

PROFORMA FOR PREPARATION OF ANNUAL REPORT
(1stJanuary 2020 to 31stDecember 2020)

1. GENERAL INFORMATION ABOUT THE KVK

1.1. Name and address of KVK with phone, fax and e-mail

a) Name of the KVK	:	Krishi Vigyan Kendra, Madurai
b) Address	:	Programme Coordinator, Krishi Vigyan Kendra, Agricultural College and Research Institute (TNAU), Madurai – 625 104.
c) Landline Phone No.	:	0452 2424955, 2422955
d) Fax No.	:	-
e) Official Mobile No.	:	9443185237
f) Email ID	:	kvkmdu@tnau.ac.in

1.2 .Name and address of host organization with phone, fax and e-mail

a) Name of the Host Organization	:	Tamil Nadu Agricultural University
b) Address	:	Tamil Nadu Agricultural University, Coimbatore - 641 003
c) Landline Phone No.	:	0422-6611233
d) Fax No.	:	0422-6611433
e) Official mobile No.	:	-
f) email ID	:	registrar@tnau.ac.in

1.3. Name of the Programme Coordinator with phone & mobile No.

a) Name	:	Dr. ChelviRamessh, Ph.D.,
b) Phone – residence	:	-
c) Mobile	:	9443185237
d) email ID	:	chelviramessh17@gmail.com

1.4. Year of sanction: 2004

1.5. Month and year of establishment: 19.04.2004

1.6. Total land with KVK (in ha) (Consolidated figure):

S. No.	Item	Area (ha)
1	Under Buildings	0.83
2.	Under Demonstration Units	0.60
3.	Under Crops	4.00
4.	Orchard	2.91
5.	Agro-forestry	0.22
6.	Others (Attached to the College)	12.42
	Total	20.98

1.6. Infrastructural Development:**A) Buildings**

S. No.	Name of building	Source of funding	Stage					
			Complete			Incomplete		
			Completion Date	Plinth area (Sq.m)	Expenditure (Rs.)	Starting Date	Plinth area (Sq.m)	Status of construction (Completed / in progress/ to be initiated)
1.	Administrative Building	ICAR	10.03.2008	548.5	43,86,000	-	-	Completed
2.	Farmers' Hostel	ICAR	15.04.2008	305	26,75,000	-	-	Completed
3.	Staff Quarters (No.)	ICAR	15.04.2008	251.51	31,50,000	-	-	Completed
4.	Demonstration Units		30.03.2011	4.32	5,000	-	-	Completed
	Vermi Compost	ICAR	30.03.2019	168	95,100	-	-	Completed
	Shade Net Nursery	ICAR	31.03.2012	18	4,62,000	-	-	Completed
	Minimal Processing Unit	ICAR	10.10.2017	240 sq.m	60,000	-	-	Completed
	Roof top garden	ICAR	10.10.2017	60 sq.m	20,000	-	-	Completed
	Mushroom unit	ICAR	10.10.2017	60 sq.m	20,000	-	-	Completed
5.	Fencing		30.03.2011	700m	5,00,000	-	-	Completed. Needs replacement.
6.	Rain water harvesting system	-	-	-	-	-	-	-
7.	Threshing floor & Seed hub go down	IIPR under NFSM	-	-	3,50,0000	01.4.16	1(25 x 25) 1(25 x 12)	Completed
8.	Farm godown	-	-	-	-	-	-	-
9.	Shed (Farm equipment)	-	-	-	-	-	-	-

10	Repair & strengthening of underground electrical cable	ICAR	-	-	1,50,000	-	-	USO awaited
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B) Vehicles

Type of vehicle	Year of purchase	Cost (Rs.)	Total kms covered as on 31.12.2020	Present status
Jeep Mahindra Bolero SUV	2017	7,75,477	73420 km	Good condition
Tractor - Mahindra Model 575D I45 HP Boomi Putra	2005	4,99,999	9947 hrs	Needs to be condemned
Two wheeler - Bike Hero Honda CD DLX	2006	40,000	10490 km	Good condition
Two wheeler-Bike Honda Activa	2009	50,000	52364 km	Good condition
John Deere Tractor 5305	2020	6,77,537	171 hrs	Good condition

C) Equipment & AV aids

Name of the equipment	Year of purchase	Cost (Rs.)	Present status
Computer with accessories	2005	74,950	Good condition
Furniture	2007	4,00,000	Good condition
RICOH MP 2014MD DDST copier	2017	65,000	Good condition
CCTV	2017	40,000	Good condition
Biometric Unit	2018	9,900	Good condition
Desktop computers (2 nos.)	2019	91,998	Good condition
Printers (2 nos.)	2019	22,140	Good condition
LCD Projector	2019	26,750	Good condition
Lap top computer	2020	74,555	Good condition
Brush cutter	2020	-	Good condition
Desktop Computer (1 no.)	2021	29,700	Good condition
Multifunction machine	2021	26,778	Good condition

1.7. A). Details SAC meeting* conducted in the year

S. No.	Date	No. of Participants	Salient Recommendations
1.	21.02.2020	40	Enclosed
2.	27.11.2020	50	Enclosed

** Attach a copy of SAC proceedings along with list of participants*

Salient recommendations of the 11th SAC conducted on 21.02.2020

S. No.	Recommendation	Recommended by
1.	Successful Technologies identified by KVK should be recommended to the Line Departments	Principal Scientist, ATARI
2.	KVK Revolving fund should be increased through cultivation of fodder crops and Seed hub programme	Principal Scientist, ATARI
3.	Latest varieties with lesser duration and high yield may be popularized among farmers to increase the productivity	Dean, AC&RI, Madurai
4.	National Nutrition week and World Food day need to be celebrated by Krishi Vigyan Kendra.	Dean, CSC&RI, Madurai
5.	Krishi Vigyan Kendra should enter MOU with one or two farmer producer organization	DDM, NABARD
6.	A meeting is to be organized for all Farmer Producer Organizations in Madurai District to create awareness about activities Krishi Vigyan Kendra.	DDM, NABARD
7.	Necessary steps may be taken to make aware of the farmers about obtaining Kisan Credit Card to avail PM Kisan Samman Nidhi and training on e- NAM is to be organized by KVK, Madurai for enhancing market led agriculture	Manager, Lead bank
8.	Impact study on the FPO existing in DFI village need to be conducted.	DEE, TNAU, Coimbatore
9.	Entrepreneurship development trainings for farm women need to be provided in garland making using jasmine and loose flowers	ADH, Madurai
10.	Farmers may be sensitized about planting of tree seedlings and agroforestry models may be established after identification of suitable locations.	Forest Range Officer, Madurai
11.	Demonstration on Paddy transplanter should be conducted during the ensuing season	Assistant Engineer, Madurai
12.	Seed drill sowing of pulses may be upscaled in larger area.	Assistant Engineer, Madurai)
13.	Training on Repairing and Maintenance of machineries is to be organized by KVK	Assistant Engineer, Madurai

14.	Skill development and Capacity building training programmes on Sericulture need to be organized by Krishi Vigyan Kendra	Scientist, Central Silk Board
15.	Trainings on value addition and quality certification need to be organized by KVKs	Asst. Manager, DIC
16.	Success stories of farmers need to be documented.	DEE, TNAU, Coimbatore
17.	Inclusion of Fishery component in the KVK training programmes and to develop Linkage with Department of Fisheries.	SAC member
18.	Banana varieties which are resistant to wilt disease may be popularized among the farmers	SAC member
19.	Awareness on usage of waste decomposer may be created among the farmers for efficient recycling of agricultural wastes	SAC member

Participants of 11th SAC meeting conducted during 21.02.2020

S. No.	Name and Designation	Position
1.	Dr. A.S. Krishnamoorthy, Registrar, TNAU, Coimbatore	VC Nominee
2.	Dr. M. Jawaharlal, Director of Extension Education, TNAU, Coimbatore	Member
3.	Dr. V.K. Paulpandi, Dean, Agricultural College & Research Institute, Madurai	Member
4.	Dr. S. Amutha, Dean, Community Science College & Research Institute, Madurai	Member
5.	Dr. A. Bhaskaran, Principal Scientist, ATARI, Hyderabad	Director (ATARI) Nominee
6.	Th. C. Palanivelayutham, Deputy Director of Agriculture (State Scheme), Madurai	JDA Nominee
7.	Mrs. R. Priska Flavia Assistant Director of Horticulture, Madurai	DDH Nominee
8.	Er. T. Saravanaperumal Assistant Engineer, Department of Agri. Engineering, Madurai	EE Nominee
9.	Th.K. Palanisamy, Forest Range Officer, Madurai	DFO Nominee
10.	Tmt. Y. Shanthi District Social Welfare Officer, Madurai	Member
11.	Th. S. Arumugam, Inspector, Department of Sericulture, Madurai	DDS Nominee
12.	Dr. S. Rajaram, Scientist, Central Sericulture Research & Training Institute, Samayanallur	Member

13.	Th. A. Bhuvaneshwaran Assistant Engineer, District Industries Centre, Madurai	GM Nominee
14.	Dr. P.S. Hari Krishnaraj DDM, NABARD, Madurai	Member
15.	Th. K. Arivalagan Lead Bank Manager, Canara Bank, Madurai	Member
16.	Th. Pon. Dhanapalan Programme Executive, AIR, Madurai	AD Nominee
17.	Th. R. Arulprakasam S/o. Th. A. Rajendran, Thooyaneri, Madurai East	Member
18.	Th.K. M. Gopalan, S/o. Th. K. Mani, Melavalavu, Kottampatti	Member
19.	Tmt. M. Lavanya Deepa A.J. Sustainable & Integrating Farms, S. Kottaipatti, Sedapatti	Member
20.	Tmt. S. Sujatha W/o. Saravanapandian, Alanganallur	Member
21.	Dr. Chelvi Ramessh Programme Co-ordinator, Krishi Vigyan Kendra, Madurai	Member

Salient recommendations of the 12th SAC conducted on 27.11.2020

S. No.	Suggestions/Recommendations (bullet points)	Name of the SAC Member
1.	KVKs should guide the trainees of Entrepreneurship Development Programme in preparation of Detailed Project Report for bank for getting Loans and to provide market linkages for them.	Dr. J.V. Prasad Director (A), ATARI, Hyderabad
2.	A Session on Farm bills to be included in the ongoing training programmes of Krishi Vigyan Kendra	
3.	Fodder cafeteria should be established at KVK	Dr. M. Jawaharlal, Director of Extension Education, TNAU, Coimbatore DEE, TNAU, Coimbatore
4.	Training on Pest Management should be imparted to Jasmine farmers	
5.	Exclusive programmes for creating awareness on bank loan facilities need to be organized by KVK.	
6.	Exposure visit should be organized for the farmers to Community Science College and Research Institute, Madurai and Krishi Vigyan Kendra, Madurai to learn about value addition technologies	Dr. S. Amutha Dean, CSC &RI, Madurai

7.	Seeds of new varieties of Paddy and Pulses may be produced in KVK farm.	Th. T. Vivekanandhan Joint Director of Agriculture, Madurai
8.	Demonstrations on high yielding millet varieties are to be conducted by Krishi Vigyan Kendra	
9.	TNAU Pulse Wonder needs to be promoted among the farmers of Madurai district	
10.	Demonstration cum training may be organized for the management of Sigatoka Leafspot in Banana	Mrs. K. Revathi Deputy Director of Horticulture, Madurai
11.	Krishi Vigyan Kendra should adopt two Farmer Producer Organizations and enter into MOU	Dr. P.S. Harikrishnaraj DDM, NABARD
12.	Farmers should be made aware about the Loan Facilities available from banks and should be advised to utilize the loan facilities.	Th. K. Arivalagan Lead bank Manager, Canara bank, Madurai
13.	Training on Repair and Maintenance of Farm Machinery need to be organized by KVK, Madurai	Er. M. Velpari Assistant Engineer, Madurai
14.	Training on Nutrition Garden should be given to Anganwadi workers.	Tmt. C. Varalakshmi PA to Collector (Noon Meal Scheme)
15.	Trainings on Fodder crop cultivation needs to be organized by Krishi Vigyan Kendra, Madurai	Th. R. Arulprakasam SAC Member, KVK, Madurai
16.	Trainings on Organic farming should be imparted to the farmers.	All India Radio, Madurai

Participants of 12th SAC meeting conducted during 27.11.2020

S. No.	Name and Designation	Position
1.	Dr. M. Jawaharlal, Director of Extension Education, TNAU, Coimbatore	Member
2.	Dr. S. Amutha, Dean, Community Science College & Research Institute, Madurai	Member
3.	Dr. T. Vivekanandan Joint Director of Agriculture, Madurai	Member
4.	Mrs. K. Revathi Deputy Director of Horticulture, Madurai	Member
5.	Er. M. Velpari, Assistant Engineer, Department of Agrl. Engineering, Madurai	EE Nominee
6.	Mrs. M.V. Prabhavathi Deputy Director of Fisheries(Regional), Madurai	Member
7.	Dr. R. Rajathilagan	Member

	Regional Joint Director of Animal Husbandary, Madurai	
8.	Dr. P.S. Harikrishnaraj DDM, NABARD, Madurai	Member
9.	Th. K. Arivalagan Lead Bank Manager, Canara Bank, Madurai	Member
10.	Dr. S. Rajaram, Scientist, Central Sericulture Research & Training Institute, Samayanallur	Member
11.	Th. A. Bhuvaneshwaran Assistant Engineer, District Industries Centre, Madurai	GM Nominee
12.	Th. R. Arulprakasam S/o. Th. A. Rajendran, Thooyaneri, Madurai East	Member
13.	Th.K. M. Gopalan, S/o. Th. K. Mani, Melavalavu, Kottampatti	Member
14.	Tmt. M. Lavanya Deepa A.J. Sustainable & Integrating Farms, S. Kottaipatti, Sedapatti	Member
15.	Tmt. S. Sujatha W/o. Saravanapandian, Alanganallur	Member
16.	Dr. Chelvi Ramessh Programme Co-ordinator, Krishi Vigyan Kendra, Madurai	Member

2. DETAILS OF DISTRICT (2020)

2.0. Operational jurisdiction of KVKs:

District	New districts governed by the KVK after division of the district, if applicable	Taluks/Tehsils and/or Mandals under the KVKs jurisdiction
Madurai	Not applicable	Madurai East Madurai West Alanganallur Vadipatti Thirupparankundram Thirumangalam T. Kallupatti Sedapatti Kottampatti Melur Kalligudi Usilampatti Chellampatti

2.1. Major farming systems/enterprises (based on the analysis made by the KVK)

S. No.	Farming system/enterprise
1.	Wetland Rice –Rice –Pulse Rice- Rice-Fallow Rice (Single Crop)-Fallow
2.	Gardenland Sugarcane -Sugarcane –Rice Banana – Brinjal/ Chillies/ Onion
3.	Dryland Single and mixed cropping of cotton and pulses Millets Fodder pulses with lab lab

2.2. Description of Agro-climatic Zone & major agro ecological situations (based on soil and topography)

S. No.	Agro-climatic Zone	Characteristics
1.	Agro-climatic Zone Southern Region II	The climate of the zone is warm and dry. The rainfall is received during North East Monsoon; Mean annual rainfall of this zone is 864.3 mm; The major soil types are vertisol and alfisol
2.	Agro ecological situation Wet and dry ecosystem	Wet ecosystem mainly depends on canal and well irrigation; Dry ecosystem mainly depends on rainfall during North-East Monsoon

