Annual Report on TSP activities 2022-23

Name of the KVK implementing TSP : KVK, Namakkal
State : Tamil Nadu

1. Summary table of all activities under TSP

S.No.	Name of the Activity	Achievement during 2022-23	
I	**On- farm trials**		
	Title of the trial	No. of trials	Number of beneficiaries
1	Assessment of Cardamom varieties suitable for Kollihills	8	8
2	Assessment of medicinal crop suitable for Kollihills region	5	5
II	**Frontline demonstrations**		
	Title of the demonstration	No. of trials	Number of beneficiaries
1	Demonstration on Organic Paddy cultivation in Kollihills **Source**: TNAU, Coimbatore, 2020	10	10
2	Demonstration of nutrient management practice in banana **Source**: TNAU, Coimbatore 2020	20	20
3	Demonstration of integrated Diseases management practices in pepper cultivation **Source**: TNAU, Coimbatore, 2022	15 (100 plant/demo)	15 (100 plant/demo)
4	Demonstration of integrated pest management practices in coffee cultivation **Source**: TNAU, Coimbatore, 2022	20	20
5	Demonstration of integrated pest and diseases management practices in Banana **Source**: TNAU, Coimbatore, 2022	20	20
6	Demonstration of EVM to control mastitis in dairy cows **Source** : TANAUVAS, 2020	5	5
7	Demonstration of Balanced feed formulation for dairy cow **Source** : TANAUVAS Feed calculator 2017	5	5
8	Demonstration of organic grass carp (*Ctenopharyngodon idella*) and GIFT	2	2

	tilapia (*Oreochromis niloticus*) using napier grass **Source** : Chonnam National University, South Korea, 2020		
9	Demonstration of Paneer pressing device **Source**: TANUVAS, Chennai, 2016	5	5
III	**Training to Practicing Farmers**		
	Name of the training	Duration	No. of participants
1	Organic farming practices in horticultural / agricultural crops	1 day	32
2	Vermicompost production methods	1 day	25
3	Balanced fertilization in banana	1 day	26
4	Importance of soil and water testing	1 day	22
5	Nutrient management in pepper	1 day	18
6	Honey Bee rearing	1 day	25
7	Demonstration of integrated pest and diseases management practices in Banana	1 day	25
8	Quick Wilt Management in Pepper	1 day	25
9	Desi bird rearing	1 day	20
10	Development of a low-cost polyculture system utilizing napier grass, Pennisetum purpureum in Kollihills	1 day	16
11	Integrated fish farming	1 day	25
12	Value added products from Pine apple	1 day	20
IV	**Training to Rural Youth**		
	Name of the training	Duration	No of participants
1	Natural farming	1 day	76
2	Honey bee rearing	1 day	20
3	Balanced nutrition for banana cultivation	1 day	35
4	Goat farming	1 day	20
5	Farming of Pacu fish culture	1 day	25
6	Millet based value added products	1 day	32
V	**Training to Extension Personnel**	1 day	
	Name of the training	Duration	No of participants
1	Recent production and protection techniques in agricultural and horticultural crops	1 day	18
VI	**Skill Training programs**		
	Name of the training	Duration	No. of participants

1	Composting technology	1 day	28
2	Ethno veterinary medicine in livestock	1 day	25
3	Preparation of Masala powder		30
4	Murrel fish culture		25
VII	**Extension activities**		
	Name of the extension activity	Duration	No. of participants
1	**Celebrated National Milk day 2022** at TSP Village – vasurpatti, Kollihills on and awareness created on clean milk production and importance of consumption of milk to farmers, farm woman and rural youth.	1day 25.11.2022	57
2	**Field day** ICM in pepper/coffee/banana/paddy/Natural farming	2 days	76
3	**Radio talk** on Minor millets cultivation	1 day	Mass
4	**Inter-state exposure visit** to IIHR, Bengaluru & IISR, RS, Appangala, Karnataka state	3 days	24
5	**Preparation of extension literature** - Soil health management, EVM practices, fish farming and value addition in millets and spices & KVK TSP activities	5	4100
6	**Production of electronic media** : Impact study of KVK activities implemented during last two years	1	Mass
7	**Capacity building programme**: Convergence with IIHR, Bengaluru conducted capacity building programme and distributed critical inputs to farmers	1	60
VIII	**Seed supplied (Q)**		
	Name of the crop / variety	Quantity (Q)	No. of beneficiaries
1	Hedge lucerne	0.10	10
2	Lucerne	0.10	10
IX	**Planting material supplied**		
	Name of the crop	Number	No. of beneficiaries
1	Cumbu Napier grass – CO4	5000 Setts	10
X	**Live-stock strains supplied**		
	Name	Number	No of beneficiaries
1	Desi bird chicks (one month old)	200	10

2	Salt lick (2 kg)	20	10
XI	**Fish finger lings supplied**	Number	No. of beneficiaries
1	Grass carp (50gms)	2500 Nos.	10
XII	**Bio products supplied**	Quantity (Q)	No. of beneficiaries
1	Bacillus subtilis	0.20	20
2	*Trichodermaharzianum*	0.20	20
3	Neem seed powder/ Neem cake	0.20	20
4	VAM	0.20	20
5	Vermicompost	5.0	10
6	Neem cake	2.0	10
7	lime	1	20
8	Arka microbial consortia	0.43	20
9	Potash solubilizing bacteria	1	20
10	Waste decomposer	52 nos.	25
11	Agricanon gun for wild life management	3 nos.	3
11	Vegetable seeds	0.14	40
XI	**Soil, water, plant, manures samples analyzed**		
	Nature of the sample	Number	No. of beneficiaries
1	Soil samples analyzed	100	100
2	Water samples	6	6
XIII	**Soil Health Cards issued**	Number	No. of beneficiaries
1	Soil health cards	100	100
XIV	**Mobile agro- advisory provided to farmers**		
	Nature of the advisory	No of messages	No. of beneficiaries
1	Weather based agro advisory services	144	1104
2	Seasonal training/awareness programme/technical advisory services	108	2089
XV	**Physical Assets / micro-enterprises established**		
	Nature of asset	No. of units supplied / established	No. of beneficiaries
1	**EDP activity on desibird Rearing** : Distributed 10 nos of desi bird night shelter with 120 nos 6 weeks old Aseel cross chicks to 10 farmers. 4 farmers started desi bird farming and	20	20

	earned Rs. 753/month by sale of bird and egg**.**		
2	**EDP activity on Honey Bee Rearing** : Apiary unit –EDP activities+ Face mask + Hand cloves Smoker +Honey extractor	25	25
3	**Assets created at KVK campus**: Organic product preparation unit under Natural Farming	1	ST village people visit the units and production of bio organic inputs Purpose
4	**EDP on Vermicompost production : Distribution of vermicompost unit** bed & worms	30 Nos.	30
5	**EDP on primary processing of spices** : Tarpaulin sheets	17 Nos.	17
6	**EDP on Value addition in fruits/milk**	10	10
7	**Coffee pulping machine**	1	20
8	**EDP –spices processing unit**	1	10
9	Small farm implements Pepper harvesting **unipole aluminium ladder**	10	10
10	**Small farm implements -** Power sprayer	10	20
11	**Small farm implements -** Brush cutter with accessories	1	10
12	**EDP** - Maintenance of NRCB Banana shakti production unit	1	10
13	**EDP -** High density polythene sheet 750 GSM for fish pond lining	2	2

2. Results of OFTs :

3.

