GOVERNMENT OF TAMIL NADU

TAMIL NADU IRRIGATED AGRICULTURE MODERNIZATION PRO

(TN IAMP) PHASE – III

NAMBIYAR SUB BASIN

COMBINED DETAILED PROJECT REPORT

THIRUNELVELI DISTRICT.





Ayacut area 1312.830 Ha.

Total Project Cost Rs. 365.911 Lakh.

MULTI DISPLINARY PROJECT UNIT (MDPU)
TNIAM PROJECT.
CHEPAUK, CHENNAI. 600 005
TAMIL NADU.

CONSOLIDATED PROJECT COST FOR NAMBIYAR SUB BASIN

Sl. No	Department	Project Cost in Lakh Rs.
1	Agriculture	21.433
2	Horticulture	115.060
3	Tamil Nadu Agricultural University	23.540
4	Agricultural Marketing	154.030
5	Agricultural Engineering	9.000
6	Fisheries	11.000
6	Animal Husbandry	**29.553**
7	TANUVAS	2.295
	TOTAL	**365.911**

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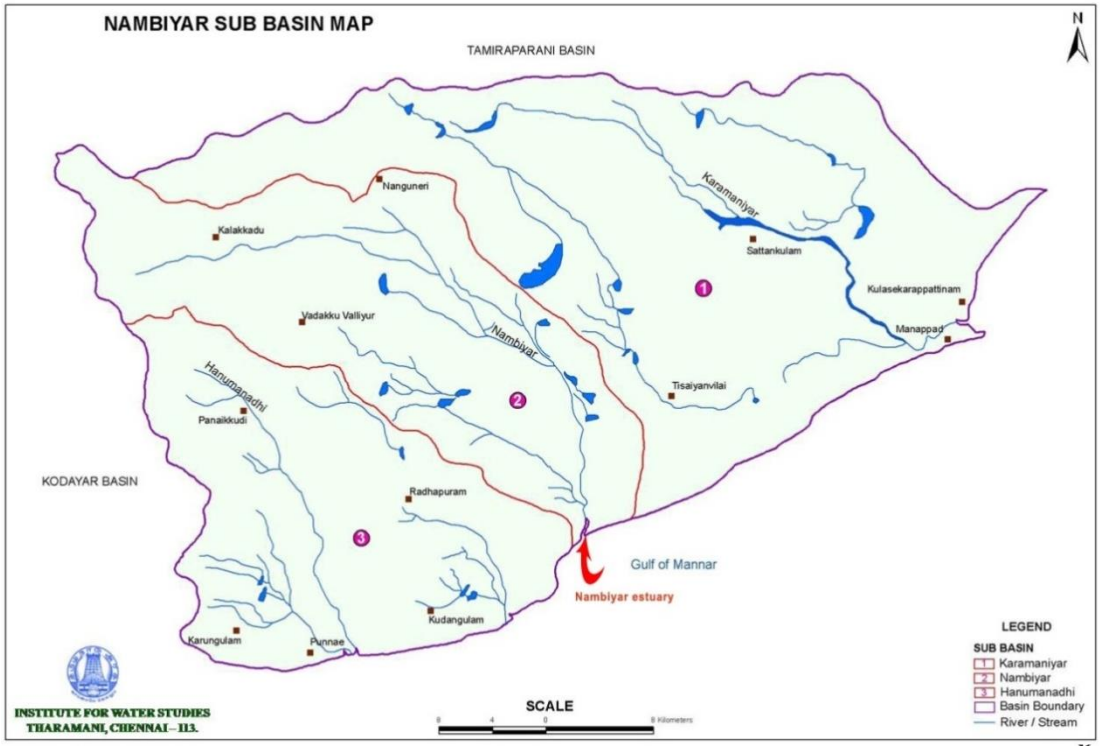
COMBINED DETAILED PROJECT REPORT