2.3. Soil types

S. No.	Soil type	Characteristics	Area in ha
1.	Pilamedu (Clay soil)	Deep, moderately well drained, fine textured soils with clayey surface occurring on flat to very gently sloping lands	74,464
2.	Vylogam (Sandy clay loam)	Deep, moderately well drained, moderately coarse textured with sandy loam to sandy clay loam, surface occurring on flat to gently sloping lands	66,885
3.	Palaviduthi (Sandy clay loam)	Very deep, moderately well drained to well drained, sandy loam to sandy clay loam, surface occurring on gently to moderately undulating lands	64,439
4.	Anaiyur (Sandy clay loam)	Very deep, poorly drained, moderately fine textured with sandy clay loam, surface occurring on nearly flat to gently sloping lands	24,343

2.4. Area, Production and Productivity of major crops cultivated in the district (of the jurisdiction as the case may be) for 2020

Kharif

S. No	Crop	Area (ha)	Production (Qtl)	Productivity (Qtl /ha)
1	Bajra	1024	28170	27.51
2	Sorghum	10804	321527	29.76
3	Maize	5000	342000	68.40
4	Green gram	2738	22369	8.17
5	Black gram	1225	8820	7.20
6	Groundnut	1797	43900	24.43

Rabi

S. No	Crop	Area (ha)	Production (Qtl)	Productivity (Qtl /ha)
1	Paddy	40466	1635231	40.41
2	Maize	10029	685984	68.40
3	Red gram	2110	29118	13.80
4	Cotton	10946	483 bales	7.5
5	Sugarcane	1304	1343120	1000

Summer

S. No	Crop	Area (ha)	Production (Qtl)	Productivity (Qtl /ha)
-	-	-	-	-

(Source: Dept. of Agriculture, Madurai- 2020)

Horticultural Crops

S. No.	Crop	Area (ha)	Production (q)	Productivity (q/ha)
1	Coconut	11185	1635 lakh nuts	14700 nuts/ha
2	Mango	6032	1809600	300
3	Banana	2932	1182123	403.2
4	Guava	1466	31856	21.7
5	Acid lime	323	4299	13.3
6	Moringa	563	309650	550
7	Bhendi	623	52836	84.8
8	Brinjal	427	20180	47.36
9	Onion	415	35943	86.6
10	Chilli	408	3329	8.2
11	Gourds	80	12000	150
12	Tomato	281	39880	141.9
13	Jasmine	1557	161741	103.8
14	Tuberose	146	21900	150
15	Rose	67	5025	75

(Source: Dept. of Horticulture, Madurai - 2020)

2.5. Weather data

Month	Rainfall (mm)	Temperature ° C		Relative Humidity (%)	
		Maximum	Minimum	RH(7.14)	RH(14.14)
January	4.8	31.2	12.5	88	54
February	-	33.4	13.2	84	41
March	-	37.0	14.0	83	39
April	13.0	37.1	15.4	54.0	24.8
May	82.8	38.8	16.9	75	40
June	155.2	37.8	26.2	69.8	43.0
July	94.1	34.0	18.5	78	55
August	61.2	36.5	18.5	75.1	45.2
September	213.7	34.2	20.9	82.1	56.2
October	246.0	33.8	23.8	82.5	57.8
November	183.6	31.0	21.4	85.3	70.9
December	63.0	29.1	18.9	83.6	71.2

2.6. Production and productivity of livestock, Poultry, Fisheries etc. in the district (2020)

Category	Population	Production	Productivity
Cattle			
<i>Crossbred</i>	-	-	-
<i>Indigenous</i>	-	-	-
Buffalo	-	-	-
Sheep			
<i>Crossbred</i>	-	-	-
<i>Indigenous</i>	-	-	-
Goats	-	-	-
Pigs	-	-	-
<i>Crossbred</i>	-	-	-
<i>Indigenous</i>	-	-	-
Rabbits	-	-	-
Poultry			
Hens	-	-	-
<i>Desi</i>	-	-	-
<i>Improved</i>	-	-	-
Ducks	-	-	-
Turkey and others	-	-	-

Category	Area	Production	Productivity
Fish	-	-	-
<i>Marine</i>	-	-	-
<i>Inland</i>	-	-	-
Prawn	-	-	-
Scampi	-	-	-
Shrimp	-	-	-

2.7. Details of Adopted Villages (2020)

S. No.	Taluk/mandal	Name of the block	Name of the village	Year of adoption	Major crops & enterprises	Major problem identified	Identified Thrust Areas
KVK adopted villages							
1.	Madurai North	Madurai East	Vellayankundram puthur	2020	Paddy	Cultivation of poor yielding pest and disease susceptible varieties	Lack of short duration rice varieties with fine grain, less profit in rice cultivation and yield loss in paddy due to severe incidence of leaf folder and sheath blight
2.	Thirumangalam	Thirumangalam	Mavilipatti	2020	Vegetables	Indiscriminate use of pesticides	High incidence of YVMV in okra High cost of private vegetable hybrids
DFI villages							
1.	Melur	Kottampatti	Melavalavu	2020	Paddy, Banana	Pest and Disease incidence in Paddy and Banana	High incidence of stem borer and leaf folder Deficiency of nutrients in banana
2.	Melur	Kottampatti	Lekkadipatti	2020	Coconut, Cotton, Millets, Vegetables	Cultivation of Traditional varieties, Pest and disease problem	New invasive pests – maize fall army worm, coconut rugose spiralling whitefly High incidence of YVMV in okra and high cost of private vegetable hybrids

2.8. Priority/thrust areas

Crop/Enterprise	Thrust area
Rice	<ul style="list-style-type: none"> • Uncertainty in water release • More water requirement for puddling • Lack of short duration rice varieties with fine grain • No replacement for scented rice variety, Jeeraga samba • Less profit in rice cultivation • Yield Loss (30-40 %) due to leaf folder & sheath blight • Continuous use of carbofuran and carbendazim
Fodder crop	<ul style="list-style-type: none"> • Limited choice of annual leguminous fodder
Pulse	<ul style="list-style-type: none"> • Less area coverage and high cost of manual sowing • Yield reduction due to inadequate plant population

Black gram	<ul style="list-style-type: none"> • Non adoption of rice fallow pulse
Greengram	<ul style="list-style-type: none"> • Less preference of existing varieties
Castor	<ul style="list-style-type: none"> • Use of traditional varieties • Not cultivated as pure crop
Coconut	<ul style="list-style-type: none"> • New invasive pests
Banana	<ul style="list-style-type: none"> • Occurrence of micronutrient deficiency & yield loss upto 20%
Chilli	<ul style="list-style-type: none"> • Yield gap (10-20%) & high cost of private seeds
Multiplier Onion	<ul style="list-style-type: none"> • Disease incidence (40%)
Ridge gourd	<ul style="list-style-type: none"> • Yield gap of 25 % due to the use of local varieties, high cost of hybrid seeds
Bitter Gourd	<ul style="list-style-type: none"> • Yield loss (25-30 %)
Jasmine	<ul style="list-style-type: none"> • Prevalence of sulphur deficiency in jasmine • 60% lower yield during off season • Wide price fluctuation between main and offseason
Coconut (copra)	<ul style="list-style-type: none"> • Lack of awareness on copra drying techniques • Mould formation in copra • Low market price for raw coconuts
Vegetables	<ul style="list-style-type: none"> • Low per capita consumption • Demand for organic greens and vegetables
Millets	<ul style="list-style-type: none"> • Drudgery in manual threshing • Poor recovery due to road side threshing • Low price due to impurities
Composting	<ul style="list-style-type: none"> • Dumping and under utilization of agricultural wastes
Poultry- Desi chicken	<ul style="list-style-type: none"> • Less preference for Broiler Chicken
Others	<ul style="list-style-type: none"> • Lack of awareness on agro forestry models • Limited fodder availability

3. Salient Achievements

Achievements of Mandated activities (1st January 2020 to 31st December 2020)

S.No	Activity	Target	Achievement
1.	Technologies Assessed and refined (No.)	0	0
2.	On-farm trials conducted (No.)	7	35
3.	Frontline demonstrations conducted (No.)	13	130
4.	Farmers trained (in Lakh)	0.025	0.025
5.	Extension Personnel trained (No.)	50	50
6.	Participants in extension activities (in Lakh)	0.055	0.055
7.	Production and distribution of Seed (in Quintal)	30	33
8.	Planting material produced and distributed (in Nos.)	3000	3000
9.	Live-stock strains and finger lings produced and distributed (in Lakh)	-	-
10.	Soil samples tested by Mini Soil Testing Kit (No)	77	77
11.	Soil samples tested by Traditional Laboratory (No)	50	50
12.	Water, plant, manure and other samples tested (No.)	50	50
13.	Mobile agro-advisory provided to farmers (No.)	55	55
14.	No.of Soil Health Cards issued by Mini Soil Testing Kits	-	-
15.	No.of Soil Health Cards issued by Traditional Laboratory	-	-

Salient Achievements by KVK during 2020 (bullet points):

- Seven technologies were assessed through OFTs
- Fifteen FLDs were laid out
- One Farm Field School on IPDM in Banana was conducted
- Trainings were organised to practising farmers and farm women, rural youths, Extension functionaries including sponsored trainings
- KVK has received 4 awards and recognitions during 2020

4. TECHNICAL ACHIEVEMENTS**Details of target and achievements of mandatory activities by KVK during 2020****OFT (Technology Assessment)**

No. of OFTs		Number of technologies		Number of locations (Villages)		Total no. of Trials / Replications / Beneficiaries	
Targets	Achievement	Targets	Achievement	Targets	Achievement	Targets	Achievement
7	7	7	7	20	20	35	35

FLD (crop/enterprise/CFLDs)

No of Demonstrations		Area in ha		Number of Farmers / Beneficiaries / Replications	
Targets	Achievement	Targets	Achievement	Targets	Achievement
15	15	35	35	117	117

Training (including sponsored, vocational and other trainings carried under Rainwater Harvesting Unit)

Clientele	Number of Courses		Number of Participants	
	Targets	Achievement	Targets	Achievement
Farmers and Farm Women	30	38	300	1331
Rural youth	2	2	40	46
Extn. Functionaries	1	1	40	42
Sponsored training	30	32	500	1050
Vocational Training	10	12	90	105

Extension Activities

Number of activities		Number of participants	
Targets	Achievement	Targets	Achievement
100	645	3000	3105

Seed Production (q)

Target	Achievement	Distributed to no. of farmers
Paddy	33	33
Barn yard millet	1.5	1.3

Planting material (Nos.)

Target	Achievement	Distributed to no. of farmers
3000 coconut seedlings	3000	370

Technology Assessments (OFTs) in Detail

OFT 1: Assessment of planting methods in Rice

1	Thematic area	:	Integrated Crop Management																							
2	Title	:	Assessment of planting methods in Rice																							
3	Scientists involved	:	G. Selvarani, SMS (Agrl. Extension) K. Anandhi, SMS (Plant Breeding and Genetics) and Programme Coordinator																							
4	Details of farming situation	:	Madurai district comes under Periyar Vaigai Command area. Tank and canal water are the main source of irrigation. Rice is the major crop of Madurai District and cultivated during Kharif and Rabi seasons. The trial was taken up with TKM 13 paddy variety during Rabi 2019 under irrigated condition in Velichanatham village of Madurai West block. Soil is Clay loam with a seasonal rainfall of 380 mm in 16 rainy days.																							
5	Problem definition / description: (one paragraph)	:	Due to uncertainty in water release for paddy cultivation and requirement of more water for puddling, direct sowing of paddy is suggested an alternative. Moreover, there is no time gap for raising of nursery when water is released in a short notice. Hence, it is planned to assess different planting methods in rice.																							
6	Technology Assessed:	:	TO1: Farmers' practice (Manual Transplanting) TO2: Machine transplanting in unpuddled soil TO3: Drum seeding in unpuddled soil																							
7	Critical inputs given: (along with quantity as well as value)	:	<table border="1"> <thead> <tr> <th>Name</th> <th>Qty (g / plant)</th> <th>Input cost (Rs.)</th> </tr> </thead> <tbody> <tr> <td>Paddy seed (TKM 13)</td> <td>4kg</td> <td>128</td> </tr> <tr> <td><i>Trichoderma viride</i></td> <td>2kg</td> <td>140</td> </tr> <tr> <td><i>Pseudomonas fluorescense</i></td> <td>2kg</td> <td>140</td> </tr> <tr> <td><i>Azospirillum</i></td> <td>2kg</td> <td>80</td> </tr> <tr> <td><i>Phosphobacteria</i></td> <td>2kg</td> <td>80</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>568</td> </tr> </tbody> </table>			Name	Qty (g / plant)	Input cost (Rs.)	Paddy seed (TKM 13)	4kg	128	<i>Trichoderma viride</i>	2kg	140	<i>Pseudomonas fluorescense</i>	2kg	140	<i>Azospirillum</i>	2kg	80	<i>Phosphobacteria</i>	2kg	80	Total		568
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8. Results: Performance of the technology

Technology Option	No. of trials	Yield (q/ha)	Net Returns (Rs./ha)	B:C ratio	Data on Other performance indicators*	Data on Other performance indicators*
Farmers' Practice (Manual transplanting)	5	42.7	38538	1.85	1250	24
Technology 1 (Machine Transplanting)		53.4	49964	1.92	850	38
Technology 2 (Drum Seeding)		47.3	53163	2.34	800	52

Description of the results: Technology option 2, Drum seeding resulted in yield (4.73 t/ha) which is equivalent to machine transplanting (TO1) (5.34 t/ha). However, B: C ratio of drum

seeding condition is found to be higher (2.34) than machine transplanting (1.92). The yield was low in manual transplanting (FP) (4.27 t/ha). Besides, water requirement (800 mm) was less in direct seeding using drum seeder as against 1250 mm in manual transplanting. The crop matured one week prior in direct seeding compared to transplanting.

9	Constraints	:	Nil
10	Feed back of the farmers involved	:	The farmers are ready to go for drum seeding which gives higher net return (Rs 53163/ha) and B: C. ratio (2.34) with reduced labour during the peak transplanting seasons
11.	Feed back to the scientist who developed the technology	:	As the labour involved for transplanting is reduced and to cope up with the delayed release of water, drum seeding is the effective planting method in Rice. Moreover, this method is ideal during the cropping system where the release of water from the canal is uncertain.

OFT 2: Assessment of sowing methods in Pulses

1	Thematic area	:	Integrated Crop Management		
2	Title	:	Assessment of sowing methods in Pulses		
3	Scientists involved	:	G. Selvarani, SMS (Agrl. Extension), S.Krishnakumar, SMS (SS&AC), B. Usharani, SMS(PP) & Programme Co-ordinator		
4	Details of farming situation	:	Madurai district comes under Periyar Vaigai Command area. Tank and canal water are the main source of irrigation. Pulse is cultivated throughout year both under irrigated and rainfed condition. The trial was taken up during Rabi 2019 under irrigated condition in Melavalavu and Keelaiyur villages of Kottampatti and Melur blocks respectively. Soil type is sandy clay loam with a seasonal rainfall of 380 mm in 16 rainy days.		
5	Problem definition / description: (one paragraph)	:	Manual sowing of pulses requires high cost and also the area coverage is less. Besides, due to suboptimal plant population in manual sowing method is the main reason for reduced yield. In order to assess the different sowing methods in pulses, this OFT was laid out		
6	Technology Assessed:	:	TO1: Farmers' practice - Broadcasting TO2: Dibbling TO3: Seed drill sowing		
7	Critical inputs given: (along with quantity as well as value)	:	Name	Qty g/plant	Input cost (Rs.)
			Seeds	8 kg	936
			<i>Pseudomonas flourescens</i>	1 kg	150
			<i>Rhizobium</i>	1 kg	50
			TNAU Pulses wonder	2 kg	400
			Neem oil	2 lit	377
				Total	1913

8. Results : Performance of the technology

Technology Option	No. of trials	Yield (t/ha)	Net Returns (Rs./ha)	B:C ratio	Data on Other performance indicators* (Plant Population)
Farmers' Practice (Broadcasting)	5	0.630	17450	1.66	27
Technology 1(Dibbling)		0.984	33735	2.01	32
Technology 2(Seed Drill sowing)		1.002	36880	2.17	42

* Other performance indicators: such as pest intensity, weed population, test weight, duration etc.