<u>OFT-1: Assessment of Cardamom varieties suitable for Kollihills</u>

a. Background information on farming situation

Cardamom is emerging crop in Kollihills and growing in between coffee and pepper plantation. Most of the farmers are growing unknown cardamom varieties and obtained less yield and poor quality of cardamom. Farmers getting an average yield of 285 kg/ha, Non

availability of high yielding variety is major issues and no awareness on new cardamom varieties in Kollihills. Majority of soils are laterite soil with high organic carbon content.

b. Details of technology assessed

Treatment	Sources of the technology	Description of the technology	No of trials	No of farmers
TO1	**Technology Option 1** Njallani Cardamom variety **Source:**ICRI, Myladumpara, 2001	Cardamom variety – Njallani 125 Days duration, Yielding @ 845 kg/ha, Oil content @ 6.7%, Plant height – 192 cm, Tolerance to thrips, Resistant to rhizome rot and Recommended for 750 – 1200 MSL	5	5
TO2	**Technology Option 2** Njallani Cardamom variety **Source:** ICRI, Myladumpara, 2015	Cardamom variety – ICRI-5 115 Days duration, Yielding @ 1600 kg/ha, Oil content @ 7.9%, Plant height – 178 cm, Tolerance to thrips, Resistant to rhizome rot and Recommended for 600 – 1300 MSL	5	5

c.Details of farmers method with which compared.

Farmers traditionally growing local Pavalakodi cardamom varieties in Kollihills. Yield about 325 kg/ha with more number of diseases were occur during cropping periods.

d.Results of the OFT in terms of all relevant parameters

Both technological options Njallani and ICRI-4 cardamom varieties were procured from Indian Cardamom Research Station, Spice Board, Myladumpara, Kerala and same was distributed to tribal farmers in Kollihills. Now crop condition is establishment stage and harvest will be done during September month.

OFT-2: Assessment of medicinal crop suitable for Kollihills region

a.Background information on farming situation

Kollihills is located about 1400 MSL in Namakkal district. Farmers are growing finger millet, little millet, beans under rainfed condition. Farmers able to get minimum income during cropping season and remaining period is migrated to Kerala state for job opportunity. Farmers are expecting new medicinal plants to cultivate in Kollihills to obtain more income and year-round employment opportunity.

b.Details of technology assessed like source, description and treatments included, Number of trials and farmers (locations).

Treatment	Sources of the technology	Description of the technology	No of trials	No of farmers
TO1	**Technology Option 1** Rosemary crop **Source:**KVK, Erode, 2014	Cultivation of Rosemary in Kollihills to get more income	5	5
TO2	**Technology Option 2** Basil crop **Source:**KVK, Erode, 2015	Cultivation of basil crop in Kollihills to get more income	5	5

c. Details of farmers method with which compared.

Farmers traditionally growing local black beans and finger millet varieties in Kollihills. Yield about 244 kg/ha with more number of diseases were occur during cropping periods.

d.Results of the OFT in terms of all relevant parameters

Both technological options like rosemary and basil plants were procured from Horticultural research station, TNAU, Ooty, The Nilgiris and same was distributed to tribal farmers in Kollihills. Now crop is planted in field and establishment stage and harvest will be done during October and November months.

Results of FLDs :

FLD-1: Demonstration on Organic Paddy cultivation in Kollihills

A.Background information on farming situation

Paddy is main crop in Kollihills is located about 1400 MSL in Namakkal district. Majority of farmers are growing Wayanad-2 paddy variety under canal irrigation. Due to non-availability of organic manures, farmers are applying inorganic fertilizer to achieve average yield. To avoid inorganic fertilizers, we are promoting natural cum organic farming practices to achieve higher yield and maintain soil fertility.

B.Details of technology assessed

Treatment	Sources of the technology	Description of the technology	No of trials	No of farmers
TO1	**Technology Option 1** Demonstration on Organic Paddy cultivation in Kollihills **Source: TNAU, 2019**	***Organic farming practices*** Paddy seeds.Bhavani variety, Basal application of neem cake @ 25kg/acre, Seed treatment - Bacillus subtilis @ 1kg, Soil application of Azophos @ 1kg/acre ,	10	10

		Vermicompost @ 50kg/acre Spray Bacillus thuringiensis var. kurstaki1kg/acre, Herboliv @10 litre/acre		
Farmers practice	Conventional method of paddy cultivation	Conventional method of paddy cultivation with existing variety.	5	5

C.Details of farmers method with which compared.

Farmers are growing local paddy variety (Wayanad-2) under conventional method of paddy cultivation with inorganic inputs.

D.Results of the FLD in terms of all relevant parameters

Paddy variety Bhavani recorded more number of productive tillers (18 tillers/hill), lengthy panicle (15.5 cm) and higher grain yield (43.3 qtl/ha) compared to local check variety. Fetched higher market price (Rs.17/kg) due to fine variety and recorded higher net income (Rs.45450/ha) under organic method. Observed less incidence of stem borer, leaf folder, Blast and non lodged during cropping period.

E.Photographs related to the trial

FLD-3: Nutrient management in banana

A.Background information on farming situation

Namaran banana is the horticultural crops being cultivated as an cash crop next to spices (Pepper, coffee, cardamom, pineapple). Banana is mostly cultivated in irrigated condition under kharif season in both red and black soil. Continuous cropping without soil test based fertilizer application leads to poor soil fertility and crop productivity. Yellowing, leaf crinkling, reduced no. of hand, less no. of fruits/hand and fruit cracking, low bunch weight mainly associated with lack of nutrient management at critical growth stages. Nutrient deficiencies especially N and K , B led to poor yield.

B.Details of technology demonstrated

Source: TNAU, Coimbatore, 2020

Description : To address the above problems, KVK, Namakkal has conducted Front Line Demonstration (FLD) in 20 farmer's field in an area of 8 ha at TSP village – Elangiyampatti and Vasalurpatti villages in Gundurnadu & Thinnanurnadu panchayts of Kollihills during 2022-2023.

The following interventions were included with ICM practice

- Intercropping with cowpea - Cowpea @ 8 kg ha^{-1} was sown in between banana plants and then Insitu incorporation of cowpea was done around the banana within 30-45 days after sowing of cowpea.
- Soil health card based fertilizer application through INM concept.
- Time of application of fertilizers (3,5, 7 months after planting)
- Foliar spraying of NRCB, Trichy banana Shakti @ 3,5,7 month after planting with 2 month intervals
- Need based plant protection measures

C.Details of farmers method with which compared :

Farm yard manure application @ 10 kg/tree at the time of planting, foliar spraying with commercially available fertilizers and tonic.

