

# *Annual report 2016-17*



**ICAR-Krishi Vigyan Kendra**  
**ICAR-Indian Institute of Spices Research**  
Peruvannamuzhi, Kozhikode - 673528, Kerala



**PROFORMA FOR ANNUAL REPORT 2016-17**

**(FOR THE PERIOD FROM APRIL 2016 TO MARCH 2017)**

**ICAR - KRISHI VIGYAN KENDRA, IISR, KOZHIKODE**

**PART I – GENERAL INFORMATION ABOUT THE KVK**

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

KVK Address	Telephone		E mail	Web Address
	Office	Fax		
ICAR-Krishi Vigyan Kendra, ICAR- Indian Institute of Spices Research, Peruvannamuzhi (P.O), Kozhikode, Kerala Pin-673 528	0496-2666041	0091-496-2666041	kvk@spices.res.in kvkcalicut@gmail.com	www.kvkcalicut.gov.in

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

Address	Telephone		E mail	Web Address
	Office	Fax		
ICAR-Indian Institute of Spices Research, Post Bag No.1701, Marikunnu (P.O.) Kozhikode-673 012, Kerala.	0495- 2731410	0091-495- 2731187	<a href="mailto:mail@spices.res.in">mail@spices.res.in</a>	www.spices.res.in

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

Name	Telephone / Contact		
	Residence	Mobile	Email
P. Ratha Krishnan	0496-2249099	9468816159	rathakrishnan@spices.res.in

**1.4. Year of sanction: 1992**

**1.5. Staff Position (as on 31<sup>st</sup> March 2017)**

Sl.No.	Sanctioned post	Name of the incumbent	Designation	M/F	Discipline	Highest Qn. (for PC, SMS and Prog. Asst.)	Pay scale	Basic Pay	Date of joining KVK	Per. / Temp.	Category (SC/S/Others)
1.	Programme Coordinator	P Ratha Krishnan	Programme Coordinator	M	Forestry	Ph.D in Forestry	37400-67000+9000	49240	19.08.15	Per.	OBC
2.	Subject Matter Specialist	P.S. Manoj	Subject Matter Specialist	M	Horticulture	Ph.D in Horticulture	15600-39100+7600	39680	30.05.94	Per.	OBC
3.	Subject Matter Specialist	K.M. Prakash *	Subject Matter Specialist	M	Agronomy	PG in Agrl. Science	15600-39100 + 7600	36160	10.12.96	Per.	Others
4.	Subject Matter Specialist	S. Shanmugavel	Subject Matter Specialist	M	Animal Husbandry	PG in Vet. Science	15600-39100 + 7600	38380	03.08.95	Per.	SC
5.	Subject Matter Specialist	A. Deepthi	Subject Matter Specialist	F	Home Science	PG in Home Science	15600-39100 + 5400	22280	08.03.10	Per.	SC
6.	Subject Matter Specialist	B. Pradeep	Subject Matter Specialist	M	Fisheries	Ph.D in Fisheries	15600-39100 + 5400	22280	30.03.10	Per.	Others
7.	Subject Matter Specialist	Aiswariya K.K.	Subject Matter Specialist	F	Plant Protection	Ph.D in Agrl. Science	15600-39100 + 5400	22280	26.04.10	Per.	OBC
8.	Programme Assistant (Lab Technician)	MariyaDainy M S	Programme Assistant	F	Soil Science	PG in Agrl Science	9300-34800 +4200	13500	30.06.14	Per.	OBC
9.	Programme Assistant (Computer)	C.K. Jayakumar	Programme Assistant	M	-	P G in Computer Science	5200-20200+2800	12060	01.02.10	Per.	Others

10	Farm Manager	Vacant	Programme Assistant	-	-	-	-	-	-	-	-
11	Accountant/ Superintendent (Assistant)	Vacant	Accountant/ Superintendent (Assistant)	M	-	-	9300-34800+4200	-	-	-	-
12	Stenographer Gr.III	K. Faisal	Stenographer Gr.III	M	-	-	9300-34800+4200	18000	01.04.02	Per.	OBC
13	Driver-cum-Mechanic	T.C. Prasad	Driver-cum-Mechanic	M	-	-	5200-20200+2800	16030	17.05.93	Per.	Others
14	Driver	P. Prakash**	Driver	M	-	-	5200-20200+2800	11400	27.06.02	Per.	Others
15	Skilled Supporting staff	C.V. Ravindran	Skilled Supporting staff	M	-	-	4440-7440+1400	10570	01.07.93	Per.	SC
16	Skilled Supporting staff	C. Ravindran	Skilled Supporting staff	M	-	-	4440-7440+1400	10100	10.11.94	Per.	SC

\* On study leave (Ph.D)

\*\* Mr. P. Prakash posted in IISR, Kozhikode

#### 1.6. Total land with KVK (in ha) :20.3ha

S. No.	Item	Area (ha)
1	Under Buildings	0.60
2.	Under Demonstration Units	3.60
3.	Under Crops	0.25
4.	Plantation crops	3.25
5.	Under road, tree stands, newly developed vegetable cultivation area	4.80
6	Others including natural forest stand	7.80

#### 1.7. Infrastructural Development:

##### A) Buildings

SL. No.	Name of building	Source of funding	Stage					
			Complete			Incomplete		
			Completion Date	Plinth area (Sq.m)	Expenditure (Rs. in lakhs)	Starting Date	Plinth area (Sq.m)	Status of construction
1	Administrative Building	ICAR	4.12.98	552	46.44	-	-	-
2	Farmers Hostel	ICAR	4.12.98	466	39.44	-	-	-
3	Staff Quarters	-	-	-	-	-	-	-
4	Old KVK office building (Farm office)	ICAR	16.1.96	360 sq. ft.	1.83	-	-	-
5	Demonstration Units					-	-	-
	1. (Old Animal Clinic) – Mushroom unit *	ICAR SHM	16.1.96 (7.3.09)	358.31 358.31	1.00 0.84	-	-	-
	2.Poultry	ICAR	20.9.03	43.8	0.84	-	-	-
	3.Dairy	ICAR	25.10.06	39.32	1.83	-	-	-
	4.Vermiculture	ICAR	3.1.08	9.00	0.11	-	-	-

6	Rainwater harvesting system	ICAR	21.09.2013	2000m <sup>3</sup>	9.62	-	-	-
7	Nursery with shed and fencing	ICAR	16.1.96	500.0	0.50	-	-	-
8	Shade house- Anthurium	ICAR	25.3.09	144.0	1.21	-	-	-
9	Goatary	ICAR	31.3.09	64.0	2.78	-	-	-
10	Training shed	SHM	25.11.08	90.0	2.69	-	-	-
11	Temporary vehicle shelter	ICAR	18.6.04	35.0	0.48	-	-	-
12	Water tank	ICAR	2.2.99	10,000	0.22	-	-	-
13	Pond with pump, storage tank etc.	ICAR	31.3.08	15X13M	8.44	-	-	-
14.	Bore well	ICAR	2013	90 m depth	0.25	-	-	-
15.	Water tank	ICAR	02.02.1999	10000	0.22	-	-	-
16	Hatchery shed	ICAR	04.01.2014	680	2.00	-	-	-
17.	Black pepper polyhouse nursery	ICAR	31.3.2015	200 m2	3.96	-	-	-
18.	Entrance with arch	ICAR	31.3.2017	4.5m height x 6m width	0.995	-	-	-

### B) Vehicles

Type of vehicle	Year of purchase	Cost (Rs.)	Total kms. Run	Present status
Motor cycle Suzuki	2009	49,980	32515	Good
Mini bus DCM Toyota	1995	5,22,670	198328	Working with high maintenance cost
TATA Sumo Jeep	2004	4,98,642	224991	Working with high maintenance cost, condemnation in progress
Power Tiller	2012	1,50,000	-	Good

### C) Equipments & AV aids

Nature of the equipment	Year of purchase	Cost (Rs.)	Present Status
TV	1996	25800	Not working
VCP	1996	10850	Not working
Kettle	1996	1375	Good
Sewing machine (2 nos.)	1996	4800	“
1.5 HP pump	1997	8100	“
Grafting machine	1998	4950	“
Public address system	1999	30656	“
Water cooler	1999	13000	Not working
Water purifier	1999	2745	“
3.5 Hand compression sprayer	1999	1200	“
UPS (1 KVA)	2002	17250	Good
Refrigerator	2002	21308	“
7.5 KVA Generator	2003	56,950	Good
Computer with accessories	2003	61,175	“

Scanner	2003	13,400	“
Overhead projector	2004	32,095	“
Pressure cooker (22 l)	2004	3,047	“
LCD Projector	2004	73,210	“
Electronic physical balance	2005	6160	“
Chemical balance	2005	42162	“
PH meter	2005	14388	“
Video camera	2005	19,000	“
Oven	2005	15476	“
Water distillation still	2005	41340	“
Digestion and distillation system	2005	1,30,802	“
Hot plate	2005	4,120	“
Spectrophotometer	2005	55,230	“
Shaker	2005	48,038	“
Conductivity meter	2005	14,960	“
Flame photometer	2005	37,026	“
Refrigerator	2005	16,890	“
Grinder	2005	1,950	“
Fax machine	2006	7,500	“
PABX	2006	31,985	“
Digital Camera	2007	10,580	“
DLP Projector	2007	54,563	Not working
Computer	2007	37,600	“
DTH System with accessories	2007	4,165	“
Iron Box	2007	830	“
UPS	2008	27060	“
Stabilizer	2008	10920	“
Laser fax	2009	14378	“
Printer	2009	5386	“
Digital camera	2009	14890	“
UPS	2009	6500	“
Weed Cutter	2010	34930	“
Chaff Cutter	2010	23800	“
Generator	2010	100000	“
Air conditioner 2 ton	2011	34000	“
Stabilizer 5 KVA	2011	2900	“
Computer – 2 nos.	2012	65000	“
Power Tiller	2012	150000	“
PABX system	2012	50000	“
Double distillation unit	2012	63250	“
Electronic balance	2012	6800	“
Horizontal autoclave	2012	278615	“
BOD Incubator	2012	62790	“
Motorized Sieve	2012	44737	“
Laminar air flow	2012	45070	“
Inkjet printer	2012	8,900	“
Water treatment plant	2013	59800	“
3KVA UPS	2013	27000	“
laptop	2013	54530	“
Mridaparikshak	2016	89775	“
Pulveriser	2016	40671	“
LED TV 43”	2017	48500	“
Desktop Computers (7 nos)	2017	194250	“
LCD Projector	2017	36000	“

Photostat Machine	2017	54500	“
All in one inkjet printer	2017	11800	“
Solar drier	2017	34000	“
Mridaparishak	2017	90300	“

### 1.8. Details SAC meeting conducted in 2016-17

Sl.No.	Date	Number of Participants	No.of absentees	Salient Recommendations	Action taken
1.	27-01-2017	27	23	Suitable technologies identified by nearby research institutions may be taken up for easy and speedy demonstrations. The technologies of RARS, Pattambi may be popularised due to the iso-climatic situation between Pattambi and Kozhikode district.	-
				Ginger seed production may be popularised using gunny bag cultivation technology to produce disease free planting material.	FLD 2017-18 proposed
				Other than regular FLD, one FLD which showed good result may be proposed to implement in relatively larger area during 2017-18.	Banana micronutrient mixture application – AYAR identified for larg scale demo.
				List of progressive farmers (in major crops) may be uploaded in KVK website.	Uploaded
				The possibility of demonstrating aquaponics system of Fish- Crop production model may be explored.	In progress
				Since KVK, Kozhikode has the strength of <i>Vertineary</i> interventions and staff, a workshop for extension functionaries may be organised in Animal Science.	Training programme organized
				The activities of FLD, OFT and trainings may be carried with the due consultation and involvement of Scientists / experts especially from IISR, Calicut	In progress
				Emphasis may be given for training programmes on value addition, secondary agriculture and skill development.	-
				Proposal on long duration trainings viz., Gardeners training and other programmes like organic production of spices may be submitted for funding from State Horticulture Mission.	Proposal submitted to SHM. Accreditation from ASCI obtained.
				Programme on urban horticulture like “Terrace gardening” may be included for execution through apartment /housing associations / groups.	OFT -2017-18 proposed
				Trainings and demonstration on improved agricultural activities may be conducted for groups / societies for its large scale adoption	Is followed
				Ensure production and supply of quality and suitable varieties of planting materials for distribution to farmers.	Is followed

## PART II - DETAILS OF DISTRICT

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

S. No	Farming system/enterprise
1	Homestead based farming system with coconut as the main crop. Intercrops cultivated are spices, fruits, vegetables and other plantation crops. Most homesteads also have other enterprises like poultry and dairy in small scales. Many farmers also practice goat rearing, pisciculture, piggery etc. Coconut based value added products by individuals and societies is the major enterprise activity

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

S. No	Agro-climatic Zone	Characteristics
1	West coast Plains & Ghats Zone (12)	This region extends over the Malabar and Konkan coasts and the Sahyadris and is covered by laterite and coastal alluvials. This is a humid region with annual rainfall above 200 cm and average temperatures of 26°C-32°C in July and 19°C-28°C in January. Rice, coconut, oilseeds, sugarcane, millets, pulses and cotton are the main crops. The region is also famous for plantation crops and spices which are raised along the hill slopes of the Ghats.

(Based on Planning Commission classification of the country into 15 zones.)

1.	Northern Mid lands V	Altitude: upto 500 m above MSL-hot humid tropical Rainfall: Poorly distributed rainfall; south west monsoon with peak in July and spread over to 3-4 months. North-east monsoon relatively weak. Topography model: Valleys less extensive hills with moderate gradients and top with egg shaped hump, steep slopes.
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(Based on NARP zoning by KAU)

S. No	Agro ecological situation	Characteristics
1.	Northern Mid lands V	Altitude: upto 500 m above (Low altitude zone-hot humid tropics, spread over the entire state) Rainfall: Poorly distributed rainfall; south west monsoon with July maximum and concentrated in 3-4 months. Northeast monsoon relatively weak (North of 11 <sup>0</sup> N Latitude). Soil type: Laterite soil with well defined B horizon (Natural midlands) Topography: Valleys less extensive hills with moderate gradients and top with egg shaped hump, steep slopes.

### 2.3 Soil type/s

S. No	Soil type	Characteristics	Area in ha
1.	Laterite	All these soils are acidic with low water holding capacity and are poor in NPK and organic matter content. The laterite soil is generally suitable for most of the dry land crops. It is mainly cultivated with coconut, arecanut, banana, tapioca, pepper, vegetables, fruit crops etc. Liming is required for correcting soil acidity.	2,09,996

### 2.4. Area, Production and Productivity of major crops cultivated in the district

S. No	Crop	Area (ha)	Production (Tonnes)	Productivity (kg/ha)
1.	Coconut	124819	852 million nuts	6672 nos/ha



2.	Palmyra	149	NA	NA
3.	Rubber	21425	30800	NA
4.	Arecanut	10247	11177	1069
5.	Cocoa	630	386	586
6.	Cashew	2179	NA	305
7.	Paddy	3511	6575	1464
8.	Pulses	33	13	NA
9.	Jack	10011	20 million nuts	1913
10.	Mango	8262	27776	NA
11.	Banana	1700	12477	8139
12.	Pineapple	144	1042	NA
13.	Papaya	1764	7001	NA
14.	Other fresh fruits	532		NA
15.	Tapioca	1824	40117	21732
16.	Elephant foot yam	220	NA	NA
17.	Colocasia	447	NA	NA
18.	Yam	28	NA	NA
19.	Sweet potato	14	2250	NA
20.	Other tubers	61	NA	NA
21.	Drumstick	1440	427	NA
22.	Amaranthus	117	NA	NA
23.	Bitter gourd	62	NA	NA
24.	Snake gourd	22	NA	NA
25.	Bhendi	24	NA	NA
26.	Brinjal	10	NA	NA
27.	Ash gourd	46	NA	NA
28.	Pumpkin	50	NA	NA
29.	Cucumber	85	NA	NA
30.	Chillies green	107	107	NA
31.	Other vegetables	223	NA	NA
32.	Pepper	3332	615	180
33.	Betel	9	651	NA
34.	Ginger	62	246	NA
35.	Turmeric	328	732	NA
36.	Cardamom	220	NA	NA
37.	Tamarind	835	535	NA
38.	Vanilla	7	NA	NA
39.	Cloves	34	2	NA
40.	Nutmeg	391	143	NA
41.	Cinnamon	23	NA	NA
42.	Fodder	64	NA	NA
43.	Lemon grass	2	NA	NA
44.	Medicinal plants	58	NA	NA

Source: Farm Information Bureau, Dept. of Agriculture, Govt. of Kerala, 2016.

NA- Not available

## 2.5. Weather data

Months	Precipitation		Temperature (°C)		Relative Humidity (%)	
	Total Rainfall (mm)	Rainy days	Max. (Mean)	Min. (Mean)	Max. (Mean)	Min. (Mean)
April-2016	3	1	37.73	25.58	79.26	53.66
May	284.4	17	35.06	23.04	90.35	63.03
June	930.6	28	29.4	22.91	94.8	86
July	830.2	26	29.43	23.45	95.61	86.51

August	438.4	23	29.82	24.17	95.48	78.93
September	280.4	18	30.46	23.55	93.63	71.33
October	64.4	5	32.27	23.24	92.51	63.93
November	42	3	33.80	22.88	91.66	51.96
December	20	2	34.0	21.12	91.90	44.41

\* IISR, Expl. Farm, P.Muzhi.

## 2.6. Production and productivity of livestock, Poultry, Fisheries etc. in the district

Category	Population	Production	Productivity
<b>Cattle</b>			
<i>Crossbred</i>	100573	217ML	13 litre
<i>Indigenous</i>	62831	41.6ML	4 litre
<b>Buffalo</b>	1185	2.26ML	11 litre
<b>Sheep</b>			
<i>Crossbred</i>			
<i>Indigenous</i>			
<b>Goats</b>	51824	1036 tons	25 kg
<b>Pigs</b>			
<i>Crossbred</i>	2318	289.7 ton	125 kg
<i>Indigenous</i>			
<b>Rabbits</b>	5278	13.2 ton	2.5 kg
<b>Poultry</b>			
Hens	566103		
<i>Desi</i>	169831	11.88 M eggs.	70
<i>Improved</i>	396272	103 M Eggs	260
Ducks	12057	0.96 M eggs	80
Turkey and others	30925	278 tons kg	9 kg.