Description of the results: Maximum yield (1.002 t/ha) was obtained in Technology option 2 (Seed drill sowing) with higher cost benefit ratio of 2.17 as compared to Dibbling method of sowing (BCR ratio -2.01). The yield was minimum (0.630t/ha) with the BCR of 1.66 in broad cast method of sowing.

9	Constraints	:	Nil
10	Feed back of the farmers involved	:	Seed drill sowing is effective for pulse cultivation as it requires less labour and time.
11.	Feed back to the scientist who developed the technology	:	Seed drill sowing ensures uniform germination and optimum population. Weeding operation becomes easy in view of line sowing. Area coverage (2ha/day) is more when compared to dibbling method.

OFT 3 : Assessment of suitability of Rice Fallow Pulse for Madurai district

1	Thematic area	:	Varietal Evaluation
2	Title	:	Assessment of suitability of Rice Fallow Pulse for Madurai district
3	Scientists involved	:	SMS (Agrl. Extension), SMS (Plant Breeding and Genetics) and Programme Coordinator
4	Details of farming situation	:	Madurai district comes under Periyar Vaigai Command area. Tank and canal water are the main source of irrigation. Fallowing after rice is the farmers Practice. Rice fallow pulse is not practiced in Madurai District so far. Hence, to assess the suitability of Rice Fallow Pulse in Madurai District, this trial was taken up during December 2019 under irrigated condition in Lekkadipatti village of Kottampatti block and Appanthirupathi village of Madurai East block. Soil in the study area is silty clay loam.
5	Problem definition / description: (one paragraph)	:	Pulse is cultivated throughout year both under irrigated and rainfed condition in Madurai District. Rice fallow Pulse cultivation is not practiced. In order to assess the suitability of pulse varieties, KKM1 and ADT 6 in rice fallow condition, this OFT was laid out.

6	Technology Assessed:	:	TO1: Farmers' practice - Fallowing after Rice TO2: Black gram KKM1 after rice TO3: Black gram ADT 6 after rice		
7	Critical inputs given: (along with quantity as well as value)	:	Name	Qty	Input cost (Rs.)
			Seed	10 kg	1300
			<i>Rhizobium</i>	1 kg	50
			TNAU Pulse Wonder	2 kg	400
			PPFM	400 ml	120
			Total		1870

Results: Performance of the technology

Technology Option	No. of trials	Yield (t/ha)	Net Returns (Rs./ha)	B:C ratio	Data on Other performance indicators*
Farmers' Practice (Fallowing after Rice)	5	-	-	-	-
Technology 1 (Rice Fallow Black gram, KKM1)		0.474	20066	3.40	-
Technology 2 (Rice Fallow Black gram, ADT 6)		0.433	17630	3.11	-

* Other performance indicators: such as pest intensity, weed population, test weight, duration etc.

Description of the results: Technology option 2, Black gram KKM1 raised after rice resulted in higher yield (0.474 t/ha) followed by technology option 3, Black gram ADT 6 after rice (0.433). Moreover, net return and B:C ratio for KKM 1 (Rs 20066/ha & 3.40) were higher as compared to ADT 6 (Rs. 17 630 / ha & 3.11).

9	Constraints	:	Nil
10	Feed back of the farmers involved	:	The farmers are ready to go for rice fallow pulse cultivation in view of higher yield, net return and B: C ratio.
11	Feed back to the scientist who developed the technology	:	KKM 1 was found suitable for rice fallow cultivation with higher yield (0.474 t/ha) compared to ADT 6 in Madurai district. Rice fallow pulse may be promoted in Madurai District in view of additional income, less cost of cultivation, utilization of residual moisture and soil fertility improvement.

OFT 4: Assessment of Chilli hybrids for higher yield

1.	Thematic area	:	Horticulture – Vegetable- Chilli
2.	Title	:	Assessment of Chilli hybrids for higher yield
3.	Scientists involved	:	SMS (Horticulture)
4.	Details of farming situation	:	For assessment of chilli hybrids (each one acre) at Melavalavu village (DFI) of Kottampatti block was selected. The soil is chiefly black alluvial soil. The plants are grown in irrigated conditions and planted at a spacing of 75 x 60 cm, The initial soil fertility status was 230: 12: 285 kg NPK/ha. The total rainfall received in this area from July 2018 to February 2019 was 230 mm in 28 days. Sowing was taken up during August 2019 followed by transplanting during September 2019. It started flowering from November and the produce was harvested during first fortnight of December 2019 to January 2020. The fertilizers viz., 10 kg Urea, 512 kg SSP & 50 kg MOP were applied in three split doses except SSP during basal, flower initiation and pod initiation.
5.	Problem definition / description:	:	Chilli is the prominent dryland crop of Madurai, Dindigul, Ramnad, Virudhunagar, Trichy districts of Southern Tamil Nadu. In Madurai, it is chiefly grown in blocks viz., Sedapatti, Kottampatti, Alanganallur and Usilampatti. It is grown in both alluvial soil and red lomy soil of Madurai district. Chilli is grown throughout the year and peak season is from August to February. It is grown for both green and red chilli (both samba and gundu types). The peak flowering period starts from September and extends till November. The average price of Chilli varies between Rs. 20 to 40. The major problem faced by the farmers viz., the cost of the seed, less pungency which fetch low price in the market and incidence of powdery mildew and Leaf Curl Virus (LCV). Hence, hybrids with high pungency, dark green, tolerant to LCV with higher yield will boost the chilli cultivation in Madurai district.
6.	Technology Assessed	:	
Technologies assessed		Technology released	
T ₁ – Farmers hybrid (VNR 277 F1)		Farmers' Practice	
T ₂ – TNAU chilli Hybrid CO 1		TNAU, 2010	
T ₃ - Arka Harita		IIHR, 2017	

7. Critical inputs given: (along with quantity as well as value)

S. No.	Critical inputs	Quantity	Value (Rs.)
1	Seeds	60 g (each hybrid 30g)	14,000
2	Vegetable special	2 kg	1,750
Total			15,750

8. Results: Performance of the technology

Technology Option	No. of trials	Season of harvest	Yield (t/ha)	Net Returns* (Rs./ha)	BCR
T ₁ – Farmers hybrid (VNR 277 F1)	5	December	20.25	1,62,000	2.6
T ₂ – TNAU chilli Hybrid CO 1		December	24.35	2,67,850	3.74
T ₃ – Arka Harita		December	23.90	2,62,900	3.67

*Price per Kg: VNR G- 166 Rs.8 Per Kg; CO1- 11/kg; A.Harita: Rs.12 per Kg

Other performance indicators

Treatments	Plant height (m)	Spread of plant (cm)	Days to 50% flowering (DAT)	Individual pod weight (g)	Pod length (cm)	Pod diameter (cm)	LCV (%)	PM (%)	Colour of pod
T1	1.25	95.00	39.00	6.12	11.0	1.12	25	35	Light green
T2	0.90	85.00	43.00	5.40	9.20	0.92	10	25	Dark green
T3	1.00	82.00	48.00	5.45	9.60	1.00	10	20	Dark green
Mean	1.05	87.33	43.33	85.33	9.93	1.01	11.6	26.6	

Description of Results: The height of the plant varied between 0.90 m (T2) to 1.25 m (T1). T1 only recorded higher than the mean value of 1.05m. Similarly T1 recorded higher spread of the plant (95 cm) followed by T2 (85 cm) and T3 82 (cm). This clearly indicates that, the number of plants is higher in T2 & T3 as compared to T1. The mean spread was 87.33 cm.

The days to 50% flowering varied from 39 (T1) to 48 days (T3), which is an indicator of earliness in yield. The length of the pod and the diameter was higher in T1 (11.00 cm and 1.12cm respectively) and hence the individual pod weight (6.12g). Both COCH1 and Arka Harita (5.40 and 5.45g respectively) were lower in individual pod weight as compared to the private hybrid. The LCV and PM incidence was higher in T1 as compared to T2 and T3 which probably decreased the yield and higher cost of production.

With regard to yield per plant, T2 recorded higher yield (24.35t/ha) as compared to T1 (20.25t/ha) and T3 (23.90t/ha). The colour value was lower in T1 (light green) as compared to T2 and T3 (dark green).

Cost economics: The market value differed between the varieties assessed. T1 (Rs.8.00/ kg) recorded the lowest value while T3 (Rs.12/kg) recorded the highest marketable price per kg of green chilli. The net returns per hectare was higher in T2 (Rs.2, 67,850/ha), followed by T3 (Rs.2,62,900 / ha) and lower in T1 (Rs.1,62,000). The percent increase of T2 over the T1 was 20.24%. The benefit cost ratio was higher in T2 and T3 *i.e* 3.74 and 3.67 respectively.

9.	Constraints	:	The spacing followed were same for all the hybrids (TNAU recommendation), however the spacing was too close for the private hybrid.
10.	Feed back of the farmers involved	:	The cost of hybrid seeds (COCH1 and A.Harita) was much lower as compared to the private hybrid. The percent germination was also higher which lowered the initial cost of production. The main constraint is to produce the seedlings <i>via.</i> , portrays. This increase the initial cost of production upto 20% as compared to regular nursery. However, this was compensated by 99.99% establishment through transplanting. The higher yield might be due to higher number of plants survived till harvest. Almost 85% of the plants survived till last harvest in COCH1 and A.Harita.
11	Feed back to the scientist who developed the technology	:	COCH1 and A.Harita can be recommended to Madurai condition with black alluvial soil and irrigated condition.

OFT 5 - Assessment of sulphur nutrition for jasmine

1	Thematic area	:	Integrated Crop Management
2	Title	:	Assessment of sulphur nutrition for Jasmine
3	Scientists involved	:	SMS (SS&ACC), SMS (Hort.) and PC
4	Details of farming situation	:	<p>Jasmine (<i>Jasminum sambac</i> L.) is a tropical or subtropical plant which belongs to the family Oleaceae. It is an extremely fragrant and evergreen shrub grown on a large scale in different states for loose flower production. It finds a very important place in the perfume industry. Jasmine oils are used extensively in the manufacture of cosmetics, soaps, confectionary perfumes, perfumed tobacco, syrups, aerated water, ointments, disinfectants and detergents. For the maximization of yield and improving quality of any flower crop suitable variety, advanced cultural and management practices like pruning, growth regulator application, integrated nutrient management etc. are required to be properly followed. In flower industry, the most important aspects are maximum production of better quality flowers in order to fetch more market prices and improve post-harvest handling in order to maintain flower's freshness and original colour for longer period.</p> <p>The trial was taken up during <i>Rabi</i> season September, 2019 under irrigated condition in Elliarpathi village, Thirupangundrum block. The texture of the soil is sandy clay loam and is low in nitrogen (230 kg/ha), medium in phosphorus (20 kg/ha) and high in potassium (285 kg/ha).</p>

5	Problem definition / description: (one paragraph)	:	The soil available sulphur status, 95 % of the soil samples from various blocks are severely deficient in available sulphur irrespective of the type of cropping systems. Hence, judicious application of sulphur fertilizers and organic manures will improve the yield and quality of jasmine. Moreover, the sulphur nutrient is one of the secondary nutrients which are essential for oil content as well as quality of flower. To meet the required secondary nutrient (sulphur), external application is necessary to get maximum yield. There are different recommendations available for jasmine, but not followed by the farmers. Hence the present investigation was taken up to study the effect of sulphur nutrient application as technology capsule for obtaining higher yield and quality jasmine flower		
6	Technology Assessed:	:	TO1: Farmers' practice (No sulphur application) TO2: Soil application of SOP TO3: Soil application of SSP		
7	Critical inputs given: (along with quantity as well as value)	:	Name	Qty (g/plant)	Input cost (Rs.)
			Sulphate of Potash (SOP)	125	480
			SSP (Single Super Phosphate)	125	520

8. Results: Performance of the technology

Technology Option	No. of trials	Diameter of flower bud (mm)	Shelf life of flower (hrs.)	Flower yield (q ha ⁻¹)	Yield % increased
TO1 Farmers' Practice (without sulphur nutrition)	5	7.19	36.00	8.87	-
TO2 Sulphate of Potash (SOP) @ 125 g plant ⁻¹		8.59	43.80	9.30	4.85
TO3 Single Super Phosphate (SSP) @ 125g plant ⁻¹		8.40	40.08	9.15	3.16

Technology Option	No. of trials	Cost of cultivation (Rs.)	Gross return (Rs.)	Net return (Rs./ha)	BC ratio
TO1 Farmers' Practice (without sulphur nutrition)	5	130300	171400	41100	1.32
TO2 Sulphate of Potash (SOP) @ 125 g plant ⁻¹		130320	178000	47680	1.37
TO3 Single Super Phosphate (SSP) @ 125g plant ⁻¹		130250	175000	44750	1.34

Description of results: The percentage yield increase in TO2 was 4.62% and TO3 is 3.06% over TO1 (Farmers' practice). The BC ratio was also higher in the TO2 and TO3 viz., 1.37 and 1.34 respectively. The diameter of the flower and shelf life of the flower also increased in TO2 and TO3 over farmers practice (TO1). Sulphur is a constituent of three S-containing amino acids (cysteine, cystine and methionine), which are the building blocks of protein. About 90% of plant S is present in these amino acids. Synthesis of oils is important function of sulphur. It activates the several enzymes, which aid in biochemical reactions in the plant. It increases crop yields and improves produce quality, both of which determine the market price a farmer would get for his produce.

9.	Constraints	:	Nil
10.	Feed back of the farmers involved	:	The awareness was created among farmers by various extension activities on Sulphur nutrition application through soil after pruning stage. The farmers are very much interested to apply the sulphur nutrient for the Jasmine flower production by its own. They are really happy and very well satisfied.
11	Feed back to the scientist who developed the technology	:	The secondary nutrient (Sulphur) application through soil after pruning increased the yield of crop compared to farmers' practice. The farmers witnessed the technology and practical utility of sulphur nutrient application.