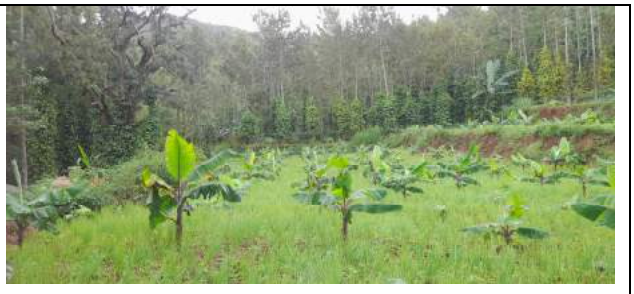
D.Results of the FLD in terms of all relevant parameters

Treatments	Bunch weight (kg)	No. of fruits/hand	No. of hands/bunch	Yield (t ha^{-1})	Net income (Rs./ha)	B:C ratio
KVK intervention (Demo)	9.89	17.52	10.12	105.4	79657	2.12
Farmers practice (Check)	7.34	14.76	8.73	91.8	68091	1.90

- Demo plot recorded higher bunch weight (9.89 kg), more no. hand /bunch (10.12 nos.), nos. fruits / hand (17.52) than farmers practice.
- Demo plot recorded the highest net return of Rs.79,657/ha and BC ratio of 2.12 followed check recorded net return of Rs.68,091/ha and BC ratio of 1.90

E.Photographs related to the trial

Banana – Cowpea intercropping



Intercropping with onion

Banana crop at vegetative and bunch formation stage

FLD-4 : Demonstration of balanced feed formulation for dairy cow

a. Background information on farming situation:

Dairy animals reared under stall fed system. Green fodder, dry fodder, ground cereals, rice bran and oil cakes fed to dairy animals and farmers feeding imbalanced ration to dairy animals causes metabolic disorder such as acidosis and ketosis results in decreased milk production fat and SNF.

Problem identified

- ✓ Imbalanced feeding causes infertility in dairy animals.
- ✓ *Farmers lack of knowledge in scientific feeding of dairy cattle.*

b. Details of technology demonstrated :

Treatment	Sources of the technology	Description of the technology	No of trials	No of farmers
TO1	**Technology Option 1** TANUVAS Feed calculator **Source:** TANUVAS 2017	Preparation least cost and balanced feed formulation by using TANUVAS feed calculator	5	5
FP	**Farmers practice**	Farmers using more cereals and less oilcakes in the ration causes metabolic disorder in dairy cattle and not aware of supplementation of mineral mixtures.	5	5

c. Details of farmers method with which compared

5nos of dairy farmers were selected for comparison of this on farm trial. All the animals selected from same age, phase of lactation and not offered imbalanced concentrate feed.

d. Results of the FLD

Dairy animals fed with balanced ration increased milk yield (8.4 lit/day/animal) and fat (4.46 %) compared to feeding imbalanced ration which decreased milk yield (8.1 lit/day/animal) and fat (4.31 %).

FLD - 5 : Demonstration of Ethno veterinary practices to control mastitis in dairy cows

A. Background information on farming situation

Dairy animals reared under mud floor and highly exposed to inflammation of the udder and subclinical mastitis. Dairy animals treated allopathy and dairy farmers not aware of the Ethno veterinary practices to control mastitis

Problem identified

High incidence of sub-clinical mastitis decrease value of the animal and Low milk yield with high somatic cell count.

B. Details of technology demonstrated :

Treatment	Sources of the technology	Description of the technology	No of trials	No of farmers
TO1	Technology Option 1 Source : TANUVAS 2017	**Demonstration of Ethno veterinary practices to control mastitis in dairy cows** Aloe vera, turmeric and lime mixed and applied in the udder of the dairy cow infected with mastitis for 4-5 times in day to control mastitis.	5	5

C.Details of farmers method with which compared

The dairy animals were selected for comparison treated with allopathic. Total nos. of animal selected was 5.

D.Results of the FLD

Dairy animals treated with ethno veterinary practices was showed lower somatic cell count (1,50,000 cells/ml of milk) and higher milk yield (7.3 lit/day) over allopathic treatmentswhich showed higher somatic cell count (1,70,000 cells/ml of milk) and lower milk yield (6.9 lit/day)

E. Photographs related to the trial

		
Aloe verajel mixed with lime	**Preparation of EVM paste (Aloe vera, lime and turmeric)**	**EVM paste applied in the udder of dairy cow**

FLD-5: Demonstration of organic grass carp (*Ctenopharyngodon idella*) and GIFT tilapia (*Oreochromis niloticus*) using napier grass, Pennisetum purpureum.

A. Background information on farming situation

Fish production in ponds can be increased both by bringing more water areas under culture as well as producing more from the areas already in use. The grass carp utilizes macrovegetation including certain types of grass as its food and hence the name. If grass carp is to be raised in ponds it would requires regular supplies of weeds to be made for feeding the species. Grass carp has pharyngeal teeth and adapted to tearing plant material. This would be necessary as herbivorous fishes have to rely on mechanical breakdown of plant cell walls.

Problem identified

Unavailable of fish seeds

B. Details of technology demonstrated :

Treatment	Sources of the technology	Description of the technology	No of trials	No of farmers
TO1	Technology Option 1 Chonnam National University, South Korea, 2020	Demonstration of organic grass carp (*Ctenopharyngodon idella*) and GIFT tilapia (*Oreochromis niloticus*) using napier grass, Pennisetum purpureum.	8	8
FP	**Farmers practice**	Inadian major Carps	5	5

C. Details of farmers method with which compared

Pond preparation:

In all the 8 ponds unwanted fishes were eradicated by complete dewatering by means of low-lift pumps. Liming is done @300 kg/ ha/ yr. The ponds were manured with the organic and inorganic fertilizers. The organic manure is raw cow dung from local cattle yard and inorganic fertilizers were urea @ 200 kg / ha /year, Single super phosphate@ 400 kg / ha/ year and muriate of potash @ 50 kg / ha / year in equal monthly installment.

Stocking:

Stocking of ponds with fingerlings was done after 5-7 days of base manuring when observed that natural fish food organisms (phyto and zooplankton) were produced in the pond water in sufficient quantity.

Stocking density:

Grass carp 1200 and GIFT Tilapia 1100 nos fingerlings/ha, Fingerlings were Purchase from private fish hatchery. Average weight of stocked fish/fingerlings varied from 0.5 - 10g.