Source: Department of Animal Husbandry, Kerala, 2003.

Category	Area	Production	Productivity
Fish	317.97 ha*	268.911 tonnes*	845.7 Kg/ha
<i>Marine</i>	71 Km*	9221 tonnes **	
<i>Inland</i>	3800 ha*	2210 tonnes**	
Prawn			
Scampi			
Shrimp	46.46 ha**	50.37 tonnes**	1 ton/ha**

\* Panfish book, District Fisheries Resource data – Kozhikode district, 2011 of Fisheries Department.

\*\* Success story of “Matsyakeralam” , 2009 of Fisheries Department.

## 2.7 District profile has been Updated for 2016-17: Yes

### 2.8 Details of Operational area / Villages

Sl.No	Taluk	Name of the block	Name of the village	How long the village is covered under operational area of the KVK (specify the years)	Major crops & enterprises	Major problem identified	Identified Thrust Areas
1	Quilandy	Balusseri	Naduvannur, Ulliyeri	1 year	Coconut, banana, vegetables	Low productivity of nendran banana, Low production of vegetables	Improving yield of fruits by INM, Improving production of vegetables by cultivation of high yielding varieties, Improving yield of fruits by High Density Planting

2	Quilandy, Thamarasery	Balusserly, Perambra, Koduvally	Unnikulam, Thiruvambadi, Changaroth, Koothali	2 years	Coconut, arecanut, black pepper, banana, vegetables	Severe incidence of <i>Phytophthora</i> foot rot of black pepper	Growing of disease resistant grafted plants
3	All taluks	All blocks	Different panchayaths	--	All horticultural crops	Unavailability of quality planting materials, Lack of knowledge about scientific cultivation practises	Quality planting material production, Improving production of horticultural crops
4	Quilandy	Balusserly	Naduvannur	1 year	Black pepper	Non availability of planting material and lesser preference of planting black pepper in coconut stands	Column method of planting material production, planting of cuttings produced from top shoots
5	Quilandy	Balusserly	Naduvannur	1 year	Thippali	Lack of knowledge on thippali cultivation	Introduction of thippali in coconut and arecanut gardens
6	Koyilandy	Balusserly	Ulliyeri	1 year	Banana	Severe incidence of Sigatoka leaf spot disease in banana	Disease management in banana
7	Koyilandy	Balusserly	Ulliyeri	1 year	Banana	Severe attack of pseudo stem weevil	Pest management in banana using biological method
8	Koyilandy	Perambra	Cheruvannur	3 years	Coconut	Low yield and death of palms due to Tanjore wilt of coconut	Integrated disease management in coconut
9	Quilandy	Balusserly	Naduvannur, Ulliyeri	1 year	Dairy farming under homestead conditions	Low milk yield, infertility, long intercalving interval	Breeding and feeding management in dairy cattle
10	Quilandy	Balusserly	Naduvannur, Ulliyeri	1 year	Backyard poultry rearing under homestead along with other livestock	Low egg laying performance, mortality, feather pecking etc.	Feeding and laying performance in layer chicks
11	Quilandy	Balusherry	Ulleyeri	2 years	Fish and Shrimps farming	Lack of knowledge of candidate species for brackishwater fish culture. Non availability of quality seed for fish culture.	Fisheries-Brackishwater aquaculture
12	Quilandy	Balusherry	Ulleyeri Naduvannur	1 year	Fish – Indian Major Carps	Poor growth and FCR for handmade feed. Leaching of feed and excess algal bloom formation .Increase in cost of rice bran and oil cake resulting in lower income for fish farmers	Fisheries-Freshwater aquaculture
13	Koilandy	Balusserly	Ulliyeri& Naduvannur	2016-17	Banana	1.Rapid perishability. 2.Unavailability of suitable technology for processing of ripe banana	Value addition

## 2.9 Priority thrust areas

S. No	Thrust area
1	Improving yield of fruits by INM
2	Improving production of vegetables by cultivation of high yielding varieties
3	Improving yield of fruits by High Density Planting
4	Quality planting material production
5	Improving production of horticultural crops
6	Growing of disease resistant grafted plants
7	Breeding management in dairy cattle
8	Feeding management during summer
9	Feeding and laying performance in backyard poultry
10	Fisheries-Brackishwater aquaculture
11	Fisheries- Freshwater aquaculture
12	Disease management in banana, using organic method
13	Pest management in banana using biological method
14	Integrated disease management in coconut
15	Development of value added products of plenty available fruits
16	Value addition of ripe banana

## PART III - TECHNICAL ACHIEVEMENTS

### 3.A. Details of target and achievements of mandatory activities

OFT				FLD			
11				10			
Number of OFTs		Number of farmers		Number of FLDs		Number of farmers	
Targets	Achievement	Targets	Achievement	Targets	Achievement	Targets	Achievement
7+4	6+4	75	65	7+3	7+3	146	146

Training				Extension Programmes			
Number of Courses		Number of Participants		Number of Programmes		Number of participants	
Targets	Achievement	Targets	Achievement	Targets	Achievement	Targets	Achievement
137	112	4350	4153	60	801	9700	7809

Seed Production (Qtl.)		Planting materials (Nos.)	
Target	Achievement	Target	Achievement
400 kg	450 kg (Participatory)	50000	30903

Livestock, poultry strains and fingerlings (No.)		Bio-products (Kg)	
7		8	
Target – 100000, 1, 5000	Achievement	Target – 3200 kg, 3 nos	Achievement -4758.09 kg, 2 nos.
Layer chicks- Day old	46318	<i>Trichoderma</i>	1143 kg
45 days old	11975	<i>Banana Micronutrient mixture</i>	454 kg
Turkey	33	Pheromone Traps	147 Nos
		Vermicompost	2011 kg
Goat kids	4	Neem soap	174 nos
Fish fingerlings-	2692 worth Rs.24117	Mushroom spawn	159.585 kg
Other fisheries products	Rs.9166	Farm Yard Manure	919 kg
		Azolla	71.5 kg

**3.B1. Abstract of interventions undertaken based on thrust areas identified for the district as given in Sl.No.2.7**

S. No	Thrust area	Crop/Enterprise	Identified Problem	Interventions										
				Title of OFT if any	Title of FLD if any	Number of Training (farmers)	Number of Training (Youths)	Number of Training (extension personnel)	Extension activities (No.)	Supply of seeds (Qtl.)	Supply of planting materials (No.)	Supply of livestock (No.)	Supply of bio products	
1.	Growing of disease resistant grafted plants	Black pepper	Severe incidence of Phytophthora foot rot of black pepper	Performance evaluation of grafted black pepper	-	1	-	-	-	-	-	Grafted pepper-50 each	-	-
2	Improving yield of fruits by INM	Banana	Low productivity of nendran banana	-	Demonstration of soil application of banana micro-nutrient mixture viz. AYAR in nendran banana	2	-	-	1	-	-	-	-	Pseudomonas Nanma 15 kg 25 l
3	Improving production of vegetables by cultivation of high yielding varieties	Banana	Low production of vegetables	Assessing the performance of Yard Long Bean varieties Lola, Vellayani Jyothika and Githika in Kozhikode district	-	1	-	-	-	Vegetable seeds-2.5 kg	-	-	-	Pseudomonas Neem soap Trichoderma 30 kg 5 kg 22.5 kg
4	Improving yield of fruits by High Density Planting	Banana	Low productivity of nendran banana	Assessment of comparative performance of tissue culture plants and suckers of nendran banana	-	1	-	-	-	-	TC banana-390 Banana suckers-425	-	-	Pseudomonas Beaveria Nanma 6 kg 6 kg 10 l

				under High Density Planting									
5	New production technology of Spices	Black pepper	Low yield of local varieties, Long pre bearing age ,  Unavailability of climbers to harvest at higher heights		FLD on 'Performance evaluation of rooted top shoots of high yielding varieties of black pepper'						Pepper top shoots 50 each		10 kg (IIS R power mix)  Lime-125 kg
6	Introduction of high value medicinal plants	<i>Piper chaba</i>	Underutilized land holdings,  High cost of <i>Piper chaba</i> in the local shops,  Lack of knowhow on cultivation of <i>Piper chaba</i> ,  Low price of conventional agricultural commodities.		FLD on 'Demonstration of Java long pepper ( <i>Piper chaba</i> ) as a mixed crop in arecanut /coconut gardens'						Piper Chaba RC 50 each		25 kg (Trichoderma)  Lime-125 kg
7	Popularization of new propagation technique	Black pepper	Scarcity of different types of planting materials of HYVs of pepper		FLD on column method of propagation of pepper						2 columns and 12 black pepper rooted cuttings to each farmer		Trichoderma-24 kg, Ciri-1200 kg
8	Disease management in banana, using organic method	Banana	Severe incidence of Sigatoka leaf spot disease in banana	Assessment of organic management practices against Sigatoka leaf spot	1								<i>Pseudomonas</i> 50kg  <i>Trichoderma</i> 30kg

				in banana										
9	Pest management in banana using biological method	Banana	Severe attack of pseudo stem weevil in banana		Management of pseudo stem weevil in banana using the entomopathogenic fungus <i>Beauveria bassiana</i>	1				1			<i>Beauveria</i> <i>Trichoderma</i>	50.5 kg 30kg
10	Integrated disease management in coconut	Coconut	Low yield and death of palms due to Tanjore wilt of coconut		Demonstration on integrated management of Tanjore wilt of coconut (continuing)	1							<i>Trichoderma</i>	57 kg
11	Feeding and egg production management in poultry	poultry	Low egg laying performance, non availability quality layer chicks, lack of scientific knowledge on feeding management and disease control measures	Assessment of Production performance of different breeds of poultry under homesteads	-	3				1			30 chicks per farmer @ 10 chicks of Kalinga brown, kaveri, aseel	-
12	Milk Production management in dairy cattle	Dairy	Higher incidence of diseases during gestation, low milk yield	-	Feeding anionic mixture to prevent milk fever in dairy cattle	3				1			Ammonium chloride Magnesium sulphate calcium	-
13	Feeding management	Dairy	unbalanced	-	Demonstration	3				1			Roughage,	-

	nt in dairy cattle		nutrition, poor production performance resulting In infertility/economic loss		of home made ration for dairy cattle							Sorghum, oil cake, brane		
14	Feeding management in dairy cattle during summer	Dairy	Scarcity of green grasses during summer	-	Hydroponic fodder production	4						Seed, Tray vinegar	-	-
15	Fisheries: Brackishwater aquaculture	Brackishwater fishes	Lack of knowledge of candidate species for fish culture. Non availability of quality seed for fish culture	Scientific farming of milkfish ( <i>Chanos chanos</i> ) in brackishwater ponds			1			1.68 kg feed per farmer				
16	Fisheries: Freshwater aquaculture	Freshwater aquaculture	Poor growth and FCR for handmade feed. Leaching of feed and excess algal bloom formation. Increase in cost of rice bran and oil cake resulting in lower income for fish farmers		"Culture of fishes using formulated feed"		4	2		2kg feed per farmer				
17	Value addition	Banana	1. Rapid perishability. 2. Unavailability of suitable technology	Evaluation of different techniques for the Production of		1	2	1	-	-	-	-	-	-



			for processing of ripe banana.	Dehydrated banana										
18	Promotion of Integrated Nutrient Management in vegetables	Vegetables	Soil acidity, Multi-nutrient deficiencies, Low productivity, Poor economic returns		FFS on soil test based nutrient management in vegetables					1.7 kg seeds				Trichoderma 10 kg Pseudomonas 20 kg

### 3.B2. Details of technology used during reporting period

S.No	Title of Technology	Source of technology	Crop/enterprise	No.of programmes conducted			
				OFT	FLD	Training	Others (Specify)
1	2	3	4	5	6	7	8
1	Grafted black pepper	IISR, Kozhikode	Black pepper	1		1	
2	Micro-nutrient mixture application in banana	KAU, Thrissur	Banana		1	1	Method demonstration
3	HYV of YLB	KAU, Thrissur	Yard Long Bean	1		1	
4	High Density Planting of suckers and TC plants of nendran banana	KAU, Thrissur	Banana	1		1	Method demonstration
5	Performance evaluation of rooted top shoots of high yielding varieties of black pepper'(FLD)	ICAR-IISR, Calicut	Black pepper	-	1	-	-
6	Mixed cropping of <i>Piper chaba</i> in coconut/arecanut gardens (FLD)	ICAR-IISR, Calicut	<i>Piper chaba</i>	-	1	-	-
7	column method of propagation of pepper (FLD)	ICAR-IISR, Calicut	Black pepper	-	1	-	-
8	<b>Assessment of organic management practices against sigatoka leaf spot in banana</b> T.O.1: Incorrect use of chemical pesticides T.O.2 : Phytosanitation + spraying of 10% cow urine, once the initial symptoms appear, 3-4 sprays at 15 days interval T.O.3: Phytosanitation + spraying of 1% mineral oil, once the initial symptoms appear, 5-7 sprays at 20-25days interval T.O.4: Phytosanitation + Use of 2% <i>Pseudomonas</i>	Farmer's practice KAU NRCB, Trichy KAU	Banana	1	-	1	-

	<i>fluorescens</i> once the initial symptoms appear, 3-4 sprays at 15 days interval						
9	Management of psedo stem weevil in banana using the endomo pathogenic fungus – <i>beauvaeria bassiana</i> 1. Field sanitation + Destruction of pseudo stem of harvested plants + Placing of split pseudostem pieces of 2 feet long smeared with <i>Beauveria bassiana</i> @ 20 g/trap, at 5,6 and 7 MAP@ one trap for 40 plants + Removal of loose dry sheaths of the pseudo stem of plants and spray application on the and leaf axil filling with <i>Beauveria bassiana</i> @ 20 g/litre at 5,6 and 7 MAP	KAU	Banana	-	1	1	
10	Demonstration on integrated management of Tanjore wilt of coconut  Removal of dead palms in advanced stage of the disease and destruction of bole and root bits of these palms. If the disease is in initial stage isolate the palms from healthy palms by digging trenches of 1 m deep and 50 cm wide at 1.5 metre away from the trunk of the palm + Application of 5 kg neem cake per palm per year + Soil drenching with Tridemorph/ Hexaconazole @ 2ml/litre @ 40 litre/palm, thrice a year + Root feeding of Tridemorph/ Hexaconazole at quarterly intervals	KAU	Coconut	-	1	-	
11	Assessment of Production performance of different breeds of poultry under homesteads	KVASU	Poultry	1	-	3	Extension activities 1
12	Feeding anionic mixture to prevent milk fever in dairy cattle	TANUVAS	Dairy	-	1	3	Extension activities 1

13	Demonstration of home made ration for dairy cattle	KVASU	Dairy	-	1	3	-
14	Hydroponic fodder production	NIANP, Bengaluru	Dairy	-	1	4	Extension activities 1
15	Culture of fishes using formulated feed	Central Institute of Fisheries Education (CIFE)	Freshwater edible fishes	-	1	6	-
18	Polyculture of milkfish with shrimp ( <i>Penaeus monodon</i> )	Central Institute of Brackishwater aquaculture (CIBA).	Brackishwater fish (milk fish) and <i>Penaeus monodon</i> shrimp	1	-	1	-
17	Production of dehydrated banana T.O.1-Osmotic dehydration of ripe banana followed by drying at 650c-75 0c for 5 Hrs (KAU) T.O.1- Fully riped banana treated with citric acid after peeling, then dried under temperature between 600c-70 0c for 8 hrs (CFTRI)	KAU	Banana	1	0	2	-
19	Integrated Nutrient Management in vegetables (FFS)	POP Recommendations crops, KAU	Vegetables	-	-	1	-

## 3.B2 contd..

No. of farmers covered																
OFT				FLD				Training				Others (Specify)				
General		SC/ST		General		SC/ST		General		SC/ST		General		SC/ST		
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
5	-	-	-	-	-	-	-	18	4	-	-	-	-	-	-	
-	-	-	-	14	-	1	-	36	2	-	-	36	2	-	-	
9	1	-	-	-	-	-	-	20	-	3	1	-	-	-	-	
2	-	-	-	-	-	-	-	36	2	-	-	36	2	-	-	
-	-	-	-	9	0	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	19	1	-	-	-	-	-	-	-	-	-	-	
3	1	1	-	-	-	-	-	149	97	8	6	859	246	8	3	
-	-	-	-	7	0	3	0	-	-	-	-	-	-	-	-	
-	-	-	-	9	6	0	0	-	-	-	-	-	-	-	-	
3	1	-	1	-	-	-	-	324	203	46	33	49	23	12	11	
-	-	-	-	6	11	4	4	-	-	-	-	-	-	-	-	
-	-	-	-	20				-	-	-	-	-	-	-	-	-
-	-	-	-	4	3	3	2	-	-	-	-	-	-	-	-	
-	-	-	-	10	0	0	0	10	-	1	-	-	-	-	-	
2	0	1	0	-	-	-	-	303	104	25	9	-	-	-	-	
-	-	-	-	-	-	-	-	120	282	2	19	-	-	-	-	
-	-	-	-	8	12	-	-	-	-	-	-	-	-	-	-	

**PART IV - On Farm Trial**

## 4.A1. Abstract on the number of technologies assessed in respect of crops

Thematic areas	Cereals	Oilseeds	Pulses	Commercial Crops	Vegetables	Fruits	Flower	Plantation crops	Tuber Crops	Total
Improving production of vegetables by cultivation of high yielding varieties	-	-	-	-	1	-	-	-	-	1

Improving yield of fruits by High Density Planting	-	-	-	-	-	1	-	-	-	1
Integrated Disease Management	-	-	-	-	-	-	-	1	-	1
Disease management in banana using organic method	-	-	-	-	-	1	-	-	-	1
Value addition of fruits	-	-	-	-	-	1	-	-	-	1
<b>Total</b>	-	-	-	-	1	3	-	1	-	5