SUB BASIN NAME: NAMBIYAR

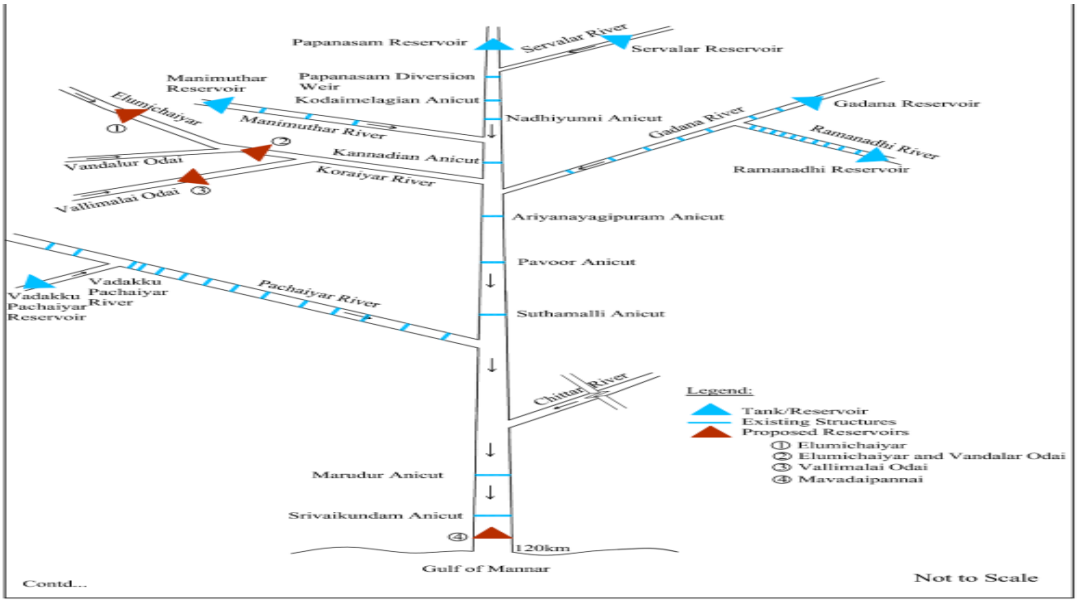
Sub Basin	:	Nambiyar
WRO Region	:	Madurai
Districts Covered	:	Tirunelveli.

INTRODUCTION

The component B (DOA, DOH, TNAU, DOAM&AB, AED, Fisheries, Animal Husbandry and TANUVAS) activities converge on spatially linked investments within the command area of rehabilitated irrigation tanks made under Component A for improving water productivity.



FLOW DIAGRAM OF THAMIRABARANI RIVER BASIN NAMBIYAR SUB BASIN MAP



OVERALL OBJECTIVES

The interventions of this component are aimed at increasing productivity of key crops, promoting diversification of agriculture production systems, enhancing resilience and improving farmer access to markets in project sub-basins. The project will adopt climate resilient approaches that promote sustainable use of land and water resources.

The component consists of 3 sub-components: (i) Agricultural intensification and diversification; (ii) Improving alternative livelihood sources through livestock and inland aquaculture; and (iii) Marketing, value-addition and post-harvest management. The implementing agencies are Departments of Agriculture (DOA), Horticulture (DOH), Tamil Nadu Agricultural University (TNAU), Agricultural Engineering (AED) and department of Agricultural Marketing and Agricultural Business (DOAM&AB), and livelihood departments like Animal Husbandry, Fisheries, Tamil Nadu Fisheries University (TNFU) and Tamil Nadu Veterinary and Animal Sciences University (TANUVAS).

In this consolidated DPR the Nambiyarsub basin ayacut area details and cropping pattern is given for the better understanding of the existing constraints and challenges in the sub basin identified during walk through survey with the community involving all the implementing line departments. Based on the requirement of farmers thrust area, details of selecting the interventions by the line departments and how it will be implemented in a converged manner is described in this Detailed Project Report(DPR).

Tamirabarani is one of the important irrigation source of Tirunelveli and Thoothukudi District. It originates from the peak of the PeriyaPothigai hills of the Western Ghats above Papanasam in the Ambasamudramtaluk of the Tirunelveli district. The river traverses about 120 K.M. in the two districts of Tirunelveli and Tuticorin before joining the Gulf of Mannar of the Bay of Bengal at Punnaikayal in Tiruchendurtaluk of Thoothukudi district.

