation of shoot and fruit borer (based on withered top stems) and other sucking pests (pop/3 leaves)
- Phytotoxicity for *Citrullus* 20% EC formulation

Reproductive stage

- Per cent fruit infestation of shoot and fruit borer

At harvest

- Yield (kg/ha)
- BC ratio

Centres to be involved

Monitoring scientist: Dr. M. Shanthi

Formulation will be prepared by Dr. K. Senthil, Assoc. Prof. (Agrl. Chemicals)

Centre	Scientist in-charge
KVK, APK	Dr. Zadda Kavitha
HC &RI, PKM	Dr. S. SuganyaKanna
TNAU, Coimbatore	Dr. E. Sumathi
RRS, Paiyur	Dr. K. Govindan
HC& RI (W), TRY	Dr. S. Sheeba Joyce Roseleen

OFT 3 - Management of sucking pests on Curry leaf

Treatment details:

T1- IPM module

Spraying of Azadirachtin 1% EC @ 2 ml/lit. @ 45 DAP

Spraying of *M. anisopliae* 1×10^8 CFUs/ml @ 3ml/lit. @ 60 DAP

Need based spraying of spiromesifen 240 SC @ 0.8ml/lit

T2- Farmers practice

T3 – Control

Observations to be recorded:

- Psyllid population (nos./5 cm shoot tip)
- Mite population (nos./2 cm^2 leaf)
- Yield
- BCR

Centres to be involved:

Centre		Scientist in-charge
AC & RI, Coimbatore (LC)	:	Dr. A. Suganthi, Assoc. Prof (Entomology)
ARS, BSR		Dr. V. Sathya Seelan, Asst. Professor (Agrl. Ento.)
HC & RI, PKM	:	Dr. K. Suganyakanna, Assoc. Prof. and Head
HC & RI (W), TRY	:	Dr. S. Sheeba Joyce Roseleen Assoc. Prof, (Agrl. Ento.)
KVK, Tirur	:	Dr. V.A. Vijayashanthi, Asst. Prof, (Agrl. Entomology)

OFT-4 Management of new invasive leaf miner, *Liriomyza huidobrensis*, in potato

Treatments:

T1: Module 1

- Yellow sticky trap @ 20/ ha
- *Ageratina adenophora* @ 5% on 30 days after sowing
- Cyantraniliprole 10.26 OD @ 900 ml/ ha on 45th and 60th days after sowing

T2: Module 2

- Yellow sticky trap @ 20/ ha
- NSKE @ 5% on 30 days after sowing
- Chlorantraniliprole 18.5 SC@ 150 ml/ha on 45th and 60th days after sowing

T3: Farmers Practice

Observations to be recorded:

- Percent leaf damage by leaf miner need to be recorded on 3, 7, 10, and 15 days after spraying.
- Yield and Cost Economics: BC ratio need to be calculated

Centres to be involved:

Dr. B. Vinothkumar ICAR-KVK, The Nilgiris
Dr. T. Elaiyabharathi TNAU, Coimbatore

OFT 5: Biological management of onion purple blotch disease

Treatment details

S. No.	Treatments
T1	Bulb treatment with *B. subtilis* (Bbv 57) + *T. viride* (TNAU *Tv* 1) (each 5g /kg) + Foliar spray of 0.2% *B. subtilis* on 30 & 50 DAS
T2	Bulb treatment with *B. subtilis* (Bbv 57) at 5g / kg
T3	Bulb treatment with *T. viride* (TNAU *Tv* 1) at 5g / kg
T4	Control

Design: RBD; Replications: 5; Season: *Rabi*

Observations to be recorded

- Per cent disease index - Purple blotch

- Bulb yield (t/ha)
- Benefit Cost Ratio (BCR)

Coordinating scientist: Dr. R. Thilagavathi, Asst. Prof. (Plant Pathology), Dr. MSS ACC&RI, Thanjavur

Centre		Scientist in-charge
Dr. MSS AC & RI, Thanjavur	:	Dr. R. Thilagavathi, Asst. Prof. (Pl. Pathology)
HC & RI (W), Trichy	:	Dr. V. K. Satya, Asst. Prof. (Pl. Pathology)
HC & RI, Periyakulam	:	Dr. K. Kalpana, Associate Professor (Pl. Patho.)
AC & RI, Madurai	:	Dr. P. Mareeswari, Professor (Pl. Pathology)

OFT 6: Management of early blight of Tomato (New)

Treatment details:

S. No.	Treatments
T1	Foliar spray of azoxystrobin 11% + tebuconazole 18.3% w/w SC 0.2%- tw sprays after the symptom appearance at 15 days interval
T2	Foliar spraying metiram 55% + pyraclostrobin 5%WG @ 0.2%- two sprays after the symptom appearance at 15 days interval
T3	Foliar spraying mancozeb 75% WP @ 0.2%- two sprays after the symptom appearance at 15 days interval
T4	Farmer's practice
T5	Control

Coordinating scientist: Dr. S. Vanitha, Professor (Plant Pathology), Dept. of Vegetable Science, TNAU, Coimbatore

Centre		Scientist in-charge
HC & RI, TNAU, Coimbatore	:	Dr. S. Vanitha, Professor (Pl. Pathology)
HC & RI, Paiyur	:	Dr. Sundaramoorthy, Assistant Professor (Pl. Pathology)
HC & RI, Periyakulam	:	Dr. K. Kalpana, Associate Professor (Pl. Pathology)
HC & RI (W), Trichy	:	Dr. K. Yamunarani, Asst. Prof. (Pl. Pathology)

OFT 7: Management of root knot nematode, *Meloidogyne incognita* and *Fusarium* sp. wilt disease complex in tomato and bitter gourd by using *Clonostachys rosea*

Treatments:

T1- *Clonostachys rosea* @ 6 kg/ha+ *Trichoderma reesei* @ 2.5kg/ha
T2 - Carbofuran 3G @ 33 kg/ha + Carbendazim @500 g/ha
T3 - Fluopyrum 34.48 % w/w SC @ 625 ml / ha
T4 - Untreated control
Design: RBD; Replications: 5;

Observations to be recorded:

- Initial and final nematode population in soil and root
- Root colonization
- Wilt incidence; Yield & CB ratio

Centres to be involved:

Centre	:	Scientist in-charge
TNAU, Coimbatore	:	Dr. G. Jothi, Professor Dr. P. Vetrivelkalai, Assoc. Prof. Dr. M. Karthikeyan, Asst. Prof. (Pathology)
KVK, Tindivanum	:	Dr. K. Senthamizh, Assoc. Prof.
HC&RI, Paiyur	:	Dr. P. Senthilkumar, Asst. Prof. Dr. M. Deivamani, Assoc. Prof. (Pl. Pathology)

OFT 8: Management of root knot nematode, *Meloidogyne incognita* in Bhendi using EC formulation of *Xenorhabdus* toxin a bioproduct

T1- Soil application of Xenotox 80EC @ 5ml/litre
T2 -Carbofuran 3G @ 33 kg/ha
T3- Fluensulfone 2G @ 40 kg/ha
T4 - Untreated control
Design: RBD, Replications: 6

Observations to be recorded

- Initial and final nematode population in soil and root
- Root gall index,
- Yield
- CB ratio

Centres to be involved:

Centre	Scientists in-charge
TNAU, CBE	Dr. N. Seenivasan, Professor
HC&RI, PKM	Dr. S. Prabhu, Assoc. Prof.
HC&RI, Paiyur	Dr. P. Senthilkumar, Assoc. Professor
AC&RI, Eachangkottai	Dr. P. Shanmugapriya, Asst. Prof.

For Information

1. Roving survey conducted at fortnightly interval in the Nilgiris, Coimbatore, Theni and Krishnagiri distrcits on major vegetable crops, revealed, maximum leaf miner incidence in Nilgris (35.78 % leaf damage) during October 2023 and minimum (4.61 % leaf damage) during March 2024 in potato. Similarly, maximum incidence of leaf miner (40.42 %) leaf damage was observed during September in beet root and minimum (3.45 % leaf damage) during February 2024.
2. In Theni district, the incidence of Diamond back moth was observed in cabbage throughout the year ranging from 1.45 to 3.95 larva per plant. The incidence of shoot and fruit borer (7-10%) and hoppers (1-8/ leaf) was high in brinjal during the month of September and incidence of fruit borer (0-10%), pin worm (2-7%) and leaf miner (5-12%) was observed in fruiting and vegetative stages of tomato, respectively. In chilli, leaf and fruit damage ranged from 5-8% during the months of September 2023 and April 2024.
3. In bhendi, maximum damage due to mite (0-12 %) and fruit borer (2-10%) was recorded during February and April, respectively. The damage of fruit

borer, *Helicoverpa armigera* was noticed maximum in lab lab (10%) during December and leaf miner in cucumber (8 - 10%), While the damage of fruit flies on gourds was recorded during the month of August and December with maximum fruit damage in snake gourds (8%) followed by ridge gourd, bitter gourd, ivy gourd and bottle gourd (0-5%).