Feeding:

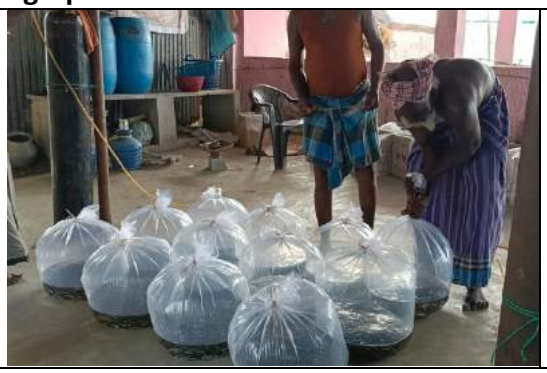
The fishes were fed on a mixture of Rice brand and mastered oil cake in the ratio 1:1 @ 2% body weight. The pond having an area of 1.5 ha were devoid of feeding of amphibious plant Zizania latifolia but feed only hydrilla were broadcast all over the water surface @ 25% of the body weight two times in a day i.e. morning and evening. The fodder leaves alone were initially cut into small pieces for feeding upto one month and subsequently the entire plant was put

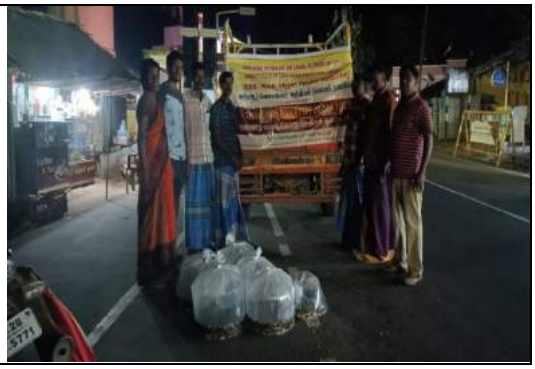
into the enclosures and the unconsumed hard stems of fodder plants were removed. The fishes were sampled once a month to assess their growth. The water sample also analysed for pH, dissolved Oxygen, free carbondioxide, total alkalinity, according to the standard methods and the water temperature were recorded.

D. Results of the FLD

The atmospheric temperature recorded at the time of sampling was in the range of 12.3-29.5^{o}C (average of 24.4^{o}C) while that of pond water was 12.5-33.2^{o}C. The dissolved oxygen was in the range of 4.9 -6.4 ppm and free carbondioxide,7 ppm. The pH of the pond water ranged from 7.5-8.4. The grass carp had recorded the highest growth under moderate stocking density. The grass carp attained an average weight 2550g and 2155g in 1.0 ha and 1.5 ha ponds respectively. The corresponding gross production of the GIFT Tilapia was 1912 kg / ha/ 10 months and 1260 kg / ha / 10 months from the two ponds. The contribution of grass carp to the total fish production in 1.0 ha pond was 41% whereas stocking percentage was only 15 % in the other pond (1.5 ha), the contribution of the grass carp was 39.90 % against stocking percentage of 15% only.

E. Photographs related to the trial





FLD-6:Demonstration of integrated Diseases management practices in pepper cultivation

A.Background information on farming situation

Kollihills is located at the tail end of the Eastern Ghats in Namakkal District of Tamil Nadu and situated between 11.10' and 11.23' North latitude and 78.17' and 78.28' East longitude and mean sea level of 1000-1300m height. The area received an average annual rainfall of 1440 mm distributed in two season's viz., South West and North East Monsoon. The maximum temperature rarely exceeds 320C and the minimum beyond 140C. Soil type is red sandy loam/ lateritic soil and more than 85 per cent of the area is under rain fed situation. Soil pH of 6.7 and EC of 0.4 dSm-1 with low Nitrogen (204 kg/ ha), medium Phosphorus (12.1 kg / ha) and high Potassium (391 kg /ha) content in soil.

Pepper is an important spices crop in Kollihills of Namakkal district and cultivated in an area of 2490 ha under rain fed condition during kharif season. Most of the farmers cultivating Panniyur -1 variety and it was given low productivity (5Q/ha) due to non-adoption of integrated diseases management practices, pest and disease incidence (wilt incidence-25-35%).

Hence the farmers got poor returns from pepper cultivation. In order to address these issues on pepper cultivation.KVK Namakkal have conducted front line demonstration onDemonstration of integrated Diseases management practices in pepper cultivation practices at Vasalurpatti, Oorkalingampattito achieve higher productivity and farm income

B.Details of technology demonstrated

Technology demonstrated:

Demonstration of integrated Diseases management practices in pepper cultivation

Source: TNAU, Coimbatore, 2022

Technology description:

- Basal application of Neem cake @ 250g / plant during off season
- Soil application of *Bacillus subtilis* @ 10g/plant +*Trichodermaharzianum*@ 10g/plant+VAM 10g/plant
- Followed by foliar spraying of *Bacillus subtilis* @ 5g/plant +*Trichodermaharzianum*@ 5g/plant+ at before flowering and after flowering

  By adoption of integrated diseases Management Technology for pepper wilt management will increase the yield and income of the pepper growers

Treatment / Critical inputs given:

- Neem cake @ 25kg/100 plant. -Rs.50/kg =Rs.1250
- *Bacillus subtilis* @ 1.5kg/100 plant –Rs.190/kg =Rs.285
- *Trichodermaharzianum*- 1.5kg/100 plant Rs.190/kg= Rs.285
- VAM-1kg/100 plant –Rs.100/kg Rs.100/
- Total Cost – Rs.1920/Demo= Rs.28, 800/
- ***Location:*** **2 locations** @ Thambapadipatti and Elangiyampatti villages at Kollihills
- *No. of demonstrations*: 15farmers fields
- *Total area* : 6.0 ha

C.Details of farmers method with which compared.

Foliar spraying of mixed fungicide (Carbendazim + Mancozeb 10g/plant)

D.Results of the FLD in terms of all relevant parameters

Biological way of wilt management techniques are demonstrated for controlling the disease in different part of kolli hills. They are getting average yields of 15.50(Q/ha) in demonstration plots and farmers Practice 8.50(Q/ha) increased yields about 45.16% per ha.

Parameters observed

Parameters	**Demonstration plots**	**Farmers Practice (check)**
No of leaf infested /plant,	15.60	85.50
No of plant infested /acre	5.20	65.50
Pepper yield (Q/ha),	15.50	8.50
Blast incidence (%)	5.75	82.50
Gross cost Rs./ha	1,00,000	65,000
Gross return Rs. /ha	3,10,000	1,70,000

Net return Rs. /ha	2,10,000	1,05,000
BCR	2.10	1.60

Feedback

Farmers felt that timely application of bio inputs before the onset of monsoon and during the monsoon period could effectively prevent the spread of disease and reduce the mortality rate up to 85 %.

E. Photographs related to the trial



FLD-7: Demonstration of integrated pest management practices in coffee cultivation

A.Background information on farming situation

Kolli hills with a peak of 1,300 m belong to Namakkal district. The mean annual temperature ranges from 140C to 280C. The average annual rainfall of the hill is around 1600mm of which a major portion is obtained during the months of September, October and November. The soils are deep to very deep, non- calcareous and developed from weathered gneiss.

Coffee is an important Plantation crops that are cultivated in a large area 2560ha with variety ofSln 9, Sln 10 and Cauvery in Kollihills of Namakkal district under rain fed condition during kharif season. It was given low productivity (5Q/ha) due to non-adoption of integrated pests management practices particularlyborer incidence 15-22%.