DESCRIPTION OF THE TAMIRABARANI BASIN

The Tamirabarani river basin is one of the Major river basins in Tamil Nadu. It is bounded by Vaippar basin in the northern side and Western Ghats on the western side, Kothaiyar river basin on southern side. The basin area is covered in 2 districts namely Tirunelveli 35.07%, Thoothukudi 64.93%. The length of the Tamirabarani river is 120km finally it debouches in to Gulf of Mannar.

This basin has been divided into 7sub-Basins namely as follows:

1. LowerTamirabarani
2. Upper Tamirabarani
3. Chittar
4. Uppodai
5. Pachaiyar
6. Gadananadhi
7. Manimuthar

DESCRIPTION OF THE NAMBIYAR SUB-BASIN

Nambiyarriver originates in the eastern slopes of the western ghats near Nalikkal Mottai about 9.6 km west of Thirukkarangudi village at an altitude of about 1060m. This river is constituted by three branches of seasonal streams, like Tamaraiar, Kombaiar and Kodumudiar. Kombaiyar and Kodumudiyar originates at the eastern slope of western ghats at an altitude of about 1600 mm near Mahendragiri hills. Nambiyar then takes an easterly course up to the Tirunelveli-Nagercoil trunk road crossing and flows in a south-easterly direction. Parattaiyaroriginates in the eastern slopes of the western ghats at an altitude of about 1200 m near KakamunjikaiMottai and joins with another arm of Nambiyar at the foot of the hills. After feeding number of small tanks, this finally joins with Nambiyar again near Ervadi at 18.5 km. Kalankalodai is another tributary which originates near Kannallur area in Nanguneritaluk of Tirunelveli district.

It gets flows from the surpluses of a few tanks dependent on other streams. After traversing a distance of 6.5 km and finally joins with the Nambiyar near Kovankulam. Another tributary which originates near VadakkuValliyur area in Nanguneritaluk of Tirunelveli district at an altitude of about 90m gets flows from the surpluses of small tanks dependent on other streams. After traversing a distance of 10.5 km finally the tributary joins with Nambiyar near Sankarapuram village. Finally the Nambiyarriver flows into the Gulf of Mannar after traversing a total distance of 59km from the origin of Nambiyarriver. The Nambiyarriver has a total of 9 small anicuts viz. 1. Mailannanianicut, 2.Dalavaipuramanicut, 3.Rajakkamangalamanicut, 4.Malapudur anicut 5.Kannanallur anicut, 6.Vijayananicut, 7.Kovankulam anicut, 8.Islapuramanicut, 9.Pulimangalamanicut. The total extent of this sub basin area is 604.32 sq.km covering blocks of Kalakkadu, Nanguneri, Valliyoor, Radhapuram in Tirunelveli district and Thovala block in Kanyakumaridistrict,either part or full.

TOTAL REGISTERED AYACUT : 1312.800 Ha.

1. LIST OF BLOCKS, TALUKS AND DISTRICT COVERED IN NAMBIYAR SUB BASIN

DISTRICT	TALUK	BLOCK
Tirunelveli	Radhapuram, Nanguneri	Valliore, Radhapuram, Kalakad, Nanguneri

2. LIST OF BLOCKS COVERED IN NAMBIYARU SUB BASIN WITH AYACUT AREA

Ayacut in ha.

Block	Tanks				Total
	Nos.	Fully irrigated area	Partially irrigated area	Gap area	
Kalakadu	3	226.213	72.393	87.754	386.36
Nanguneri	3	43.432	20.896	8.052	72.38
Valliyur	19	352.693	149.973	138.328	640.994
Radhapuram	15	102.542	72.858	37.696	213.096
Total	40	724.88	316.12	271.83	1312.83

3. SEASON-WISE FOCUS CROPS

Though Paddy is the mainstay of farming, the other crops also are cultivated in considerable area in the Nambiyaru sub-basin.

Sl. No	Season	Main crops cultivated
1	Summer season	Vegetables
2	South west monsoon	Paddy, Vegetable
3	North east monsoon	Paddy, Pulses, Oil seeds
4	Perennial	Coconut
5	Annual	Banana

PROJECT DEVELOPMENT OBJECTIVES:

The Project Development Objective (PDO) is to enhance productivity and climate resilience of irrigated Agriculture, improve water management, and increase market opportunities for farmers and agro-entrepreneurs in selected sub- basin areas of Tamil Nadu.