4. In Coimbatore district, the incidence of pin worm in tomato was very high (82.33 % fruit damage) in Sattakal pudur and was low in Irutu pallam (56.23%), Thondamuthoor block. In bhendi, incidence of whiteflies (17.3/ plant) was noticed during the month of January 2024. The leaf miner damage was 46.5 per cent in lab lab. The incidence of ash weevil was recorded up to 14.7 per cent in Kurunallipalayam village.
5. Fourteen vegetable samples including amaranthus, lablab, moringa pod and moringa leaf showed detectable level of pesticide residues of methamidaphos, azoxystrobin, emamectin benzoate, oomethoate, dinotefuran, dimethoate, tebuconazole and monocrotophos. All the detected pesticide residues were off label pesticides. Dimethoate in one lablab sample and monocrotophos in moringa leaf sample exceeded the FSSAI MRL. No pesticide residues were at detectable level in brinjal, cabbage, cauliflower, tomato radish and okra samples.
6. Survey was conducted on mite diversity in Horticultural crops of Coimbatore and Erode Districts from July, 2023 to March, 2024. In lab lab and brinjal, the major mite, *Tetranychus macfarlanei* was the predominant species and in Tomato recorded. Cucumber and Agathi were recorded as the new host for *Tetranychus truncatus,* and *Tetranychus ludeni,* respectively.
7. In Tomato, *Bacillus subtilis* consortium (BBv57+BST8+EBPBS4)- ST @ 10 ml/kg + salicylic acid @ 2.5 lit/ha on 15 days after transplanting + foliar spray at 2.5 lit/ha on 30, 45 and 60 Days after transplanting reduced incidence of Groundnut bud necrosis virus (9.05 %)
8. In Potato, VAM - basal application (5 kg/ha) and salicylic acid 100ppm + *Chaetomium globosum* (Cg6) 10ml/kg tuber treatment + salicylic acid of Cg6 2.5kg/ha at 30 DAS + 4 alternate foliar spraying with salicylic acid 100 ppm and Cg6 0.5% at 40, 50, 60 and 70 days after sowing reduced early and late blight disease
9. In Onion, bulb treatment (2 g/kg bulb), soil drenching (0.2 %) and spraying carbendazim + mancozeb (0.1 %) reduced twister blight -74%, basal rot-83% and purple blotch -79.5%.
10. In Onion, Bulb treatment with *Trichoderma asperellum* (TNAU *Tv*)+*Bacillus subtilis* (Bbv 57) each at 10g/kg of bulb + soil application of *T. Asperellum* (TNAU *Tv*) and *B. subtilis* (Bbv57) each at 2.5kg/ha + FS of *B. subtilis* (Bbv 57) at 0.5% - 25, 40 & 60 Days after sowing reduced basal rot 13.1 % with the highest yield of 15.30 t/ha and C:B of 3.10.
11. In tomato, *Clonostachys rosea* was found to reduce the population of root-knot nematode, *Meloidogyne incognita* in tomato and bitter gourd by 64.8% and 47.8% and wilt disease by 63.6% and 54.9%. Persistence of the fungal bio-agent was observed in the egg masses and field after harvest.
12. In tomato, Chitosan nanoformulation @ 5ml/plant at planting and 30 days after planting reduced the root galling by 48.18% and egg mass by 59.27%. Tomato yield increased by 11.17%.

13. In bhendi, soil application of Xenotox 80EC @ 5 ml/lit resulted in reduction of root-knot nematode population by 58% in soil and 52% in root. This strategy increased the fruit yield by 28% with CB ratio 1:2.7.
14. Chilli accessions *viz*., PKM CA-20, PKM CA-33, PKM CA-38, PKM CA-08, PKM CA(C)1, PKM CA(B)2, PKM CA(P)2 and PKM CA(GL)2 were found to be highly resistant to *Meloidogyne incognita*. The accessions PKMCA-32 and PKMCA-BL-2 showed resistance reaction to *M. incognita.*
15. Brinjal accessions *viz*., PKM B-E-1 and PKMB–G-1 were found to be highly resistant to *Meloidogyne incognita*. Accession PKM BB-2 showed resistance reaction to *M. incognita.*
16. In brinjal, soil application of Simarouba oil cake @ 35 kg/ha near the root zone of brinjal reduced the root-knot nematode population by 43%. It recorded minimum ash weevil damage compared to untreated control.
17. Culture filtrate of *Bacillus firmus* exhibited the highest percent inhibition of egg hatching (96.08%) and juvenile mortality (98.00%) of *M. incognita*. Under glasshouse conditions, soil application of liquid formulation of *B. firmus* @ 3 ml/litre was found to increase the plant growth parameters of cucumber and *B. firmus* significantly reduced the population of *M. incognita* in soil (42.51%). *B. firmus* was compatible with *T. asperellum*, *B. subtilis* and *P. chlamydospsoria* and incompatible with *P. lilacinum*.

III. Spices and Plantation crops

1. For adoption: NIL

2. For On Farm trial:

OFT 1 Management of Quick Wilt in Pepper

T1 - Soil application of *Bacillus subtilis* + *Trichoderma asperellum* + *Purpureocillium lilacinum* each @ 2.5 kg/ha + VAM (2 kg/ha), 2-times at 6-month intervals. Spraying of Bordeaux mixture (1%) as soon as the symptom appears on leaves, followed by spraying of 0.25% metalaxyl + mancozeb after 15 d.

T2- Farmer's practice

T3- Control

Observations to be recorded:

- Quick wilt incidence (%)
- Nematode population
- Berry yield
- C:B ratio

Centres **to be involved**

Centre	:	Scientist in-charge
TNAU, CBE	:	Dr. S. Sundaravadhana
HC&RI, Periyakulam	:	Dr. A. Vijayasamundeeswari
HRS, Yercaud	:	Dr. S. Maruthasalam

OFT 2: Management of pepper wilt complex (New)

Treatment details

S. No.	Treatments
T1	Spraying of Bordeaux mixture (1%) as soon as the symptom appears on leaves, followed by spraying of 0.25% metalaxyl + mancozeb after 15 days of first spray. Soil application of *Bacillus subtilis* (Bbv57) + *Trichoderma asperellum* (TNAU *Tv*) + *Purpureocillium lilacinum* each at 2.5 kg/ha + VAM (2 kg/ha), 2-times (June-July & Nov-Dec) at 6-month intervals
T2	Farmer's practice
T3	Untreated control

Design: RBD; No. of Replications: 7; Season: *Kharif*

Observations to be recorded:

- Quick wilt incidence (%)
- Nematode population
- Berry yield (kg/ha)
- Benefit cost ratio (BCR)

Coordinating Scientists: Dr. S. Sundravadana, TNAU, Coimbatore & Dr. N. Seenivasan, Professor (Nematology)

TNAU, CBE	Dr. S. Sundravadana, Assoc. Professor (Pl. Pathology) Dr. N. Seenivasan, Professor (Nematology)
HC&RI, Periyakulam	Dr. A. Vijayasamundeeswari, Assoc. Prof. (Pl. Pathology)
HRS, Yercaud	Dr. S. Sundravadana, Assoc. Professor (Pl. Pathology)
HRS, Ooty	Dr. L. Rajendran, Assoc. Professor (Pl. Pathology)

OFT 3: Management of foliar diseases (leaf spot and blotch) in turmeric (New)

Treatment details:

S. No.	Treatments
T1	Spraying of azoxystrobin 18.2% + difenoconazole 11.4% w/w SC@0.1%
T2	Spraying of propiconazole 25 EC @ 0.1%
T3	Farmer's practice
T4	Control

No. of Replications: 5, Design: RBD, Season: *Kharif*

Observations to be recorded:

- Leaf spot incidence (PDI)
- Leaf blotch incidence (PDI)
- Rhizome yield (t/ha)
- Fungicide residue for best treatment
- Benefit Cost Ratio (BCR)

Coordinating scientist: Dr. S. Sundravadana, TNAU, Coimbatore

TNAU, Coimbatore	Dr. S. Sundravadana, Assoc. Professor (Pl. Pathology) (Coimbatore & Dharmapuri districts)
TRC, Bhavanisagar	Dr. S. Maruthasalam, Assoc. Professor (Pl. Pathology) (Erode and Salem districts)