OFT 6: Assessment of IPM for Rugose Spiralling Whitefly in Coconut

1	Thematic area	:	IPDM
2	Title	:	Assessment of IPM for Rugose Spiralling Whitefly in Coconut
3	Scientists involved	:	Dr. B. Usha Rani SMS (Plant Protection)
4	Details of farming situation	:	The trial was conducted during October, 2019 in five selected farmers' fields under irrigated condition in Chinnakottampatti village of Kottampatti block and Velliayankundram Village of Madurai East Block. The soil type was clay loam.
5	Problem definition / discription: (one paragraph)	:	The Rugose Spiraling Whitefly (RSW) <i>Aleurodicus rugioperculatus</i> Martin (Hemiptera: Sternorrhyncha: Aleyrodidae) has been recently reported in India from Tamil Nadu, Karnataka, Kerala and Andhra Pradesh. India is the only country in the Oriental region where the whitefly has been introduced during 2004 from Belize, Central America and in South Florida, United States in 2009. It is an invasive pest that attacks a wide range of host plants including palms, woody ornamentals and fruits. Coconut and banana are among the most preferred host plants. It was reported in Pollachi tract, Coimbatore, Tamil

			Nadu during August, 2016. Knowing the importance of the pest an IPM package was formulated and it was evaluated as on farm trial in farmers' field of Madurai District.												
6	Technology Assessed:	:	<p>TO1: Farmers' practice (Azadirachtin 1% @ 2 ml/l + Sticking agent & Water spray)</p> <p>TO2: IPM for Rugose Spiralling Whitefly in Coconut Yellow sticky trap /sheets@ 10 /acre, water spray, <i>Chrysoperla zastrowi</i> eggs @ 400/ac, <i>Encarsia guadeloupae</i> cocoons @ 100 /acre, Foliar application of <i>Isaria fumorosea</i> @5g / l, Azadirachtin 1% @ 2 ml/l + Sticking agent, Foliar spray with Maida flour @ 25g/l</p> <p>Methodology for assessment The following parameters were worked out Intensity of damage (%) and percent parasitisation was worked out. Damage rating scale from 0 to 3 was also followed for further identification</p>												
7	Critical inputs given: (along with quantity as well as value)	:	<table border="1"> <thead> <tr> <th>Name</th> <th>Qty/acre</th> <th>Input cost (Rs.)</th> </tr> </thead> <tbody> <tr> <td>Yellow sticky trap</td> <td>10/acre</td> <td>1000</td> </tr> <tr> <td><i>Isaria fumorosa</i></td> <td>5g/l</td> <td>600</td> </tr> <tr> <td>Azadirachtin 1 %</td> <td>One litre</td> <td>900</td> </tr> </tbody> </table>	Name	Qty/acre	Input cost (Rs.)	Yellow sticky trap	10/acre	1000	<i>Isaria fumorosa</i>	5g/l	600	Azadirachtin 1 %	One litre	900
Name	Qty/acre	Input cost (Rs.)													
Yellow sticky trap	10/acre	1000													
<i>Isaria fumorosa</i>	5g/l	600													
Azadirachtin 1 %	One litre	900													

8. Results: Performance of the technology

Treatment details	Intensity of RSW (%)							Grade	Parasitization (%)
	Oct 19	Nov 19	Dec 19	Jan 20	Feb 20	March 20	Mean		
TO1 - Farmer's practice	69.2	72.4	73.9	76.7	83.8	86.5	77.1	1.9	24.0
TO2 - IPM module	65.8	65.3	72.5	52.7	48.4	40.3	56.7	1.1	35.2

Treatment details	Yield (nuts/tree/year)	Yield (nuts/ha)	Gross return (Rs.)	Gross cost (Rs.)	Net return (Rs.)	BCR
TO1 - Farmer's practice	82	14350	172200	76,125	96,075	1:2.26
TO2 - IPM module	90	15750	189000	78,750	110,250	1:2.40

Description of results: The results revealed that in the RSW IPM module adopted plot, the intensity of incidence was reduced from 65.8 % to 40.3 % as against 69.2 % to 86.5 %. This intensity of RSW reduction was mainly due to higher per cent parasitisation (35.2 %). The grade of pest intensity was 1.1 in IPM plot and 1.9 in Farmer's practice plot. Yield and BCR

was more or less similar in Farmer's practice and IPM module adopted field. But parasitization (%) was high in IPM module adopted field.

9.	Constraints faced	:	Difficulty in spraying
10.	Feed back of the farmers involved	:	Farmers' wants immediate control. Hence they are not ready to accept this technology. They accepted only the Yellow sticky traps for RSW.
11	Feed back to the scientist who developed the technology	:	Ecofriendly new molecular insecticides may be included to manage this notorious insect pest. Conservation of natural enemies may be encouraged

OFT 7: Alternative natural sweetener for bakery products

1.	Thematic area	:	Post harvest technology / value addition
2.	Title	:	Assessment of Alternative natural sweetener for bakery products
3.	Scientists involved	:	Dr. S. Arokiamary, SMS (Home Science)
4.	Details of farming situation Describe the farming situation including Season, Farming situation (RF/Irrigated), Soil type, fertility Status, Seasonal rainfall (mm) No. of rainy days etc (about 500 words)	:	Not applicable
5.	Problem definition / discription (one paragraph)	:	Sulphur is a contaminant which enters sugar during refining. The maximum permissible limit for sulphur is 70 ppm (BIS) and 10 ppm (IS). If the amount of sulphur exceeds the permissible limits, it is highly toxic and accounts for the defamation of white sugar. Nowadays people are avoiding consuming white sugar, instead go for jaggery and palm jaggery. In view of this trial was conducted to assess the suitable alternative for white sugar.
6.	Technology Assessed	:	
Technologies assessed			Technology released
FP – White sugar cookies Wheat flour, powdered sugar and shortening agent were used to prepare cookies			Farmers Practice
TO ₁ – Palm jaggery cookies Wheat flour, palm jaggery and shortening agent were used to prepare cookies			TNAU, 2017

TO ₂ - Jaggery cookies Wheat flour, powdered jaggery and shortening agent were used to cookies	IIFPT, 2014
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7. Critical inputs given (along with quantity as well as value) :

S.No.	Critical inputs	Quantity	Value (Rs.)
1.	Wheat flour	12 kg	600
2.	Powdered sugar	2 kg	100
3.	Powdered jaggery	2 kg	200
4.	Palm jaggery	2 kg	1000
5.	Shortening agent	6 kg	300
Total			2200

8. Results : Performance of the technology

Technological options	Organoleptic scores	Shelf life (days)	Gross cost (Rs.)	Gross return (Rs.)	Net return (Rs.)	BCR
TO ₁ – White sugar cookies	8.5	30	1170	2000	830	1.71
TO ₂ – Palm jaggery cookies	8.0	30	1815	4000	2185	2.20
TO ₃ - Jaggery cookies	8.0	30	1240	3000	1760	2.42

Description of the results: There was no difference in the shelf life of cookies prepared using white sugar, jaggery and palm sugar (30 days). Negligible changes were observed in organoleptic score of all the three types of cookies. Hence, jaggery and palm jaggery can be used as a replacement for white sugar in the preparation of cookies.

9.	Constraints	:	No.
10.	Feed back of the farmers involved	:	The farmers and entrepreneurs are very much satisfied with the taste of the cookies prepared out of jaggery and palm jaggery. The cost of the palm jaggery cookies are costly compared to other two types of cookies. Hence, jaggery may be used for preparing cookies for higher profit on a commercial scale.
11.	Feed back to the scientist who developed the technology	:	White sugar leads to many health hazards. Hence, it can be replaced by the either jaggery or palm jaggery.

Frontline Demonstrations in Detail

a. Follow-up of FLDs implemented during previous years

1. Technology-1

Crop/Enterprise

Thematic area

Technology Demonstrated as a follow-up from OFT

Feed back sent to the Research System

Details on the performance of the technology sent to the Extension Department

Horizontal spread of the technology (No. of Villages, farmers and area in ha)

b. Details of FLDs implemented during the reporting period

Technology – 1: Demonstration of paddy variety, ADT 53

1.	Crop	:	Rice
2.	Thematic area	:	Varietal evaluation
3.	Technology demonstrated	:	New variety, ADT 53
4.	Season and year	:	<i>Kharif, 2019</i>
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No of locations (Villages)	:	6
8.	No. of demonstrations (replications/farmers/beneficiaries):	:	10
9.	No of SC/ST Farmers & women farmers	:	2 C ST & 2 Women farmers
10.	Area proposed (ha)	:	4
11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	ADT 53 is short duration with fine grain variety which fetch higher price.
14.	Feedback of the Scientist	:	ADT 53 is preferred by the farmers because of its fine grain and short duration
15.	Extension activities on the FLD	:	Training on ICM in ADT 53 conducted at KVK, Madurai on 13.09.2019 and 30 farmers participated in the programme

Technology – 2: Demonstration of fine grain rice variety, VGD 1

1.	Crop	:	Rice
2.	Thematic area	:	Varietal evaluation
3.	Technology demonstrated	:	New variety VGD 1
4.	Season and year	:	<i>Rabi, 2019</i>
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No of locations (Villages)	:	5
8.	No. of demonstrations (replications/farmers/beneficiaries):	:	10
9.	No of SC/ST Farmers & women farmers	:	2 women farmers
10.	Area proposed (ha)	:	4

11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	VGD 1 is a good replacement for Seeraga samba with non lodging, non shattering and lesser duration
14.	Feedback of the Scientist	:	VGD 1 is a short statured, non lodging with the duration of 120- 125 days. It is highly preferred by the farmers, traders and millers in view of its fine grain nature, aroma and higher yield.
15.	Extension activities on the FLD	:	Conducted field days on 21.01.2020, 05.02.2020 &07.02.2020

Technology – 3: Biointensive management of leaf folder and sheath blight in rice

1.	Crop	:	Rice
2.	Thematic area	:	Crop Protection
3.	Technology demonstrated	:	IPDM Seed Treatment with TNAU Pf1 liquid formulation @ 10 ml/kg of seeds Seedling root dip with TNAU Pf1 liquid formulation @200ml/ac, Foliar spray with TNAU Pf1 liquid formulation @ 5ml/lit, <i>Trichogramma chilonis</i> @ 6 cc/acre (37, 44 and 51 DAT), <i>Beauveria bassiana</i> @ 5g/l twice @15 days interval
4.	Season and year	:	Rabi, 2019
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries):	:	10
9.	No of SC/ST Farmers & women farmers	:	2
10.	Area proposed (ha)	:	4
11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	Nil
13.	Feedback from farmers	:	Farmers visualized the drastic reduction in leaf folder infestation due to the adoption of ecofriendly management technologies. However, need based green label pesticides may be used to tackle the pest and disease problem
14.	Feedback of the Scientist	:	In Demo plot, the pest and disease problem were minimum. The leaf folder infestation was minimum (3.70 %) while, in check plot the leaf folder infestation was maximum (15.6 %). Prophylactic and timely application of biocontrol agents resulted in reasonable control

		of diseases in paddy. Incidence of blast, BLB and sheathblight were observed. In demo plots, the intensity recorded as 6.5 PDI, 7.5 and 2.6 per cent respectively, whereas, in farmers' practice, it was 25.6, 30.2 and 10.2 per cent. The per cent reduction in pest incidence was 76.28 % as compared to check plot. The spider population was also maximum (40 nos./10 hills) due to the adoption of ecofriendly management technologies in rice crop. Hence this technology may be popularized among the farming community
15.	Extension activities on the FLD	Training on IPM in rice at Vellinipatti on 28.11.2019 and 32 farmers participated in the programme

Technology – 4: Introduction of Castor, YTP 1

1.	Crop	:	Castor
2.	Thematic area	:	Varietal Introduction
3.	Technology demonstrated	:	Introduction of Castor, YTP 1 (TNAU-2019)
4.	Season and year	:	Rabi, 2019
5.	Farming situation	:	Rainfed
6.	Source of fund	:	ICAR
7.	No of locations (Villages)	:	3
8.	No. of demonstrations (replications/farmers/beneficiaries):	:	10
9.	No of SC/ST Farmers & women farmers	:	2 SC ST & 1 women farmer
10.	Area proposed (ha)	:	0.4 ha
11.	Actual area (ha)	:	0.4 ha
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Cattle grazing is avoided. Requires less water than other crops.
14.	Feedback of the Scientist	:	Castor YTP 1 is the new introduction to Madurai District with drought tolerant and high yielding.
15.	Extension activities on the FLD	:	Training on ICM in YTP 1 castor cultivation was conducted at Lekkadipatti (DFI), Kottampatti block on 28.06.2019 and 35 farmers participated in the programme

Technology – 5: Demonstration of IDM for basal rot in multiplier onion

1.	Crop	:	Onion
2.	Thematic area	:	Plant protection
3.	Technology demonstrated	:	Demonstration of IDM for basal rot in multiplier onion

4.	Season and year	:	Rabi, 2019
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	10
9.	No of SC/ST Farmers and women farmers	:	2 SC ST farmers
10.	Area proposed (ha)	:	4
11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	The farmers understood the significance of bulb size in better crop establishment. Farmers were made aware of the bioagents viz., <i>Trichoderma viride</i> and VAM and their method of application.
14.	Feedback of the Scientist	:	The application of <i>T. viride</i> as seed treatment and soil application and soil application of VAM significantly reduced the basal rot.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Training on IPDM in small onion at Ettunazhiputhur on 03.07.2019

Technology – 6: Demonstration of ridge gourd COH 1 for higher yield

1.	Crop	:	Ridge gourd
2.	Thematic area	:	Varietal introduction
3.	Technology demonstrated	:	Demonstration of Ribbed gourd hybrid COH1
4.	Season and year	:	Rabi, 2019
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	10
9.	No of SC/ST Farmers and women farmers	:	4 SC ST farmers
10.	Area proposed (ha)	:	4
11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Ribbed gourd Hybrid COH1 was equally good with private hybrids in terms of yield and quality parameters with reduced seed cost
14.	Feedback of the Scientist	:	The fruits size and colour were highly preferred in the market.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Conducted training on ICM in ridge gourd on 29.05.2019 at Lekkadipatti

Technology – 7: Demonstration of IPM for YMV and fruit fly in Bitter gourd

1.	Crop	:	Bitter gourd
2.	Thematic area	:	Crop protection
3.	Technology demonstrated	:	IPDM Seed treatmentssss Imidacloprid 600 FS @ 5 ml/kg, Low cost Cue lure traps @ 12/acre, Yellow sticky trap @ 5/ac, Foliar spray - Malathion 50 EC @ 2 ml/l + 10g gur/sugar /l , NSKE 5 %
4.	Season and year	:	Rabi, 2019
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	10
9.	No of SC/ST Farmers and women farmers	:	2
10.	Area proposed (ha)	:	4
11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	By integration of technologies viz., seed treatment, fixing yellow sticky traps, cue lure traps and NSKE spray reduced the YMV incidence to the tune of 80 per cent. Farmers were very much convinced and ready to adopt
14.	Feedback of the Scientist	:	The role of whitefly is more important as a vector of Yellow mosaic virus than its direct damage as a sucking pest in bitter gourd. The disease attains significance because the virus is capable of attacking the crop in all the stages of its growth period, Hence this IPM technology was popularized among the farmers.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Trainings and demonstrations

Technology – 8: Demonstration of micronutrients or enhanced productivity in banana

1.	Crop	:	Banana
2.	Thematic area	:	Integrated Nutrient Management
3.	Technology demonstrated	:	Banana sakthi special micronutrient foliar spray @2% at 4 th , 5 th , and 6 th month intervals
4.	Season and year	:	Kharif, 2019
5.	Farming situation	:	Irrigated, Clay loam soil

6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	3
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	10
9.	No of SC/ST Farmers and women farmers	:	3 SC ST and 2 women farmers
10.	Area proposed (ha)	:	4
11.	Actual area (ha)	:	4
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	The micronutrients foliar spray (Banana Sakthi Special) increased the yield of crop over farmers practice. The farmers witnessed the technology and practical utility of micronutrient foliar spray.
14.	Feedback of the Scientist	:	The awareness was created among farmers by various extension activities on Micronutrient application through foliar spray. The farmers are very much interested to apply the micronutrients for the banana crop production by its own. They are really happy and very satisfied.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	On campus training on sustainable soil health management practices on 07.06.2019 at Lekkadipatti village, Kottampatti block. Totally 30 farmers were benefited

Technology – 9: Demonstration of Agri-Silvi-Pastoral Model

1.	Crop	:	Coconut-Giliricidia-Cumbu Napier
2.	Thematic area	:	Agroforestry model
3.	Technology demonstrated	:	Agri-Silvi-Pastoral system
4.	Season and year	:	<i>Kharif</i> , 2019
5.	Farming situation	:	Irrigated, Sandy Clay loam soil
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	3
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	5
9.	No of SC/ST Farmers and women farmers	:	1 SC ST and 1 woman farmer
10.	Area proposed (ha)	:	2
11.	Actual area (ha)	:	2
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Giliricidia is a small fast growing multipurpose legume tree that increases soil productivity and leaves contain 20 to 30% crude protein and are highly digestible for ruminants like buffalows, cow and goat. It reduced the soil erosion and used as live fencing. Cumbu napier had higher fodder yield, highly palatable preferred by milch cattle, goat and sheep.
14.	Feedback of the Scientist	:	Agro forestry model can control the runoff and

			soil erosion, thereby reducing losses of water, soil material, organic matter and nutrients. It can provide a more diverse farm economy and stimulate the whole rural economy, leading to more stable farms and communities Economic risks are reduced when systems produce multiple products.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	On campus training on Importance of Agroforestry Models on 05.12.2019 at KVK, Madurai. Totally 32 farmers were participated.