4. PRESENT SCENARIO:

TIRUNELVELI DISTRICT

Tirunelveli district is provided with varied agro climatic conditions ranging from extreme tropical to subtropical. Major agricultural crops grown in the district are rice, pulses, maize, millets, oil seeds and cotton. Areas adjacent to Western Ghats like Tenkasi and Shencottai taluks are enjoying subtropical climate which is conducive for cultivation of most of the spices, sub tropical fruits, plantation crops and production of off-season mango. Tirunelveli District is endowed with traditional Vegetable growing belts having garden land with red and loamy soils suitable for cultivation of most of the Vegetables. Regional Agricultural Research Center of Tamil Nadu Agricultural University is functioning efficiently at Ambasamudhram from the year 1937. Development of season specific, pest and disease resistant, quality rice varieties with high yield for Tamiraparani delta region is the mandate of this RRS. Twenty rice varieties have been released from this station. Among the other released varieties, ASD 16 is very popular in the southern districts and is gaining popularity among the farmers in other districts of Tamil Nadu, because of its high yielding ability coupled with its suitability to both Kar and Pishanam seasons.

5. PRODUCTION, PRODUCTIVITY AND MARKETABLE SURPLUS OF MAJOR CROP IN TIRUNELVELI DISTRICT

Sl. No	Crop	Area (Ha.)	Productivity (MT)	Production (MT)	Marketable Surplus (M.T)
1	Paddy	62281	5.83	362994	326694.6
2	Cholam	1715	2.5	4284	3855.6
3	Maize	13086	4.61	60331	54297.9
4	Pulses	22452	0.46	10315	9283.5
5	Sugarcane	3369	63.82	215001	215001
6	Cotton	3484	1.09	3804	3765.96
7	Groundnut	634	2.76	1752	1681.92
8	Gingelly	1045	0.29	307	294.72
	Total	**108066**		**658788**	**614875.2**

6. SUB BASIN PRODUCTION, PRODUCTIVITY AND MARKETABLE SURPLUS OF MAJOR CROP

S. No	Crop	Area	Production (MT)	Productivity (MT)	Market Surplus(MT)
1	Paddy	800	3736	4.67	3000
2	Banana	600	15000	25	14300
3	Pulses	175	122.5	0.7	110
4	Coconut	300	1050	3.5	950
5	Cotton	120	240	2	240
6	Groundnut	250	350	1.4	300
7	Moringa	400	1400	20	1400
8	Tomato	50	1250	25	1200
9	Bhendi	50	400	8	380
10	Brinjal	30	600	20	550

Marketable surplus =Total production – consumption

7. CROPPING SEQUENCE IN SUB BASIN:

FIRST SEASON CROP:

Paddy is the principal crop extensively cultivated in both First season (June – September) and Second season (October - January). Locally the first season is called as Kar and second season is called as Pishanam. Normal productivity of Rice in the region is 5056 Kg per ha. Apart From paddy major importance is given to Pulses, Ground nut..

SECOND SEASON CROPS:

PULSES:

Pulse crops are being cultivated during Third season (February – April) .The normal productivity of pulses is 845 Kg/ ha. Blackgram is the predominant pulse crop cultivated.

8. EXISTING CROP SCENARIO IN THE SUB-BASIN

Paddy, Pulses, vegetables, banana are important crops cultivated in the sub-basin

9. EXISTING CROPPING SYSTEM IN THE SUS-BASIN

1. Paddy – Vegetables (tomato, chillies, onion, bhendi, brinjal)
2. Paddy – pulses
3. Banana – Paddy (two year crop rotation).

10. CROPPING PATTERN IN SUBBASIN

In the Sub Basin Paddy, Ground nut and Pulses are grown in Major areas.