3. For Information

1.	Soil application of coconut consortia @ 5% + soil drenching with copper hydroxide @ 0.25% + foliar application of recommended dose of fertilizers showed higher reduction (25.40%) of basal stem rot disease, after 6 months and higher (16.85 nuts) nut yield.
2.	Soil application of *T. asperellum* @ 25 g/cent at sowing + crown application of *B. subtilis* endophyte @ 10 g/l of water at 3 & 6 MAS + application of AMF @ 50 g/cent at 3-month reduced the bud rot disease incidence by 77% and enhanced the percent germination (91%).
3.	Rhizome treatment and foliar application of salicylic acid at 100 ppm showed lower leaf spot (3.8 PDI) and blotch (9.53 PDI) incidence and higher rhizome yield (28.13 t/ha). Control treatment showed higher leaf spot (25.30 PDI) & blotch 32.92 PDI) incidence and lower rhizome yield (25.0 t/ha).
4.	Soil application of coconut consortia at 5litres/acre + root feeding with hexaconazole (2 ml + 100 ml water) per palm at 3-month intervals + recommended dose of fertilizers, showed 25.53% basal stem rot reduction.
5.	Spraying with Bordeaux mixture (1%) and 0.25% metalaxyl + mancozeb alternatively at 15 days interval as soon as disease appears & soil application of *Bacillus subtilis* (Bbv57) + *Trichoderma asperellum* (TNAU *Tv*) + *Purpureocillium lilacinum* each at 2.5 kg/ha + VAM (2 kg/ha) at 6-month intervals (June-July & Dec-Jan.) showed 71.82% disease reduction, 37% reduction of nematode population and 48% higher berry yield.
6.	Soil and foliar application of endophytic bio-consortium was effective against blister blight & grey blight in tea and increased (45%) fresh leaf yield of tea.
7.	In betel vine, application of *Purpureocillium lilacinum* 30 g/vine + neem cake @ 400 kg/ha minimized the final nematode population in soil by 75.5%, females/g in roots by 67.9% and increase vine yield by 86.4%.

IV. Flowers Medicinal and Aromatic Crops

1. For adoption: Nil

2. For on Farm trial:

OFT 1: Management of foliar diseases of tuberose

Treatment details

S. No.	Treatments
T1	Foliar spray of tebuconazole 50% + trifloxystrobin 25% WG @ 0.1% - 45 and propiconazole 25 % EC @ 0.1% 60 DAP
T2	Farmers practice (carbendazim 50% WP @ 0.1%)
T3	Farmer's practice

Design: RBD, No. of Replications: 7

Observations to be recorded:

Leaf blight disease (PDI)
Flower yield (kg/ha)
Benefit Cost Ratio (BCR)

Coordinating Scientist: Dr. M. Karthikeyan, TNAU, Coimbatore

Centre	:	Scientist in-charge
AC & RI, Coimbatore	:	Dr. P. Mahalakshmi, Asst. Prof. (Pl. Pathology)
AC&RI, Madurai	:	Dr. P. Mareeswari, Prof. (Pl. Pathology)
HC&RI, Paiyur	:	Dr. Sundaramoorthy, Asst. Prof. (Pl. Pathology)
KVK, Paparapatti	:	Dr. M. Deivamani, Asst. Prof. (Pl. Pathology)

OFT 2: Management of powdery mildew of rose (new)

Treatment details

S. No.	Treatments
T1	Foliar spray of bupirimate 26.7% EC w/w at 4000ml/ha
T2	Farmers practice (carbendazim 50% WP @ 0.1%)
T3	Control

Design: RBD, No. of replications: 7

Observations to be recorded:

Powdery mildew incidence (PDI)
Flower yield (kg/ha)
Benefit Cost Ratio (BCR)

Coordinating Scientist: Dr. L Rajendran, TNAU, Coimbatore

Centre	:	Scientist in-charge
HRS, Ooty	:	Dr. L Rajendran Assoc. Prof. (Pl. Pathology)
KVK, Paparapatti	:	Dr. M. Deivamani, Asst. Prof. (Pl. Pathology)
HC&RI, Paiyur	:	Dr. Sundaramoorthy, Asst. Prof. (Pl. Pathology)

OFT 3. Management of root knot nematode, *Meloidogyne incognita* in tuberose through bio-inducer and biocontrol

Proposed treatment details

T1 – Humic acid 3% bulb treatment + *Pochonia chlamydosporia* @ 2.5 kg/ha
T2 - Carbofuran 3G @ 1 kg a.i./ha
T3 - Fluopyrum 34.48 % w/w SC @ 625 ml / ha
T4 - Untreated control

Design: RBD, Replications: 6

Observations to be recorded

- Initial and final nematode population in soil and root
- Root gall index
- Flower Yield
- CB ratio

Centre	:	Scientist in-charge
HC&RI, Paiyur	:	Dr. P. Senthilkumar, Assoc. Professor
TNAU, CBE	:	Dr. N. Seenivasan, Professor
HC&RI, PKM		Dr. S. Prabhu, Assoc. Professor
KVK, Dharmapuri		Dr. T. Senthilkumar, Assoc. Professor

3. For Information

1.	Mites emerged as the primary pest affecting carnations, leading to notable reductions in flower quality, while the sporadic appearance of Carnation tortrix during the flowering season poses additional challenges. In Gerbera cultivation, whiteflies and thrips were identified as major pests, emphasizing the need for effective pest management strategies. Chrysanthemum cultivation during 2023-2024 cropping period witnessed peak populations of thrips, aphids, and capitulum borer, underlining the importance of vigilant pest monitoring
2.	Application of Tebuconazole 50% + Trifloxystrobin 25% at 0.1% foliar spray effectively controlled *Colletotrichum* and *Alternaria* leaf spot diseases in jasmine plants.
3.	Foliar spraying of *Sargassum myricocystum* extract at 3% concentration at 45 and 60 days after planting significantly reduced leaf spot incidence in tuberose plants, resulting in a higher yield (11.67 ton/ha) and higher benefit-cost ratio (1:2.82)
4.	Foliar application of Trifloxystrobin + Tebuconazole @ 0.1% at 45 and 60 days after planting effectively reduced foliar diseases in tuberose plants by 9.25 PDI compared to untreated plants
5.	Under sodic soil conditions, *Trichoderma asperellum* and *T. harzianum* demonstrated significant effectiveness in reducing the growth of *Fusarium solani*
6.	The incidence of viral diseases in Gloriosa varied between 7% and 43%, with the highest occurrence observed in Ottanchathiram, Dindigul district. Plants infected with Cucumber Mosaic Virus (CMV) showed an 84% reduction in pod count compared to healthy plants
7.	Beneficial microorganisms such as *Trichoderma* and *Bacillus* strains isolated from healthy soils demonstrated effectiveness against soil-borne pathogens such as

	Macrophomina phaseolina, *Fusarium* spp., and *Sclerotium rolfsii*. Application of *Trichoderma* and *Bacillus* consortia formulations reduced disease incidence and promoted plant growth
8.	Mites emerged as the primary pest affecting carnations, leading to notable reductions in flower quality, while the sporadic appearance of Carnation tortrix during the flowering season posed additional challenges. In Gerbera cultivation, whiteflies and thrips were identified as major pests, emphasizing the need for effective pest management strategies. Chrysanthemum cultivation during the 2023-2024 cropping period witnessed peak populations of thrips, aphids, and capitulum borer, underlining the importance of vigilant pest monitoring.
9.	Application of Tebuconazole 50% + Trifloxystrobin 25% at 0.1% foliar spray at 15 days interval immediately after the appearance of symptom effectively controlled *Colletotrichum* and *Alternaria* leaf spot diseases in jasmine plants.
10.	Foliar spraying of *Sargassum myricocystum* extract at 3% concentration at 45 and 60 DAP significantly reduced the leaf spot incidence in tuberose plants, resulting in a higher yield (11.67 ton/ha) and higher benefit cost ratio (2.82)**.**
11.	Foliar application of trifloxystrobin + tebuconazole @ 0.1% at 45 and 60 days after planting effectively reduced foliar diseases in tuberose plants by 9.25 PDI compared to untreated plants
12.	The incidence of viral diseases in Gloriosa varied between 7% and 43%, with the highest occurrence observed in Ottanchathiram of Dindigul district. Plants infected with cucumber mosaic virus (CMV) showed an 84% reduction in pod count compared to healthy plants
13.	Beneficial microorganisms such as *Trichoderma* and *Bacillus* strains isolated from healthy soils demonstrated effectiveness against soil-borne pathogens such as *Macrophomina phaseolina*, *Fusarium* spp., and *Sclerotium rolfsii* in Gloriosa. Application of *Trichoderma* and *Bacillus* consortia formulations reduced disease incidence and promoted plant growth.