#### 4.A2. Abstract on the number of technologies refined in respect of crops : Nil

Thematic areas	Cereals	Oilseeds	Pulses	Commercial Crops	Vegetables	Fruits	Flower	Plantation crops	Tuber Crops	TOTAL
<b>Total</b>										

#### 4.A3. Abstract on the number of technologies assessed in respect of livestock enterprises

Thematic areas	Cattle	Poultry	Piggery	Rabbitry	Fisheries	TOTAL
Disease of Management	-	-	-	-	-	-
Production and Management	-	1	-	-	1	2
<b>TOTAL</b>	-	1	-	-	1	2

#### 4.A4. Abstract on the number of technologies refined in respect of livestock enterprises: Nil

Thematic areas	Cattle	Poultry	Piggery	Rabbitry	Fisheries	TOTAL
<b>TOTAL</b>						

### 4.B. Achievements on technologies Assessed and Refined

#### 4.B.1. Technologies Assessed under various Crops

Thematic areas	Crop	Name of the technology assessed	No. of trials	Number of farmers	Area in ha (Per trail covering all the Technological Options)
Integrated Crop Management	Banana	High Density Planting of suckers and TC plants of nendran banana	2	2	0.25
	Yard Long Bean	Improving production of vegetables by cultivation of high yielding varieties	10	10	0.1
Integrated Disease Management	Black pepper	Growing of disease resistant grafted plants	5	5	0.68
Integrated Disease Management	Banana	Assessment of organic management practices against Sigatoka leaf spot in banana	5	5	0.08
Value addition of fruits	Banana	Evaluation of different techniques for dehydrated banana	-	-	-
<b>Total</b>	-	-	22	22	1.11

#### 4.B.2. Technologies Refined under various Crops: Nil

Thematic areas	Crop	Name of the technology assessed	No. of trials	Number of farmers	Area in ha (Per trail covering all the Technological Options)
<b>Total</b>					

#### 4.B.3. Technologies assessed under Livestock and other enterprises

Thematic areas	Name of the livestock enterprise	Name of the technology assessed	No. of trials	No. of farmers
Production and management	Fisheries	Scientific farming of milkfish ( <i>Chanos chanos</i> ) in brackishwater ponds	3	3
“	Dairy	Assessment of Production performance of different breeds of poultry under homesteads	5	5
Total			8	8

#### 4.B.4. Technologies Refined under Livestock and other enterprises: Nil

Thematic areas	Name of the livestock enterprise	Name of the technology assessed	No. of trials	No. of farmers
Total				

#### 4.C1. Results of Technologies Assessed

##### Results of On Farm Trial

Crop/enterprise	Farming situation	Problem definition	Title of OFT	No. of trials	Technology Assessed	Parameters of assessment	Data on the parameter	Results of assessment	Feedback from the farmer	Any refinement needed	Justification for refinement
1	2	3	4	5	6	7	8	9	10	11	12
Black pepper	Rainfed	Severe incidence of Phytophthora foot rot of black pepper	Performance evaluation of grafted black pepper	5	Grafted black pepper	Disease incidence, yield	--	The grafts were planted during January – February 2015. By second year end, more than 86 per cent of grafts were established in all the plots and is growing satisfactorily. About 58 per cent of grafts have started spiking. No incidence of grafted <i>Phytophthora</i> foot rot was reported in any of the grafted plants. The grafts grown without irrigation showed wilting symptoms by 25- 30 days and hence have to be irrigated especially in upland conditions. But grafts planted in low lying areas could withstand up to two months without irrigation. The trial is progressing.	The technology very successful so that two of the beneficiary farmers expanded their cultivation of grafted plants to 500 and 100 respectively.	Nil	--
Banana	Irrigated	Low productivity of nendran banana	Assessment of comparative performance of tissue culture plants and	2	High Density Planting of suckers and TC plants of nendran banana	Yield	Trial continuing	Planting has been completed in both the plots and the crop has established well. Trial is under progress.	--	--	--

			suckers of mendran banana under High Density Planting							
Yard Long Bean	Irrigated	Low production of vegetables	Assessing the performance of Yard Long Bean varieties Lola, Vellayani Jyothika and Githika in Kozhikode district	10	HYV of YLB			The programme was initiated during December 2016 – January 2017 as proposed. The crop has established well and harvesting is continuing.	Initial results indicate that Githika is performing better in terms of yield. Performance of all the varieties is superior in low lying areas compared to upland conditions.	Nil
Brinjal @	Irrigated	Low yield and incidence of bacterial wilt	Performance evaluation of brinjal varieties (2015- 16)	10	Growing of superior indigenous variety of brinjal viz. Vengeri brinjal	Disease incidence, yield	Disease incidence: Nil in all varieties Yield: 45.67 t/ha in the case of Vengeri brinjal	Among the three varieties assessed, Vengeri brinjal was found to be superior in terms of yield and quality parameters. The highest BC ratio (3.40) was also noted in Vengeri brinjal. The variety also had good market demand. The variety Surya was found to be little bitter in taste compared to Vengeri brinjal and Haritha. All the three varieties showed resistance to bacterial wilt and major pests while the local check was affected by wilt.		
Banana	Pure crop	Severe incidence of Sigatoka leaf spot disease in banana	Assessment of organic management practices against Sigatoka leaf spot in banana	5	Management practices against Sigatoka leaf spot in banana	Percentage disease incidence Yield BC ratio		The trial is progressing in five farmers' fields. The treatments were imposed when the initial symptoms appeared. The crop is in 6-7 month old stage in different fields. Presently, the crop is in bunching stage in many fields	Mineral oil and <i>Pseudomonas</i> were reported to give better disease control compared to cow urine	

Vegetables- Tomato, chillies, okra	Pure crop	Severe incidence of whitefly in vegetables	Assessment of organics for whitefly management in solanaceous vegetables and okra (2015-16)	5	Whitefly management in solanaceous vegetables and okra	Percentage Whitefly incidence Yield BC ratio	In tomato, Percentage Whitefly incidence T.O.1-39% T.O.2-12.6% T.O.3-13.7% Yield T.O.1-5.25 t/ha T.O.2-8.7 t/ha T.O.3-8.4 t/ha BC ratio T.O.1-1.75 T.O.2-2.32 T.O.3-2.25 In chillies, Percentage Whitefly incidence T.O.1-25% T.O.2-9% T.O.3-11% Yield T.O.1-4.13 t/ha T.O.2-7.3 t/ha T.O.3-7.05 t/ha BC ratio T.O.1-1.43 T.O.2-2.15 T.O.3-2.05 In okra, Percentage Whitefly incidence T.O.1-19% T.O.2-5% T.O.3-6.5%	Neem soap was found to be more efficient in reducing the whitefly population, compared to <i>V. leccani</i> , probably due to the low humidity prevalent in the micro climate	The whiteflies are efficiently controlled by using neemsoap and to a certain extent by using <i>V. leccani</i>	-	-
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							Yield T.O.1- 7.25 t/ha T.O.2- 10.5 t/ha T.O.3- 9.95 t/ha  BC ratio T.O.1- 1.52 T.O.2- 2.35 T.O.3- 2.30				
Tuber crops, vegetable, spice crops, banana	Mixed cropping	Crop loss due to the attack of wild boars	Management of wild boars (2015-16)	10	Protection of crops from wild animals intruding the cultivated area	Interval (days) at which intrusion was made after application of treatment	During rainy season: Ecodon-6 days, Neelbo-5.2 days, Boarep-18-20 days, WHILE, during summer season: Ecodon-8.2 days, Neelbo-7.2 days, Boarep-28 days	The Boarep powder was found to be more efficient compared to Ecodon and Neelbo.	The Boarep powder was also found to be effective against monkeys, wild goat and porcupines	-	-
Poultry	Poultry rearing under homesteads	Low egg laying performance, non availability quality layer chicks, lack of scientific knowledge on feeding management and disease control measures	Assessment of Production performance of different breeds of poultry under homesteads	15	T.O.1. Farmers Practice(T1): Rearing of chicks as scavengers without scientific background	Age at sexual maturity Egg laying performance Feather pecking problem Mortality percent	Age at sexual maturity, days Body weight, Egg production, Mortality	Age at sexual maturity: 196 days, Bodyweight: 1.450kg, 200 days egg production :65, Mortality: 10%	--	nil	nil
					T.O.2. Rearing of Kalingabrown layer chicks as per recommended concentrate feed along with mineral mixture,	Age at sexual maturity Egg laying performance Feather pecking problem	Age at sexual maturity, days Body weight, Egg production, Mortality	Age at sexual maturity: 182 days, Body weight: 2.9kgs, 200 days egg production: 111, Mortality: 13.33%	Thick shelled coloured eggs, cockroaches are having higher body weight gain.	nil	nil



					vitamin supplements and Azolla @ 10 to 15 gms per bird per day	Mortality percent					
					T.O.3. Rearing of kaveri breeds of layer chicks as per recommended concentrate feed along with mineral mixture, vitamin supplements and Azolla @ 10 to 15 gms per bird per day	Age at sexual maturity Egg laying performance Feather pecking problem Mortality percent		Age at sexual maturity:192 days, Body weight:2.1kgs, 200 days egg production:99 Mortality:16.66%	Thick shelled coloured eggs,good brooders suitable for backyard rearing,few birds showing canabolism	nil	nil
					T.O.4: Rearing of Aseel cross layer chicks as per recommended concentrate feed along with mineral mixture, vitamin supplements and Azolla @ 10 to 15 gms per bird per day	Age at sexual maturity Egg laying performance Feather pecking problem Mortality percent		Age at sexual maturity:199 days, Body weight:1.7kgs, 200 days egg production:82 Mortality:26.66%	Very active and alert,attack predators,thick shelled small sized eggs,canabolic tendency is more	nil	nil
Fisheries: Freshwater aquaculture (2015-16)	Ornamental fishes	Poor colouration of fishes	Use of Carotenoid rich feed for freshwater ornamental fish culture	10	Feeding fishes with carotenoid rich feed	Colouration BCR Survival Net returns	% Rs	Carotenoid incorporated feed with marigold petals and green algae gave better BC ratio and net returns when compared to shrimp starter feed (farmers practice)	It is better to mix both green algae and marigold @1% each. It was observed when feeding fishes with marigold @2% gave a yellowish orange colour to white coloured fishes.	No	No

Fisheries- Brackishwater fishes (2016-17)	Mostly shrimps and pearlspot fish cultured	Lack of knowledge of candidate species for brackishwater fish culture. Non availability of quality seed for fish culture.	Scientific farming of milkfish ( <i>Chanos chanos</i> ) in brackish water ponds	3	Milkfish farming practices	Yield Survival BC ratio	Kg %	Shrimp 80% Milkfish 75%	Trial under progress Survival		
Banana	Homestead gardening	1. Rapid perishability. 2. Unavailability of suitable technology for processing of ripe banana	Evaluation of different methods for the production of dehydrated banana	10	Ripe banana dried under sunlight in other variety like poovan, nendran. (Farmers practice) 2. Osmotic dehydration of ripe banana followed by drying at 65 <sup>0</sup> c-75 <sup>0</sup> c for 5 Hrs (KAU) 3. Fully riped banana treated with citric acid after peeling, then dried under temperature between 70 <sup>0</sup> c-80 <sup>0</sup> c for 8 hrs (CFTRI)	Keeping quality Cost effectiveness	Technology under progressing	Colour: Light brown Texture: Hard Taste: Good  Colour: brown Texture: Soft, and Rubbery Taste: good			

@ Result of technology assessment conducted during (2015- 16)

Contd..

Technology Assessed	Source of Technology	Production	Please give the unit (kg/ha, t/ha, lit/animal, nuts/palm, nuts/palm/year)	Net Return (Profit) in Rs. / unit	BC Ratio
13	14	15	16	17	18
Technology option 1: Growing local varieties of black pepper		Trial continuing	-	-	-
Technology option 2: Growing grafted pepper with irrigation	(ICAR-IISR)	Trial continuing	-	-	-
Technology option 3: Growing grafted pepper without irrigation	(ICAR-IISR)	Trial continuing	-	-	-
Technology option 1: Cultivation of nendran banana using suckers with one sucker per pit		Trial continuing	-	-	-

Technology option 2: High Density Planting (2 m x 3 m) of nendran banana using TC plants with two plants per pit	KAU, Thrissur	Trial continuing	-	-	-
Technology option 3: High Density Planting (2 m x 3 m) of nendran banana using suckers with two suckers per pit	KAU, Thrissur	Trial continuing	-	-	-
Technology option 1: Cultivation of local types like Kurutholapayar and Manjeri local	-	Trial continuing	-	-	-
Technology option 2 : Cultivation of a HYV of YLB viz. Lola as per PoP	KAU, Thrissur	Trial continuing	-	-	-
Technology option 3: Cultivation of a HYV of YLB viz. Vellayani Jyothika as per PoP	KAU, Thrissur	Trial continuing	-	-	-
Technology option 4: Cultivation of a HYV of YLB viz. Githika as per PoP	KAU, Thrissur	Trial continuing	-	-	-
Technology option 1: Growing mostly bacterial wilt susceptible local varieties	KAU, Thrissur	15.22	t/ha	0.54/ha	1.13
Technology option 2: Growing of brinjal variety Surya as per PoP	KAU, Thrissur	22.13	t/ha	2.61/ha	1.65
Technology option 3: Growing of brinjal variety Haritha as per PoP	KAU, Thrissur	28.50	t/ha	4.52/ha	2.12
Technology option 4: Growing of superior indigenous variety of brinjal viz. Vengeri brinjal	Niravu farmer group, Vengeri, Kozhikode	45.67	t/ha	9.66	3.40
Technology option 1: Incorrect use of chemical pesticides	Farmer's practice -	-	-	-	-
Technology option 2: Phytosanitation + spraying of 10% cow urine, once the initial symptoms appear, 3-4 sprays at 15 days interval	KAU	-	-	-	-
Technology option 3: Phytosanitation + spraying of 1% mineral oil, once the initial symptoms appear, 5-7 sprays at 20-25days interval	NRCB, Trichy	-	-	-	-
Technology option 4: Phytosanitation + Use of 2% <i>Pseudomonas fluorescens</i> once the initial symptoms appear, 3-4 sprays at 15 days interval	KAU	-	-	-	-
Technology option 1: Spraying of rice gruel + dusting of wood ash on under surface of leaves, at weekly intervals T. O. 2: T. O. 3: :	Farmers' practice	Yield In tomato- 5.25  In chillies-4.13  In okra- 7.25	t/ha	In tomato-67500  In chillies-49700  In okra-74500	In tomato-1.75:1  In chillies-1.43:1

					In okra-1.52:1
Technology option 2 Spraying of Neem soap @ 10-15 g/litre, on the under surface of leaves, thrice, at an interval of 7-10 days	ICAR-IIHR	Yield In tomato- 8.7  In chillies-7.3  In okra- 10.5	t/ha	In tomato-173600  In chillies-156200  In okra-211850	In tomato-2.32:1  In chillies-2.15:1  In okra-2.35:1
Technology option 3: Spraying of entomo pathogenic fungi <i>Verticillium lecanii</i> @ 20 g/litre, on the under surface of leaves, thrice, at an interval of 7-10 days	KAU	Yield In tomato- 8.4  In chillies-7.05  In okra- 9.95	t/ha	In tomato-163250  In chillies-144700  In okra-197000	In tomato-2.25:1  In chillies-2.05:1  In okra-2.30:1
T.O.1: Use of Ecodon- Ecodon liquid formulation to be diluted 3 times and jute thread kept immersed in it for 3 days, to be tied in two rows (one row at 1 foot above the ground level and the second at 1 foot above the first row), around the cultivated area. The jute threads to be sprayed with the solution at 15 days interval	ICAR - All India Network Project on Rodent Control, Jodhpur	-	-	-	-
T.O.2: Use of Boarep-The powder formulation of Boarep (100 g each ) to be tied in tiny bags and kept hung at a height of one foot above the ground level , at an interval of 5m, around the border of the cultivated area	KAU	-	-	--	-
T.O.3: Use of Neelbo- Neelbo liquid formulation to be diluted 5 times and jute thread kept immersed in it for 3 days, to be tied in a single row around the cultivated area. The jute threads to be sprayed with the solution at 15 days interval	Pest Control India Ltd.	-	-	-	-
Technology option 1:	-	Rs 450.00	Rs 820.00	Rs 370.00	1.8
Technology option 2:	KVASU	Rs780.00	Rs1393.00	Rs 613.00	1.7
Technology option 3:	KVASU	Rs 780.00	Rs 1246.00	Rs 466.00	1.5
Technology option 4	TANUVAS	Rs 780.00	Rs 1029.00	Rs 249.00	1.3
Technology option 1: Feeding fishes with shrimp feed	Farmers' practice	Survival 88.2% faded colouration	88 fishes	1303	3.69
Technology option 2: Feeding fishes with feed incorporated with dried marigold @2%	Central Institute of Fisheries Education (CIFE)	Survival 86.8% Good colouration	-87 fishes	1992	4.25

Technology option 3: Feeding fishes with feed incorporated with dried @2% Chlorella feed	Central Institute of Fisheries Education (CIFE)	Survival 88.7% Good colouration	-89 fishes	2000	4.01
Technology option 1 Extensive shrimp farming in brackishwater ponds	Farmers' practice	-	-	-	-
Technology option 2: Mono culture of milkfish	Central Marine Fisheries Research Institute (CMFRI)	-	-	-	-
Technology option 3: Polyculture of milkfish with shrimp ( <i>Penaeus monodon</i> )	Central Institute of Brackishwater aquaculture (CIBA)	-	-	-	-
Technology option 1: Ripe banana dried under sunlight	Farmers' practice	-	-	-	-
Technology option 2: Osmotic dehydration of ripe banana followed by drying at 650c-75 0c for 5 Hrs	Kerala Agricultural University	-	-	-	-
Technology option 3: Fully riped banana treated with citric acid after peeling, then dried under temperature between 700c-80 0c for 8 hrs	CFTRI, Mysur	-	-	-	-

#### 4.C2. Details of each On Farm Trial for assessment to be furnished in the following format separately as per the following details

##### OFT-1

- 1 Title of Technology Assessed : Performance evaluation of grafted black pepper (2014 – 15 and continuing)
- 2 Problem Definition : Severe incidence of *Phytophthora* foot rot of black pepper
- 3 Details of technologies selected for assessment: Assessing the performance of grafted black pepper under irrigation and without irrigation. The treatments were:
  - i) Technology option 1 (Farmer's practice): Growing local varieties of black pepper
  - ii) Technology option 2: Growing grafted pepper with irrigation
  - iii) Technology option 3: Growing grafted pepper without irrigation
- 4 Source of technology: (ICAR-IISR)
- 5 Production system and thematic area: Coconut based cropping system, Integrated Disease Management
- 6 Performance of the Technology with performance indicators:
  - ✓ Planting was undertaken during January - February 2015.
  - ✓ By second year end, more than 86 per cent of grafts were established in all the plots and is growing satisfactorily.
  - ✓ About 58 per cent of grafts have started spiking.
  - ✓ No incidence of *Phytophthora* foot rot was reported in any of the grafted plants.
  - ✓ The trial is progressing
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring techniques : The grafts grown without irrigation showed wilting symptoms by 25- 30 days and hence have to be irrigated especially in upland conditions. But grafts planted in low lying areas could withstand up to two months without irrigation after the cessation of monsoon showers. Performance of Panniyur 1 grafts was better compared to Subhakara in terms of growth performance and incidence of viral diseases.
- 8 Final recommendation for micro level situation: By growing grafted pepper plants, we can totally eliminate

*Phytophthora* foot rot. But irrigation of grafts is required especially in summer season.