Name of the sub Basin	:	Nambiyar Sub-Basin
Registered Ayacut Area	:	1312.830 Ha
Fully Irrigated	:	724.88 Ha
Partially Irrigated	:	316.12 Ha
Gap area	:	271.83 Ha

Cropping Pattern

Name of the sub Basin : **Nambiyaru sub-basin**

Registered Ayacut Area : 1312.83 Ha Partially Irrigated : 316.12 Ha

Fully Irrigated : 724.88 Ha Gap area : 271.83 Ha

S. No.	Crop	Without Project				With Project				Inc.
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
I	**Perennial crop**									
1	Coconut	35	159	0	194	35	159	0	194	0
2	Mango	0	24	0	24	0	24	0	24	0
3	Sapota	0	2	0	2	0	2	0	2	0
6	Casurina	0	2.1	0	2.1	0	2.1	0	2.1	0
7	Teak	0	0.5	0	0.5	0	0.5	0	0.5	0
8	Tamarind	0	1.13	0	1.13	0	1.13	0	1.13	0
10	Amla	0	1.05	0	1.05	0	1.05	0	1.05	0
12	Other tree crops	0	12	0	12	0	12	0	12	0
13	Flowers\ Tube Rose	0	0.5	0	0.5	0	0.5	0	0.5	0
	Total	**35**	**202.28**	**0**	**237.28**	**35**	**202.28**	**0**	**237.28**	0
II	**Annual Crop**									0
1	Banana	82	0	0	82	32	0	0	32	-50
2	Moringa	0	0	0	0	175	0	0	175	175
	Total	**82**	**0**	**0**	**82**	**207**	**0**	**0**	**207**	125
III	**1st crop**									0
1 a	Paddy	596.18	0	0	596.18	0	0	0	0	-596.18
b	Paddy - SRI	0	0	0	0	500	0	0	500	500
2	Maize	3.07	0	0	3.07	3.25	0	0	3.25	0.18
3	Pulses	4.03	45	0	49.03	70	0	0	70	20.97
4	Groundnut	0	10.2	0	10.2	50	0	0	50	39.8
5	Gingelly	0	2.6	0	2.6	5	0	0	5	2.4
6	Cumbu	0	2.5	0	2.5	2.5	0	0	2.5	0
7	Tomato	0.7	20.5	0	21.2	11.2	0	0	11.2	-10
8	Bhendi	0	9.2	0	9.2	80	0	0	80	70.8
9	Brinjal	2.86	5.63	0	8.49	25	0	0	25	16.51
10	Onion	0	5.63	0	5.63	7	0	0	7	1.37
11	Cucumber	0	2	0	2	30	0	0	30	28
12	Gourds	0.17	1	0	1.17	5	0	0	5	3.83
13	Radish	0	1	0	1	1	0	0	1	0
14	Curry leaf	0	0.23	0	0.23	0.23	0	0	0.23	0
15	Cluster Beans	0	0.15	0	0.15	0.15	0	0	0.15	0
16	Greens	0	1	0	1	1	0	0	1	0
17	Watermelon	0	1	0	1	8	0	0	8	7
18	Chillies	0.87	3	0	3.87	25	0	0	25	21.13
19	Beans	0	0.25	0	0.25	0.25	0	0	0.25	0
20	Veg Cowpea	0	0.45	0	0.45	0.45	0	0	0.45	0
21	Corinader	0	0.85	0	0.85	0.85	0	0	0.85	0
22	Colacassia	0	1	0	1	3	0	0	3	2
23	Marigold	0	0.65	0	0.65	1	0	0	1	0.35
24	Fodder cholam	0	0	0	0	0	38.67	0	38.67	38.67
24	Fallow	0	0	271.83	271.83	0	0	0	0	-271.83
	Total	**607.88**	**113.84**	**271.83**	**993.55**	**829.88**	**38.67**	**0**	**868.55**	-125
	Grand total (I+II+III)	**724.88**	**316.12**	**271.83**	**1312.83**	**1071.88**	**240.95**	**0.00**	**1312.83**	0
IV	**2 nd crop**									0
1. a	Paddy	357	0	0	357	0	0	0	0	-357
b	Paddy - SRI	0	0	0	0	357	0	0	357	357
2	Maize	0	0	0	0	10	0	0	10	10
3	Groundnut	25	0	0	25	55	0	0	55	30
4	Fodder cholam	0	12.05	0	12.05	25	0	0	25	12.95
5	Rice fallow pulses	0	0	0	0	0	0	272	272	272
6	Bhendi	0	0	0	0	30	0	0	30	30
	Total	**382**	**12.05**	**0**	**394.05**	**477**	**0**	**272**	**749**	354.95
	Great Grand Total	**1106.88**	**328.17**	**271.83**	**1706.88**	**1548.88**	**240.95**	**272.00**	**2061.83**	354.95
	Cropping Intensity				**130**				**157**	