B. ACTION PLAN: 2024-2025			
I. FRUITS			
Agrl. Entomology			
Title	**Name of the Scientist & Centre**	**Activities**	**Deliverables**
AP 1: Monitoring Insect Pests of fruit Crops	Dr. S. Suganya Kanna, HC&RI, PKM Dr. K. Govindan, RRS, Paiyur Dr. K. Sasikumar, KVK, Dharmapuri Dr. K. Elanchezhiyan, AC&RI, KKM Dr. S. Jeyaprabhavathi, TCRS, Yethapur Dr. M. Senthil Kumar, HRS, Yercaud	• Monitoring of insect pests of major fruit crops *viz*., mango, banana, guava, grapes, cashew through Roving survey at fortnight intervals in the identified district • Depositing preserved samples of newer categories of insects with the TNAU Insect Biodiversity Laboratory for documentation and cataloguing • Uploading the data in CPPS Pest and Diseases Monitoring Google Sheets immediately. • Submission of high-quality photos 500 nos. each to the Theme Leader for preparation of Bulletin • Reporting pests outbreak to DCPPS • Monthly pest monitoring report to the Government and other stakeholders	• Pest status of horticultural crops Monthly pest monitoring report Bulletin by the Team of Scientists
AP 2: Monitoring and Management of insect pests in the paclobutrazol applied mango field in Krishnagiri District	Dr. P. Thilagam, ASP-ARS, Virinjipuram Dr. P. Govindan, AP - RRS, Paiyur	• Monitoring major insect pests in the Paclobutrazol applied mango field • Assessing the effect of paclobutrazol on the infestation of insect pest population • Management of insect pest in paclobutrazol treated mango fields with eco-friendly approaches	Pest status in paclobutrazol applied field and their eco-friendly management.
AP 3: Monitoring and Management of fruit fly in pear	Dr. M. Senthil Kumar, HRS, Yercaud Dr. S. Suganya Kanna, HC&RI, PKM Dr. B. Vinoth Kumar, KVK, Ooty	• Monitoring, collection and identification of fruit fly in pear T1- IPM module 1. Collect infested fruits and dump in deep pits. 2. Frequent raking of the soil to kill pupae.	Fruit fly status in pear in different temperate zones and their eco-friendly management.

		3. Installation of methyl eugenol trap 1% solution dipped in cotton @25/ha 4. Spray Neem oil @ 30.0 ml/lt. during fruit maturation T2- Chemical Control (Farmer's approach) Three rounds of chemical spraying immediately after fruit set (Imidacloprid 17.8% SL@ 0.5 ml / lt or Malathion l.0 ml / lt) T3- Untreated control **Design:** RBD **Replications**: 7 **Observations to be recorded** ➢ Fruit fly/ trap at weekly intervals and identification of fruit fly ➢ Per cent fruit damage ➢ Yield and BC ratio **Lead Centre:** HC&RI, PKM **Participating Centres** HC&RI, PKM KVK, Ooty	
AP 4. Integrated Management of Citrus Rust Mite	Dr. E. Sumathi, Professor (Agrl Entomology) Dr. K. Senguttuvan, Asst. Professor (Agrl Entomology) Dr. K. Elanchezhyan, Assoc. Professor (Agrl Entomology) Dr. J. Jayaraj, Professor (Agrl Entomology)	• Spraying of Azadirachtin 1% EC @ 3 ml/lit. during fruit initiation • Spraying of citrullus 20 Ec 2ml/lit. @ 3ml/lit. 15 days after first spray • Release of predatory mite, *Neoseiulus longispinosus* at 1: 50 (prey: predator ratio) • Need based spraying of spiroteramat 15.31 OD @ 0.6ml/lit • Observation on Mite population (nos/2 cm 2 fruit area) at 0, 1, 3, 5, 7, and 14 DAS, Per cent reduction, yield & BC ratio	• Population assessment (mites/2 cm^2 area/leaf) • Developing Eco-friendly management of citrus mite • Validating the module under farmers' field.

		AC & RI, Coimbatore (LC) : Dr. E. Sumathi, Prof. (Agrl. Entomology) Dr. K. Senguttuvan, Asst. Prof. (Agrl Entomology) AC & RI, Killikulam : Dr. K. Elanchezhyan, Assoc. Prof. (Agrl Entomology) AC & RI, Chettinad : Dr. J. Jayaraj, Prof. (Agrl Entomology)	
Plant Pathology			
AP 1 Monitoring diseases of horticultural crops and correlation with weather parameters and collection of data set for Artificial Intelligence (AI) based diagnosis	**FRUITS** Dr. N. Indra, TNAU, Coimbatore Dr. K. Yamunarani, HC & RI (W), Trichy Dr. R. Thilagavathi, Dr. MSS AC&RI, Eachangkottai, Thanjavur Dr. A. Vijayasamundeeswari, HC&RI, Periyakulam Dr. Sanjay Gandhi, DARS, Chettinad Dr. K. Manonmani, AC&RI, Madurai Dr. R. Udhayakumar, AC&RI, Kudumiyanmalai Dr. S. Marutahsalam, TRC, Bhavanisagar: Dr. S. Sundramoorthy, HC&RI, Paiyur. **VEGETABLES** Dr.S. Vanitha, TNAU, Coimbatore. Dr. K. Yamunarani, HC & RI (W), Trichy Dr. K. Kalpana, HC&RI, Periyakulam Dr. R. Udhayakumar, AC&RI, Kudumiyanmalai Dr. Sundaramoorthy, HC&RI, Paiyur Dr. P. Mareeswari, AC&RI, Madurai Dr. R. Akila, RRS, Aruppukottai Dr. L. Rajendran, HRS, Ooty Dr. R. Thilagavathi, Dr. MSS AC RI, Thanjavur.	• Monitoring of diseases of horticultural crops fruits crops through Roving survey and fixed plot survey at fort nightly intervals in the identified districts. • Uploading the data in CPPS pest and diseases monitoring Google sheets immediately. • Submission of high-quality images to the theme Leader for preparation of bulletin and for Artificial Intelligence (AI) purpose. • Reporting outbreak of diseases to DCPPS • Monthly pest monitoring report to the Government and other stakeholders.	• Details of the emerging diseases in horticultural crops. • Forewarning the farmers to take up preventive measures. • Initiation of new research activities. • Availability of good quality images for Artificial Intelligence (AI).

	SPICES AND PLANTATION CROPS Dr. S. Sundravadana, TNAU, Cbe Dr. S. Maruthasalam TRC, Bhavanisagar Dr. P. Latha, CRS, Aliyarnagar Dr. K. Kavitha, KVK, Thirupathisaram Dr. M. Surulirajan, CRS, Veppankulam Dr. K. Kalpana, HC&RI, Periyakulam **FLOWERS, MEDICINAL AND AROMATIC CROPS** Dr. M. Karthikeyan, TNAU, Coimbatore Dr. P. Mareeswari, AC&RI, Madurai Dr. L. Rajendran, HRS, Ooty Dr. M. Deivamani, KVK, Dharmapuri Dr. M. Kavitha, KVK, Thirupathisaram Dr. A. Vijayasamundeeswari, HC&RI, Periyakulam Dr. S. Sundaramoorthy, HC&RI, Paiyur		

AP 4 Exploration of endophytes, yeast, botanicals and biocontrol agents for the management of leaf spot and fruit rot (*Colletotrichum gloeosporioides*) of custard apple and black spot (*Isariopsispersona tavar. zizyphi*) ofber.	Dr. R. Akila, RRS, Aruppukottai	***In vitro* studies** T1: Endophyte 1 isolated from medicinal arid zone fruit crops T2: Endophyte 2 isolated from arid zone fruit crops T3: NSKE (5%) T4: Mancozeb 0.2% T5: Carbendazim + mancozeb 0.1% T6: Chlorothalonil 0.1% T7: *Bacillus subtilis* (Bbv57) (0.5%) T8: Control **Design**: CRD; **Replications**: 3 ***In vivo* studies** Effective endophyte, bio control agent, botanical and fungicides will be tested at field level at RRS, Aruppukottai **Design**: RBD **Replications**: 3 **Observations to be recorded** ➢ Leaf spot (PDI) ➢ Fruit rot incidence ➢ Yield (kg/tree)	Environmental friendly alternative for the management of foliar and fruit rot diseases of custard apple and ber
AP 5 Integrated management of Avocado wilt and borer	Dr. A. Vijayasamundeeswari, HC&RI, Periyakulam Dr. Suganya Kanna, HC&RI, Periyakulam	**Treatments details** T1: IPDM - Remove and destroy all the unwanted / infested parts and spray the tree trunks with *Beauveria bassiana* @ 5g/litre + application of *Bacillus subtilis* (Bbv57) (10 8 cfu) + Trichoderma asperellum (TNAU Tv) (10 7 cfu) @ 2.5 kg/ha mixed with FYM (50 kg) + Neem cake around the root zone, drenching with Bordeaux mixture 0.1% with onset of monsoon, followed by need based drenching with 0.25% metalaxyl + mancozeb or 0.2 % fosetyl Al) T2: Farmer's practice T3: Control **Design**: RBD; **Replications**: 3	An effective management strategy for Avocado wilt and borer will be made available