Hence the farmers got poor returns from coffee cultivation. In order to address these issues in coffee cultivation. KVK Namakkal have conducted front line Demonstration of integrated pests management practices in coffee cultivation practices at Vasalurpatti, Oorkalingampatti to achieve higher productivity and farm income

B.Details of technology demonstrated

Technology demonstrated:

Demonstration of integrated pest management practices in coffee cultivation

Source: TNAU, Coimbatore, 2022




Technology description:

- Collars prune the infested plants
- Uprooted and burn the affected parts.
- Deep scrubbing should be avoided
- Foliar Spraying of the main stem and thick primaries with Neem seed kernel extract5% afford good control of the pest.
- Foliar Spraying of white muscardine fungus *Beaveriabassiana* 5g/lit before and after flowering effectively reduce the fruit borer and stem borer attack

Treatment / Critical inputs given

- Neem cake @ 10kg/acre Rs.50/kg =Rs.500
- *Beaveriabassiana* 2kg/acre.Rs.290/kg =Rs.580
- Total Cost – Rs.1080/Demo= Rs.21,600
- ***Location:*** 3 locations @ Thambapadipatti and Elangiyampatti villages at Kollihills
- ***No. of demonstrations***: 20farmers fields
- ***Total area*** : 8.0 ha

C.Details of farmers method with which compared.

Foliar spraying of Quinalphos 25 EC @ 340 ml/200 lit or lamda cyhalothrin 5 EC 120 – 160 ml / 200 lit.

Results of the FLD in terms of all relevant parameters

Biological way of integrated pest management practices in coffee for controlling the insect pests in different part of kolli hills. They are getting average yields of 32.50(Q/ha) in demonstration plots and farmers Practice 21.50(Q/ha) increased yields about 33.84% per ha.

Parameters observed

Parameters	Demonstration Plots	Farmers Practice (check)
No of infested fruit borer /plant,	12.50	65.20
No of plant infested plant /acre	4.70	55.10
Coffee yield (Q/ha),	32.50	21.50
Borer incidence (%)	4.75	55.50
Gross cost Rs. /ha	65,000	65,000
Gross return Rs. /ha	2,27,500	1,50,500
Net return Rs. /ha	1,27,500	85,500
BCR	1.96	1.30

Feedback

Farmers felt that timely application of bio inputs before the onset of monsoon and during the monsoon period could effectively prevent the spread of Borerincidence up to 75 %.

FLD-8.: Demonstration of integrated pest and diseases management practices in Banana

A.Background information on farming situation

Elangiyampatti, Vasalurpatti, Oorkalingampatti villages are located at an altitude of 1200m extend between 11 0 00' to 11.0 36'10" N latitude and 77 0 40' to 78 0 30'00" E longitude with 305 meters above mean sea level. Coffee, Black pepper, Jack fruit, Hill banana, Pineapple, oranges, Tapioca and other spices are the major crops grown in kolli hills. Hill Banana is grown as mono cropping for two to three years. They are cultivating by utilizing rainfall and well water with less management with anarea of 122 ha under rain fed condition

Most of the farmers cultivating local banana variety and it was given low productivity (6t/ha) due to non-adoption of integrated diseases management practices, pest and disease incidence (stem weevil incidence 20-40%).

Hence the farmers got poor returns from banana cultivation. In order to address these issues in banana cultivation. KVK Namakkal have conducted front line Demonstration on "Demonstration of integrated pest and diseases management practices in Banana in Kolli hills for control the incidence of stem weevil in Hill Banana" was carried out in 20 farmers' field in an area of 8.0 ha in Kolli hills block, Namakkal District during Kharif season 2022-23

B.Details of technology demonstrated

Technology demonstrated:

Demonstration of integrated pest and diseases management practices in Banana

Source: TNAU, Coimbatore, 2022

Technology description:

- Remove and rouging of infected banana plants
- For vector controls Injection of plants with monocrotophos 4 ml (1:4) at 45 days interval from 3rd month till flowering
- Apply castor cake 250g per tree before planting also prevents infestation
- Banana pseudo stem trap @ 100/ha effectively controls banana weevils.
- Swabbing the cut surface of the traps with *Beauveriabassiana* @ 20g trap-1 trapped the weevils and killed them instantly and they need not be collected.
- Alternatively, dilute 54 ml of Monocrotophos 36 WSC with 350 ml of water and inject 4 ml (2 ml at 45 cm from the ground level another 2 ml 150 cm from the ground level) in the pseudo stem at monthly interval from 5th to 8th month.

Treatment / Critical inputs given:

- *Beaveriabassiana* 2kg/acre.Rs.290/kg =Rs.580
- Monocrotophos 36 WSC@Rs 650/lit
- Rs.1230/demo / 20 demos = Rs.24,600
- *Location:* 3 locations @ Elangiyampatti ,Vasalurpatti, ,Oorkalingampattivillages at Kollihills
- *No. of demonstrations*: 20farmers fields
- *Total area*: 8.0 ha

C.Details of farmers method with which compared.

Farmers practice- Cultivation of local variety (Namaran) with Non adoption of crop rotation.

D.Results of the FLD in terms of all relevant parameters

Description of the results

- Remove and rouging of infected banana plants
- For vector controls Injection of plants with monocrotophos 4 ml (1:4) at 45 days interval from 3rd month till flowering
- Apply castor cake 250g per tree before planting also prevents infestation
- Banana pseudo stem trap @ 100/ha effectively controls banana weevils.
- Swabbing the cut surface of the traps with *Beauveriabassiana* @ 20g trap-1 trapped the weevils and killed them instantly and they need not be collected.
- Alternatively, dilute 54 ml of Monocrotophos 36 WSC with 350 ml of water and inject 4 ml (2 ml at 45 cm from the ground level another 2 ml 150 cm from the ground level) in the pseudo stem at monthly interval from 5th to 8th month.

Parameters observed

Controlled the incidence of stem weevil in banana with highest fruit yield of 185 q/ha with

Parameters	**Demonstration plots**	**Farmers Practice (check)**
Plant population	275	260
Number of bunches per tree	6.25	5.10
Number of fingers / bunches	12.50	8.50
Number of plants infected	80	90
Per cent incidence of weevil before treatment	35.50	36.50
Per cent incidence of weevil after treatment	4.50	15.50
yield (Q/ha)	185	135
Gross cost Rs. /ha	82875	70280
Gross return Rs. /ha	180000	135000
Net return Rs. /ha	97125	64720
BCR	2.17	1.92

net return of Rs.97125 with BC ratio of 2.17. Whereas fruit yield of 135 q/ha with net return of Rs.64720 with BC ratio of 1.92 was noticed in Farmers Practice.

Feedback

- Timely stem applicationwith monocrotophos 4 ml (1:4) at 45 days interval from 3rd month till flowering showed better in controlling the pseudo stem weevil in banana could effectively prevent the incidence up to 85 %.
- *Beauveriabassiana* trap is cheaper method and easier to trap the pseudo stem weevil.
- Purchase of locally available pesticide has been followed till now with non-adoption of crop rotation.
- Purchase of bio pesticide will be followed in the following years to control the stem weevil.

- Coming year, the technology will be followed and communicated to the other farming area of kolli hills. Higher expenditure for pesticide application will be changed.