- 9 Constraints identified and feedback for research: Pepper grafts of Subhakara variety was found to be more susceptible to virus disease compared to Panniyur 1.
- 10 Process of farmers' participation and their reaction: The technology was very successful so that two of the beneficiary farmers expanded their cultivation of grafted plants to 500 and 100 respectively. Many farmers from neighbouring areas of trial are coming forward for taking up cultivation of grafted pepper.

#### OFT-2

- 1 Title of Technology Assessed: Assessing the performance of Yard Long Bean varieties Lola, Vellayani Jyothika and Githika in Kozhikode district (2016-17)
- 2 Problem Definition: Low production of vegetables
- 3 Details of technologies selected for assessment:
- ✓ Technology option-1(Farmers practice): Cultivation of local types like Kurutholapayar and Manjeri local
  - ✓ Technology option -2.: Recommended practice: Cultivation of a HYV of YLB viz. Lola as per PoP
  - ✓ Technology option-3: Cultivation of a HYV of YLB viz. Vellayani Jyothika as per PoP
  - ✓ Technology option-4: Cultivation of a HYV of YLB viz. Githika as per PoP
- 4 Source of technology: KAU, Thrissur
- 5 Production system and thematic area: Irrigated, Improving production of vegetables
- 6 Performance of the Technology with performance indicators: The programme was initiated during December 2016 – January 2017 as proposed. Harvesting is continuing and the crop is in final stages.
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring
8. Final recommendation for micro level situation: Harvesting continuing.
9. Constraints identified and feedback for research:
10. Process of farmers participation and their reaction:

#### OFT-3

- 1 Title of Technology Assessed: Assessment of comparative performance of tissue culture plants and suckers of nendran banana under High Density Planting (2016-17)
- 2 Problem Definition: i) Low yield of nendran banana
- 3 Details of technologies selected for assessment:
- ✓ Technology option-1(Farmers practice): Cultivation of nendran banana using suckers with one sucker per pit
  - ✓ Technology option -2.: Recommended practice - High Density Planting (2 m x 3 m) of nendran banana using TC plants with two plants per pit
  - ✓ Technology option-3: High Density Planting (2 m x 3 m) of nendran banana using suckers with two suckers per pit
- 4 Source of technology: KAU, Thrissur
- 5 Production system and thematic area: Irrigated, Improving production of fruits
- 6 Performance of the Technology with performance indicators: The crop has established well and trial is progressing.
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring
8. Final recommendation for micro level situation: Trial continuing.
9. Constraints identified and feedback for research:
10. Process of farmers participation and their reaction:

#### OFT-4

- 1 Title of Technology Assessed: Performance evaluation of brinjal varieties (2015- 16)
- 2 Problem Definition: i) Low yield and incidence of bacterial wilt

- 3 Details of technologies selected for assessment:  
The treatments were:
- ✓ Technology option 1 (Farmer's practice): Growing mostly bacterial wilt susceptible local varieties
  - ✓ Technology option 2: Growing of brinjal variety Surya as per PoP (KAU)
  - ✓ Technology option 3: Growing of brinjal variety Haritha as per PoP (KAU)
  - ✓ Technology option 4: Growing of superior indigenous variety of brinjal viz. Vengeri brinjal (Niravu farmer group, Vengeri, Kozhikode)
- 5 Production system and thematic area: Irrigated, Improving production of vegetables
- 6 Performance of the Technology with performance indicators: Among the three varieties assessed, Vengeri brinjal was found to be superior in terms of yield and quality parameters. The highest BC ratio (3.40) was also noted in Vengeri brinjal.
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring: The variety also had good market demand. The variety Surya was found to be little bitter in taste compared to Vengeri brinjal and Haritha. All the three varieties showed resistance to bacterial wilt and major pests while the local check was affected by wilt.
8. Final recommendation for micro level situation: The variety Vengeri brinjal having superiority in all the characters assessed can be recommended for large-scale cultivation. The variety is suitable for nutrition garden owing to its superior quality parameters and resistance to major pests and diseases.
9. Constraints identified and feedback for research: Unavailability of seed material was found to be major problem in popularizing the variety. In order to overcome this problem, KVK has procured seed material of all the three varieties from the farmers under this onfarm trial, raised pro tray seedlings and distributed to farmers in and around Kozhikode.
10. Process of farmers' participation and their reaction: A Video documentary on the success story of the trial was broadcasted in Mathrubhumi TV on 1.11.2016. In addition, around 32 new farmers have started cultivation of Vengeri brinjal variety owing to the success of the trial. Farmers also multiplied seed material of all the three varieties and distributed to needy farmers in and around their homesteads.

## OFT-5

- 1 Title of Technology Assessed : Assessment of organic management practices against Sigatoka leaf spot in banana (2016-17)
- 2 Problem Definition : Severe incidence of Sigatoka leaf spot disease in banana
- 3 Details of technologies selected for assessment:  
T.O.1: Farmer's practice - Incorrect use of chemical pesticides  
T.O.2 : Phytosanitation + spraying of 10% cow urine, once the initial symptoms appear, 3-4 sprays at 15 days interval  
T.O.3: Phytosanitation + spraying of 1% mineral oil, once the initial symptoms appear, 5-7 sprays at 20-25days interval  
T.O.4: Phytosanitation + Use of 2% *Pseudomonas fluorescens* once the initial symptoms appear, 3-4 sprays at 15 days interval
- 4 Source of technology: T.O.1: Farmer's practice, T.O.2 : KAU, T.O.3: NRCB, Trichy, T.O.4: KAU
- 5 Production system and thematic area: Banana- pure crop, Disease management
- 6 Performance of the Technology with performance indicators: -The trial is on-going.
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring

techniques : -

- 8 Final recommendation for micro level situation: -
- 9 Constraints identified and feedback for research: - There was shortage of water in a few farmers' field , during early crop stage
- 10 Process of farmers participation and their reaction: The farmers have actively participated in the programme.

#### OFT-6

- 1 Title of Technology Assessed: Assessment of organics for whitefly management in solanaceous vegetables and okra (2015-16)
- 2 Problem Definition: Severe incidence of whitefly in vegetables
- 3 Details of technologies selected for assessment:
  - T. O. 1: Farmers' practice – Spraying of rice gruel + dusting of wood ash on under surface of leaves, at weekly intervals
  - T. O. 2: Spraying of Neem soap @ 10-15 g/litre, on the under surface of leaves, thrice, at an interval of 7-10 days (ICAR-IIHR)
  - T. O. 3: Spraying of entomo pathogenic fungi *Verticillium lecanii* @ 20 g/litre, on the under surface of leaves, thrice, at an interval of 7-10 days (KAU)
- 4 Source of technology: T. O. 1: Farmers' practice, T. O.2: ICAR-IIHR, T. O. 3- KAU
- 5 Production system and thematic area: Pure crop and homestead farming system, Pest management
- 6 Performance of the Technology with performance indicators: In tomato, chillies and okra, the B:C ratio and net returns was highest for neemsoap, compared to *Verticillium*.
- 7 Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring
- 8 Final recommendation for micro level situation: Neem soap was found to be more efficient in reducing the whitefly population, compared to *V. leccani*, probably due to the low humidity prevalent in the micro climate
- 9 Constraints identified and feedback for research: Nil
10. Process of farmers participation and their reaction: The whiteflies were efficiently controlled using neemsoap and the entomopathogenic fungus, compared to the farmers' eco friendly practice of using ash, and have saved the crop.

#### OFT-7

- 1 Title of Technology Assessed: Management of wild boars (2015-16)
- 2 Problem Definition: Crop loss due to the attack of wild boars
- 3 Details of technologies selected for assessment:
  - T. O. 1: Use of Ecodon- Ecodon liquid formulation to be diluted 3 times and jute thread kept immersed in it for 3 days, to be tied in two rows (one row at 1 foot above the ground level and the second at 1 foot above the first row), around the cultivated area. The jute threads to be sprayed with the solution at 15 days interval (ICAR - All India Network Project on Rodent Control, Jodhpur)
  - T. O. 2: Use of Boarep-The powder formulation of Boarep (100 g each ) to be tied in tiny bags and kept hung at a height of one foot above the ground level , at an interval of 5m, around the border of the cultivated area (KAU)
  - T. O. 3: Use of Neelbo- Neelbo liquid formulation to be diluted 5 times and jute thread kept immersed in it for 3 days, to be tied in a single row around the cultivated area. The jute threads to be sprayed with the solution at 15 days interval (Pest Control India Ltd.)
- 4 Source of technology: T. O. 1: ICAR - All India Network Project on Rodent Control, Jodhpur, T. O.2: KAU T. O. 3- Pest Control India Ltd.



5. Production system and thematic area: Homestead farming system, Protection of crops from wild animals intruding the cultivated area
6. Performance of the Technology with performance indicators: The wild boar attack was first noticed at the following days after application of treatment .During rainy season: Ecodon-6 days, Neelbo-5.2 days, Boarep-18-20 days, while during summer season: Ecodon-8.2 days, Neelbo-7.2 days, Boarep-28 days,
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring : The farmers have found Boarep to be very effective for saving the crop, which they have ranked first. Neelbo and Ecodon were ranked together and were having less efficiency in repelling wild boars, compared to Boarep
8. Final recommendation for micro level situation: Boarep could be recommended for repelling the wild boars efficiently from cultivated areas.
9. Constraints identified and feedback for research: The Boarep powder is having a pungent smell, causing headache
10. Process of farmers participation and their reaction: The farmers have actively involved in conducting trials. They were happy because they could ward off the wild boars, otherwise, which would have resulted in complete crop loss. Boarep was also effective against wild goats, porcupines and also against monkeys.

#### OFT-8

1. Title of Technology Assessed : Assessment of Production performance of different breeds of poultry under homesteads (2016-17)
2. Problem Definition : Low egg laying performance,non availability quality layer chicks,lack of scientific knowledge on feeding management and disease control measures
3. Details of technologies selected for assessment: T.O.1.Farmers Practice(T1): : Rearing of chicks as scavengers without scientific background  
T.O.2. Rearing of Kalingabrown layer chicks as per recommended concentrate feed along with mineral mixture, vitamin supplements and Azolla @ 10 to 15 gms per bird per day  
T.O.3. Rearing of kaveri breeds of layer chicks as per recommended concentrate feed along with mineral mixture, vitamin supplements and Azolla @ 10 to 15 gms per bird per day  
T.O.4: Rearing of Aseel cross layer chicks as per recommended concentrate feed along with mineral mixture, vitamin supplements and Azolla @ 10 to 15 gms per bird per day
4. Source of technology: KVASU
5. Production system and thematic area: poultry rearing under homesteads
6. Performance of the Technology with performance indicators:

Parameters	Technology options				Remarks
	T1	T2	T3	T4	
Age at sexual maturity(days)	196	182	192	199	
Body weight gain(kg)	1.450	2.9	2.100	1.7	
200 days Egg production(No's)	65	111	99	82	
Mortality (%)	10	13.33	16.66	26.66	

7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring techniques : Thick shelled coloured eggs,cockrels are having higher body weight gain in kalinga brown , kaveri are good,Aseel are brooders,  
Very active and alert,attack predators,Aseel has thick shelled small sized eggs,canabolic tendency is more in aseel , suitable for backyard rearing and the eggs are fetching higher market price

- 8 Final recommendation for micro level situation: kaveri and kalingabrown are suitable for backyard rearing and kaveri are good brooders
- 9 Constraints identified and feedback for research: canabolic tendency is more in aseel chicks
- 10 Process of farmers participation and their reaction: farmers are very interested to take the technology and they are well cooperated throught the trial.

**OFT-9**

- 1 Title of Technology Assessed: Use of Carotenoid rich feed for freshwater ornamental fish culture (2015-16)
- 2 Problem Definition: Poor colouration of ornamental fishes, when fed with shrimp starter feed
- 3 Details of technologies selected for assessment: Feeding fishes with carotenoid rich feed with marigold petals and green algae
- 4 Source of technology: Central Institute of Fisheries Education (CIFE)
- 5 Production system and thematic area: Freshwater aquaculture, Ornamental fish culture
- 6 Performance of the Technology with performance indicators: Colouration of fish, Survival %, BCR
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring  
Mixing of both colouring pigment source marigold petals and chlorella
8. Final recommendation for micro level situation: To mix both green algae and marigold @1% each as carotein source to increase colouration of fish.
9. Constraints identified and feedback for research: Nil
10. Process of farmers participation and their reaction: Farmers were very much satisfied with the carotenoid incorporated feeds performance.

**OFT10**

- 1 Title of Technology Assessed : Scientific farming of milkfish (*Chanos chanos*) in brackish water ponds (2016-17)
- 2 Problem Definition : Lack of knowledge of candidate species for brackishwater fish culture., Non availability of quality seed for fish culture
- 3 Details of technologies selected for assessment: Poly culture with shrimp and monoculture of milkfish
- 4 Source of technology: Central Marine Fisheries Research Institute (CMFRI) & Central Institute of Brackishwater aquaculture (CIBA)
- 5 Production system and thematic area: Fisheries – Brackishwater aquaculture
- 6 Performance of the Technology with performance indicators: Yield, BC ratio
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring techniques: Trial under progress
- 8 Final recommendation for micro level situation: -
- 9 Constraints identified and feedback for research: -
- 10 Process of farmers participation and their reaction: -

**OFT-11**

- 1 Title of Technology Assessed : Evaluation of different methods for the production of dehydrated banana. (2016-17)
- 2 Problem Definition : Rapid perishability of ripe banana. Unavailability of suitable technology for processing of ripe banana
- 3 Details of technologies selected for assessment:  
T1: (Farmers practice) This technology includes only the process of direct sun drying.

T2: (KAU) osmotic dehydration of ripe banana followed by drying at 650c-75 0c for 5 hrs is practiced under 67-700c Brix for 8hrs followed by drying at 650c for 5 hrs

T3: Fully riped banana treated with citric acid after peeling, then dried under temperature between 700c-80 0c for 8 hrs

- 4 Source of technology: KAU and CFTRI
- 5 Production system and thematic area: Value addition
- 6 Performance of the Technology with performance indicators: Trial under progressing
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring techniques :
- 8 Final recommendation for micro level situation:
- 9 Constraints identified and feedback for research:
- 10 Process of farmers participation and their reaction:

#### 4.D1.Results of Technologies Refined: Nil

#### Results of On Farm Trial

Crop/enterprise	Farming situation	Problem definition	Title of OFT	No. of trials	Technology refined	Parameters of refined t	Data on the parameter	Results of refinement	Feedback from the farmer	Details of refinement done
1	2	3	4	5	6	7	8	9	10	11

Contd..