		Observations to be recorded ➢ Wilt incidence (%) ➢ No of borehole/tree ➢ Percent stem/twig damage ➢ Yield per plant	
Nematology			
AP 1 Management of root-knot nematode, *Meloidogyne enterolobii* and Fusarium wilt disease complex in Guava	**AC&RI, Coimbatore** Dr. P. Vetrivelkalai Dr. N. Indra **HC&RI (W), Trichy** Dr. N. Swarnakumari Dr. K. Yamunarani **HC &RI, Periyakulam** Dr. S. Prabhu Dr. A. Vijayasamundeewari **KVK, Pongalur** Dr. P. Kalaiarasan	T1 – *Bacillus firmus* @ 30 ml/tree + *Lycinibacillus fusiformis* @ 30 ml/tree + *Pochonia chlamydosporia* @ 30 ml/tree+ *Trichoderma asperullum* @ 5g/tree thrice at monthly intervals. T2 – Growing of marigold at the basin of tree (10 seedlings / tree) + *Trichoderma asperullum* @ 5g/tree thrice at monthly intervals. T3 – Carbofuran 3G @ 60 g + Carbendazim @ 2g /litre/ tree and repeating the same after 3 months T4 – Fluopyram 400 SC @ 2 ml / litre and repeating the same after 3 months. T5 – Control **Observation to be recorded** Final nematode population in soil and root Final population load of biocontrol agents Gall index Wilt incidence Yield (t/ha) CB ratio	Development of effective management method for nematode wilt disease complex in guava.
II. VEGETABLES			
AGRL. ENTOMOLOGY			
AP 1: Monitoring Insect Pests of vegetable Crops	Dr. S. Suganya Kanna, HC&RI, PKM Dr. S. Sheeba Joyce Roseleen, ADAC&RI, TRY Dr. K. Govindan, RRS, Paiyur Dr. B. Vinoth Kumar, KVK, Ooty	Monitoring of insect pests vegetable crops through Roving survey @ fortnight intervals in the identified district. Depositing preserved samples of newer categories of insects with the TNAU	•Pest status of horticultural crops Monthly pest monitoring report Bulletin by the

		Insect Biodiversity Laboratory for documentation and cataloguing. Uploading the data in CPPS Pest and Diseases Monitoring Google Sheets immediately. Submission of high-quality photos to the Theme Leader for preparation of Bulletin. Reporting outbreak of pests to DCPPS. Monthly pest monitoring report to the Government and other stakeholders	Team of Scientists
AP 2: Monitoring of Pesticide residues in vegetables	TNAU, CBE Dr. A. Suganthi, Assoc. Prof. (Entomology) Dr. M. Alagar, Asst. Professor (Entomology)	Collection of farm gate samples at monthly interval from Coimbatore district for residue analysis Vegetables: Bhendi, Brinjal, Tomato, Bitter gourd, Snake gourd, Green Chillies, Cauliflower, Beetroot, Curry leaf, Amaranthus, Coriander.	Status of pesticide residue in farm gate samples of vegetables will be made available through the NABL-PTL
AP 3: Monitoring mite diversity in vegetable crops ecosystem in Tamil Nadu	Theme Leader - Dr. E. Sumathi Dr. E. Sumathi, (Coimbatore, Tirupur, and Namakkal dt.) Dr. V. Baskaran, (The Nilgiris, Erode Dt.) Dr. S. Jayaprabhavathi, TCRS, Yethapur	Documentation of mite diversity in vegetable crops in Tamil Nadu through roving survey at fortnightly interval*. Specimens to be sent to the Professor and Head, Department of Agrl. Entomology, CPPS, TNAU, CBE for identification. *Protocol for survey, collection and transport will be communicated by the Theme Leader.	Status of mite diversity in vegetable crops of Tamil Nadu will be available Bulletin on mite diversity in vegetable ecosystem
PLANT PATHOLOGY			
AP 1 Documentation of gummy stem blight disease of Gourds / Cucurbits in different vegetable growing zones of Tamil Nadu	Dr. S. Vanitha, TNAU, Coimbatore Dr. K. Yamunarani, HC&RI(W), Trichy Dr. K. Kalpana, HC&RI, Periyakulam Dr. R. Udhayakumar, AC& RI, Kudumiyanmalai Dr. Sundaramoorthy, HC&RI, Paiyur Dr. P. Mareeswari, AC&RI, Madurai Dr. R. Akila, RRS, Aruppukottai	• Monitoring of diseases of vegetable crops through Roving survey @ fortnightly intervals in the identified district • Reporting outbreak of diseases • Submission of high-quality images to the Theme Leader	Prevalence and severity of gummy stem blight of cucurbits in Tamil Nadu will be documented

	Dr. R. Thilagavathi, Dr. MSS AC&RI, Thanjavur		
AP 2 Collection and selection of potential mushroom species suitable for commercial utilization	Dr. G. Thiribhuvanamala, TNAU, Coimbatore. Dr. M. Revathy, AC&RI, Madurai. Dr. V. Ramamoorthy, Dr. MSSAC&RI, Eachangkottai Dr. A. Vijayasamundeeswari, HC&RI, Periyakulum	Exploitation of mushroom biodiversity for commercial utilization **Observations to be recorded** Collection of different mushroom species/ strains/ pure culturing and maintenance Testing potential mushroom strains/ species for edibility/ industrial applications	Strengthening of mushroom culture collection, identifying promising strains/ species and developing mass prodn. technology
AP 3 Testing the yield performance of potential mushroom strains/isolates suitable for commercial utilisation	Dr. G. Thiribhuvanamala, TNAU, Coimbatore. Dr. M. Revathy, AC&RI, Madurai. Dr. V.K. Satya, HC&RI (W), Trichy Dr. R. Akila RRS, Aruppukottai	Mushroom isolates: 1. TNAU-CBE-20-15 2. TNAU-MDU-20-05 3. APK2 Replications: 7 No. of beds /replication: 3 Data to be recorded • Days for spawn run • Days for first harvest • Av. no. of sporophores/500 g substrate	Developing new varieties for commercial production
NEMATOLOGY			
AP 1 Identification of sources of resistance against root knot nematode, *Meloidogyne incognita* in vegetable crops	Dr. K. Senthamizh, KVK, Tindivanam Dr. S. Prabhu, HC &RI, Periyakulam Dr. P. Vetrivelkalai, TNAU, Cbe Dr. M. Shanmugapriya, AC & RI, Eachangkottai	Confirmation of resistance against root knot nematode, *M. incognita* in vegetable crops chillies and brinjal **Observation to be recorded** • Final nematode population in soil and root • Gall index	Nematode resistant sources will be identified.
AP 2 Monitoring of Nematode infection in horticultural crops	Dr. P. Kalaiarasan (TL), KVK, Pongalur Dr. P. Vetrivelkalai, TNAU, Cbe Dr. S. Prabhu, HC &RI, Periyakulam Dr. M. Shanmugapriya, AC & RI, Eachangkottai Dr. J. Jayakumar, KVK, Vridhachalam T. Senthilkumar, KVK, Pappiredipatti Dr. N. Swarnakumari, HC&RI (W),	Conducting survey on horticultural crops and submission of nematode analysis report on or before 25th of every month to the Professor and Head, Department of Nematology, TNAU, Coimbatore Observation to be recorded: Final nematode population in 200 cc	Diagnoses of nematode diseases in Horticultural crops will be delivered

	Trichy Dr. K. Senthamizh, KVK, Tindivanam Dr. P. Senthil Kumar, HC&RI, Paiyur	soil and 1 g root Gall index	
IV. Flowers, Medicinal & Aromatic Crops and Spices and plantations			
Agrl. Entomology			
AP 1 Monitoring Insect Pests of flower Crops	Dr. K. Suresh, AC&RI, MDU Dr. K. Govindan, RRS, Paiyur Dr. L. Allwin, AC&RI, KKM	• Monitoring of insect pests flower crops through Roving survey @ fortnight intervals in the identified district. • Depositing preserved samples of newer categories of insects with the TNAU Insect Biodiversity Laboratory for documentation and cataloguing. • Uploading the data in CPPS Pest and Diseases Monitoring Google Sheets immediately. • Submission of high-quality photos to the Theme Leader for preparation of Bulletin. • Reporting outbreak of pests to DCPPS • Monthly pest monitoring report to the Govt. & other stakeholders	Pest status of horticultural crops Monthly pest monitoring report Bulletin by the Team of Scientists
AP 2. Integrated management of pests, diseases and nematodes in carnation under protected condition	Dr. E. Sumathi Professor (Ento.) Dr. M. Karthikeyan, Assoc. Professor (Path) Dr. N. Seenivasan, Professor (Nematology) (Kothagiri) TNAU, CBE Dr. B. Vinothkumar Assoc. Professor (Ento.) Dr. G. Senthilraja Asst. Prof. (Pl. Path.) HRS, Ooty Dr. K. Govindan, Asst. Prof. (Ento.) Dr. S. Sundaramoorthy, Asst. Prof. (Pl. Path.) Dr. P. SenthilKumar, Assoc. Professor (Nem.)	**IPDM** • Proper maintenance of humidity and temperature in polyhouse • Basal application of *Trichodermaviride* + *Bacillus subtilis* + *Purpureocilliumlilacinum* each 2.5kg/ha • Spraying of azadirachtin 1% EC 3 ml/lit. @ 30 DAP. • Installation of yellow sticky traps @ 50 Nos/ ha at 30 DAP. • Need based application of fipronil 5 SC @ 1.5 ml/ lit. forthrips. • Need based application of abamectin 1.9 EC @ 0.4 ml/lit. followed by spiromesifen 22.9	Management of insects, mites nematodes and diseases on carnation in polyhouse