E. Photographs related to the trial

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FLD-9: <u>Title: Demonstration of Paneer Pressing Device</u>

A.Background information on farming situation

Paneer is produced at small scale and industrial level. Cow, buffalo or mixed milk may be used but buffalo milk is preferred. Paneer pressing device was designed in order to facilitate the dairy farmers and paneer producers. Milk production in KolliHills is 26.3 m.tonnes and the milk production in the study area was more and in order to assist dairy farmers in the production of paneer using minimum effort and cost an attempt was taken. Paneer pressing machine with minimum capacity was fabricated to facilitate small farmers/EntrepreneursKolli hills is known place for cattle rearing. Many farm women are engaged in cattle maintenance and extraction of Milk. A group meeting of farm women was organised to create awareness in value addition in milk. Ten farm women expressed their interest and on campus training and awareness on value addition in milk was organised. Demonstration on paneer pressing Device was carried out.

Major problem faced by Dairy Farmers includes

- Poor market price for milk due to excess production
- Lack of awareness on processing of milk
- Poor storage facilities for milk
- Poor marketing strategy for raw milk

B.Details of technology demonstrated

Technology demonstrated: Demonstration on Paneer Pressing Device practice (Source: TANUVAS, 2012)

Technology description:

- Increased shelf-life
- Enhancing nutritive value
- Additional income

Treatment / Critical inputs given:

Paneer pressing Device
Milk
Citric acid/ Lemon juice
Musline cloth

Location:

5 locations @ Thambapadipatti and Elangiyampatti villages at Kollihills

No. of demonstrations: 5 farmers' fields

C.Details of farmers method with which compared

Paneer is analogous to fresh, unripe soft cheese made by heat and acid coagulation of milk and is used for preparation of various culinary dishes and acts as an ingredient for vegetable dishes and snacks. There is a wide variation in the chemical composition and yield of paneer due to the use of varied techniques by paneer manufacturers. Therefore, with value-added strategies and appropriate processing technologies, the milk can be processed in a better way to improve the marketing of milk and to get better income to the dairy farmers.

D.Results of the FLD in terms of all relevant parameters

Demonstration results revealed after getting training from KVK their made initial investment entirely from family members and own savings.They are started to prepare paneer from the milk.They sells about 20 litres of milk in local market at the rate of Rs 40 /lit.about 40 litres of milk forvalue addition produces about 3-4 kg paneer per day .

Parameters	Demonstration on Paneer	Farmers Practice (check)
Colour	4.2	-
Flavour	4.3	-
Texture	4.5	-
Taste	4.5	-
Over all aceptability	4.5	-
Shelf life (Days)	15	-
Gross cost Rs. /ha	24500	22186
Gross return Rs. /ha	55800	41785
Net return Rs. /ha	31300	9599
BCR	2.2	1.2

Farmer's feedback

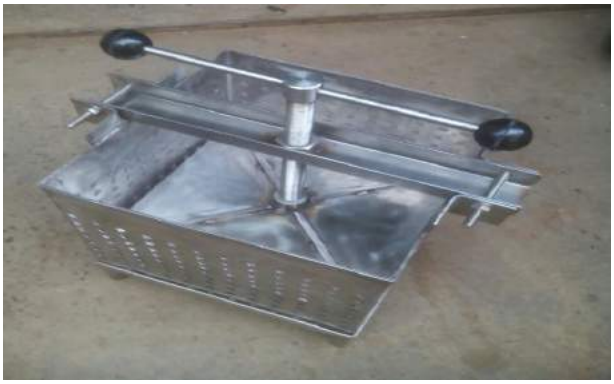
SResults achieved among participating farmers, groups in terms of gain in knowledge and skills, productivity in the demonstration, increased economic benefits, increase in volume of production, processed products quantity and quality etc.

Training programmes were conducted to the farm women and SHG women for paneer production using low cost paneer pressing device. Trained members also facilitated to market their products with quality testing and labelling.

Extension activities on FLD

- ✓ Providing technical advices to the farmers and farm women to doubling their income
- ✓ Proposed FLD programme on "Increasing shelf life of paneer using herbs and spices"
- ✓ Conduct of Training programmes (On and off campus)
- ✓ Standardization of new Milk based products
- ✓ Imparting latest packaging technologies
- ✓ Quality control measures and Licensing
- ✓ Providing marketing facilities and tie up with KVK sales unit
- ✓ Popularization of Paneer and Flavored milk production among Farm women and SHG women through Trainings and Demonstrations.

E.Photographs related to the trial

	
Group Meeting	**Demonstration on paneer preparation**
	

5. Success stories of KVK interventions under Tribal Sub Plan during 2022-23

Primary Processing unit for Spices and Plantation crops

1. Domain of the study / Rationale

In Kollihills pepper is the major crop, followed there are growing cardamom and coffee, tapioca, vegetable and banana for income generation and family consumption. Pepper is growing in an area of 2491.4 ha, coffee in an area of 2127.3 ha and cardamom in an area of 94.5 ha. Mostly Coffee and cardamom crops are growing as intercrop in pepper. Farmers are getting additional income from crops other than pepper. Compared to other crops Kollihills farmers mainly depends income from the pepper followed by coffee and cardamom.

In general, tribal farmers are processing the spices with help of seasonal farm labour during every harvest. Usually pepper harvesting during the month of April - May, cardamom between October-November and coffee from August- September. Manual processing of spices are laborious, time consuming, and impartial in quality grading.

2. Activities implemented by KVK to tackle the problem

Survey was collected at Elangiyampatti village, Gundurnadu Panchayat followed by conducted group meeting and then finalized the list of spices processing machineries needed for tribal farmers to ease the agricultural operations at farm level. The following agricultural machineries supplied to Elangiyampatti group farmers with cost of Rs.2,80,000/-.

1. Pepper dust extractor
2. Pepper grader
3. Pepper powder making machine
4. Disc type coffee pulping machine
5. Cardamom dryer

Machineries was supplied and inaugurated during month of September and operation guidelines suggested. Every field visit, observed the functioning efficiencies of machineries.

3.Output of the intervention

The working efficiency of machineries under TSP as follows

Pepper duster & grader

Particulars	Manual (Manual)	Pepper duster & grader
Pepper extractor	100 kg/day Lady 50 kg	100 kg /1/2 hour (2000 kg) 10oo -1500 kg grading
Labour saving	Rs.300/labour/day	Rs.200/l100 kg
Time	Laborious	Quick

Quality	Dusts present	Clean
Grading	Average by naked eye	3 grades based on size
Rate	Rs. 550 /kg	A- Rs.650/kg B - Rs.600/kg C - 550/kg

Cardamom dryer

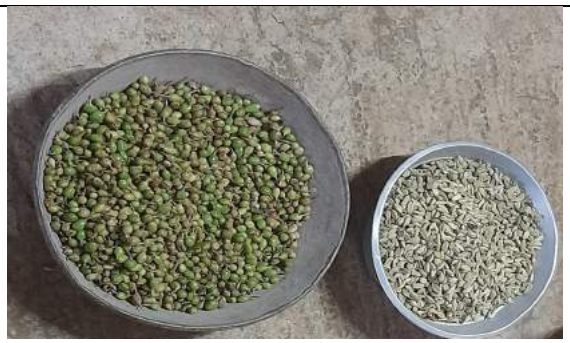
Particulars	**Manual (Manua l – Virgu aduppu)**	**Cardamom dryer**
Cardamom	1-2 kg/day	100 -200 kg /day
Labour saving	Rs.600/labour/day	Rs.400/ day
Time	Laborious	Quick
Quality	Irregular	Uniform
Grading	Average by naked eye	3 grades based on size
Rate	Rs. 500 /kg	Rs.1500/kg