Technology Refined	Source of Technology for Technology Option1 / Justification for modification of assessed Technology Option 1	Production	Please give the unit (kg/ha, t/ha, lit/animal, nuts/palm, nuts/palm/year)	Net Return (Profit) in Rs. / unit	BC Ratio
13		14	15	16	17
Technology Option 1 (best performing Technology Option in assessment)					
Technology Option 2 (Modification over Technology Option 1)					
Technology Option 3 (Another Modification over Technology Option 1)					

4.D.2. Details of each On Farm Trial for refinement to be furnished in the following format separately as per the following details: Nil

1. Title of Technology refined
2. Problem Definition
3. Details of technologies selected for refinement
4. Source of technology
5. Production system and thematic area
6. Performance of the Technology with performance indicators
7. Feedback, matrix scoring of various technology parameters done through farmer's participation / other scoring

techniques

- 8 Final recommendation for micro level situation
- 9 Constraints identified and feedback for research
- 10 Process of farmers participation and their reaction

## **PART V - FRONTLINE DEMONSTRATIONS**

### **5.A. Summary of FLDs implemented during 2016-17**

Sl. No.	Category	Farming Situation	Season and Year	Crop	Variety / breed	Hybrid	Thematic area	Technology Demonstrated	Area (ha)		No. of farmers/ demonstration			Reasons for shortfall in achievement
									Proposed	Actual	SC/ST	Others	Total	
1.	Fruits	Irrigated	Rabi 2016	Banana	Nendran	--	Improving fruit production	Application of banana micro-nutrient mixture	1 ha	1 ha	1	14	15	--
2	Fruit crops	Pure crop	August 2016- May 2017	Banana	Nendran	-	Pest management	Field sanitation + Destruction of pseudo stem of harvested plants + Placing of split pseudostem pieces of 2 feet long smeared with <i>Beauveria bassiana</i> @ 20 g/trap, at 5,6 and 7 MAP@ one trap for 40 plants + Removal of loose dry sheaths of the pseudo stem of plants and spray application on the and leaf axil filling with <i>Beauveria bassiana</i> @ 20 g/litre at 5,6 and 7 MAP (KAU)	0.4 ha	0.4 ha	-	10	10	-

3	Spices and condiments	Rainfed	2016-17	black pepper	IISR Thevaram, Subhakra, Panniyur 5		Popularization of new propagation technique	Column method of propagation of pepper (ICAR-IISR)	-	-	-	20	20	-
4	“	Rainfed	2016-17	black pepper	IISR Thevaram, Subhakra, Panniyur 5, Girimunda		New production technology of Spices (IISR-2014)	Performance evaluation of rooted top shoots of high yielding varieties of black pepper (ICAR-IISR)	1 ha	1 ha	-	10	10	-
5	“	Rainfed	2016-17	Java long pepper	-		Introduction of high value medicinal plants	Mixed cropping of <i>Piper chaba</i> in coconut/arecanut gardens (ICAR-IISR, Calicut)	0.4 ha	0.4 ha	-	10	10	-
6	“		2015-16	Curcuma aromatica	-		Value addition	Production of herbal products from Curcuma aromatic-Soap and face pack	-	-	-	10	10	-
7	Plantation crops	Homestead	2014-17	Coconut	Local	-	Integrated Disease Management	Removal of dead palms in advanced stage of the disease and destruction of bole and root bits of these palms If the disease is in initial stage isolate the palms from healthy palms by digging trenches of 1 m deep and 50 cm wide at 1.5 metre away from the trunk of the palm +	225 palms	225 palms		15	15	-

							Application of 5 kg neem cake per palm per year + Soil drenching with Tridemorph / Hexaconazole @ 2ml/litre @ 40 litre/palm, thrice a year + Root feeding of Tridemorph / Hexaconazole at quarterly intervals (KAU)							
8	Vegetables	Irrigated	2016-17 Summer	Bhindi Amaranthus Yard long bean Oriental pickling melon Bittergourd	Arka Anamika Arun Vellayani Jyothika Mudikode local Preethi		Promotion of Integrated Nutrient Management in vegetables	Integrated Nutrient Management in vegetables (POP, KAU)	0.4 ha	0.4 ha		20	20	
9	Dairy cattle	-	2016-17	Dairy cattle	NA		Feeding management	Feeding anionic mixture to prevent milk fever in dairy cattle	-	-	8	17	25	-
10	Dairy cattle	-	2016-17	Dairy cattle	NA		Feed and fodder management	Hydroponic fodder production	-	-	5	7	12	-
11	Fresh water edible fishes	-	2016-17	Fresh water fishes	NA		Feed management	Culture of fishes using formulated floating feed (2016-17) under progress	-	-	0	10	10	-

## 5.A. 1. Soil fertility status of FLDs plots during 2016-17

Sl. No.	Category	Farming Situation	Season and Year	Crop	Variety/breed	Hybrid	Thematic area	Technology Demonstrated	Season and year	Status of soil			Previous crop grown
										N	P	K	
1	Fruits	Irrigated	Rabi 2016	Banana	Nendran	--	Improving fruit production	Application of banana micro-nutrient mixture	Rabi 2016	Medium	High	Medium	Banana
2	Spices	Rainfed	2016-17	black pepper	Thevam, Subhakara, Panniyur 5		New production technology of Spices	Performance evaluation of rooted top shoots of high yielding varieties of black pepper	2016-17	Medium	Medium-High	Medium	Coconut, arecanut, black pepper
3	Spices	Rainfed	2016-17	Java long pepper	Elite line		Introduction of high value medicinal plants	Mixed cropping of <i>Piper chaba</i> in coconut/arecanut gardens	2016-17	medium	Medium-High	medium	Coconut, arecanut, black pepper
4	Vegetables	Irrigated	2016-17		Bhindi-Arka Anamika Amaranthus- Arun Vellayani Jyothika Yard long bean Oriental pickling melon-Mudikode local Bittergourd-Preethi		Integrated Nutrient Management in vegetables	Soil test based nutrient management in vegetables	2016-17 summer	Medium	Low	Medium	Tapioca, Vegetables
5	Plantation crops	Homestead farming	-	Coconut	Elite lines	-	IDM	Demonstration on integrated management of Tanjore wilt of coconut	-	Low-Medium	Low-Medium	Medium	Coconut
6	Fruit crops	Pure crop	-	Banana	Nendran	-	Pest management	Demonstration on Pseudo stem weevil management in banana using entomopathogenic fungus <i>Beauveria bassiana</i>	-	Medium	Medium-High	Medium	Banana

## 5.B. Results of Frontline Demonstrations

## 5.B.1. Crops

Crop	Name of the technology demonstrated	Variety	Hybrid	Farming situation	No. of Demo.	Area (ha)	Yield (q/ha)			% Increase	*Economics of demonstration (Rs.(lakhs)/ha)				*Economics of check (Rs (lakhs)/ha)				
							Demo	Check			Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR	
						H	L	A											
Banana	Application of banana micro-nutrient mixture	Nendran	--	Irrigated	15	1 ha					Trial under progress								
Banana @	Application of banana micro-nutrient mixture	Nendran	--	Irrigated	15	1 ha	302.50	245	290	242.5	19.59	4.63	11.6	6.97	2.51	4.25	9.70	5.45	2.28
Black pepper	Column method of propagation of black pepper	IISR Thevam, Subhakar, Panniyur 5, Girimunda		Rainfed	20	0.02 ha	800 nos	400 nos	600 nos	520 nos	15.3	4100	12000	7900	1.92	3600	10400	6800	2.89
Black pepper	Performance evaluation of rooted top shoots of high yielding varieties of black pepper	IISR Thevam, Subhakar, Panniyur 5		Rainfed	9	1 ha	pro	gres	sing			Trial under progress							
Java long pepper	Demonstration of Java long pepper ( <i>Piper chaba</i> ) as a mixed crop in arecanut/coconut gardens	Elite line		Rainfed	10	0.4 ha	pro	gres	sing			Trial under progress							
Ginger	Rhizome treatment with PGPR encapsulated biocapsule @ 20 capsules for treating seeds to be planted in a hectare (ICAR-IISR)	Varada		Rainfed ginger	10	0.2	134.70	114.50	124.21	135.5 (chemical control)		474625	916880.3	442255.30	1.93	557250	972176.3	414926.3	1.74



Coconut	Demonstration on integrated management of Tanjore wilt of coconut (continuing)	Local	-	Homestead	15	1.3 ha	108 nuts/palm/year	76 nuts/palm/year	92 nuts/palm/year	32 nuts/palm/year	65.2	89095	111412	22317	1.25	71795	38752	33043	0.53
Banana	Management of pseudo stem weevil in banana using the entomopathogenic fungus <i>Beauveria bassiana</i> (ON GOING)	Nendran	-	Pure crop	10	0.4	-	-	-	-	Trial under progress								
Curcuma aromatic	Production of herbal products from Curcuma aromatic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Soap				10						376	704	1080	1.8	296	379	675	1.2	
	Face pack				10						63.25	150	86.75	1.37	116	85	31	0.73	
Vegetables- FFS	Integrated nutrient management in vegetables			Irrigated	20	0.4 ha	-	-	-	-	-	-	-	-	-	-	-	-	-
Bhindi		Arka Anamika							87.5	50.0	43.8	1.84	3.84	2.00	2.09	1.65	2.00	0.35	1.21
Amaranthus		Arun							75	44.0	41.3	1.82	3.00	1.18	1.65	1.64	1.78	0.14	1.09
Yard long bean		Vellayani Jyothika							52.5	43.0	18.1	2.43	3.88	1.45	1.60	2.23	3.06	0.83	1.37
Oriental pickling melon		Mudikode local							200	112	0.44	1.86	2.94	1.08	1.58	1.70	2.24	0.54	1.30
Bittergourd		Preethi							81.3	48.0	41	2.56	4.06	1.5	1.59	2.20	2.4	0.20	1.09

\* The first and second application of Ayar has been completed in all the plots. The plants are growing satisfactorily and demonstration is progressing. @ Result of FLD conducted during 2015-16.

**Data on additional parameters other than yield (viz., reduction of percentage in weed/pest/diseases etc.)**

Data on other parameters in relation to technology demonstrated		
Parameter with unit	Demo	Check
Disease incidence (%) in ginger	8	6.5
Disease incidence (%) in coconut	4	38

Data on other parameters in relation to technology demonstrated				
Column method of propagation of black pepper	Parameter with unit		Demo	Check
	Average internodal length (cm)			10.6
Percent field establishment (%)			98	99
Performance evaluation of rooted top shoots of high yielding varieties of black pepper	Percent field establishment (%)		100	
Demonstration of Java long pepper ( <i>Piper chaba</i> ) as a mixed crop in arecanut /coconut gardens	Percent field establishment (%)		100	
Soil test based nutrient management in vegetables	Per cent disease incidence (%)			
	Bhindi-Pod borer		3	28
	Amaranthus -leaf blight		7	62
	Oriental pickling melon-downy mildew		9	54

**5.B.2. Livestock and related enterprises**

Type of livestock	Name of the technology demonstrated	Breed	No. of Demo	No. of Units	Yield (q/ha)			% Increase	*Economics of demonstration Rs./unit				*Economics of check (Rs./unit)				
					Demo	Check if any			Gross Cost	Gross Return	Net Return	**BCR	Gross Cost	Gross Return	Net Return	**BCR	
					H	L	A										
Dairy	Feeding anionic mixture to prevent milk fever in dairy cattle	Crossbred milch cow	25	25	Milk yield(lit) 14.6	8.7	11.65	7.250	101.37	1080	3040	1960	2.8	5544	1825	1271	3.2
					Disease incidence(%) 4	-	-	20	Disease incidence reduced from 20 to 4 % (16% reduced)	-	-	-	-	-	-	-	-
Dairy	Demonstration of home made ration for dairy cattle	Crossbred milch cow	20	5	Milk yield(lit) 18.7	9.8	14.25	8.8	112.5	1128	3719	2590	2.8	6969	2296	1599	3.2
Dairy	Hydroponic fodder production	Crossbred milch cow	12	12	Fodder yield(kg) 6.2	4.2	5.2	3.6	72.2	1820	4698	2878	2.5	1350	3024	1674	2.2

**Data on additional parameters other than yield (viz., reduction of percentage diseases, increase in conceiving rate, inter-calving period etc.)**

Data on other parameters in relation to technology demonstrated		
Parameter with unit	Demo	Check if any
Laminitis %	3	12
Oestrus response(%)13/20	65	40
Conception rate(%)7/13	53	25
Oestrus response(%)8/12	66.66	60
Conception rate(%)3/8	37.5	33.33

### 5.B.3. Fisheries

Type of Breed	Name of the technology demonstrated	Breed	No. of Demo	Units/ Area (m <sup>2</sup> )	Yield (q/ha)				% Increase	*Economics of demonstration Rs./unit) or (Rs./m <sup>2</sup> )				*Economics of check Rs./unit) or (Rs./m <sup>2</sup> )			
					Demo			Check if any		Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
					H	L	A										
Freshwater edible fishes	Culture of fishes using formulated floating feed (2015-16)	Catla, Rohu, Mrigal, Pearlspot, Tilapia	10	10	2409	660	1344	228	21%	5180	11862	6682	2.29	4361	8373	4012	1.92
Freshwater edible fishes	Culture of fishes using formulated floating feed (2016-17) under progress	Pearlspot, Tilapia	10	10	-	-	-	-	-	Trial under progress							

#### Data on additional parameters other than yield (viz., reduction of percentage diseases, effective use of land etc.)

Data on other parameters in relation to technology demonstrated		
Parameter with unit	Demo	Check if any
Survival %	66.9	65.3
Growth Survival B C Ratio	Avg growth of peralspot 80g and for tilapia 250g in 6 months, Survival ~90% Demo under progress	100g for Indian Major carps Survival ~80%

### 5.B.4. Other enterprises : Nil

Enterprise	Name of the technology demonstrated	Variety/ species	No. of Demo	Units/ Area {m <sup>2</sup> }	Yield (q/ha)			% Increase	*Economics of demonstration (Rs./unit) or (Rs./m <sup>2</sup> )				*Economics of check (Rs./unit) or (Rs./m <sup>2</sup> )				
					Demo				Check if any	Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
					H	L	A										

#### Data on additional parameters other than yield (viz., additional income realized, employment generation, quantum of farm resources recycled etc.)

Data on other parameters in relation to technology demonstrated		
Parameter with unit	Demo	Local

### 5.B.5. Farm implements and machinery: Nil

Name of the implement	Cost of the implement in Rs.	Name of the technology demonstrated	No. of Demo	Area covered under demo in ha	Labour requirement in Man days		% save	Savings in labour (Rs./ha)	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)				
					Demo	Check			Gross cost	Gross Return	Net Return	** BC R	Gross Cost	Gross Return	Net Return	** BC R	

#### Data on additional parameters other than laboursaved (viz., reduction in drudgery, time etc.): Nil

Data on other parameters in relation to technology demonstrated		
Parameter with unit	Demo	Local

### 5.B.6. Extension and Training activities under FLD

Sl.No.	Activity	No. of activities organised	Number of participants	Remarks
1	Training	2	50	Resource person from CTCRI, Trivandrum also attended the programme to talk on biological control of pest and diseases in banana.
2	Method demonstration	1	38	Method demonstration on use of botanical pesticides Nanma and Menma.
3	Extension activity	3	96	The programme was organised in collaboration with cooperative milk society

**PART VI – DEMONSTRATIONS ON CROP HYBRIDS: Nil****Demonstration details on crop hybrids: Nil**

Type of Breed	Name of the technology demonstrated	Name of the hybrid	No. of Demo	Area (ha)	Yield (q/ha)			% Increase	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)						
					Demo				Check	Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR		
					H	L	A												

**PART VII. TRAINING****7.A. Training of Farmers and Farm Women including sponsored training programmes (On campus)**

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Crop Production</b>										
a) Plantation crops										
Spices	3	52	14	66	1	0	1	53	14	67
<b>Horticulture</b>										
a) Plantation crops										
Spices	5	98	15	113	5	0	5	103	15	118
Cocoa	1	52	3	55	0	0	0	52	3	55
b) Vegetables	4	95	7	102	4	1	5	99	8	107
<b>Plant Protection</b>	3	45	13	58	3	1	4	48	14	62
a) Plant protection aspects										
b) Bee keeping (PAID)	<b>1</b>	<b>19</b>	<b>1</b>	<b>20</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>20</b>	<b>1</b>	<b>21</b>
<b>Soil Health and Fertility Management</b>										
Soil Science	1	6	0	6	0	0	0	6	0	6
a) Soil health management										
<b>Livestock Production and Management</b>										
Dairy Management	1	15	3	18	0	1	1	15	4	19
Poultry Management	4	57	54	111	5	4	9	62	58	120
Goatary management	3	33	4	37	2	13	15	35	17	52
Goatary (PAID)	<b>1</b>	<b>7</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>1</b>	<b>8</b>
<b>Fisheries</b>										
Composite fish culture	1	17	13	30	1	2	3	18	15	33
<b>Home Science/Women empowerment</b>										
Processing and cooking	7	10	86	96	1	14	15	11	100	111
Value addition	1	2	1	3	0	0	0	2	1	3
Women empowerment (Flower arrangement)	1	1	18	19	0	0	0	1	18	19
<b>Production input at site</b>										
Mushroom cultivation	2	17	30	47	2	3	5	19	33	52
<b>Other</b>										
a) Spices – Improved Spice Production technology	6	90	12	102	4	0	4	94	12	106

b) Soil Water Management	2	30	10	40	0	0	0	30	10	40
c) Plantation crops – Coconut	3	153	8	161	5	0	5	158	8	166
d) Planation crops - Cocoa	1	23	2	25	0	0	0	23	2	25
<b>TOTAL</b>	<b>51</b>	<b>822</b>	<b>295</b>	<b>1117</b>	<b>34</b>	<b>39</b>	<b>73</b>	<b>856</b>	<b>334</b>	<b>1190</b>

#### 7.B Training of Farmers and Farm Women including sponsored training programmes (Off campus)

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Crop Production</b>										
Planation Crops - Spices	1	87	21	108	2	0	2	89	21	110
<b>Horticulture</b>										
<b>a) Vegetable Crops</b>										
Vegetables and banana	3	150	35	185	0	0	0	150	35	185
<b>c) Spices</b>	3	92	77	169	2	4	6	94	81	175
<b>Soil Health and Fertility Management</b>										
a) Soil Health Management	5	199	46	245	3	3	6	202	49	251
b) Soil Testing	3	120	19	139	0	0	0	120	19	139
c) INM	1	5	31	36	0	0	0	5	31	36
<b>Livestock Production and Management</b>										
Dairy Management	4	159	114	273	46	41	87	205	155	360
Poultry Management	2	18	43	61	4	7	11	22	51	73
Goatary	1	12	18	30	4	2	6	16	20	36
<b>Plant Protection</b>	0	0	0	0	0	0	0	0	0	0
Integrated Pest and Disease Management	4	114	12	126	6	1	7	120	13	133
<b>Fisheries</b>										
<b>Home Science</b>										
Processing and cooking	3	64	103	167	0	3	3	64	106	170
<b>Production input at site</b>										
<b>Others</b>										
a) Plantation crops-Coconut value addition	1	1	23	24	0	2	2	1	25	26
<b>TOTAL</b>	<b>31</b>	<b>1021</b>	<b>542</b>	<b>1563</b>	<b>67</b>	<b>63</b>	<b>130</b>	<b>1088</b>	<b>606</b>	<b>1694</b>

#### 7.C.Training for Rural Youths including sponsored training programmes (on campus)

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Horticulture										
a)Spices	4	113	104	217	0	0	0	113	104	217
<b>Plant Protection</b>	2	17	40	57	0	3	3	17	43	60
Plant protection aspects										
Bee keeping	1	30	6	36	2	2	4	32	8	40