	HC&RI, Jeenur	SC @ 0.8 ml/lit, fenazaquin 10EC @ 2 ml/lit. at 14 days interval. • Need based application of tebuconazole 25 EC @ 0.15%. forGrey mould and leaf blight. T2 : Farmers practice; T3: Control **Observations to be recorded** Sucking pests – Population (nos/leaf) Bud borer – Population (nos/plant) Yield – No. of flowers / ac Benefit cost ratio	
Plant Pathology			
AP 1 Management of basal stem rot in coconut	Dr. S. Sundravadana, TNAU, Coimbatore Dr. P. Latha, CRS, Aliyarnagar Dr. K. Kavitha, KVK, Thirupathisaram Dr. M. Surulirajan, CRS, Veppankulam	**Treatment details** T_1: Soil application of TNAU COCOCON @ 5 lit/acre + VAM @ 100g + recommended dose of fertilizers -at 3 months interval. T_2: Soil application of TNAU COCOCON @ 5 lit/acre + root feeding with hexaconazole - 2 ml mixed with 100 ml water + recommended dose of fertilizers- at 3 months interval. T_3: Farmers practice T_4: Control **Treatment details** Design: RBD; No. of Replications: 5 No. of palms per replication: 10 (minimum) **Observations to be recorded** ➢ BSR disease severity (standard score chart) ➢ Coconut yield (Nuts/harvest) ➢ Benefit Cost Ratio (BCR)	An IDM package for the management of basal stem rot of coconutwill be made available
AP 2 Management of root wilt disease of coconut	Dr. G. Karthikeyan & Dr. S. Sundravadana, TNAU, Coimbatore Dr. P. Latha, CRS, Aliyar Nagar	T_1: Recommended dose of fertilizers & micronutrients + soil application of *Bacillus subtilis* (Bbv57) and *Trichoderma asperellum* (TNAU *Tv*) & Bio-fertilizers (Azospirillum, Phosphobacteria and AMF) +	An IDM package for the management of root wilt of coconutwill be made available

	Dr. K. Kavitha, KVK, Thirupathisaram Dr. N. Rajinimala, ARS, Ambasamudram	root feeding with coconut tonic (40 ml/palm) at 2-month interval + crown application of hexaconazole (2 ml + 300 ml water) + TNAU COCOCON application at 3 months interval. T_2: Recommended dose of fertilizers; T_3: Control **Treatment details** Design: RBD; No. of Replications: 7 No. of Palms per replication: 10 (minimum) **Observations to be recorded** ➢ Root wilt incidence and severity (using scale) ➢ Leaves: Nutrients (N, P, K) concentration and micronutrients ➢ Soil (rhizosphere and bulk) ➢ pH; Electrical conductivity ➢ Organic carbon; Available macronutrients coconut yield (No. of nuts/harvest); Benefit Cost Ratio	

C. REMARKS ON THE RESEARCH PROJECTS Agrl. Entomology			
S. No.	**Project details**	**Project Investigator and Centre**	**Remarks**
I. Fruit crops			
1.	**CPPS/PKM/FRU/HOR/2023/001** Study on pests and natural enemies spectrum in Jamun Period: January 2023- December 2024	Dr. S. Suganya Kanna Assoc. Prof. (Ento.) Dept. of Fruit Science HC & RI, Periakulam Dr. C. Vijayaraghavan Assoc. Prof. (Ento.) CRS, Srivilliputhur Dr. Ga. Dheebakaran Assoc. Prof. (Agronomy) ACRC, TNAU, Coimbatore	Project may be continued
2.	**CPPS/JNR/AEN/HORT.CROPS/2023/286** Studies on changing insect pest scenario in the offseason mango gardens of Krishnagiri district Period: September 2023- August 2026	Dr. P. Thilagam Assoc. Prof. (Agrl. Ento.) Dr. S. Srividhya Assoc. Prof. (Horti.) HC&RI, Paiyur	Project may be continued
3.	**CPPS/PYR/HOR/2022/001** Evolving integrated pest management strategies for thrips and hoppers complex in mango Period: October 2022 – September 2024	Dr. K. Govindan, Assistant Professor (Agrl. Entomology) RRS, Paiyur	Project may be continued
4.	**CPPS/OTY/AEN/HORTCROPS/2023/181** Arthropod diversity and management of major pests of strawberry through eco-friendly approaches in Nilgiris District Period: April 2023 to March 2025	Dr. B. Vinothkumar Assoc. Prof. (Agrl. Entomology) ICAR - KVK, The Nilgiris	Project may be continued
II. Vegetables			
1.	**CPPS/CBE/ENT/VEG/2020/002** Developing a biointensive module for the management of tomato pinworm, *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae) Period: Sept. 2020–Aug. 2022	Dr. S. Jeyarani, Prof. (Ento.), AC & RI, Kudimiyanmalai	Project completed and completion report accepted
2.	**CPPS/CBE/ENT/2021/011** Decontamination of organophosphorous and neonicotinoid insecticide residues in okra and chilli Period: July 2020-July 2022	Dr. K. Bhuvaneswari, Prof. (Ento.) TNAU, Coimbatore.	Project completed and completion report accepted
3.	**CPPS/CBE/ENT/VEG/2020/001** Development of eco-friendly IPM module for the management of sucking pests complex of capsicum under protected	Dr. T. Elaiyabharathi, Asst. Prof. (Ento.) TNAU, Coimbatore	Project completed and completion report accepted

	cultivation Period: April 2021 to March 2022		
4.	**CPPS/YTP/ENT//2021/001** Population dynamics of mealybug species and its natural enemies in cassava Period: April, 2021 to March 2023	Dr. P.A. Saravanan, Asst. Professor (Ento.), TCRS, Yethapur	Project completed and completion report accepted
5.	**CPPS/CBE/ENT/2021/012.** Dissipation pattern of chlorantraniliprole and thiamethoxam in Curry leaf Period: July, 2020 - July 2022	Dr. K. Bhuvaneswari, Professor (Ento.), TNAU, CBE	Project completed and completion report accepted
6.	CPPS/CBE/AEN/HORT.CROPS/2023/259 Development of Integrated Pest Management Module for Two Spotted Spider Mite, *Tetranychus urticae* Koch on Okra	Dr. E. Sumathi Professor AICRP -Acarology	Project may be continued
7.	CPPS/CBE/AEN/HORT.CROPS/2023/258 Validation of TNAU adathoda (10%) soap against sucking pest complex for home gardens	Dr. T. Elaiyabharathi Associate Professor AICRP - Medicinal Plants	Project may be continued
8.	CPPS/CBE/AEN/HORT.CROPS/2023/284 Development of pesticide decontamination products to mitigate the pesticide residues in brinjal	Dr. M. Alagar Assistant Professor AINP - Residue	Project may be continued
9.	DCM/CBE/AEN/HORT.CROPS/2023/255 Studies on the efficacy of astras in vegetable pest management	Dr. M. Suganthy Co-PI - Dr. K. Ganesan Professor, NOFRC	Results may be proposed as OFT in 2024
10.	DCM/CBE/AEN/HORT.CROPS/2023/257 Comparative evaluation of different farming systems in the management of insect pests of vegetable crops	Dr. M. Suganthy Co-PI - Dr. K. Ganesan Professor, NOFRC	Results may be proposed as OFT in 2024
11.	CPPS/KDM/AEN/HORT.CROPS/2023/283 Development of farmer's friendly integrated strategy for the management of major insect pests of vegetable cowpea, *Vigna unguiculata* (L) walp	Dr. M. Chandrasekaran Professor AC&RI, Kudimiyanmalai	Project may be continued
12.	CPPS/TIR/AEN/ HORT.CROPS/2023/106 Evaluation of newer Insecticides molecules fir the management of Invasive thrips, *Thrips parvispinus* in chilli	Dr. V.A. Vijayashanthi Assistant Professor KVK, Tirur	Project may be continued
13.	CPPS/PPY/AEN/HORT.CROPS/2023/057 Management module strategies for chilli thrips transmitted tospoviruses complex and mites in Dharmapuri Dt.	Dr. K. Sasikumar Assistant Professor HC&RI, Jeenur	Project may be continued