Technology – 10: Demonstration of Horti-Silvi-Pastoral Model

1.	Crop	:	Banana-Giliricidia-Cumbu Napier
2.	Thematic area	:	Agroforestry model
3.	Technology demonstrated	:	Horti-Silvi-Pastoral system
4.	Season and year	:	<i>Kharif</i> , 2019
5.	Farming situation	:	Irrigated, Sandy Clay loam soil
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	5
9.	No of SC/ST Farmers and women farmers	:	1SC ST and 1 woman farmer
10.	Area proposed (ha)	:	2
11.	Actual area (ha)	:	2
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Giliricidia is a small fast growing multipurpose legume tree that increases soil productivity and leaves contain 20 to 30% crude protein and are highly digestible for ruminants like buffalows, cow and goat. It reduced the soil erosion and used as live fencing. Cumbu napier had higher fodder yield, highly palatable preferred by milch cattle, goat and sheep.
14.	Feedback of the Scientist	:	Agro forestry model can control the runoff and soil erosion, thereby reducing losses of water, soil material, organic matter and nutrients. It can provide a more diverse farm economy and stimulate the whole rural economy, leading to more stable farms and communities Economic risks are reduced when systems produce multiple products.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	On campus training on Importance of Agroforestry Models on 05.12.2019 at KVK, Madurai. Totally 32 farmers were participated.

Technology – 11: Demonstration of Composting Techniques

1.	Crop	:	Composting
2.	Thematic area	:	Waste recycling
3.	Technology demonstrated	:	TNAU Biomineralizer @ 2kg/tonnes of agricultural wastes
4.	Season and year	:	NA
5.	Farming situation	:	NA
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	5
9.	No of SC/ST Farmers and women farmers	:	1 SC ST and 2 women farmers
10.	Area proposed (ha)	:	NA
11.	Actual area (ha)	:	NA
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	The awareness was created among farmers by various extension activities on agricultural wastes composting. The farmers are very much interested to buy the TNAU Biomineralizer by its own. They are really happy and satisfied.
14.	Feedback of the Scientist	:	The agricultural wastes decomposition technology by TNAU biomineralizer was increased the available nutrients, helping to retain moisture and suppresses plant diseases and pests. It reduces the need for chemical fertilizers. It also encourages the production of beneficial bacteria and fungi that breakdown organic matter to humus, a rich nutrient-filled materials. The farmers witnessed the technology and practical utility of agricultural waste decomposing.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Off campus training on Demonstration of composting techniques was done on 16.10.2019 at Kudipatti village, Sedapatti block. Totally 30 farmers were participated

Technology – 12: Demonstration of Desi Chicken, TANUVAS Aseel

1.	Crop	:	-
2.	Thematic area	:	Animal Husbandry ad Veterinary Sciences
3.	Technology demonstrated	:	Demonstration of Desi Chicken, TANUVAS Aseel (Source: TANUVAS 2017)
4.	Season and year	:	2020
5.	Farming situation	:	-
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	4
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	10

9.	No of SC/ST Farmers and women farmers	:	3 SC ST & 1 Women farmer
10.	Area proposed (ha)	:	10 Nos.
11.	Actual area (ha)	:	10 Households
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Higher price owing to high preference than Broiler chicken
14.	Feedback of the Scientist	:	Quick growing with high livability percentage
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Training on Backyard Poultry Rearing was conducted at Ammapatti village of Thirumangalam block on 27.11.2019 and 56 farmers participated in the programme.

Technology – 13: Demonstration of Nutri Garden in Anganwadis

1.	Crop	:	Vegetables
2.	Thematic area	:	Nutri Garden
3.	Technology demonstrated	:	Demonstration of Nutri Garden in Anganwadis
4.	Season and year	:	Rabi, 2020
5.	Farming situation	:	Irrigated
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	5
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	5
9.	No of SC/ST Farmers and women farmers	:	-
10.	Area proposed (ha)	:	0.02
11.	Actual area (ha)	:	0.02
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Children enjoyed the gardening activities as a part of their curriculum besides getting nutritious vegetables.
14.	Feedback of the Scientist	:	The concept of gardening was inculcated which will bring positive impact in the young minds
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Training on Nutri garden was conducted at KVK, Madurai on 08.11.2019 & 10.01.2020 and 24 & 34 farmers participated in the programme respectively

Technology – 14: Demonstration of copra drying technique (Solar drying with improved techniques)

1.	Crop	:	Coconut
2.	Thematic area	:	Post Harvest Management
3.	Technology demonstrated	:	Demonstration of copra drying technique (Solar drying with improved techniques)
4.	Season and year	:	NA
5.	Farming situation	:	NA
6.	Source of fund	:	ICAR

7.	No. of locations (Villages)	:	1
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	2
9.	No of SC/ST Farmers and women farmers	:	1
10.	Area proposed (ha)	:	2
11.	Actual area (ha)	:	2
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	This technology is cost effective and safe and easy to adopt
14.	Feedback of the Scientist	:	Mould growth during drying of copra may be arrested using one per cent acetic acid.
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	-

Technology – 15: Demonstration of millet thresher

1.	Crop	:	Millets
2.	Thematic area	:	Post Harvest Technology
3.	Technology demonstrated	:	Demonstration of millet thresher
4.	Season and year	:	NA
5.	Farming situation	:	NA
6.	Source of fund	:	ICAR
7.	No. of locations (Villages)	:	2
8.	No. of demonstrations (replications/farmers/beneficiaries)	:	5
9.	No of SC/ST Farmers and women farmers	:	2 SC ST Farmers
10.	Area proposed (ha)	:	1
11.	Actual area (ha)	:	1
12.	Justification for shortfall if any	:	-
13.	Feedback from farmers	:	Millet thresher increases the working efficiency thereby saving time and energy, reduces drudgery. Reduces the labour requirement which reduced the cost of cultivation. The feeding hopper may be widened and outlet pipe needs to be extended.
14.	Feedback of the Scientist	:	Threshing efficiency was higher could reduce wastage and cost of cultivation
15.	Extension activities on the FLD (Field days, Farmers training, media coverage, training to Extension Functionaries)	:	Training on Millet thresher was conducted at Sambakulam village on 20.09.2019 and 30.12.2019 at Lekkadipatti village

Technology Week Celebrations

Types of Activities	No. of Activities	Number of Participants	Related crop/livestock technology
Gosthies	-	-	-
Lectures organised	-	-	-
Exhibition	-	-	-
Film show	-	-	-
Fair	-	-	-
Farm Visit	-	-	-
Diagnostic Practicals	-	-	-
Distribution of Literature (No.)	-	-	-
Distribution of Seed (q)	-	-	-
Distribution of Planting materials (No.)	-	-	-
Bio Product distribution (Kg)	-	-	-
Bio Fertilizers (q)	-	-	-
Distribution of fingerlings	-	-	-
Distribution of Livestock specimen (No.)	-	-	-
Total number of farmers visited the technology week	-	-	-
Others	-	-	-

Training/workshops/seminars etc. attended by KVK staff:

Name of the staff	Title	Dates	Duration	Organized by
Dr. ChelviRamesh, Dr. S. Arokiamary, Dr. G. Selvarani, Dr. K. Anandhi, Dr. S. Krishnakumar	Insects and languages; Implications for food and nutrition security	24.1.2020	One day	AC & RI, Madurai
Dr. B.Usha Rani	Stored grain pest detection and identification and their management	27.01.2020 to 31.01.2020	Five days	NIPHM, Hyderabad
Dr. ChelviRamesh	Neem workshop	06.02.2020	One day	DCM, TNAU, Coimbatore
	Seed Hub review meeting	10.02.2020	One day	Minto Hall, Bhopal
	IC Pulses, 2020	10.02.2020 - 12.02.2020	Three days	
Dr. S. Arokiamary	38 th Pulses Scientist Meet – 2020	22.05.2020	One day	Online meeting organized by TNAU, Coimbatore
Dr. ChelviRamesh Dr. R. Arun Kumar	36 th Horticulture Scientist Meet	26.05.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. ChelviRamesh Dr. B. Usharani Dr. G. Selvarani Dr. M. Palanikumar Dr. C. Menaka Dr. Arokiamary Dr. S. Krishnakumar	Foundation Day of TNAU, Coimbatore through online	01.06.2020	One day	Online mode organized by TNAU, Coimbatore

Dr. ChelviRamesh Dr. S. Arokiamary Dr. S. Krishnakumar	World Environmental Day through online	05.06.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. ChelviRamesh Dr. B. Usharani	webinar on locust management	06.06.2020	One day	Online mode organized by Director, CPPS, TNAU, Coimbatore.
Dr. ChelviRamesh Dr. S. Krishnakumar	National Webinar on Zero Budget Natural Farming	06.06.2020 to 07.06.2020	One day	Online mode organized by Association of Plant Science Researchers (APSR), Plantica Foundation, Dehradun, Uttarakhand
Dr. ChelviRamesh Dr. K. Anandhi	Crop Scientist Meet on production oriented projects through online	10.06.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. ChelviRamesh Dr.G. Selvarani	Social Scientist Meet	10.06.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. ChelviRamesh Dr. S. Krishnakumar	National Webinar on Organic Farming	16.06.20 to 20.06.20	One day	Online mode organized by College of Agriculture, Balaghat, Jabalpur
Dr. S. Arokiamary	Webinar on “Nutrition Communication in the complex food and media environment”	23.06.2020	One day	Online mode organized by Nutrition Society of India, Mumbai
Dr. S. Krishnakumar	National Webinar on ‘Agricultural Biotechnology for Mitigating Climate Change’	03.07.2020	One day	Online mode organized by Bihar Agricultural University, Sabour, Bhagalpur

Dr. S. Krishnakumar	Webinar on 'Role of Insecticides on Past, Present and Future Pest Management'	06.07.2020	One day	Online mode organized by Krishna College of Agriculture and Technology
Dr. B. Usharani	Webinar on IPDM in Banana	11.07.2020	One day	Online mode organized by NBRC, Trichy
Dr. B. Usharani	Entomology action plan mode	13.07.2020	One day	Online mode organized by AC & RI, Madurai
Dr. ChelviRamesh	Soft Skill Development on Application of Basics of Remote Sensing & GIS in Nutritional Crops	16.07.2020 to 20.07.2020	Five days	Online mode organized by NAHEP – Centre for Advanced Agricultural Science & Technology on Nutritional Crops
Dr. S. Arokiamary	International webinar on "Public Health Epidemiology – Strategies for Health and Nutrition Security"	21.07.2020	One day	Online mode organized by the Dept. of Human Devt. & Family Studies, CSC&RI, Madurai
Dr. S. Arokiamary	Webinar on "Value addition and entrepreneurship development in banana"	22.07.2020	One day	Online mode organized by ICAR – National Research Centre for Banana, Trichy
Dr. ChelviRamesh Dr. B. Usharani Dr. G. Selvarani Dr. M. Palanikumar Dr. C. Menaka Dr. S. Arokiamary Dr. S. Krishnakumar	Webinar on "Vision Doubling Farmers' Income : Opportunities & Challenges"	22.07.2020	One day	Online mode organized by FICCI, Tamil Nadu
Dr. S. Krishnakumar	International webinar on Mushrooms – Nature's Gift	24.07.2020	One day	Online mode organized by Dept. of Microbiology, K.R.College of Arts and Science, Kovilpatti

Dr. ChelviRamesh Dr. B. Usharani Dr. G. Selvarani Dr. M. Palanikumar Dr. C. Menaka Dr. S. Arokiamary Dr. S. Krishnakumar	Annual Zonal Review Workshop	24.07.2020 & 25.07.2020	Two days	Online mode organized by Director, ATARI, Hyderabad
Dr. ChelviRamesh Dr. B. Usharani Dr. G. Selvarani Dr. M. Palanikumar Dr. C. Menaka Dr. S. Arokiamary Dr. S. Krishnakumar	Webinar on Indian Citation Index	26.07.2020	One day	Online mode organized by Directorate of Research, TNAU, Coimbatore
Dr. ChelviRamesh	MOOCS online training on Gender in Agricultural Development	27.07.2020 to 05.08.2020	Ten days	Online mode Organized by MANAGE, Hyderabad
Dr. ChelviRamesh	Webinar on Fall Army Worm	28.07.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. S.Krishnakumar	National webinar on Plant biological interventions for Climate Smart Agriculture	30.07.2020	One day	Online mode organized by Bihar Agricultural University, Sabour, Bhagalpur
Dr. S.Krishnakumar	National webinar on Plant biological interventions for Climate Smart Agriculture	30.07.2020	One day	Online mode organized by Bihar Agricultural University, Sabour, Bhagalpur.
Dr. B. Usharani	Integrated insect pests and nematodes Management in Banana	04.08.2020	One day	Online mode organized by ICAR- NRC Banana
Dr. S.Krishnakumar	National webinar on Forest, Environment and Wildlife – Status and Developments in the 21 st Century	04.08.2020	One day	Online mode organized by SHAUTS, Allahabad, UP, India
Dr. ChelviRamesh	TANII meeting	19.08.2020	One day	Online mode organized by TANII, Thodaneri

Dr. ChelviRamesh	PMFBY – DLMC & DLJC meeting	20.08.2020	One day	Online mode organized by Collectorate, Madurai
Dr. B. Usharani	International webinar on importance of Honey bee in Agriculture and their pest Management	20.08.2020	One day	Online mode organized by Dept of Agril. Entomology, MIT- CAT, Musiri
Dr. B. Usharani & Dr. S. Arokiamary	Webinar on Biocontrol of parthenium	21.08.2020	One day	Online mode organized by SBA, Bengaluru
Dr. B. Usharani & Dr. S. Krishnakumar	SEEPERS ATMA- AESA based project preparation meeting Agro Based Ecosystem Analysis Meeting for garden land combined with Periyarvaigai Canal	01.09.2020	One day	SEEPERS ATMA- AESA Thirumangalam
Dr. B. Usharani & Dr. S. Krishnakumar & Dr. M. Palanikumar	International webinar on Pesticides – Health and Safety	03.09.2020 & 04.09.2020	Two days	Online mode organized by the HC&RI for Women, Trichy
Dr. ChelviRamesh & Dr. B. Usharani & Dr. G. Selvarani & Dr. M. Palanikumar & Dr. C. Menaka & Dr. S. Arokiamary & Dr. S. Krishnakumar & Tmt.N. Ramya	Capacity building of farmers and Village Level functionaries for Disaster Management planning and awareness on drought mitigation measures	10.9. 2020	One day	KVK, AC & RI, Madurai
Dr. ChelviRamesh	National Digital Conclave on Agri startups / Business incubation/ FPOs	16.09.2020	One day	MABIF, AC & RI, Madurai
G. Selvarani	Webinar on Agri business Ideathon for Rural Youth	19.09.2020	One day	Online mode organized by Director, Agri Business, TNAU, Coimbatore