<b>Fisheries</b>	5	112	47	159	11	5	16	123	52	175
a) Ornamental fish culture										
b) Fresh water fish culture	1	20	2	22	1	0	1	21	2	23
c) Brackish water aquaculture	1	10	0	10	1	0	1	11	0	11
d) Fish processing	1	7	19	26	1	3	4	8	22	30
e) Ornamental fish culture (PAID)	<b>1</b>	<b>15</b>	<b>2</b>	<b>17</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>2</b>	<b>23</b>
<b>Home Science</b>	1	12	14	26	1	2	3	13	16	29
a) Processing of fruits and vegetables										
<b>Soil Science</b>	1	6	0	6	0	0	0	6	0	6
a) Soil testing										
<b>TOTAL</b>	<b>18</b>	<b>342</b>	<b>234</b>	<b>576</b>	<b>23</b>	<b>15</b>	<b>38</b>	<b>365</b>	<b>249</b>	<b>614</b>

#### 7.D. Training for Rural Youths including sponsored training programmes (off campus)

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Horticulture</b>	1	45	4	49	0	0	0	45	4	49
a) Spices										
b) Vegetables	1	26	25	41	0	0	0	26	25	41
<b>Animal Science</b>	1	19	18	37	7	4	11	26	22	48
a) Dairy cow management										
<b>Fisheries</b>	3	209	84	293	14	4	18	223	88	311
a) Composite fish culture										
<b>Soil Science</b>	1	20	25	45	0	0	0	20	25	45
a) Soil Testing										
<b>TOTAL</b>	<b>7</b>	<b>319</b>	<b>156</b>	<b>465</b>	<b>21</b>	<b>8</b>	<b>29</b>	<b>340</b>	<b>164</b>	<b>494</b>

#### 7.E. Training programmes for Extension Personnel including sponsored training programmes (on campus)

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Horticulture</b>	1	3	4	7	0	0	0	3	4	7
a) Fruits and vegetables										
<b>Animal Science</b>	1	8	0	0	1	0	1	9	0	9
a) Dairy cow management										
<b>Total</b>	<b>2</b>	<b>11</b>	<b>4</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>4</b>	<b>16</b>

#### 7.F. Training programmes for Extension Personnel including sponsored training programmes (off campus)

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Composite fish culture	2	74	18	92	10	5	15	84	23	107
Processing of vegetables	1	14	15	19	0	0	0	14	15	19
<b>Total</b>	<b>3</b>	<b>88</b>	<b>33</b>	<b>111</b>	<b>10</b>	<b>5</b>	<b>15</b>	<b>98</b>	<b>38</b>	<b>126</b>

**7.G. Sponsored training programmes conducted**

S.No.	Area of training	No. of Courses	No. of Participants									
			General			SC/ST			Grand Total			
			Male	Female	Total	Male	Female	Total	Male	Female	Total	
<b>1</b>	<b>Crop production and management</b>											
1.a	Plantation crops- Cocoa cultivation	1	23	2	25	0	0	0	23	2	25	
<b>2</b>	<b>Others</b>	0	0	0	0	0	0	0	0	0	0	
2.c	Breeding and culture of ornamental fishes	1	23	3	26	4	0	4	27	3	30	
2.d	Fish processing	1	7	19	26	1	3	4	8	22	30	
2.h	Goatary (PAID)	1	7	1	8	0	0	0	7	1	8	
2.i	Bee keeping (PAID)	1	19	1	20	1	0	1	20	1	21	
2.j	Ornamental fish culture (PAID)	1	15	2	17	6	0	6	21	2	23	
	<b>Total</b>	<b>6</b>	<b>94</b>	<b>28</b>	<b>122</b>	<b>12</b>	<b>3</b>	<b>15</b>	<b>106</b>	<b>31</b>	<b>137</b>	

**Details of sponsoring agencies involved**

1. Department of agriculture
2. Kerala horticultural products development corporation

**7.H. Details of Vocational Training Programmes carried out by KVKs for rural youth: Nil**

S.No.	Area of training	No. of Courses	No. of Participants								
			General			SC/ST			Grand Total		
			Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>1.</b>	<b>Livestock and fisheries</b>										
1.a.	Others - Ornamental fish culture (DBT)										
	<b>Grand Total</b>										

**PART VIII – EXTENSION ACTIVITIES****Extension Programmes (including extension activities undertaken in FLD programmes)**

Nature of Extension Programme	No. of Programmes	No. of Participants (Total)			No. of Participants SC / ST			No. of extension personnel (Total)		
					Male	Female	Total	Male	Female	Total
Radio talks	5	-	-	100s	-	-	-	-	-	-
TV programmes	-	-	-	-	-	-	-	-	-	-
Advisory Services	2310	-	-	2310	-	-	-	0	0	0
Field/Diagnostic Visits	93	-	-	270	-	-	-	-	-	9
Exhibition	15	-	-	8000	-	-	-	-	-	710
Exposure Visits	7	-	-	206	-	-	-	-	-	3
Farmers group meeting	1	-	-	7	-	-	-	-	-	0
Farmers Visit to KVK	611	-	-	2089	-	-	-	-	-	12
Field Day	2	-	-	76	-	-	-	-	-	12
Film Show	4	-	-	100	-	-	-	-	-	-
KisanMela/Technology week	1	-	-	1000s						100s
Group discussion	23	-	-	32	-	-	-	-	-	-
Lecture delivered	26	-	-	1146	-	-	-	-	-	-
Method Demonstration	8	-	-	175	-	-	-	-	-	-
Seminar	5	-	-	1359	-	-	-	-	-	75
Celebration of important days	4	-	-	426	-	-	-	-	-	-
Newspaper coverage	65	-	-	-	-	-	-	-	-	-
Extension literature distributed	116	-	-	116	-	-	-	-	-	-
Soil health Camp	7	-	-	277	-	-	-	-	-	-

Workshop	4	-	-	22	-	-	-	-	-	104
Artificial insemination	43	-	-	43	-	-	-	-	-	-
Animal Health campaign	23	-	-	100s	-	-	-	-	-	-
SHG meeting	11	-	-	152	-	-	-	-	-	-

## PART IX – PRODUCTION OF SEED, PLANT AND LIVESTOCK MATERIALS

### 9.A. Production of seeds by the KVKs: Nil

Crop category	Name of the crop	Variety	Hybrid	Quantity of seed (qtl)	Value (Rs)	Number of farmers to whom provided
Vegetable seeds	Amaranthus	-	-	180g	180	9
	Bittergourd	-	-	10g	10	1
	Cowpea	-	-	610g	610	32
	Cucumber	-	-	40g	40	3
	Okra	-	-	40g	40	3
	Paddy	-	-	1 kg	45	1
Spices*	Ginger	IISR Varada	-	4.50	67,500	98
<b>Total</b>	-	-	-	-	<b>68425</b>	<b>147</b>

### 9.B. Production of planting materials by the KVKs

Crop category	Name of the crop	Variety	Hybrid	Number	Value (Rs.)	Number of farmers to whom provided
Vegetable seedlings	Cabbage	-	NS183	3395	10185	145
	Cauliflower	-	NS 60-N	3137	9411	138
	Brinjal	-	-	297	1218	54
Fruits	Mango	Vellaikolumban	Sindhu	106	6360	40
	Rose apple rooted cuttings (Spl)	Elite line	-	189	4345	72
	Rambutan	-	Seedlings	74	1480	24
	Acid lemon	-	-	17	220	10
	Jack graft	Elite line	-	195	17950	90
	Lime	-	-	20	200	5
	Fashion fruit	-	-	1	20	1
	Spices	Nutmeg	IISR Viswasree	-	2981	694725
<i>Piper colubrinum</i>		-	-	833	7828	59
<i>Piper chaba</i>		Elite line	-	213	2630	53
<i>Garcinia grafts</i>		Elite line	-	492	31600	126
<i>Bush pepper</i>		-	-	3609	250330	458
<i>Ciinamon</i>		IISR Nithyasree, IISR Navasree	Rooted cuttings and seedlings	60	940	24
<i>Clove seedlings</i>		-	-	1	25	1
<i>All spice</i>		-	-	2	150	2
<i>Blackpepper</i>		Thevam, Panniyur etc	RC	14294	189490	465
Ornamental plants		<i>Misc. ornamental plants</i>	-	-	58	580
	<i>Aquarium plants</i>	-	-	136	1480	30
<b>Total</b>				<b>30110</b>	<b>12,31,167</b>	<b>2331</b>



### 9.C. Production of Bio-Products

Bio Products	Name of the bio-product	Quantity Kg	Value (Rs.)	Number of farmers to whom provided
Bio-Pesticide	<i>Neem soap</i>	220	8800	124
Bio-fungicide	<i>Trichoderma</i>	349.4	32692	126
Banana micro nutrient mixture	<i>Peruma micro nutrient mix</i>	227	43212	103
Others (specify)	Pheromone traps	118	13525	80
Mushroom spawn	Oyster mushroom spawn	138.29	16594	79
Vermicompost	-	672	8064	81
Earthworm	-	510	255	6
Azolla	-	74.45	4467	56
Fish feed	-	16.99	1699	49
Sale of publications	-	470	5610	321
Soil Testing charges	-	103	20600	103
<b>Total</b>	-	-	<b>1,55,518</b>	<b>1128</b>

### 9.D. Production of livestock materials

Particulars of Live stock	Name of the breed	Number	Value (Rs.)	Number of farmers to whom provided
<b>Dairy animals</b>	<b>Bull</b>	<b>1</b>	<b>17000</b>	<b>1</b>
Others (Pl. specify)	Goats	7	31101	6
	Goat mating	108	8100	86
	AI	43	1935	43
	Cow Milk	4.25 lit	170	1
<b>Poultry</b>				
Layers 45 days and 1 day old	Gramasree, aseel cross etc	43287	1618174	589
Turkey	-	29	12600	15
<b>Fisheries</b>				
Fingerlings	Live bearer and egg laying freshwater Ornamental fishes	3310	24289	265
Micro worm	-	4	200	4
Larva food	-	2	70	2
Medicines	-	11	330	6
PVC Cage	-	1	200	1
Fresh fish	-	18.6	2301	16
<b>Total</b>	-	-	<b>17,16,470</b>	<b>1035</b>

## PART X – PUBLICATION, SUCCESS STORY, SWTL, TECHNOLOGY WEEK AND DROUGHT MITIGATION

### 10. A. Literature Developed/Published (with full title, author & reference)

A. KVK News Letter ((Date of start, Periodicity, number of copies distributed etc.)

Newsletter- KVK Kozhikode- Volume 9, No.1( January –December 2016), Hard copies : 50 , Soft copies: 80

B. Literature developed/published

Item	Title	Authors name	Number
Abstract	Analysis on farming and marketing of ornamental fishes in South India- A case study.	Pradeep, B., P. Rathakrishnan and Lijo Thomas	2017. Abstract in 2 <sup>nd</sup> symposium on frontline extension programmes for realizing higher productivity and profitability in Farming

			7-8 March 2017. Page 136-137
	Foot rot management of black pepper in Kozhikode district of Kerala- Poster presentation for the Second KVK Symposium held at TNAU, Coimbatore	K.K. Aiswariya, K.M.Prakash, K. Jayarajan	1
Popular article	Nendra vazhayil utpadana mikavinu sookshma moolakakoottum uyarnna nadeel sandrathayum (Malayalam) (Micro nutrient mixture and High Density Planting for higher productivity in nendran banana). Kerala Karshakan. 24(4): 26-27	Manoj, P. S and Rathakrishnan, P	-
	Kurumulaku ottikkalil karshakante vijayam (Malayalam) (Success story of a farmer in black pepper grafting). Spice India (M). 29(4): 26-28	Prakash, K.M, Manoj, P. S and Rathakrishnan, P	-
	Fruit crop cultivation in Kerala – Problems and prospects. Kerala Karshakan e- journal. 3(12):12-16	Manoj, P. S, Nazia Sheriff and Rathakrishnan, P.	-
	Nendra vazhayil utpadana mikavinu sookshma moolakakoottum uyarnna nadeel sandrathayum (Malayalam) (Micro nutrient mixture and High Density Planting for higher productivity in nendran banana). Krishiyankanam. 21(5): 24-25	Manoj, P. S, and Rathakrishnan, P	-
	Bush pepper – A profitable venture by an innovative farmer. In: Malhotra, S.K, Kandiannan, K, Mini Raj, K, Neema V. P, Prasath, D, Srinivasan, V. Homey Cheriyan and Femina (Eds.). Proceedings- National Seminar on Planting Material production in Spices. Directorate of Arecanut and Spices Development, Kozhikode, Kerala. 233-234 pp.	Prakash, K.M, Manoj, P. S and Rathakrishnan, P	-
	Adayamayum alankaramayum valarthan kuttikkurumulaku (Malayalam) (Bush pepper for income generation and ornamental value). Krishiyankanam 21(5): 38-39	Prakash, K.M and Manoj, P. S	-
	Successful farmer research in pepper grafting. Spice India (E) 29(4): 20-24	Prakash, K.M, Manoj, P. S and Rathakrishnan, P.	-
	Jathiyil Mikavumayi Keralashree (Malayalam) (A promising nutmeg variety Keralashree). Spice India (M) 29(5): 8-10	Sasikumar, B, Rema, J, Saji, K. V, Manoj, P.S and Sujeeesh, E.S. 2016	-
	Jaiva pachakkari krishiyilay penkoottayam (Malayalam) (Women group engaged in organic vegetable production). Krishiyankanam. 21(6): 26-27	Manoj, P. S, Prakash, K.M and Rathakrishnan, P. 2016.	-
	Rocky terrain is not a barrier for this ginger woman. Indian Journal of Arecanut, Spices and Medicinal Plants 18(2): 42-43	Prakash, K.M, Manoj, P. S and Rathakrishnan, P	-
	Parayanenkilum inchi vialayum (Malayalam) (Ginger yield even in rocky terrain). Krishiyankanam 22(2): 32-33	Prakash, K.M and Manoj, P. S.	-
	Jthiyil nadeel vasthukkaluday udpadana sankethika vidya (Malayalam) (Planting material production in nutmeg). Krishiyankanam. 22(2): 27-29, 36, 17	Manoj, P. S, Prakash, K.M, Rathakrishnan, P and Femina.	-
	Low cost ornamental fish culture techniques, 2016, Jalakarshakan, September, page 20-24	Pradeep, B. Subal, N.M.	
	Women empowerment through ornamental fish culture, 2016, Krishiyankanam, August, page 44-46	Subal N.M., Pradeep,B	
	KVK, Kozhikode promotes organic mushroom production from banana residue, www.icar.org.in/en/node/11850. Directorate of	Ratha Krishnan, P.	-

	Knowledge Management in Agriculture, ICAR, New Delhi, Nov, 2016.		
	Organic mushroom production from banana - crop residue, ICAR News, 22 (1): 2-3.	Ratha Krishnan, P.	-
	Deepthi, A. 2017. Kamaneeyam Kera bouquet, Kerala karshakan, January, pp 64	Deepthi.A	-
	Deepthi, A. 2017. Success stories: Empowerment through value addition in ginger, nutmeg, Kasthuri turmeric, Kerala karshakan, March, pp 57 – 61	Deepthi.A	-
Leaflets	Freshwater ornamental fish diseases and their preventive measures (Malayalam)	Pradeep, B. , Neethu V.S	2017, 8pp
	Deepthi, A. 2017. Chakka vibhavangal (Malayalam), ICAR- KVK, IISR, Calicut, 6p.	Depthi A	
	Krishi Vigyan Kendra, Kozhikode – Ottanottathil (Malayalam) (Krishi Vigyan Kendra Kozhikode at a glance). ICAR – Krishi Vigyan Kendra, Peruvannamuzhi, Kozhikode, 6 p	Rathakrishnan, P and Manoj, P. S,	3500
Training Manual	Women empowerment through ornamental fish culture under. DBT training manual.	Pradeep, B. Subal, N.M and Neethu V.S	2016, Pages 20
	Freshwater ornamental fish culture. NFDB training manual	Pradeep, B. Subal, N.M and Neethu V.S.	2016, Pages 27
	Fish processing. NFDB training manual.	Pradeep, B., Rathakrishnan P., Deepthi A and Neethu V.S.	2016, Pages 28
	Training manual on Beekeeping	K . K. Aiswariya, P.Rathakrishnan	21
Research paper	Role of institutional extension effort in spreading grass root innovations: A study of ornamental fish culture in Kerala.	B. Pradeep., P.S. Manoj and Lijo Thomas	2016, Indian Res. J.Ext.Edu .16(1): 134-138
	Innovations in household level ginger cultivation - case study in Kozhikode district, Kerala. In: Joseph, E.J, Harikumar, P.S, Babu Mathew, Girish Gopinath, Resmi, T.R and Surendran U (Eds.). Abstract Proceedings of the National Seminar on Natural Resource Management for Horticultural Crops under changing climatic conditions. Centre for Water Resources Development and Management, Kozhikode, Kerala. 74-75 pp	Rathakrishnan, P, Prakash, K.M and Manoj, P. S	-
	Rocky terrain is not a barrier to the ginger women. Indian journal of Arecanut, spices & medicinal plants, 18 (12), 38 – 39.	Prakash, K.M., Manoj, P.S. and Ratha Krishnan, P	-
	Effect of pre-sowing treatments on Prosopis pallida seed germination attributes. Range Management and Agroforestry, 37 (1), 104 – 107.	Ramesha, M.N., Patil, S.L., Ratha Krishnan, P. and Seshadri, B.N.	-
	Partitioning of rainfall in Acacia species of Indian Thar Desert. Indian J. of Agroforestry., 18 (1), 10 – 15.	Ratha Krishnan, P. and Venkatesan, K.	-
Book chapter	Quality planting material production options and potential towards drought mitigation. In: Drought mitigation and management (Eds: Suresh Kumar, S.P.S. Tanwar and Akath Singh), Scientific Publishers (India), Jodhpur, 218 – 228. 2017.	Ratha Krishnan, P.	-

**10.B. Details of Electronic Media Produced: Nil**

S. No.	Type of media (CD / VCD / DVD/ Audio-Cassette)	Title of the programme	Number
-	-	-	-

**10.C. Success Stories / Case studies, if any (two or three pages write-up on each case with suitable action photographs. The Success Stories / Case Studies need not be restricted to the reporting period).****Success Story -1****Year: 2014 - 2017****Title of the Success Story :Grafting technology to combat the dreaded *Phytophthora* foot rot of black pepper****URL Name :****Details of Success Story :**

- 1. Background:** Black pepper is one of the most important spice crops of the district. The area under this crop is fast diminishing due to the high incidence of *Phytophthora* foot rot. The disease is presently managed by an integrated approach involving chemical and biocontrol methods which have its own limitations. Grafting pepper on Brazilian wild pepper (*Piper colubrinum*) which is resistant to foot rot is a promising way for combating this deadly disease. Hence the trial was initiated with grafted pepper as one of the technological options.
- 2. Intervention Process:** The method of growing grafted pepper was known before, but farmers were reluctant to test it apparently due to apprehensions of failure of the technology. As it is a perennial crop the risk involved was more. So the first action on the part of KVK was confidence building. Hence KVK organized an exposure visit of pepper farmers to KVK Knur add a progressive farmers' field at Kannur, who has been practising the technology for more than 13 years. As a follow up trial training programmes on grafted pepper cultivation with emphasis on production of grafts were conducted at our KVK which motivated the farmers assess the technology as a KVK onfarm testing programme.
- 3. Intervention Technology:** Brazilian wild pepper (*Piper colubrinum*), a wild relative of cultivated black pepper is resistant to *Phytophthora* foot rot. Hence trial was undertaken in five farmers' fields in Unnikulam, Thiruvambady, Changaroth and Koothali panchayats during November – December 2014 with grafted pepper as one of the technological options. More over *Piper colubrinum* is a marshy plant and hence pepper cultivation could be extended eve water logged areas were its cultivation was never possible.
- 4. Impact Horizontal Spread:** The trial was initiated during January – February 2015 by planting the grafts. By second year end, more than 86 per cent of grafts were established in all the plots and is growing satisfactorily. About 58 per cent of grafts have started spiking. No incidence of *Phytophthora* foot rot was reported in any of the grafted plants. The grafts grown without irrigation showed wilting symptoms by 25- 30 days and hence have to be irrigated especially in upland conditions. But grafts planted in low lying areas could withstand up to two months without irrigation.