14.	CPPS/MDU/AEN/HORT.CROPS/2024/050 Integration of silicon sources with growth regulators and other eco-friendly approaches for the management of major	Dr. P. Chandramani Professor AC&RI, Madurai	Project may be continued
15.	CPPS/YTR/AEN/Oilseeds/2023/219 Distribution of *Anagyrus lopezi* and its impact on Cassava mealybug management	Dr. P.A. Saravanan Assoc. Prof. (Agrl. Entomology) Dr. S. Jayaprabhavathi Assoc. Prof. (Agrl. Ento.), TCRS, Yethapur	Project may be continued
III. Spices and Plantation crops			
1.	**PPS/PKM/ENT/SPC/2020/001** Biological nanoparticles for the management of cigarette beetle, *Lasioderma serricorne* (Fabricius) and pathogens (*Aspergillus flavus*, *Alternaria alternate* and *Fusarium oxysporum*) of stored coriander seeds	Dr. M. Kannan Assistant Professor (Agrl. Entomology) CANT	Project completed and completion report accepted
2.	**CPPS/YCD/ENT/BLP/2021/001** Bioecology, population dynamics of sucking pest complex in black pepper in relation to weather factors and its management	Dr. M. Senthil Kumar, Asst. Prof. (Ento.), HRS, Yercaud.	Project completed and completion report accepted
IV. Flowers, Medicinal & Aromatic Crops			
1.	**CPPS/TRY/ENT/FLO/2020/001** Bio-suppression of mealybugs in flower crops **Period**: July 2020 to June 2023	Dr. G. Preetha, Asst. Prof. (Entomology) Dept. of Agrl. Entomology, TNAU, Cbe	Project completed and completion report accepted
2.	**CPPS/TRY/ENT/FLO/2020/001** Insecticide Resistant Management of Jasmine bud worm, *Hendecasis duplifascialis* in Tamil Nadu **Period**: December 2019 to May 2022	Dr. R.P. Soundararajan, Assoc. Prof. (Ento.) COE, TNAU, Coimbatore Dr. K. Ganesan, Asst. Prof. (Ento), ARS, Bhavanisagar	Project completed and completion report accepted

Plant Pathology

C. REMARKS ON THE RESEARCH PROJECTS			
S. No.	**Project details**	**Project Investigator and Centre**	**Remarks**
I. FRUIT CROPS			
PATHOLOGY			
1.	**CPPS/CBE/PAT/FRU/2020/001** Banana endophyte mediated induction of in planta resistance against Fusarium wilt of banana (January 2020–Dec 2023)	Dr. S. Nakkeeran, Professor (Pl. Path.) TNAU, Coimbatore	Completion report may be submitted

2.	**CPPS/JNR/PAT/HORT.CROPS/2023/064** Thyme oil based eco-friendly management of mango anthracnose (January 2023 to December 2026)	Dr. A. Kamalakannan, Professor (Pl. Path.) TNAU, Coimbatore	Project may be continued
3.	**CPPS/CBE/PAT/FRU/2021/001** Management of powdery mildew disease in Grapes *(Vitis vinifera)* using endophytic microorganisms and botanicals (January 2021 - March 2024)	Dr. S. Vanitha Professor (Plant Pathology), TNAU, Coimbatore	Completion report may be submitted
4.	**CPPS/CBE/DFS/HOR/2021/001** Diagnosis, characterization and management of bacterial crown rot of Papaya (August 2021-July 2024)	Dr. S. K. Manoranjitham Professor (Pl. Path.) TNAU, Coimbatore	Closure report may be submitted
5.	**CPPS/MDU/PAT/FRU/2020/002** Development of microbial formulation, a component of IDM package for Citrus Greening Disease (CGD) (September 2020-August 2023)	Dr. K. Manonmani, Assoc. Prof. (Pl. Path.) Dr. Zadda Kavitha, Assoc. Prof. (Ag. Ento)	Completion report submitted approval pending
	EXTERNALLY FUNDED PROJECTS		
6.	**DST/SERB/MDU/PAT/2022/R001** Citrus Microbiome Mediated Pathogen Control and Nutrient Availability on Mitigating the Impact of Citrus Greening Disease for Sustaining the Citrus Health (February 2022-January 2025)	Dr. K. Manonmani Associate Professor (Plant Pathology) AC&RI, Madurai	Project may be continued
7.	**CPPS/PAT/ERDF/202/L001** Development of microbial consortium for managing Citrus Greening Disease (December 2021 -November 2023)	Dr. K. Manonmani Assoc. Prof. (Plant Pathology), AC&RI, Madurai	Completion report may be submitted
	II. VEGETABLE CROPS		
1.	**CPPS/CBE/PAT/VEG/2021/001.** Exploring Bacillus spp. for the management of Peanut bud necrosis virus in tomato Period: March 2021 To February 2024	Dr. S. Harish, Asst. Prof. (Pl. Path) Dept. of Plant Pathology, TNAU, Coimbatore	Completion report to be submitted and presented in RPAC
2.	CPPS/ADT/PAT/HORT. CROPS/2024/046 Collection, isolation and identification of high yielding milky mushroom suitable for Tamil Nadu (April, 2024 to March, 2026)	Dr. Mathiazhagan Asst. Prof. (Pl. Pathology) AC&RI, Eachangkottai	Project may be continued
3.	New -Exploitation of wild milky mushroom isolates for commercial utilization (January 2024 to Dec.2025)	Dr. G. Thiribhuvanamala Prof. (Pl. Pathology) TNAU, Coimbatore.	Project may be continued
4.	**CPPS/MDU/PATH/HOR/2022/001.** Exploring the effect of endophytesagonists viruses infecting water melon (*Citrullas lanatus*). Period: April 2022–March 2025	Dr. K. Kalpana, Assoc. Prof. (Plant Pathology) Dept. of Plant Pathology, HC&RI, PKM	Project may be continued

EXTERNALLY FUNDED PROJECTS			
5.	**DST-SERB / CPPS / PATH / 2022 / R001**. Pathogenomics of emerging whitefly transmitted begomoviruses of cucurbitaceous crops in Tamil Nadu: Characterization of ecologically diverse begomoviruses and population dynamics of whitefly biotypes in virus transmission Period: January 2022 to December 2024	Dr. G. Karthikeyan, Professor, Dept. of Plant Pathology, TNAU, Coimbatore.	Project may be continued
6.	GoI-MoEF/CPPS/PAT/2022/R001 Exploration, Conservation and documentation of ethno mycological knowledge from forests of Western Ghats of Coimbatore district (April 2023 to Sept.2024)	Dr.G. Thiribhuvanamala Prof. (Pl. Pathology), Dept. of Plant Pathology, TNAU, Coimbatore.	Project may be continued
III. SPICES AND PLANTATION CROPS			
1.	**CPPS/BSR/TRC/HOR/2023/001** Effect of application of salicylic acid on leaf spot (*Collectotrichum capsici*), leaf blotch (*Taphrina maculans*) severity and curcuminoid accumulation in turmeric (*Curcuma longa* L.) (January 2023-December 2025)	Dr. S. Sundravadana, Assoc. Prof. (Plant Pathology), TRC, Bhavanisagar.	Project may be continued
2.	**CPPS/ALR/PAT/HORT. CROPS/2023/166** Development of IDM module for the management of root wilt in coconut (April 2023 - March 2026)	Dr. P. Latha, Assoc. Prof. (Plant Pathology), CRS, Aliyarnagar Dr. C. Sudhalakshmi Assoc. Prof. (SS&AC), CRS, Aliyarnagar	Project may be continued

Nematology

C. REMARKS ON THE RESEARCH PROJECTS			
S. No.	**Project details**	**Project Investigator and Centre**	**Remarks**
I. FRUIT CROPS			
1.	CPPS/CBE/NEM/ FRU/2021/001: Evaluation of turmeric leaf waste against lesion forming nematodes in banana (July 2021-June 2024)	Dr. N. Seenivasan, Prof. (Nematology), TNAU, Coimbatore	Project may be continued for one more year to confirm results.
2.	CPPS/CBE/NEM/ FRU/2021/002: Evaluation of bacterial endosymbionts against root lesion nematodes, *Pratylenchus coffeae* and *Radopholus similis* in banana. Jan. 2021-Dec. 2023	Dr. P. Vetrivelkalai Assoc. Prof. (Nematology) HC & RI (W), Trichy	Closure proposal may be submitted.
II. VEGETABLES			
1.	CPPS/CBE/ANM/HORT.CROPS/2023/157 Efficacy of Bacterial antagonist, *Bacillus firmus* (TNAU-PP-CC-B-0200) formulation against	Dr. A. Shanthi Professor, HC & RI, Coimbatore	Project may be continued.

	root knot nematode, *Meloidogyne incognita* on Tomato and Cucumber under Protected Cultivation (February 2023 to March 2026)		
2.	CPPS/CBE/ANM/HORT.CROPS/2023/275 Evaluation of the efficacy and release kinetics of the plant derived nematicide, Alpha-terthienyl infused nanofiber formulation against root knot nematode, *Meloidogyne incognita* in tomato. (October 2023 – September 2025)	Dr. P.G. Kavitha Asst. Professor TNAU, Coimbatore	Project may be continued.
3.	CPPS/CBE/NEM/HOR-001. Development of soluble concentrate formulation of egg parasitic fungi, *Pochonia chlamydosporia* and *Purpureocillium lilacinum* against *Meloidogyne* spp. (January, 2022 to December 2024)	Dr. N. Swarnakumari, Assoc. Prof. (Nematology), HC&RI (W), Trichy	Project may be continued.
4.	CPPS/ CBE/ NEM/ HOR/002. Influence of abiotic factors on the biocontrol potential of nematophagous fungus, *Clonostachys rosea* (TNAU CR 01) on root knot nematode in bitter gourd. (January 2022 to December 2024)	Dr. G. Jothi Prof., TNAU, Coimbatore	Project may be continued.
III. SPICES AND PLANTATION CROPS			
1.	**CPPS/TRY/NEM/2021/001** Eco-friendly management of betelvine nematodes (July 2021-June 2024)	Dr. J. Jayakumar, Assoc. Prof. (Nemato.), KVK, Vridhachalam	Completion report may be submitted.