Coffee pulping machine

Particulars	**Manual (Manual)**	**Coffee pulping machine**
Coffee processing	10 kg/day	150-200 kg / day
Labour saving	Rs.300/labour/day Rs. 6000/200 kg	Rs.300/labour/day
Time	Laborious	Quick
Quality	Peels present	Clean
Rate	110/kg	150/kg

4.Outcome and impact

- Only Elangiyampatti village farmers 50 farm families utilized for processing of harvested product on cost basis
- Rs. 1/kg fixed for pepper dust extraction, Rs. 8/kg for pepper powder making ana Rs.30 /kg for cardamom drying.
- One A type labour engaged to maintain the Processing Unit and he is getting income from that unit
- Expenditure incurred for maintenance of unit being done from the income generation
- Recently nearby panchayat farmers, getting awareness and being utilized mainly cardamom drying



Cardamom drying unit

Pepper dust extractor & grader

Disc type Coffee pulper

Glimpses of TSP activities carried out 2022-2023 – Training Programmes

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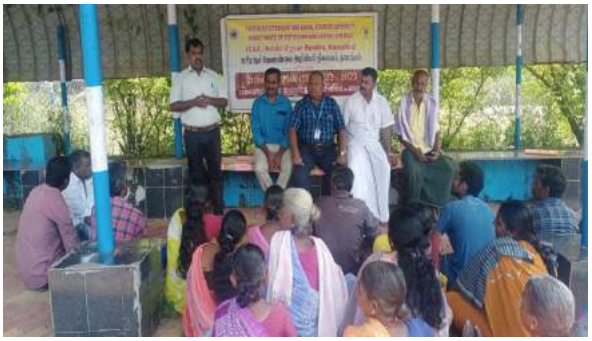
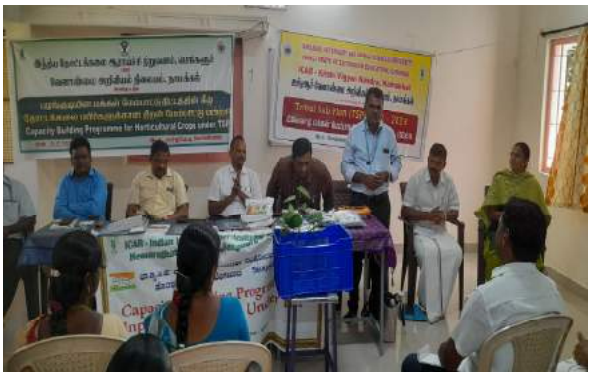
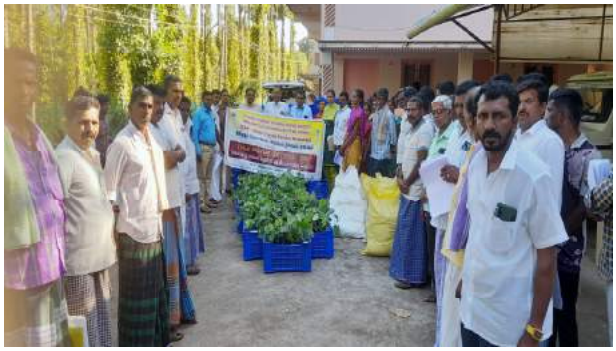


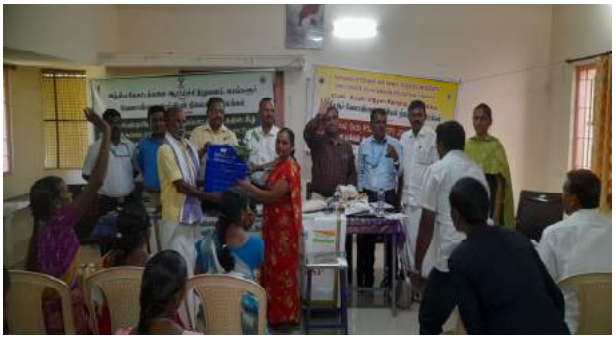
Farmers training & method demonstration on season spectific technologies

Distribution of soil health cards to farmers



Capcity building programme with IIHR Scienists, Bengaluru

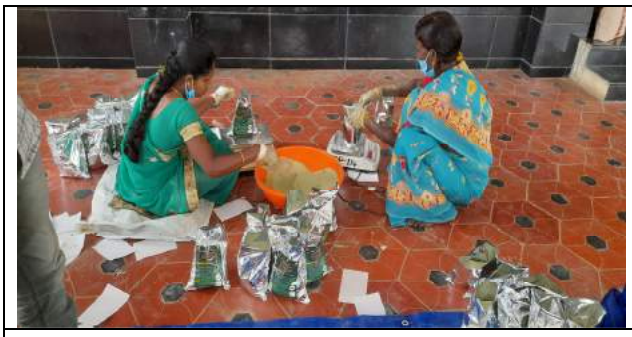




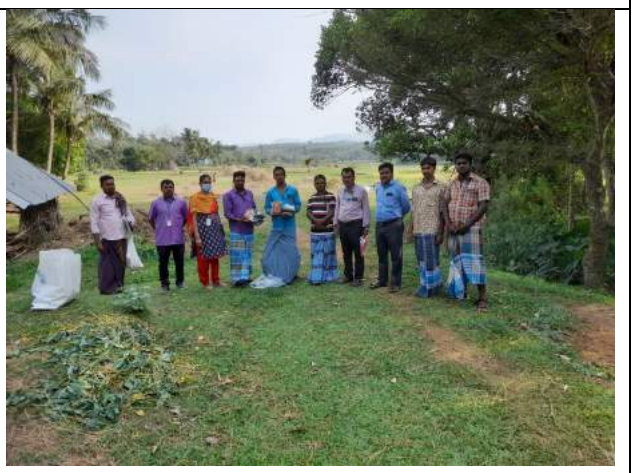
Distribution of pepper plants, grader, AMC & vegetebale seeds under IIHR, Bengaluru TSP project

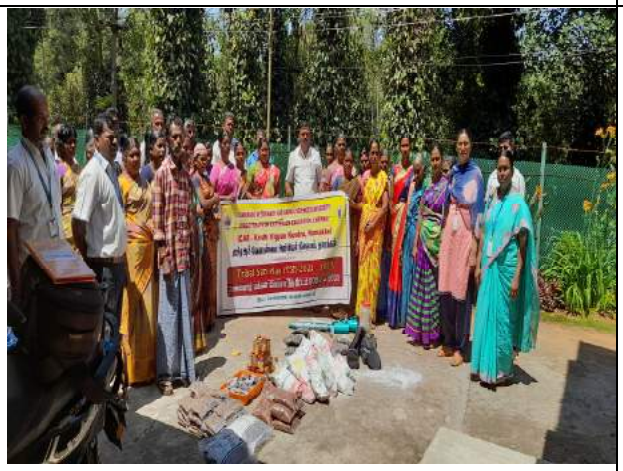
Method demonstration on compsoting

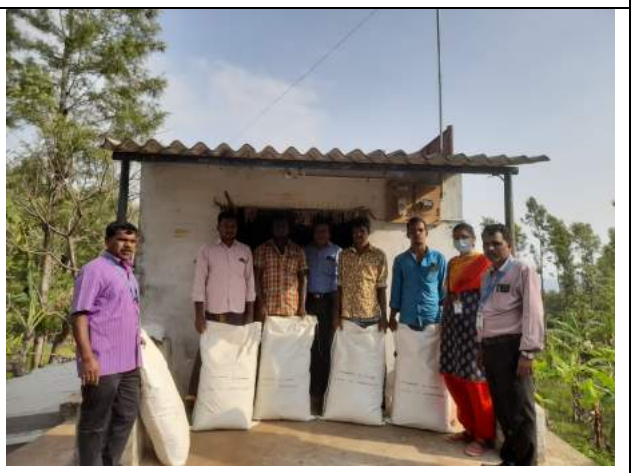
Mehtod demo on nutrient application in pepper