Convinced by the success of the technology, Mr.Muhammed, one of the beneficiary farmers expanded his cultivation of grafted plants to 500 numbers. Grafting was carried out by himself after learning the technology from KVK. A Farmers Field School was also organized in his farm to popularize the

technology among pepper farmers. He is also acting as a Master Farmer for various training programmes organized by ATMA, Department of Agriculture, Government of Kerala. He started production of bush pepper grafts also. Directorate of Arecanut and Spices Development, Kozhikode honoured the farmer for his innovative black pepper cultivation practices in January 2017. He is thus constantly acting as a resource person and about 8- 10 farmers in his locality have started cultivation of grafted pepper and the technology is slowly spreading to other farmers also.

Another beneficiary farmer Mr.Sadanandan expanded his cultivation of grafted plants to 100 numbers. He also carried out grafting by himself after learning the technology from KVK. In addition, he is acting as a master farmer in training programmes.

Now both the plots have become a demonstration plot for KVK training programmes and KVK conduct regular exposure visits to these plots. As a direct impact of the success of the technology, the demand for grafted pepper plants have increased many fold in KVK underlining the success of the technology and its horizontal spread.

5. **Impact Economic Gains:** Black pepper is one of the most important spice crops of the district and its cultivation has been affected by the high incidence of *Phytophthora* foot rot. Area under this crop has drastically reduced in the last several years due this chronic malady. The disease is presently managed by an integrated approach involving chemical and biocontrol methods which have its own limitations. But by employing the grafting technology, the disease could be avoided completely resulting in huge economic gains to the farmers, especially considering the fact that pepper is a perennial crop.
6. **Impact on Employment Generation:** Convinced by the success of the technology, demand for grafted pepper plants have increased manifold. Mr.Muhammed, one of the participating and most successful farmer started production of grafts for own use as well as for sale to needy farmers. He has already produced over 600 grafts costing about Rs.1,80,000.

KVK also started production of grafted plants employing KVK trained rural youth. They are also earning an annual income of over Rs.3.50 lakhs by the production of various planting material in KVK nursery. In addition, many private nurseries in Kozhikode and Kannur districts have started production of pepper grafts recently and their economic gains have to be evaluated further.

#### Other Success Stories

- a) **Low cost method of ornamental fish cultivation**
- b) **Broiler goat technology**

**10.D. Give details of innovative methodology or innovative technology of Transfer of Technology developed and used during the year: Nil**

**10.E. Give 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): Nil**

S. No.	Crop / Enterprise	ITK Practiced	Purpose of ITK
1			
2			

**10.F. Indicate the specific training need analysis tools/methodology followed for**

- Identification of courses for farmers/farm women- Based on feedback during kisan goshti, interaction at ATMA workshops and based on field survey.
- Rural Youth - Based on request received from groups, NGOs, SHGs etc.
- In-service personnel - Based on Departmental priorities and demand

**10.G. Field activities**

- i. Number of villages adopted:
- ii. No. of farm families selected:
- iii. No. of survey/PRA conducted:

**10.H. Activities of Soil and Water Testing Laboratory**

Status of establishment of Lab : Working

1. Year of establishment : 2010
2. List of equipments purchased with amount :

Sl. No	Name of the Equipment	Qty.	Cost (Rs.)
1	Electronic physical balance	1	6160
2	Chemical balance	1	42162
3	pH meter	1	14388
4	Oven	1	15476
5	Water distillation still	1	41340
6	Digestion and distillation system	1	130802
7	Hot plate	1	4120
8	Spectrophotometer	1	55230
9	Shaker	1	48038
10	Conductivity meter	1	14960
11	Flame photometer	1	37026
12	Refrigerator	1	16890
13	Grinder	1	1950
14	Double distillation unit	1	63250
15	Electronic balance	1	6800
16	Mridaparishak	2	180000
<b>Total</b>		<b>17</b>	<b>678592</b>

**Details of samples analyzed so far since establishment of SWTL:**

Details	No. of Samples analyzed	No. of Farmers benefited	No. of Villages	Amount realized (Rs.)
Soil Samples	2987	816	73	23800
Water Samples	46	46	16	2800
<b>Total</b>	<b>3033</b>	<b>862</b>	<b>89</b>	<b>26600</b>

**Details of samples analyzed during the 2016-17:**

Details	No. of Samples analyzed	No. of Farmers benefited	No. of Villages	Amount realized (Rs.)
Soil Samples	220	220	30	23800/-
Water Samples	18	18	7	Analysed under the proje
<b>Total</b>	<b>238</b>	<b>238</b>	<b>37</b>	

**10.I. Technology Week celebration during 2016-17 Yes.**

Period of observing Technology Week : 23 to 30 December 2016  
 Total number of farmers visited : 300  
 Total number of agencies involved : 3  
 Number of demonstrations visited by the farmers within KVK campus: 8



## PART XI. IMPACT

### 11.A. 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)
Banana micronutrient mixture	15	100	Rs. 5.45 lakhs per ha	Rs. 6.97 lakhs per ha
Plant propagation techniques	25	32	Nil (New initiative)	Rs. 58000 per person
Quality seed production in ginger	20 (2 SHGs)	100	Nil (New initiative)	Rs. 33750 per SHG

### 11.B. Cases of large scale adoption:

### 11.C. Details of impact analysis of KVK activities carried out during the reporting period:

## PART XII - LINKAGES

### 12.A. Functional linkage with different organizations

KVK is maintaining functional linkages with All India Radio, the State Dept. of Agriculture, Dept. of Animal Husbandry, Dept. of Fisheries, Agri-Horti Society, Calicut, Gramin Banks around KVK Voluntary organizations etc. to organise various training programmes and other extension activities like animal health camps, seminars and exhibitions.

Sl. No	Name of Organization	Nature of linkage
a.	ATMA	Assistance for Technology Week celebrations, ATMA managing committee meetings and MTA meetings
b.	NABARD	Financial assistance for the project Lead Enthusiastic Agriculturist to Develop (LEAD) Farm by setting up of agriculture incubation centre at KVK
c.	KAU	Technical support, supply of technological inputs
d.	Department of Agriculture	As resource person for training programmes, beneficiary identification for various training programmes
e.	NGO's, Farmers' clubs etc	As resource person for training programmes
f.	VFPCCK	Training and supply of quality seeds
g.	DCCD	Training
h.	NFDB	Training
i.	DBT	External funded project

### 12.B. List Externally Funded Projects / schemes undertaken by the KVK and operational now, which have been financed by State Govt./Other Agencies

Name of the scheme	Role of KVK	Date/ Month of initiation	Funding agency	Amount (Rs.)
Lead Enthusiastic Agriculturist to Develop (LEAD) Farm by setting up of Agriculture Incubation Centre at KVK	Technical guidance to set up model demo units of latest technology in KVK farm	January-2015	NABARD	7.30
Empowerment of rural women and youth in Kozhikode district through ornamental fish culture applying bio-technologies	Project implementation	March 2015	DBT	21.5

### 12.C. Details of linkage with ATMA

- a) Is ATMA implemented in your district Yes  
If yes, role of KVK in preparation of SREP of the district?



**Coordination activities between KVK and ATMA during 2016-17**

S. No.	Programme	Particulars	No. of programmes attended by KVK staff	No. of programmes Organized by KVK	Other remarks (if any)
01	Meetings	MTA meeting	12		
		Interview for selection of BTMs	1	-	
02	Extension programmes	Diagnostic field visits	3	-	
		Training	-	1	-
		Seminar	1		
		Exhibitions	3	--	-

**12.D. Give details of programmes implemented under National Horticultural Mission / MIDH :**

S. No.	Programme	Nature of linkage	Funds received if any Rs.	Expenditure during the reporting period in Rs.	Constraints if any
1	Training programmes	Expert lecture and exposure visit	-	-	-

**12.E. Nature of linkage with National Fisheries Development Board:**

S. No.	Programme	Nature of linkage	Funds received if any Rs.	Expenditure during the reporting period in Rs.	Remarks
1.	Training and demonstration on fish processing -	Training	Rs. 42750	Rs. 41048	Training given for 30 individuals for 3days
2.	Training and demonstration on Breeding and culture of freshwater ornamental fishes	Training	Rs. 57,250	Rs.56,750	Training given for 30 individuals for 5days

**12.F. Details of linkage with RKVY : Nil**

S. No.	Programme	Nature of linkage	Funds received if any Rs.	Expenditure during the reporting period in Rs.	Remarks

**12. G Kisan Mobile Advisory Services**

Month	No. of SMS sent	No. of farmers to which SMS was sent	No. of feedback / query on SMS sent
April 2016	2	166274	100s
May	4	332164	100s
June	1	1620	-
July	2	166416	
August	1	83209	100s
September	0	0	0
October	1	83211	
November	2	166434	100s
December	2	166694	100s
January 2016	2	166666	100s
February	1	83337	100s
March	1	83364	100s
Total for the year 2016-17	<b>19</b>	<b>1499389</b>	-

### PART XIII- PERFORMANCE OF INFRASTRUCTURE IN KVK

#### 13.A. Performance of demonstration units (other than instructional farm)

Sl. No.	Demo Unit	Year of establishment	Area (ha)	Details of production			Amount (Rs.)		Remarks
				Variety	Produce	Qty.	Cost of inputs	Gross income	
1	Vermicompost	2008	9.00 m <sup>2</sup>	-					
2	Nursery	1996	100m <sup>2</sup>	Released varieties and elite lines	Grafts, rooted cuttings, seedlings etc. of different horticultural crops	30,903	Rs.8.58 lakhs	Rs.12.41 lakhs	
3	Poly house for seedling production	2015	50 m <sup>2</sup>	Panniyur, Sakthi, Thevam, Sreekara, Subakara, etc	Rooted cuttings	15,000	120,000	3,00,000	

#### 13.B. Performance of instructional farm (Crops) including seed production:

Name of the crop	Date of sowing	Date of harvest	Area (ha)	Details of production			Amount (Rs.)		Remarks
				Variety	Type of Produce	Qty.	Cost of inputs	Gross income	
									-

#### 13.C. Performance of production Units (bio-agents / bio pesticides/ bio fertilizers etc.,)

Sl. No.	Name of the Product	Qty	Amount (Rs.)		Remarks
			Cost of inputs	Gross income	
1	<i>Trichoderma</i>	1143 kg	22860	114300	The item is available in stock
2	Pheromone Traps-Cuelure	99	7623	12375	-
	Pheromone Traps-MET	48	3216	4800	-
3	Mushroom spawn	159.585 kg	7182	19150.2	-
4	Neam soap	174 Nos.	5568	6960	-

#### 13.D. Performance of instructional farm (livestock and fisheries production)

Sl. No	Name of the animal / bird / aquatics	Details of production			Amount (Rs.)		Remarks
		Breed	Type of Produce	Qty.	Cost of inputs	Gross income	
1	Pregnant heifer	Crossbred	-	1	-	17000.00	-
2	Goats	Malabari	-	4	-	32100.00	-
3	Layer chicks	Gramasree	-	58293	15,77,618.00	21,06,693.00	-
5	Freshwater ornamental fishes	Livebearers and egg laying varieties	-	-	-	-	-

**13.E. Utilization of hostel facilities**

Accommodation available (No. of beds): 26

Months	No. of trainees stayed	Trainee days (days stayed)	Reason for short fall (if any)
April 2016	12	11	-
May	15	6	-
June	12	17	-
July	65	4	-
August	72	11	-
September	7	6	-
October	6	4	-
November	2	1	-
December	30	1	-
January 2017	35	5	-
February	2	9	-
March	36	23	-

**13.F. Database management**

S.No	Database target	Database created
1	District agricultural inventory	Updated and being maintained

**13.G. Details on Rain Water Harvesting Structure and micro-irrigation system**

Amount sanction (Rs.)	Expenditure (Rs.)	Details of infrastructure created / micro irrigation system etc.	Activities conducted					Quantity of water harvested in '000 litres	Area irrigated / utilization pattern
			No. of Training programmes	No. of Demonstrations	No. of plant materials produced	Visit by farmers (No.)	Visit by officials (No.)		

**PART XIV - FINANCIAL PERFORMANCE****14.A. Details of KVK Bank accounts**

Bank account	Name of the bank	Location	Branch code	Account Name	Account Number	MICR Number	IFSC Number
With Host Institute	State Bank of India	Calicut	000861	ICAR Unit, IISR, Kozhikode	30302810771	673002001	SBIN0000861
With KVK							

**14.B. Utilization of KVK funds during the year 2016-17(Rs. in lakh)**

Name of head of account	RE	Expenditure	Closing balance
<b>Recurring Items</b>			
Pay & Allowances	12014000	11942405	71595
Travelling Allowances	150000	148111	1889
<b>Contingencies</b>			
Stationery & Other Office Exp.	436817	436817	0
POL & R&M of Vehicles	271202	271202	0
Meals for Trainees	61978	61978	0
Materials for Trainees	19090	19090	0
FLD	370000	639989	11
OFT (On Farm Testing)	200000	200000	0
Training of Extn. Functionaries	30000	30000	0

Building Maintenance			
Extension Activities	35000	35000	0
Farmer's Field School	10282	10282	0
Library Maintenance	14908	14908	0
Soil Water testing and issue of soil health cards	48723	48723	0
<b>Total Contingencies</b>	13677000	13603505	73495
<b>Total Recurring</b>			
<b>1. Equipments and furniture</b>			
a) Office automation	300000	299718	282
b) Furniture and fixtures	200000	200000	0
c) Portable carp hatchery	300000	299410	590
<b>2. Works</b>			
a) Repairs & Renovation	1000000	999500	500
<b>3. Vehicle</b>			
a) 4 wheeler replacement	800000	799972	28
<b>Total Non Recurring</b>	2600000	2598600	1400
<b>Grand Total</b>	16277000	16202105	74895
<b>Closing Balance</b>			<b>74895</b>

#### 14.C. Status of revolving fund (Rs. in lakh) for the three years

Year	Opening balance as on 1 <sup>st</sup> April	Income during the year	Expenditure during the year	Net balance in hand as on 1 <sup>st</sup> April of each year
April 2014 to March 2015	6.01	8.78	17.46	-2.67
April 2015 to March 2016	-2.67	42.37	34.29	5.42
April 2016 to March 2017	5.42	37.9	40.78	2.54

#### 15. Details of HRD activities attended by KVK staff during 2016-17

Staff Name	Designation	Title of the training programme	Institute Address	Start Date
Jayakumar C K	Programme Assistant Computer	Training programme on cyber security	IASRI, New Delhi	24-09-17 to 5-10-17
Jayakumar C K	Programme Assisnat Computer	Training on purchase through GEM portal	ATARI, Bengaluru	6.2.17
Deepthi	SMS (Home science)	Capacity building of KVK SMS on food processing	AC&RI, Madurai	14 to 16 March 2017
P Ratha Krishnan	Programme Coordinator	Training for district level key resource persons pn "Missions"	Kerala Institute of Local Administration, Trivandrum	3 & 4 March 2017

16. Please include any other important and relevant information which has not been reflected above (write in detail).

#### A. Projects

**Project Name: "Empowerment of rural women and youth in Kozhikode district through ornamental fish culture applying biotechnologies" 2015-18 Funded by Dept. Of Biotechnology New Delhi**

- I. Twenty five ornamental fish culture units have been established under the project for empowering rural women through freshwater ornamental fish culture. The women are residing within 25 Km radius to KVK were

selected, trained and inputs were provided to them for establishing the units at their backyard. These women have started production and sale of ornamental fishes and are earning a monthly income of Rs.2000-5000.