VII. REMARKS

a. General remarks

- Introduction of Non-traditional and exotic horticultural crops may be explored (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Biotechnologocal approaches in horticultural crops may be intensified (**Action**: Dean HC&RI, CBE & PKM/ DCPMB&B).
- Germplasm collection and genetic enhancement may be intensified in all horticultural crops (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Extending shelf-life in perishables through non-chemical measures may be given priority (**Action**: Dean HC&RI, CBE/PKM/TRY/Dean, AEC&RI, CBE/Dean, CSC&RI)
- Efforts may be taken to popularize the newly released horticultural crop varieties and technologies (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Efforts may be taken to notify newly released horticultural crop varieties (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Good Agricultural Practices may be standardised for export oriented horticultural crops (**Action**: Dean HC&RI, CBE/PKM/TRY/Dean, AEC&RI, CBE/Dean, CSC&RI)
- Horti-Tourism may be explored for income generation (**Action**: Dean HC&RI, CBE/PKM).
- Availability of quality planting materials may be ensured in all crops (**Action**: Dean HC&RI, CBE/PKM/TRY).
- All the Horticultural scientists may be motivated to attract external funding schemes. Progress may be monitored regularly (**Action**: All Scientists).
- Scientists may be encouraged to publish their research findings in the peer reviewed journals having NAAS rating more than 7 (**Action**: All Scientists).

b. Fruit Crops

- Efforts may be taken to popularize TNAU banana varieties *viz*., CO 1, CO 2 and CO 3 among the farmers (**Action**: Dean HC&RI, CBE/PKM/TRY/DEE)
- Technologies may be developed to rejuvenate senile mango orchards (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Research may be focused on standardization of High-density planting in Major fruit crops (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Precision farming technology in major fruit crops may be taken up to increase the productivity (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Research on canopy management in fruit crops may be strengthened (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Nutrient formulation to control PRSV in papaya may be developed (**Action**: Dean HC&RI, CBE/PKM).

c. Vegetable Science

- Efforts may be taken to strengthen the seed production program in vegetable crops (**Action**: Dean HC&RI, CBE)
- Production of quality planting materials may be ensured (**Action**: Dean HC&RI, CBE/PKM/TRY).
- Research on off season production/protected cultivation of vegetables may be taken up (**Action**: Dean HC&RI, CBE/PKM).
- Intercropping of short duration vegetables in papaya orchards may be taken up for effective utilization of land (**Action**: Dean HC&RI, CBE/PKM).
- Research on underutilized vegetable crops may be taken up (**Action**: Dean HC&RI, CBE/PKM).
- Aggregatum onion seeds may be produced based on indent (**Action**: Dean HC&RI, CBE/PKM).
- Pre-release culture of sweet potato may be analyzed for its starch content and studies on suitability of sweet potato for solid food to infants may be taken up (**Action**: Dean HC&RI, CBE/PKM).

d. Spices and Plantation Crops

- Research may be intensified to produce export quality spices with permissible residue levels (**Action**: Dean HC&RI, CBE/PKM).
- Research projects may be initiated in plantation crops *viz*., tea and coffee (**Action**: Dean HC&RI, CBE/PKM)
- Efforts may be taken to develop fast growing nutmeg trees (**Action**: Dean HC&RI, CBE/PKM)
- Industry oriented research may be undertaken in spices and plantation crops (**Action**: Dean HC&RI, CBE/PKM)
- Research on decomposition of banana dried leaves *in situ* may be initiated (**Action**: Dean HC&RI, CBE/PKM/DNRM)
- Farm mechanization in spices and plantation crops may be strengthened (**Action**: Dean HC&RI, CBE/PKM/AEC&RI, CBE/KUM).

e. Floriculture and Landscape Architecture

- Research on development of multi-colour *Chrysanthemum* may be strengthened (**Action**: Dean HC&RI, CBE)
- Enrichment of germplasm through acquisition of materials from NBPGR may be done (**Action**: Dean HC&RI, CBE/PKM/TRY)
- Development of ornamental sunflower may be attempted (**Action**: Dean HC&RI, CBE)
- Jasmine foliar consortia as 'Jasmine tonic' may be commercialised (**Action**: Dean HC&RI, CBE)

f. Crop Protection

- Status of insecticides residues may be included in all the plant protection trials/ experiments
- Organic pest management packages for major pests of horticultural crops may be developed.
- Turmeric leaf waste may be evaluated for nematode management in banana

VIII. List of Participants

S. No.	Name	Designation and Department
1.	Dr. P. Irene Vethamoni	Dean (Horti.), HC&RI, Coimbatore
2.	Dr. J. Rajangam	Dean (Horti.), HC&RI, Periyakulam
3.	Dr. P. Paramaguru	Dean, HC&RI(W), Trichy
4.	Dr. S. Nakkeeran	Dean, AC&RI, Kudumiyanmalai
5.	Dr. M. Shanthi	Director, CPPS, TNAU, Coimbatore
6.	Dr. N. Senthil	Director, CPMB&B, TNAU, Coimbatore
7.	Dr. M.S. Aneesa Rani	Nodal Officer, HC&RI, Jeenur
8.	Dr. R. Swarnapriya	Special Officer, VOC AC&RI, Killikulam
9.	Dr. R. Arulmozhiyan	Prof. & Head, Fruit Science, HC&RI (W), Trichy
10.	Dr. V. Rajashree	Prof. & Head, SPC, HC&RI, Coimbatore
11.	Dr. M. Ganga	Prof. & Head, FLA, HC&RI, Coimbatore
12.	Dr. T. Saraswathi	Prof. & Head, MAC, HC&RI, Coimbatore
13.	Dr. P. Aruna	Prof. & Head, PHT, HC&RI (W), Trichy
14.	Dr. K. Angappan	Prof. & Head (Pl. Path.), TNAU, Coimbatore
15.	Dr. K. Devarajan	Prof. & Head (NRM), TNAU, Coimbatore
16.	Dr. M. Murugan	Prof. & Head (Ento.), TNAU, Coimbatore
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19.	Dr. S. Saraswathy	Prof. & Head, Fruit Science, HC&RI, Periyakulam
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23.	Dr. K.R. Rajadurai	Prof. & Head, FLA, HC&RI, Periyakulam
24.	Dr. R. Nalini	Prof. & Head, Dept. of Agrl. Ento., AC&RI, Madurai
25.	Dr. C. Kavitha	Assoc. Professor & Head, TRC, Bhavanisagar
26.	Dr. V. Premalakshmi	Assoc. Prof. & Head, Hort., VOC, AC&RI, Killikulam
27.	Dr. G. Malathi	Assoc. Professor & Head, HRS, Yercaud
28.	Dr. K.S. Vijai Selvaraj	Assoc. Professor and Head, VRS, Palur
29.	Dr. C. Ravindran	Assoc. Professor and Head, HRS, Kodaikanal
30.	Dr. R. Arun Kumar	Assoc. Professor and Head, CRS, Veppankulam
31.	Dr. R. Balakumbahan	Assoc. Professor and Head, HRS, Thadiyankudsai
32.	Dr. M. Palanikumar	Assoc. Professor and Head, CRS, Sankarankovil
33.	Dr. S. Suganya Kanna	Assoc. Professor and Head, HC&RI, Periyakulam
34.	Dr. A. Sankari	Professor (Hort.), O/o. Dean (Horti.), HC&RI(W), Trichy

S. No.	Name	Designation and Department
35.	Dr. S. Vanitha	Professor (Pl. Path.), Veg. Sci, HC&RI, Coimbatore
36.	Dr. N. Seenivasan	Professor (Nematology), TNAU, Coimbatore
37.	Dr. S. Umesh Kanna	Professor, TPO to VC, TNAU, Coimbatore
38.	Dr. C. Muthaiah	Professor (Ento.), HC&RI, Periyakulam
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