G. Selvarani	Annual Zonal Review Workshop of the DAMU KVKs under zone X	23.09.2020	One day	Online mode organized by Director, ATARI, Hyderabad
Dr. ChelviRamesh, Dr. G. Selvarani	46 th EEC meeting	30.09.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. ChelviRamesh,	Digitization of SR	06.10.2020	One day	Online mode organized by TNAU, Coimbatore
Dr. S.Krishnakumar	National web conference on Utilization of Organic Waste for Soil Health Management and Energy Production Under Changing Climate Scenario	06.10.2020	One day	Online mode organized by Sri Karan Narendra Agriculture University, Jobner- Jaipur
Dr. ChelviRamesh Dr. B. Usharani Dr. G. Selvarani Dr. M. Palanikumar Dr. C. Menaka Dr. S. Arokiamary Dr. S. Krishnakumar	Fifth National Conference on Agricultural Scientific Tamil	09.10.2020 & 10.10.2020	Two days	Online mode organized by TNAU, Coimbatore
Dr. ChelviRamesh, Dr. G.Selvarani Dr. S. Arokiamary	Lecture on New Farmers' Acts 2020	13.10.2020	One day	Online mode organized by DCARDS, TNAU, Coimbatore
Dr. ChelviRamesh Dr. B. Usha Rani Dr.S. Arokiamary Dr. C. Menaka Dr. G. Selvarani	6 th National conference on Scientific Agriculture in Tamil	21.12.2020 – 22.12.2020	Two days	Online mode organized by TNAU, Coimbatore

Details of sponsored projects/programmes implemented by KVK

S. No.	Title of the programme / project	Sponsoring agency	Objectives	Duration	Amount (Rs.)
1.	Seed Hub	NFSM	Augmenting the availability of good quality pulse seeds	2016 -21	150.00
2.	TN – IAMP	World Bank	Creating awareness on improved technologies through appropriate extension programmes	2017 -23	91.58
3.	Cluster FLD	NFSM	Demonstration of the latest agricultural technologies in green gram and black gram to improve productivity	2020-21	4.50
4.	DAMU	ICAR	To establish District Agro Met Unit (DAMU) at KVK, Madurai To record and maintain the weather related observations at KVK and share the same to the ICAR and IMD as per the MoU To generate specific advisories for agricultural management and disseminate the same to the farming community.	2020-21	1.20
5.	Empowering socially – challenged sector of Usilampatti through advanced medicinal plants	SADP	To create an inventory of medicinal plants and indigenous traditional knowledge in Usilampatti	2020-23	60.65

	cultivation and value addition		To mass multiply endangered (Sirukurunjan) and genetically elite(Noni) medicinal plants through plant tissue culture methods To cultivate sirukurunjan, Noni and other medicinal plants in farmers fields To set up pilot scale processing units and train the farmers interested groups and self-help groups on value addition		
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Please attach detailed report of each project / programme separately

1. Seed Hub

Physical Progress: Seed production target and achievement (in quintals):

S. No.	Crop	Variety	Target (kg)	Class	Qty. produced (kg)
1.	Greengram	CO8	50000	FS I	120
				FS II	2644
				Sub total	2764
2.	Blackgram	VBN8	50000	FS II	452
		VBN 10		CS	2380
		VBN8		FS I	44
				FS II	600
Sub total					3476
Total					6240

2. TNIAMP – Sathiyar sub basin (2020—2021)

The Green Manure - System Rice Intensification (GM - SRI) intervention of 75 ha was completed in the farmers field covering five blocks of under Sathiyar sub basin, Madurai District. Pulses area expansion intervention was also made in 15 ha. Totally 17 awareness programmes and 11 off campus training programmes on GMSRI, Pesticide free vegetables production and Pulses production technology was conducted in Sathiyar sub basins. The pesticide free village groups of 35 No. (20 members each group) was formed in each village under sub basin. Under Precision Farming interventions, Drip materials was

installed in the farmers field viz., Mango-12.15 ha, Guava-19.25 ha, Banana-4.70 ha, Vegetables-4.49 ha, Jasmine-2.40 ha.

For GMSRI the agricultural inputs viz., Daincha seed (2777kgs), Paddy Seed (TKM-13 – 478 kgs), Bio fertilizers (Azhosbirillum (375 kgs), Phasphobacteria (375 kgs), *Pseudomonas florescence* (375 kgs) and Tricoderma Viridi (375 kgs)) were distributed TNIAMP farmers. Fertilizer back ended subsidy was distributed to 102 farmers. For Pulses area expanses intervention the agricultural inputs viz., Pulse Black gram seed (300 kgs), Pulse wonder (31 kgs), Bio fertilizers (Rhyzobium (150kgs) Phosphobacteria (375kgs)) were distributed to the farmers. Pesticide free village group formation intervention the agricultural inputs viz., *Pseudomonas florescence* (375 kgs), Tricoderma Viridi (375kgs), Neem oil (100 lits) and Yellow & Blue Stick traps (700 Nos.) were distributed to the farmers under TNIAMP Sathiyar sub basin scheme.

3. CFLD Pulses

Target 40 ha; Achievement 40 ha.

The farmers were exposed to pulse production technologies viz., source of seeds, seed treatment, crop husbandry practices with special reference to crop nutrition and management of pest and diseases. Farmers got familiarity with the latest high yielding varieties of Black gram, VBN 8 and green variety CO 8. The farmers were also learnt on seed treatment with imidachlopid, insecticide spray & installation of yellow sticky trap for whitefly monitoring to contain YMV incidence, foliar spray of TNAU Pulses wonder spray at 50% flowering.

4. DAMU

Purchase of Non- Recurring items Viz., Computer, Printer and Accessories was completed.

5. Empowering socially – challenged sector of Usilampatti through advanced medicinal plants cultivation and value addition under Special Area Development Programme (SADP)

Training on medicinal plant cultivation was organized on 08.10.2020 at Thottapanaickanur and Trainings and Demonstrations on vegetative propagation of *Gymnema* was conducted at Kurinchi nagar and Vasinagar of Usilampatti block on 11.11.2020

Awareness programmes on medicinal plant cultivation was organized at Pothampatti and Nalluthevanpatti villages on 23.10.2020 and identified 30 medicinal plants, Perumalkovilpatti village on 18.12.2020 and Kunchanpatti village of Usilampatti block on 21.12.2020.

Success stories

Success story - 1

Paddy VGD 1 cultivation –A success story

Situation analysis / Problem statement

The farmers of Madurai district are finding it difficult to cultivate seeraga samba because of lodging problem and very low yield. The recently released variety, paddy VGD 1 is the suitable alternative for the existing variety. In order to popularize the new variety to meet out the farmers demand Krishi Vigyan Kendra, Madurai had taken up FLD on demonstration of paddy variety, VGD 1. Ten paddy farmers from Madurai east, Madurai west, Thirumangalam, Melur and Chellampatti blocks of Madurai district were selected and the variety VGD 1 was demonstrated with ICM. The variety is a scented one and has higher market price like seeraga samba and also lesser in duration with non lodging characters. Hence, by growing this new variety increase in productivity and market price will ensure additional income to the farmer can be achieved.

Plan, Implement and Support

Krishi Vigyan Kendra, Madurai laid out ten Front Line Demonstration on paddy variety VGD 1 at the farmers' fields in Madurai East, Madurai West, Thirumangalam, Melur and Chellampatti blocks of Madurai District during rabi *season* of the year 2019-20. The various aspects included in the FLD were introduction of new variety, integrated nutrient management, weed management, integrated pest management and harvesting. The detailed guidance regarding scientific cultivation practices of paddy variety VGD 1 were given to the farmers to increase the awareness of improved variety and to increase productivity of scented variety in paddy

Th. Ramasubramanian, one of the progressive farmers in Madurai West block, willingly laid out FLD on VGD 1 paddy cultivation and actively participated in training and other programmes conducted by KVK.

Output

The grain yield was 2100 kg per acre with all ICM practices. The benefit cost ratio was 1.86 which motivated the farmers for taking up VGD 1 cultivation in the ensuing samba season. Th. Ramasubramanian seeing the results of paddy VGD 1 variety is willing to take up additional acreage of VGD 1 in next Samba season as it had higher market price, lesser duration (130-135 days), non lodging besides higher yield.

Outcome

Results of the frontline demonstration had shown that the use of new variety, scientific cultivation practices resulted in higher productivity. A field day was organized in his farm and participants of field were showing interest in taking up the cultivation of paddy VGD 1 on observing that the new variety fetches more profit.

Success story – 2

Enhanced yield in Barn Yard Millet cultivation

Situation analysis or Problem Statement

Farmers of Madurai district are cultivating traditional varieties of barnyard millet with poor yield potential. 1 which was released during 2017 from Agricultural College and Research Institute, Madurai is a high yielding variety with whitish bold grains compared to the traditional varieties. To popularize MDU 1 Barnyard millet among the farmers of Madurai district, Front Line Demonstration was laid out in ten farmers' fields at Lekkadipatti (DFI village), Kottampatti block of Krishi Vigyan Kendra, Madurai during 2019-20. This variety is of 95-100 days duration which can withstand both the extremities, water stress waterlogging conditions.

Plan, Implement and Support

Front Line Demonstration on MDU1 Barnyard millet with integrated crop management practices were laid out at Lekkadipatti village of Kottampatti block during rabi season 2019-2020. Training on Integrated Crop Management practices was imparted to the farmers. Th.P. Ramasamy, one of the progressive farmers of Lekkadipatti village came forward and laid out FLD on Barnyard millet, MDU 1 and actively participated in the training programmes, method demonstrations and field days conducted by KVK.

Output

Th. Ramasamy took up one FLD on Barnyard millet, MDU 1 in one acre and adopted all the ICM practices. The crop stand was very much impressive and could get a grain yield of 7.4 qt. /acre as against 5.8 qt. /acre in the check. The yield increase was 27 per cent in the demo plot. The B:C ratio was 2.15 which encouraged other farmers to express their willingness to cultivate MDU 1 Barnyard millet in the coming years rather than going for traditional varieties with B:C ratio of 1.87.

Outcome

A field day was organized in the farmer's field to show the successful performance of Barnyard millet, MDU 1 to other farmers. Twenty five farmers and State Department Officials participated in the field day. The seeds of Barnyard millet, MDU 1 were distributed to the farmers of Madurai and Trichy Districts by the farmer.

Success story – 3

Suitability of Okra hybrids for small and medium farmers

Situation analysis/Problem statement:

The area under okra is around 400 acres in Madurai and grown throughout the year. Okra is grown in all the blocks of Madurai district which has a varied soil types and rainfall distribution pattern. Okra, certainly a remunerative crop to the farmers of Madurai district, however, it has high price fluctuations ranging from Rs. 5 to Rs 40 per kg depending upon the season and quality of the produce. The main factors contributing to the cost of cultivation are seeds (30%), fertilizer (20%), plant protection (20%), harvesting (20%) and marketing (10%). Except seeds and marketing of the produce, others are inevitable. If the seed cost and marketing share exceeds 25 per cent, it will directly reduce the net returns of the farmers. Okra is affected by nutrient deficiencies, pests and diseases, post harvest moisture loss which the farmers are not aware off and they mainly depend upon the seeds, fertilizer/ pesticide shops or market vendors which will certainly increase the cost of cultivation. The cost of

hybrid seeds is 2 fold as that of university varieties which directly reflect on the net returns and also the resistance to YVMV. Lack of awareness on selection of quality seeds and maturity index are the reasons for high cost of cultivation or less profit which have to be addressed.

A brief statement of the problem, in terms of number/area affected, productivity loss, quality decline, income reduction etc.

Seed cost is one of the major factors which increases the initial cost of production. On the other hand, germination percent also should be considered, since many of the farmers are facing this problem in Madurai district. And YVMV, the most destructive one, causing severe yellowing of plants and the pods. The incidences will certainly cause loss in yield up to 80% in fields where the incidence appear before flowering in okra. This loss may be due to whitefly incidence, alternate source of YVMV in the field, high relative humidity and alternate wet and dry pattern of the soil.

Plan, Implement and Support:

A basic survey was conducted with the help of Department of Horticulture, Kottampatti block and the scientists of KVK Madurai regarding the cultivation and production problems related to okra grown during summer season during *Rabi* 2019. Basic profiling of farming situation was taken for the 5 farmers field and the average is listed below.

Season	Farming situation (RF/Irrigate)	Soil type	Status of soil			Previous crop	Sowing date	Harvest date	Seasonal rainfall (mm)	No. of rainy days
			N	P	K					
<i>Rabi</i>	Irrigated	Red Loam	212.5	13.9	256.8	Brinjal	03.08.2019	10.11.19	360mm	18

The hybrids *viz.*, TNAU CO4 and Arka Nikita were provided to the formers in an off campus training conducted on ICM practices in okra by scientists of KVK. Among the assembled farmers, 5 poor and marginal farmers were selected for the on farm trial based on their wiliness to undertake the technologies was proposed by KVK. Large and progressive farmers also attended the programme and sought advice from KVK to improve the quality of okra. There were many production problems and one among them was YVMV which was much severe in the village *i.e.* Lekkadipatti of Kottampatti block throughout the year. The farmers' practice and KVK interventions for production of okra is as follows

S.No	Particulars	Farmer's practice	KVK advisory
1	Planting material	Private hybrids	University hybrids
2	Seed treatment	Nil	<i>Pseudomonas and Trichoderma viride</i> , @ 4g/kg
3	Seed rate	8 kg per ha	6 kg per ha
4	VAM application	No awareness	VAM applied @ 12.5 kg per ha
5	Soil application of <i>Trichoderma viridi</i>	No awareness	<i>Trichoderma viride</i> @2.5 kg per ha
6	Spacing	45 x15cm	45x30 cm
7	Fertilizer application	150 kg DAP, 50 kg	Based on soil health card (FYM

		Ammonium sulphate and 100 kg MOP per ha	25 t/ha, Neem cake @100 kg per ha <i>Azospirillum</i> 2 kg and <i>Phosphobacteria</i> 2 kg/ha, 10 kg Urea, 512 kg SSP & 50 kg MOP)
8	Micronutrient application	4% spray at 45 days after planting	IIHR Vegetable special @ 5g per lit at 30,45 and 60 th day after planting
9	IPM practices	1% Imidachlorprid @15 days interval; 5% neem oil, 5% fermented curd after the incidence of the pest/ disease	Neem oil 5%, Yellow sticky trap - 12 Nos. per ha; Light trap 1No/ha,
10	Harvesting (Rabi)	Alternate days	Alternate days
11	Post harvest	Packing in open field	Packing under shade

The critical inputs viz., seeds, and vegetable special were supplied to the farmers. Pamphlets on ICM practices for okra in vernacular language were provided to the farmers. Farmers with smart phones were advised to browse TNAU agritech portal which has bilingual format of okra cultivation practices.

Output:

After the final harvest the data were pooled from the five farmers field and presented in table 1.