- II. Various sub groups of these women were formed based on their interest in allied areas such as marketing, fish feed preparation, aquarium and its top construction. The marketing of fishes have been takeup by two women who have been procuring fishes from other beneficiaries under the project and also from other fish producers and wholesalers. They are constructing aquariums and have been marketing fish from the sales counter at KVK, by participating in exhibitions and also from their home.
- III. Two self help groups have been formed based on the block panchayaths in which they are residing. One is under Perambra block panchayath which includes eighteen beneficiaries registered as a Joint Liability Group (JLG) under the name Angel JLG (Reg. No.24/16-17/PBA) with office at KVK Peruvannamuzhi. The other group (Jaya activity group) with 5 members is registered under Koorachundu grama panchayath (Reg No. 110/708/01/164).
- IV. The health status of the fish and water quality of culture tanks is being monitored and the disease outbreaks have been recorded. Bacterial disease (Collumnaris) has been the greatest concern followed by protozoan white spot disease. In order to improve the health status and colouration of fish, a fish feed is being formulated incorporating immunostimulant, gut probiotic and carotenoids. The performance of the feed is being evaluated in these ornamental fish culture units.

## **B. Special programmes**

Total three inter institutional collaborative training programmes on “Scientific coconut cultivation and value added products development” with CPCRI, Kasaragod; “Tapioca based Biological pest management in Banana” with CTCRI, Trivandrum and “Spices propagation and integrated management” with IISR, Calicut were also organized.

As mass awareness programmes, programme on “Pandit Deen Dayal Updhyaya Award” giving ceremony was organized at IISR during the visit of Hon’ble Union Agriculture Minister. Seminar cum training on “Scientific coconut cultivation” farmers fair and awareness programme on “Pradhan Mantri Fasal Beema Yojana” celebration of Agriculture education day; World soil day and Rabi awareness programme on “Organic vegetable cultivation”; Jai Kisan Jai Vigyan Week - 2016 and “Agriculture Farmers’ Innovation Meet” were organized at KVK, Peruvannamuzhi for the benefit of thousands of participants.

The Kendra conducted two field days, four seminars, participated in twelve exhibitions, delivered seven radio talks and conducted three studies cum exposure tours for farmers to various research institutes. During the period KVK organized about ten awareness programmes on soil health management and analyzed 68 numbers of soil samples and issued 225 soil health cards to farmers.

KVK organized mobile sales unit for wide publicity and dispersal of quality agriculture inputs at needy doorsteps at least once in a month and covered all the blocks of the district.

# SUMMARY FOR 2016-17

## I. TECHNOLOGY ASSESSMENT

### Summary of technologies assessed under various crops

Thematic areas	Crop	Name of the technology assessed	No. of trials
Integrated Crop Management	Banana	High Density Planting of suckers and TC plants of nendran banana	2
	Yard Long Bean	Improving production of vegetables by cultivation of high yielding varieties	10
Integrated Disease Management	Black pepper	Growing of disease resistant grafted plants	5
Integrated Disease Management	Banana	Assessment of organic management practices against Sigatoka leaf spot in banana	5
Value addition of fruits	Banana	Evaluation of different techniques for dehydrated banana	-
<b>Total</b>	-	-	<b>22</b>

### Summary of technologies assessed under livestock

Thematic areas	Name of the livestock enterprise	Name of the technology assessed	No. of trials
Production and management	Fisheries	Scientific farming of milkfish ( <i>Chanos chanos</i> ) in brackishwater ponds	3
“	Dairy	Assessment of Production performance of different breeds of poultry under homesteads	5
<b>Total</b>			<b>8</b>

### Summary of technologies assessed under various enterprises: Nil

Thematic areas	Enterprise	Name of the technology assessed	No. of trials

### Summary of technologies assessed under Home Science: Nil

Thematic areas	Enterprise	Name of the technology assessed	No. of trials

## II. TECHNOLOGY REFINEMENT

### Summary of technologies refined under various crops: Nil

Thematic areas	Crop	Name of the technology refined	No. of trials
<b>Total</b>			

### Summary of technologies assessed under refinement of various livestock: Nil

Thematic areas	Name of the livestock enterprise	Name of the technology refined	No. of trials
<b>Total</b>			



	Introduction of high value medicinal plants	Demonstration of Java long pepper ( <i>Piper chaba</i> ) as a mixed crop in arecanut/coconut gardens	-	10	0.4	-	-	-	Trial under progress									
	Value addition	Production of herbal products from Curcuma aromatic Soap Face pack	-	20	-	-	-	-	-	-	376 63.25	704 150	1080 86.75	1.8 1.37	296 116	379 85	675 31	1.2 0.73
	Integrated Disease Management	Rhizome treatment with PGPR encapsulated biocapsule @ 20 capsules for treating seeds to be planted in a hectare (ICAR-IISR)	-	10	0.2	124.21	135.5 (chemical control)	-	-	-	474625	916880.3	442255.30	1.93	557250	972176.3	414926.3	1.74
<b>Plantation</b>	Integrated Disease Management	Demonstration on integrated management of Tanjore wilt of coconut (continuing)	-	15	1.3	92 nuts/palm/year	32 nuts/palm/year	65.21	-	-	89095	111412	22317	1.25	71795	38752	33043	0.53
FFS  Bhindi  Amaranthus	Integrated nutrient management in vegetables	Vegetables- FFS  Arka Anamika  Arun	-	20	0.4	87.5 75	50.0 44.0	43.8 41.3	-	-	1.84 1.82	3.84 3.00	2.00 1.18	2.09 1.65	1.65 1.64	2.00 1.78	0.35 0.14	1.21 1.09



Yard long bean	Vellayani Jyothika				52.5	43.0	18.1			2.43	3.88	1.45	1.60	2.23	3.06	0.83	1.37
Oriental pickling melon	Mudikode local				200	112	0.44			1.86	2.94	1.08	1.58	1.70	2.24	0.54	1.30
Bittergourd	Preethi				81.3	48.0	41			2.56	4.06	1.5	1.59	2.20	2.4	0.20	1.09
<b>Total</b>																	

### Livestock

Category	Thematic area	Name of the technology demonstrated	No. of KVKs	No. of Farmer	No. of units	Major parameters		% change in major parameter	Other parameter		*Economics of demonstration (Rs.)				*Economics of check (Rs.)			
						Demonstration	Check		Demonstration	Check	Gross Cost	Gross Return	Net Return	**BCR	Gross Cost	Gross Return	Net Return	**BCR
Dairy	Disease management	Feeding anionic mixture to prevent milk fever in dairy cattle	-	25	25	Milk yield(lit) 11.650	7.250	101.37	-	-	10800	30406	19606	2.8	5544	18256	12712	3.2
						Disease incidence(% )4	20	Disese incidence reduced from 20 to 4 % (16% reduced )			-	-	-	-	-	-	-	-
Dairy	Feeding management	Demonstration of home made ration for dairy cattle	-	20	5	Milk yield(lit)14.25	8.8	112.5	-	-	11286	37192	25906	2.8	6969	22968	15999	3.2
Dairy	Feed and fodder management	Hydroponic fodder production	-	12	12	Fodder yield(kg) 5.2	3.6	72.2	-	-	1820	4698	2878	2.5	1350	3024	1674	2.2

### Fisheries

Category	Thematic area	Name of the technology demonstrated	No. of KVKs	No. of Farmer	No. of units	Major parameters		% change in major parameter	Other parameter		*Economics of demonstration (Rs.)				*Economics of check (Rs.)			
						Demonstration	Check		Demonstration	Check	Gross Cost	Gross Return	Net Return	**BCR	Gross Cost	Gross Return	Net Return	**BCR
Fisheries	Freshwater edible fishes Pearlspot, Tilapia	Culture of fishes using formulated floating feed (2016-17) under progress	1	10	10	-	-	Trial under progress	-	-	-	-	-	-	-	-	-	-
Freshwater edible fishes	Fresh water fish culture	Culture of fishes using formulated floating feed (2015-16)	-	10	10	1344	228	21	-	-	5180	11862	6682	2.29	4361	8373	4012	1.92





Integrated Pest and Disease Management	4	114	12	126	6	1	7	120	13	133
<b>Fisheries</b>										
<b>Home Science</b>										
Processing and cooking	3	64	103	167	0	3	3	64	106	170
<b>Production input at site</b>										
<b>Others</b>										
b) Plantation crops-Coconut value addition	1	1	23	24	0	2	2	1	25	26
<b>TOTAL</b>	<b>31</b>	<b>1021</b>	<b>542</b>	<b>1563</b>	<b>67</b>	<b>63</b>	<b>130</b>	<b>1088</b>	<b>606</b>	<b>1694</b>

**Training for Rural Youths including sponsored training programmes (on campus)**

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Horticulture										
a) Spices	4	113	104	217	0	0	0	113	104	217
<b>Plant Protection</b>	2	17	40	57	0	3	3	17	43	60
Plant protection aspects										
Bee keeping	1	30	6	36	2	2	4	32	8	40
<b>Fisheries</b>	5	112	47	159	11	5	16	123	52	175
f) Ornamental fish culture										
g) Fresh water fish culture	1	20	2	22	1	0	1	21	2	23
h) Brackish water aquaculture	1	10	0	10	1	0	1	11	0	11
i) Fish processing	1	7	19	26	1	3	4	8	22	30
j) Ornamental fish culture (PAID)	1	15	2	17	6	0	6	21	2	23
<b>Home Science</b>	1	12	14	26	1	2	3	13	16	29
b) Processing of fruits and vegetables										
<b>Soil Science</b>	1	6	0	6	0	0	0	6	0	6
b) Soil testing										
<b>TOTAL</b>	<b>18</b>	<b>342</b>	<b>234</b>	<b>576</b>	<b>23</b>	<b>15</b>	<b>38</b>	<b>365</b>	<b>249</b>	<b>614</b>

**Training for Rural Youths including sponsored training programmes (off campus)**

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Horticulture</b>	1	45	4	49	0	0	0	45	4	49
c) Spices										
d) Vegetables	1	26	25	41	0	0	0	26	25	41
<b>Animal Science</b>	1	19	18	37	7	4	11	26	22	48
b) Dairy cow management										
<b>Fisheries</b>	3	209	84	293	14	4	18	223	88	311
b) Composite fish culture										
<b>Soil Science</b>	1	20	25	45	0	0	0	20	25	45
b) Soil Testing										
<b>TOTAL</b>	<b>7</b>	<b>319</b>	<b>156</b>	<b>465</b>	<b>21</b>	<b>8</b>	<b>29</b>	<b>340</b>	<b>164</b>	<b>494</b>



## V. Extension Programmes

Nature of Extension Programme	No. of Programmes	No. of Participants (Total)	No. of Extension Personnel	Total
Radio talks	5	100s	-	-
TV programmes	-	-	-	-
Advisory Services	2310	2310	0	2310
Field/Diagnostic Visits	93	270	9	279
Exhibition	15	8000	710	8710
Exposure Visits	7	206	3	209
Farmers group meeting	1	7	0	7
Farmers Visit to KVK	611	2089	12	2101
Field Day	2	76	12	88
Film Show	4	100	-	100
KisanMela/Technology week	1	1000s	100s	1000s
Group discussion	23	32	-	32
Lecture delivered	26	1146	-	1146
Method Demonstration	8	175	-	175
Seminar	5	1359	75	1434
Celebration of important days	4	426	-	426
Newspaper coverage	65	-	-	-
Extension literature distributed	116	116	-	116
Soil health Camp	7	277	-	277
Workshop	4	22	104	126
Artificial insemination	43	43	-	43
Animal Health campaign	23	100s	-	100s
SHG meeting	11	152	-	152

### Details of other extension programmes

Particulars	Number
News Letter	1
News paper coverage	65
Research paper	5
Radio Talks	5
Popular articles	19
Animal health camps (Number of animals treated)	23
Training manual	3
Abstract	3
<b>Total</b>	<b>124</b>

## VI. PRODUCTION OF SEED/PLANTING MATERIAL

### Production of seeds by the KVKs

Crop category	Name of the crop	Variety	Quantity of seed (qtl)	Value (Rs)	Number of farmers to whom provided
Vegetable seeds	Amaranthus	-	180g	180	9
	Bittergourd	-	10g	10	1
	Cowpea	-	610g	610	32
	Cucumber	-	40g	40	3
	Okra	-	40g	40	3
	Paddy	-	1 kg	45	1

Spices*	Ginger	IISR Varada	4.50	67,500	98
<b>Total</b>	-	-	-	<b>68425</b>	<b>147</b>

### Production of planting materials by the KVKs

Crop category	Name of the crop	Variety	Hybrid	Number	Value (Rs.)	Number of farmers to whom provided
Vegetable seedlings	Cabbage	-	NS183	3395	10185	145
	Cauliflower	-	NS 60-N	3137	9411	138
	Brinjal	-	-	297	1218	54
Fruits	Mango	Vellaikolumban	Sindhu	106	6360	40
	Rose apple rooted cuttings (Spl)	Elite line	-	189	4345	72
	Rambutan	-	Seedlings	74	1480	24
	Acid lemon	-	-	17	220	10
	Jack graft	Elite line	-	195	17950	90
	Lime			20	200	5
	Fashion fruit		-	1	20	1
Spices	Nutmeg	IISR Viswasree	-	2981	694725	518
	<i>Piper colubrinum</i>	-	-	833	7828	59
	<i>Piper chaba</i>	Elite line	-	213	2630	53
	<i>Garcinia grafts</i>	Elite line	-	492	31600	126
	<i>Bush pepper</i>	-	-	3609	250330	458
	<i>Ciinamon</i>	IISR Nithyasree, IISR Navasree	Rooted cuttings and seedlings	60	940	24
	<i>Clove seedlings</i>	-	-	1	25	1
	<i>All spice</i>	-	-	2	150	2
	<i>Blackpepper</i>	Thevam, Panniyur etc	RC	14294	189490	465
Ornamental plants	<i>Misc. ornamental plants</i>	-	-	58	580	16
	<i>Aquarium plants</i>	-	-	136	1480	30
<b>Total</b>				<b>30110</b>	<b>12,31,167</b>	<b>2331</b>

### Production of Bio-Products

Bio Products	Name of the bio-product	Quantity Kg	Value (Rs.)	Number of farmers to whom provided
Bio-Pesticide	<i>Neem soap</i>	220	8800	124
Bio-fungicide	<i>Trichoderma</i>	349.4	32692	126
Banana micro nutrient mixture	<i>Peruma micro nutrient mix</i>	227	43212	103
Others (specify)	Pheromone traps	118	13525	80
Mushroom spawn	Oyster mushroom spawn	138.29	16594	79
Vermicompost	-	672	8064	81
Earthworm	-	510	255	6
Azolla	-	74.45	4467	56
Fish feed	-	16.99	1699	49
Sale of publications	-	470	5610	321
Soil Testing charges	-	103	20600	103
<b>Total</b>		-	<b>1,55,518</b>	<b>1128</b>

**Production of livestock and related enterprise materials**

Particulars of Live stock	Name of the breed	Number	Value (Rs.)	Number of farmers to whom provided
<b>Dairy animals</b>	<b>Bull</b>	<b>1</b>	<b>17000</b>	<b>1</b>
Others (Pl. specify)	Goats	7	31101	6
	Goat mating	108	8100	86
	AI	43	1935	43
	Cow Milk	4.25 lit	170	1
<b>Poultry</b>				
Layers 45 days and 1 day old	Gramasree, aseel cross etc	43287	1618174	589
Turkey	-	29	12600	15
<b>Fisheries</b>				
Fingerlings	Live bearer and egg laying freshwater Ornamental fishes	3310	24289	265
Micro worm	-	4	200	4
Larva food	-	2	70	2
Medicines	-	11	330	6
PVC Cage	-	1	200	1
Fresh fish	-	18.6	2301	16
<b>Total</b>	-	-	<b>17,16,470</b>	<b>1035</b>

**VII. DETAILS OF SOIL, WATER AND PLANT ANALYSIS 2016-17**

Details	No. of Samples analyzed	No. of Farmers benefited	No. of Villages	Amount realized (Rs.)
Soil Samples	220	220	30	23800/-
Water Samples	18	18	7	Analysed under the proje
<b>Total</b>	<b>238</b>	<b>238</b>	<b>37</b>	

**VIII. SCIENTIFIC ADVISORY COMMITTEE**

<b>Number of SACs conducted: One</b>
27-01-2017

**IX. NEWSLETTER**

<b>Number of issues of newsletter published: One</b>
January to December 2016

**X. RESEARCH PAPER PUBLISHED**

<b>Number of research paper published: 5</b>
<ol style="list-style-type: none"> <li>1. B. Pradeep., P.S. Manoj and Lijo Thomas 2016. Role of institutional extension effort in spreading grass root innovations: A study of ornamental fish culture in Kerala. Indian Res. J.Ext.Edu .16(1): 134-138</li> <li>2. Rathakrishnan, P, Prakash, K.M and Manoj, P. S Innovations in household level ginger cultivation - case study in Kozhikode district, Kerala. In: Joseph, E.J, Harikumar, P.S, Babu Mathew, Girish Gopinath, Resmi, T.R and Surendran U (Eds.). Abstract Proceedings of the National Seminar on Natural Resource Management for Horticultural Crops under changing climatic conditions. Centre for Water Resources Development and Management, Kozhikode, Kerala. 74-75 pp</li> <li>3. Prakash, K.M., Manoj, P.S. and Ratha Krishnan, P Rocky terrain is not a barrier to the ginger women. Indian journal of Arecanut, spices &amp; medicinal plants, 18 (12), 38 – 39.</li> <li>4. Ramesha, M.N., Patil, S.L., Ratha Krishnan, P. and Seshadri, B.N. Effect of pre-sowing treatments on Prosopis pallida seed germination attributes. Range Management and Agroforestry, 37 (1), 104 – 107.</li> <li>5. Ratha Krishnan, P. and Venkatesan, K. Partitioning of rainfall in Acacia species of Indian Thar Desert. Indian J. of Agroforestry., 18 (1), 10 – 15.</li> </ol>



## XI. DETAILS ON RAIN WATER HARVESTING STRUCTURE AND MICRO-IRRIGATION SYSTEM

<b>Activities conducted</b>				
No. of Training programmes	No. of Demonstration s	No. of plant materials produced	Visit by farmers (No.)	Visit by officials (No.)
7	7	-	160	15

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