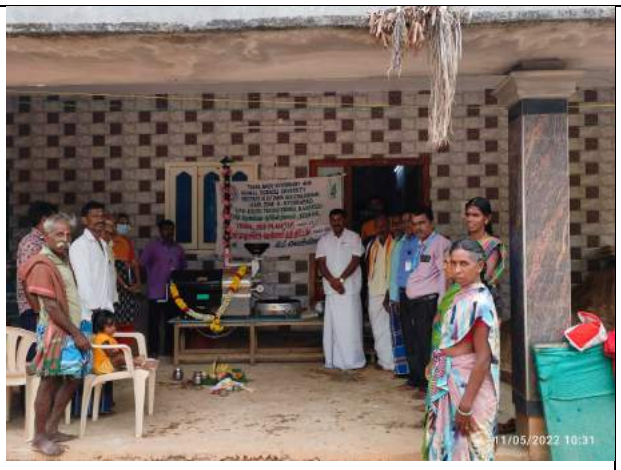
Skills on Banana Shakti Preparation



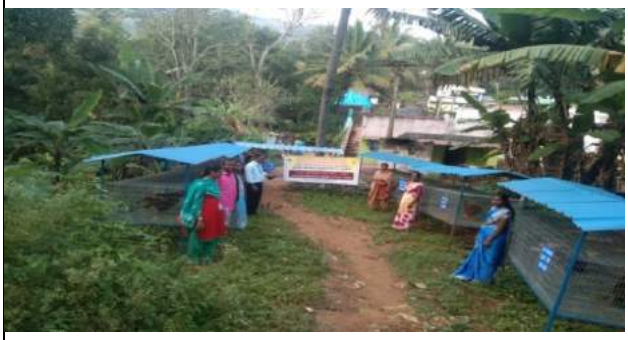




Disribution of critical input to farmers

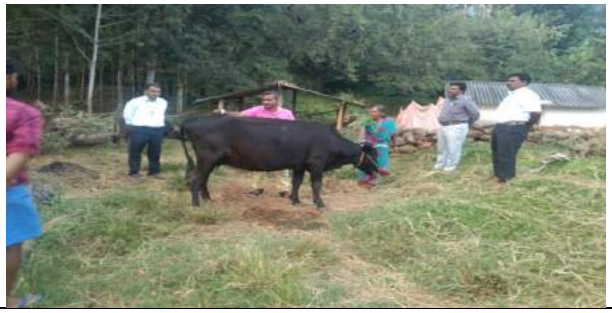


Distribution of coffee roster cum grinder



Distributed of Desi bird night shelter to ST farmers

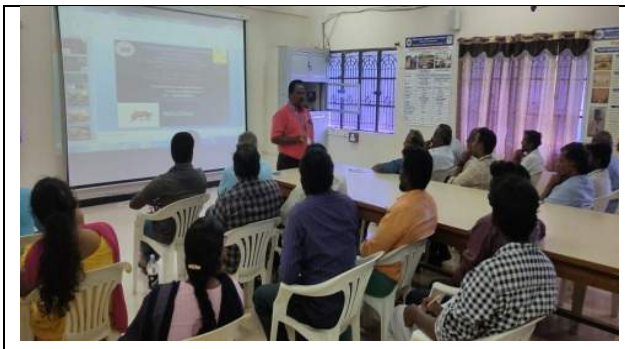
Distributed of one month old Aseel cross chicks to ST farmers

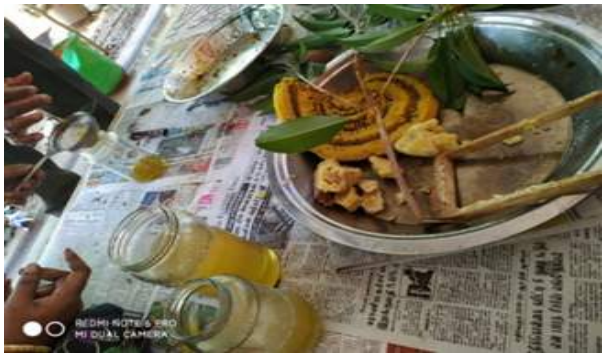


Celebrated National Milk Day

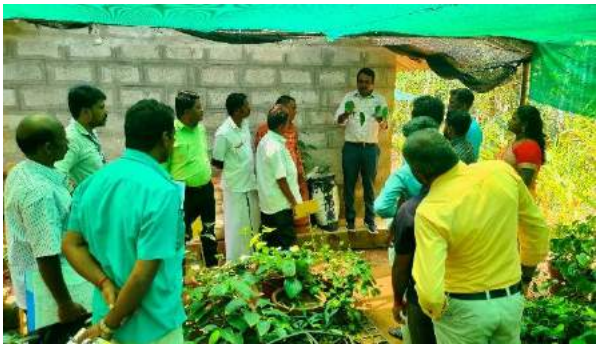
Demonstrated TRPVB tick shield on dairy cow

	
Distribute to Agricanon gun	**Measuring of pond Size- HDPE sheet**
	
Bamboo Local pepper harvesting ladder	**Pepper harvesting by using Aluminium unipole pepper ladder**
	
Field visits – Observation of fish	**Observation of Poultry**





EDP actiivty on Honey bee Rearing



Inter-State Exposure visit :Interstate exposure visit for tribal and sc farmers under TSP Programme : 23.03.2023 to 25.03.23 (3 days)

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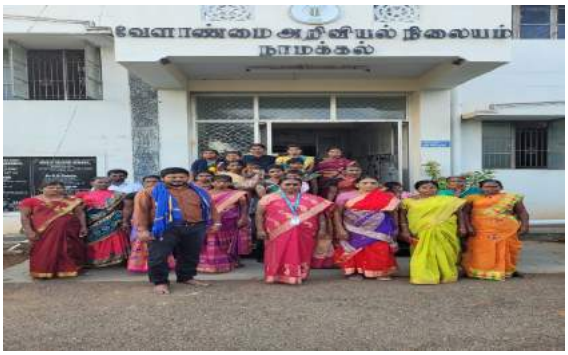
<tr><td>  </td><td>  </td></tr>
<tr><td colspan="2">Value addition in spices and millets</td></tr>
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