Table 1. Performance indicators

Treatment s	Plant height (m)	Days to 50% flowering (Days After Transplanting)	Pod length (cm)	Pod diameter (cm)	Trichome s density/ cm ³	YVMV* incidenc e (%)	PM** incidenc e (%)
T1	1.90	33.00	13.50	1.56	31	30	40
T2 (CO4)	1.75	34.00	17.50	2.10	21	5	10
T3(Arka Nikita)	1.60	36.00	15.75	1.78	20	5	10
Mean							

*YVMV- Yellow vein mosaic virus

** PM- Powdery mildew

The height of the plant varied between 1.90 m (T1) to 1.60 m (T3). Similarly T1 (33 days) recorded earlier flowering as compared to T2 (34 days) and T3 (36 days), however, the differences were too low. The tender pod length was higher in T2 (17.50 cm) followed by T3 (15.75 cm) and low in T1 (13.50). Similar pattern was observed in pod diameter viz., T2(2.10cm), T3(1.78cm) and T1 (1.56cm). As commercial point, the trichome density is one

the prime characters to be observed in okra. The trichomes were sparse in T1 (21) and T2(20) as compared to T3(31). The major problem in okra is the incidence of LCV (market loss) and powdery mildew (Gross cost of cultivation). Both the T1 and T2 recorded negligible loss as compared to farmers practice which recorded 30% in LCV incidence and 40 % in powdery mildew incidence. Both these parameters had high impact over increase in gross expenditure.

Outcome:

Technology Option	No. of trials	Season of harvest	Yield (t/ha)	Net Returns* (Rs./ha)	BCR
T ₁ – Farmers hybrid (Sakthi)	5	December	19.50	1,95,000	2.54
T ₂ – TNAU CO 4		December	22.50	2,22,500	3.42
T ₃ - Arka Nikita		December	21.25	2,21,250	3.31

*Price per Kg: Average price Rs.10

The net returns per hectare was higher in T2 (Rs.2,22,500/ha), followed by T3 (Rs.2,21,250/ha) and lower in T1 (Rs.1,95,000). The percent increase of T2 over the T1 was 34.64%. The benefit cost ratio was higher in T2 and T3 *i.e* 3.42 and 3.31 respectively.

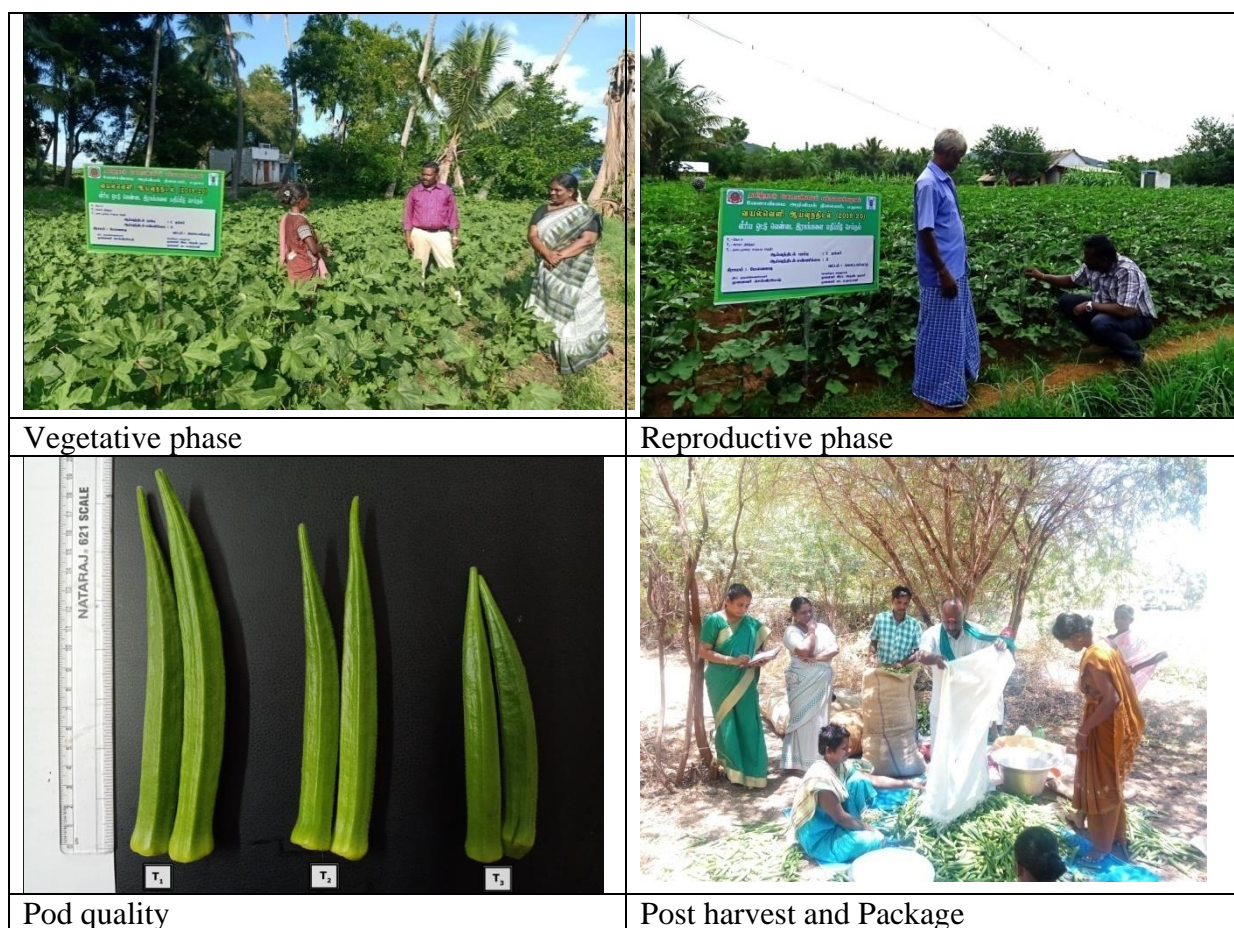
Impact:

The farmers were unaware of resistant varieties which is available at low cost in the universities, which lead to excessive input cost and also post planting pesticide spray. Seed treatment with *Trichoderma viride* @4g/ kg of bulb and incorporation of neem cake @ 50 kg/ha was found to be beneficial for the farmers to combat problems during initial growing phase. Foliar application of IIHR vegetable special also enhanced the visual quality both in vegetative and reproductive phase. Installation of IPM package *viz.*, yellow stick trap and light trap decreased the incidence of whitefly and borers curtailing unnecessary sprays. The farmers harvested part of the produce from 34th day and the maximum cost was only Rs.45 per kg. The harvest continued up to 104 days after sowing where the KVK interventions were implemented. The fruit length, colour and tenderness were exceptionally good as compared to the conventional practice. The cost per kg was also higher due to long green pods. Now the farmers are aware that, resistant varieties, IPM packages and IIHR vegetable special should be considered while planning for okra cultivation. The TNAU hybrid CO4 and Arka Nikita are promising hybrids for Madurai district as the incidence of YVMV was only 5%. The farmers were overwhelmed about the hybrids performance with low cost as compared to their regular private hybrids.

KVK scientists also advised the farmers' to keep the harvested produce under shade and pack it after removing field heat as it increased the excessive moisture loss initially in the field itself. Field heat is one the major cause for post harvest losses in many fruit and vegetables. the moisture loss directly impact the marketable quantity and hence the net profit.

KVK in co-ordination with the State Department of Horticulture and the FPO farmers at Kottampatti block visited the field during harvest and known the importance of ICM practices in Okra. The farmers assured to raise the crops next year with the lessons learned from the OFT farmers who were benefited during the current year and also spread the message to other onion growers of the block and their relatives in the district. The main

constrain faced by the farmers are availability of university hybrids in their vicinity. The farmers are planning to procure seeds in bulk through FPO with the help of KVK, Madurai from Department of Vegetable Crops, TNAU, Coimbatore to increase the area atleast by 50 acres during the ensuing year 2021.



Success story 4

A farmer succeeded FAW incidence through IPM

Situation analysis/Problem statement

The outbreak of *Spodoptera frugiperda* J.E Smith (Lepidoptera:Noctuidae) was noticed in Karnataka especially in Shivmooga district during 2018. Gradually it spread to other parts of country viz., Coimbatore, Namakal, Dindigul and other rest parts of Tamil Nadu. It feeds in large numbers on the leaves and stems of more than 80 plant species, causing major damage to economically important cultivated grasses such as maize, rice, sorghum, sugarcane, vegetable crops and cotton. It causes economic losses of about 15 -37%.

Maize is cultivated in an area of 14,000 ha in Madurai District. First incidence of FAW noticed at Thangalachery village, Thirumanagalam block in Madurai District on 21.08.2018. The farmer, Th. S. Palpandi S/o. M.Sivanandi, is a progressive maize farmer used to cultivate maize in an area of more than 10 acres annually. From the very first day of FAW incidence in his field, the farmer was very much cooperative in following the IPM module against FAW.

Plan, Implement and Support

The FAW incidence was observed in 15 days old crop. Neem oil was sprayed @ 3 % concentration. Th. Paulpandi, Tmt. Paulpandi and his two sons started collecting eggs and early instar larvae of FAW and destroyed regularly from their field as per the advice of KVK,

Madurai. In addition, causal labourers engaged for weeding also collected the eggs and early instar larvae. Hand collection and destruction helped them a lot which could arrest further spread and crop damage. The following technologies were immediately implemented in his field, Pheromone trap @ 4/acre and foliar sprays with Chlorantraniliprole 18.5 % SC @ 0.3 ml/l and Emamectin benzoate 5 SG @ 0.4 g/l at an interval of 15 days during 2018-19.

During the year 2019-20, an OFT with Neem cake @ 250kg/ha as basal, Fodder maize as border crop, Intercrop with green gram, Pheromone traps @ 4 / acre, Neem oil (5 ml/litre) @ 10 DAS,,First spray with *Metarhizium* @ 8 g/l @ 25 DAS, Second spray with spinetoram @ 0.5 ml/l @ 40 DAS, Poison bait application : 10 kg of rice bran +2kg Jaggery+2-3 liters of water +100 g thiodicarb was taken up in his field.

Output

Year	Plant Height (cm)	Single Cob weight (gm) Wet weight	Single Cob weight (gm) Dry weight	Grain yield (t/ha)
2018-2019	260.8	168.8	145	7.0
2019-2020	280.2	170.2	148	9.0

Economics

Year	Gross return	Gross cost	Net return	BCR
2018-2019	133000	52,000	81,000	2.6
2019-2020	171000	52,000	1,19,000	3.3

The FAW infestation was reduced to the tune of 6.2 per cent by following the above technologies. Maize yield of 7 t/ha was obtained by adopting all IPM during 2018-19 when all the maize growing farmers had experienced severe yield loss in view of FAW incidence. Implementation of IPM module during 2019-20 resulted reduction in egg mass (0.59 No. / plant), larval population (1.16 No./plan), leaf damage (4.1%), tassel damage (0.67 %) and cob damage (1.33 %). Maize crop was saved by the continuous monitoring and implementation of IPM by the KVK scientists in spite of severe infestation by FAW. The farmer was awarded a cash prize of Rs. 10,000 and Best farmer award during 2019-20 by the State Government.

Outcome

These technologies also spread to neighbouring villages, farmers from his villages and his neighbouring villages have now started to adopt the IPM technologies

Impact

The farmer is planning to bring additional five acres under maize in the current year. An income of Rs. 1, 00,000/season/year is accrued by the farmer through maize cultivation. By adopting the IPM technology, pesticide load was reduced besides reducing the cost of cultivation and increased profit. The farmer became the role model in his village for getting successful maize crop by overcoming FAW incidence.

Success story – 5

Post harvest handling made easier by Millet thresher

1. Situation analysis/Problem statement:

Mr. C. Sambath is a farmer cultivating barnyard millet in his field at Sambakulam village of Alanganallur Block. He faced difficulty in threshing of barnyard millet. He transported the barnyard millet from the field to threshing yard, where it is threshed by a tractor passed over the crop spread uniformly on the floor. It is estimated that harvesting and threshing of crops consume about one third of the total requirement of the production system. It has low output, higher grain damage and involved more drudgery to the farmers. Harvest and post harvest operations were the second most energy consuming operations for both rainfed and irrigated crops, since in traditional agriculture, more human power was used for these operations.

2. Plan, Implement and Support:

Keeping in view the problems of threshing of millets, KVK, Madurai introduced Millet thresher which was developed by the VPKAS, Almora to the Madurai District farmers. This machine can thresh as well as pearl grains of finger millet, barnyard millet, proso millet and foxtail millet. Threshing and pearling of finger millet are done simultaneously, whereas in case of foxtail millet, barnyard millet, and proso millet, threshing and pearling are done separately. In order to mechanize the processing of small millets, the machine works well with > 98% threshing efficiency and > 90% pearling efficiency. The machine has threshing capacity of 60-80 Kg and pearling capacity of 80-100 Kg grains of finger millet in one hour. The machine has similar threshing capacity for barnyard millet with dehusking capacity of 2.5-4.0 Kg grains per hour. Two models of these machines, electric thresher and engine operated thresher are available. These machines significantly reduce the work load and time for post harvest processing of small millets. This thresher has been well received by the cultivators as well as the development agencies.

3. Output:

He was very much interested to use millet thresher for threshing barnyard millet. He spent Rs. 5000/- exclusively to thresh barnyard millet. After using millet thresher he can save Rs. 3000/-. The threshing capacity of millet thresher was 25kg / hr, whereas manual threshing gives 8 kg / hr. The threshing capacity was also increased. The machine can be kept in the threshing yard. So he can save the transportation cost of the harvested barnyard millet to the roadside for manual threshing. The labour requirement for machine threshing (1 labour) was less when compared to manual threshing (5 labours). The germination percentage was also high in the machine threshed grain (97 %) than manual threshed grain (80 %). The impurities was also very less in the machine threshed grain than grain threshed manually.

4. Outcome:

Apart from him, more farmers are showing interest for using millet thresher to thresh barnyard millet.

5. Impact:

In view of high quality of the grain, good germination percentage and less expense he has decided to use this millet thresher for threshing barnyard millet in the upcoming years. The other farmers were also motivated by the threshing capacity of millet thresher. Hence, it can be concluded that KVK, Madurai is playing a vital role in disseminating the new technology and helps in increasing the returns. The technology transferred is also profitable and acceptable to the farming community.

Details of innovative methodology, innovative technology and transfer of Technology developed and used during the year by the KVK: -

Details of indigenous technology practiced by the farmers in the KVK operational area which can be considered for technology development (in detail with suitable photographs)

S. No.	Crop / Enterprise	ITK Practiced	Purpose of ITK
1.	Sorghum	Sowing sorghum seeds during Vaikasi- Ani (May-June)	To escape the shoot fly and stem borer attack
		Dusting ash at milking stage	Reduces the attack of earhead bug.
2.	Barn yard Millet	Sundrying the grains during full moon day	The rays are higher in new moon day and reduces the pest incidence during storage
3.	Kodomillet	Pungam leaves/ vasambu leaves/ neem leaves will be used	To prevent storage pest.
4.	Little millet	Vellacholam is planted in the bunds	To protect grazing by cows.
5.	Finger Millet	Planting Nochi and Erukku around the fields as a fence	To control ret

Impact of KVK activities (Not to be restricted for reporting period)

Name of specific technology/skill transferred	No. of participants	% of adoption	Change in income (Rs.)	
			Before (Rs./Unit)	After (Rs./Unit)
Demonstrated Pre rice Green manuring with salt tolerant variety Rice cv.TRY 3	55	6	11,650	23,986
Black gram VBN 8	235	80	11,900	22,920
Integrated Management of Smut in Sorghum (2015-16)	10	20	20,279	30,782
Bio-intensive management for shoot borer and fruit borer in brinjal (2016-17)	10	20	1,50,600	2,02,900

NB: Should be based on actual study, questionnaire/group discussion etc. with ex-participants.

Impact of five select technologies assessed/demonstrated / popularized by the KVK in the district (in QRT format)

S. No.	Name of Specific Technology/ Skill transferred	Source of Technology	No. of farmers	Extent (ha)	Increase in net return (Rs. / ha)	Economic impact/ benefit (Rs.)	KVK Intervention (OFTs/FLDs/ Trainings)	Convergence/ partners involved in upscaling of the technology	Remarks
1.	Direct seeding in Rice	TNAU	1170	468	7344	3436992	FLD	Farmers group: 40 ha KVK: ICM & weed management	Crop matures 7 – 10 days earlier; seed requirement reduced by 40 %
2.	Barnyard Millet (MDU 1) - An alternative to rice (2017-18)	TNAU	1118	447	15385	6877095	FLD conducted during 2017-2018 and 2018-2019.	Seeds distributed: 23 q KVK : SBGF Project-22 lakhs Farmers benefited: 600 Farmers clusters: 2 Nos. Two millet Processing units Entrepreneurs: 14	Yield 22 q/ha Higher market price Scope for value addition
3.	Rice CO51 (2014-15)	TNAU	14063	5625	7500	42187500	FLD conducted during 2014-2015 ICM & LCC based N recommended	DoA: Seed distributed -3742 q (2015 – 16 to 2018-19)	Yield : 61 – 65 q/ha High yielding, suitable alternative for

									<i>kharif.</i>
4.	Ecological engineering approaches against pests and diseases in Rice (2018-19)	TNAU	1215	486	12940	6288840		DOA : NFSM Pulses - Bund Crop subsidy (50 %) : 410 ha Light trap subsidy KVK : IPDM trainings, FFS & Joint diagnostic visit under ATMA	Reduction in leaf folder incidence (5.7%), dead heart (3.7 %), white ears (1.2 %) & reduced incidence of blast (8.8 PDI) & Sheath blight (12.6 PDI)
5.	PPFM against Terminal Drought in Rice (2014-15)	TNAU	8358	3343	6750	22565250	FLD conducted in 2014-15	DoA : Given on subsidy KVK : Trainings & Demonstrations Dept. of Agri. Microbiology : Production & supply	Crop can withstand moisture stress upto 10 days

Cases of large scale adoption / impact of specific technologies:

1. Tractor drawn seed drill for pulses

Pulses are cultivated in 9290 ha in Madurai District in which black gram (1225 ha) and Green gram (2738 ha) occupy an area of 3953 hectares. In pulse cultivation, delayed sowing and sub optimal plant population are observed as the major problems. In order to overcome these problems, tractor drawn seed drill was popularized among the farmers of Madurai District to enhance the productivity by maintaining optimum plant population and taking up timely sowing. Moreover, by using the tractor drawn seed drill the seed rate for pulses is reduced which results in reduction in cost of cultivation.

Krishi Vigyan Kendra, Madurai popularized the tractor drawn seed drill among the farmers of Madurai District in convergence with the State Department of Agriculture under Seed Hub scheme. A total area of 137 ha pulse sowing is covered in the KVK adopted villages.

Yield under normal sowing method (Check) is recorded as 7.1 quintols/ ha whereas the yield in pulses using tractor drawn seed drill (Demo) was recorded as 8.6 quintols/ ha. Hence, an additional yield of 1.5 quintols/ ha was recorded by using this tractor drawn seed drill with 21.13 percentage yield increase. A total amount of Rs.3500/ha - is reduced in the seed cost using this seed drill. Net return obtained through manual sowing of pulses was Rs 10925/ha where as it was Rs. 18075/ha in pulse sowing by tractor drawn seed drill with an additional net return of Rs.7150/ha. Benefit cost ratio recorded in check was 1:1.44 while B:C ratio in mechanized sowing of pulses was 1: 1.88.

Due to the advantages of mechanized pulse sowing, In Madurai District, tractor drawn seed drill sowing was adopted in 949 hectares in convergence with State Department of Agriculture.

2. Large scale adoption of Greengram CO8

Pulses are cultivated in 9290 ha in Madurai District in which Green gram occupy an area of 3953 hectares. Indeterminate growth of existing green gram varieties and higher picking cost were the major problems experienced by the farmers. Hence a new variety, CO8 was popularized among the farmers. Improved varieties were widely recognized as fundamental input for ensuring increased production and productivity. Hence this variety was popularized among the farmers.

During 2014-15, Krishi Vigyan Kendra, Madurai assessed the performance of this variety with Farmers', Practice (KM 2) and VBN3. And found that CO 8 matures 10 – 15 days earlier to VBN 3 and uniformly facilitating mechanical harvest. In addition this variety CO8

variety was popularized among the farmers through CFLD and Seed Hub scheme. The area spread through convergence along with Dept of Agriculture was 2492 ha. From 2016-17 to till now more than 168 q were distributed through seed hub scheme. In Madurai District, during 2020-21, more than 90 percent of the farmers were used this variety for sowing.

Productivity (in q/ha) in demo was 7.84, where as in check it was 6.5. Hence, an additional yield of 1.34 q/ ha was recorded by this variety, thereby per cent increase in yield over check was 21. Additional Net Returns in demo was Rs. 8000/-.

The improved variety was preferred for high yield, increased germination capacity which imparts uniform plant population and least pest and disease incidence, synchronous maturity which paves way for mechanical harvest thereby reducing the labour charge and cost of cultivation.

Details of impact analysis of KVK activities carried out during the reporting period

Selvarani,G, K. Anandhi and ChelviRamesh.2020. Impact of MDU 1 Barnyard Millet training programme imparted by Krishi Vigyan Kendra in Madurai District. International Journal of Agricultural Sciences. ISSN: 0975- 3710 & E-ISSN: 0975-9107, Volume 12, Issue 1: 9400-9401.

Linkages

Functional linkage with different organizations

Name of organizations	Nature of linkage	Outcome
ISHS, Belgium	Conducted different scientific sessions regarding the research and extension activities on Under Utilized Plant Species (ISUPS)	Released the souvenir and Acta Horticulturae. The farmers and scientists were benefitted by IPR activities.
State Planning Commission, Government of Tamil Nadu	Improved production technology and value addition in Millet crops	Introduction of high yielding varieties of Sorghum, Pearl Millet an Barnyard Millet; Establishment of millet processing units and Entrepreneurship development
Power Grid Corporation of India Limited	Vocational training on Integrated Farming System was imparted to fifty farmers from Kinnimangalam and Mavilipatti of Thirumangalam block where the Power Grid is located	The farmers get acquainted with the different components of IFS for getting regular income besides attaining environmental sustainability

National Cooperative Sugar Mill, Alanganallur, Madurai	NADP sponsored Sustainable Sugarcane Initiative trainings were imparted to Cane Officers and sugarcane farmers	Area under SSI increased to the tune of 20 per cent; Shae nets established in farmers' fields for raising portray nursery
Confederation of Indian Industry (CII), India	KVK recommended the farmer to grow Banana with improved cultivation technologies	25 % of yield increase was noticed in the farmers field and Adaptation of latest technology by the farmers has increased
Dept. of Agriculture	Sustainable sugarcane initiative in Sugarcane and System Rice Intensification in rice	Sugarcane and rice area has been increased 20 per cent
	Sustainable crop production technologies in major agricultural and horticultural crops	The ATMs, BTMs, SMSs and farmers were benefitted
	Improved production technologies and training programmes on Oilseeds were conducted for ATMA farmers	Farmers from Madurai district were benefitted
	Seed drill sowing and newer variety resistant to YMV and ICM package	Pulse area under high yielding YMV resistant variety has been increased for 35 %
Dept. of Horticulture	Awareness and knowledge has been imparted as well as skill developed on improved vegetable cultivation	Area has been increased under improved vegetable cultivation
	Recent technologies viz, drip irrigation, crop production, soil health management and precise utilization of critical inputs has been given to the farmers	Area under cultivating vegetable crops under precision farming has increased.
Agricultural Engineering Department	Awareness were created to renovate the community tank and creation of farm ponds	Soil and water conservation through rain water harvest and vettiver cultivation was commenced
Dept. of Animal Husbandry	Demonstration on mixed fodder production, Azolla cultivation, silage making, milking methods and prophylactic measures on mastitis	Additional milk yield of 0.50 - 1 % has been achieved in cross bred cows SNF and Fat percentage of cross bred cow has been improved and fetched an additional income of Rs.3 – 5 / li /day / animal
Department of Seed Certification	Imparting training to Seed Certification officials and farmers	No.of seed growers increased to the tune of 20 per cent

Department of Agricultural Marketing	Imparting training on Collective Farming, Creating awareness on the facilities available with Agricultural Marketing	Fair price realized by the farmers besides avoiding middlemen, safe storage of farm produce & availing loans, arrangement of gunnies Registration of FIGs, Commodity Groups & FPOs
Department of Sericulture	Creation of awareness on the schemes related to mulberry cultivation, silk worm rearing, Farm advisory services	Sericulture is getting extended in Kallikudi an Thirumangalam blocks
Department of Forestry	Training on vermicomposting, bee keeping and prevention of wildlife into the farmlands were imparted	Vermicomposting using low cost silpaulin vermibag started by VFC members at Thettur of Vaippatti block
Irrigation Management Training Centre, Vinayapuram	Farmers from all the 31 districts of Tamil Nadu use to visit KVK	Farmers gained knowledge through various demo units established at KVK farm besides attending trainings pertinent to their respective districts
Irrigation Management Training Institute, Trichy	Imparting trainings on irrigation management, micro irrigation, rain water harvesting and IFS	Farmers gained knowledge through various demo units established at KVK farm besides attending trainings pertinent to irrigation management
PWD Staff Training Institute, Madurai	Imparting training on water requirement of crops, irrigation efficiencies an duty of water	PWD staff members get exposure on basic aspects of crop water requirement an increasing the irrigation water use efficiency
District Rural Development Agency	Krishi Kalyan Karyasala was organized on 2.5.18 in all blocks and the activities of KVK were explained to the farmers, exhibitions were arranged	Outreach of KVK activities in major revenue villages in collaboration with all the line departments
IIPR, Kanpur	The farmers were exposed to the essentials of seed production viz., source of seeds, seed treatment, crop husbandry practices with special reference to crop nutrition, management of pest and diseases, seed registration, farm inspection, rouging, harvesting, processing and storage	Seed Processing unit cum storage go own established; 100 – 120 farmers were roped in the seed production; Farmers got familiarity with the latest high yielding varieties of Black gram, VBN 6, VBN 8, MDU 1, KKM,1 and green variety CO 8; The profit in seed production was 50 – 60 per cent higher than that of production of grains offering space for their livelihood enhancement

IIHR, Bangalore	Conducted FLD, OFT in farmers' field of Madurai District.	Farmers got awareness regarding recent varieties and yield potential of vegetable crops. Area has been increased 12%.
NRCB, Trichy	Demonstration at farmers field	Awareness has been created micronutrients used for banana crop. Farmers has witnessed the yield increase by using micronutrients
CICR, Coimbatore	Demonstration at farmers field for controlling the pest and diseases	Farmers were aware regarding organically pest and disease control measures
CPCRI, Kasaragod	Demonstration of coconut based food products and neera preparation	Farmers has known the value of Neera and coconut based products
IFGTB, Coimbatore	Knowledge and skill developed on bamboo seedling production	Farmers has been taught over the bamboo seedling production in an entrepreneurial mode
KAU, Kerala	Demonstration at farmers field	Farmers has witnessed using of pith plus for decomposition of coirpith. The nutrient value of composted coirpith also increased.
Tamil Nadu Open University	Lectures are delivered to farmers and rural youth	Farmers and youths gained the knowledge on bee keeping, mushroom production, Coconut crop production and food processing techniques.

NB The nature of linkage should be indicated in terms of joint diagnostic survey, joint implementation, participation in meeting, contribution received for infrastructural development, conducting training programmes and demonstration or any other

List of special programmes undertaken by the KVK and operational now, which have been financed by State Govt. / Other Agencies:

Name of the scheme	Date / Month of initiation	Funding agency	Amount (Rs.)
Disaster Management planning and awareness on drought mitigation measures	10.09.2020	Government of Tamil Nadu	21340
Swachth Hi Sewa	16.12.202 to 31.12.2020	ATARI, Hyderabad	28100

Important Visitors to KVKs during 2020 (with photographs)

S. No.	Date	Venue	Name of the visitor for KVK	Name of the programme
1.	21.1.2020	KVK, Madurai	Dr. Geetha Director of CPBG TNAU, Coimbatore	Visit to LSD of newly released varieties, Rice VGD 1, ADT 53, Green gram VBN 4, Samai ATL 1, Crop cafeteria
2.	27.01.2020	KVK, Madurai	Dr.N.Kumar, Vice- Chancellor, TNAU, Coimbatore	Visit to LSD of newly released varieties, Rice VGD 1, ADT 53, Demo plots of Green gram VBN 4, Samai ATL 1 under Agroforestry system, Crop cafeteria, Irrigation cafeteria & Nutrigarden
3.	04.02.2020	KVK, Madurai	Dr. N. Manivannan, Prof and Head, NPRC, Vamban	Visit to pulses cafeteria
4.	21.2.2020	KVK, Madurai	Dr. M.Jawaharlal, DEE, TNAU, Coimbatore	XI SAC Member
5.			Dr. A. Bhaskaran, Principal Scientist, ATARI, Hyderabad	XI SAC Member
6.			Dr. A.S.Krishnamoorthy, Registrar, TNAU, Coimbatore	Special guest for XI SAC
7.			Dr. M. Ananthan, Director (ODL), TNAU, Coimbatore	Guest for XI SAC meeting
8.			Dr. V.K.Paulpandi, AC & RI, TNAU, Coimbatore	XI SAC Member
9.			Dr.S.Amutha, CSC & RI, TNAU, Coimbatore	XI SAC Member
10.			31.07.2020	KVK Orchard
11.	10.09.2020	KVK, Madurai	Th.R. B. Udhyakumar, Honorable Minister for Revenue, Disaster Management and Information technology	One day training programme on “Capacity building of farmers and Village Level functionaries for Disaster Management planning and awareness on drought mitigation measures”

			Dr.T.G. Vinay, District Collector, Madurai Thiru. K. Manickam Honorable Member of Lokshaba, Cholavandan	
12.	27.11.2020	KVK, Madurai	Dr. M. Jawaharlal, Director of Extension Education, TNAU, Coimbatore DEE, TNAU, Coimbatore Dr. S. Amutha Dean, CSC &RI, Madurai Th. T. Vivekanandhan Joint Director of Agriculture, Madurai Mrs. K. Revathi Deputy Director of Horticulture, Madurai Dr. P.S. Harikrishnaraj DDM, NABARD Th. K. Arivalagan Lead bank Manager, Canara bank, Madurai Er. M. Velpari Assistant Engineer, Madurai Tmt. C. Varalakshmi PA to Collector (Noon Meal Scheme)	12 th Scientific Advisory Committee meeting

PHOTOS

Photos on performance of technologies in OFTs and FLDs, Trainings, Extension Programmes, Other Extension Activities, Important Visitors, Awards and Recognitions (KVK, Staff, Farmers) *etc.*

Jpeg/png format with good resolution for printing (300 dpi, RGB/CMYK)

Title must have the KVK Name, activity (OFT/Training/Visitor/award *etc.*) and short description