DEPARTMENT WISE INTERVENTIONS

DEPARTMENT OF AGRICULTURE

INTERVENTION-WISE BREAK UP OF COST NORMS

1. PRODUCTIVITY ENHANCEMENT IN PADDY (IPT DEMOS: 160 HA)

In this sub- basin there is scope for improving the productivity to bridge the yield gap (1.0 - 1.2 MT / Ha) both in first and second seasons (Samba and Navarai). The DoA will conduct IPT Paddy Crop Demonstrations with all improved management practices, like planting of single seedling etc. and inputs like improved variety of crop, IPM, INM etc. are practiced in FFS mode, and also suggesting suitable interventions viz., Introduction of three crop sequence of Green Manure – SRI Paddy – Rice Fallow Pulses.

GROWING GREEN MANURE CROPS: especially for their organic matter and ability to improve the soil can dramatically build up poor and exhausted soils and maintain the fertility of better ones. It boosts lands' organic matter (O.M) level. It keeps nutrients from leaching down beyond reach of crops, provides food for microbial soil life, helps legumes fix nitrogen in their root nodules and helps the soil produce good structure and maintain the air-pore spaces essential to good crop health. Green manure is less expensive than animal manure and is practically free ofantibiotics and growth hormones. Green manure can also help create vital soil in areas with little or no top soil due to water runoff. It deters weeds, even without the use of harmful herbicides. Earthworms and beneficial bacteria grow well with green manure. Poor and exhausted soils get rich in nutrients through green manures. Green manure also helps with soil erosion due to weather parameter like wind and rain.

SYSTEM OF RICE INTENSIFICATION:

Paddy is the main staple crop grown in the Nambiyar sub- basins where in there is still scope for improving the productivity as the yield gap varies from 1.2 - 1.5 MT / Ha both in first and second seasons (Samba and Navarai). Conventional method of paddy cultivation requires huge amount of water and cost of cultivation is also high. So, we are programmed to educate the farmers to change the conventional cultivation practices into System of Rice Intensification method in the sub-basin areas. System of Rice Intensificationensures saving of seed and water as they require in less, greater root growth due to young seedlings and wider spacing, more tillers ultimately more grains and yield. There is reduction of cost due to labour saving through the usage of power weeder, fertilizer saving through usage of Leaf Colour Chart and lesser pest and disease incidence.

RICE FALLOW PULSES: are sown as relay crop after the harvest of Paddy. These rice fallow areas offer a huge potential niche for short season pulses crops. In this relay cropping sequence sowing of pulses is being followed before/after the harvest of Paddy under Zero tillage system. The rice fallow pulses are effectively utilizing the available residual moisture and nutrients after the harvest of Rice crop. It enhances the soil fertility status for the next crops due to nitrogen fixation.

Sl.No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	IPT Demo. Of Green Manure Crop - SRI - Rice Fallow Pulses (3 Crop Sequence)	160	0.100	16.000

UNIT COST – GM-SRI-RFP CROP DEMONSTRATION:

A) GREEN MANURE

Sl. No	Particulars	Unit Cost (Rs. /Kg)	Amount (Rs.)
1	Seed cost with seed treatment components - 40 Kg / Ha	50	2,000
	Total		**Rs.2,000**

B) SRI [PADDY]

Sl. No	Particulars	Unit Cost (Rs. / Kg)	Amount (Rs.)
1	Cost of Soil testing	20	20
2	Seed cost with seed treatment components - 8 Kg / Ha	50	400
3	Cost of nursery raising and Bio-fertilizers		600
4	Cost of fertilizers (150:50:50 Kg NPK / Ha)		
	Urea - 300 Kg	6	1,800
	Muriate of Potash – 80 Kg	16	1,280
	$ZnSO_4$ 25 Kg	70	1,750
5	IPM - Plant protection charges	1,000	1,000
	Total	**Rs. 6850 (Assistance Restricted to) Rs. 6,000**	

C) RICE FALLOW PULSES

Sl. No	Particulars	Unit Cost (Rs. / Kg)	Amount(Rs.)
1	Seed cost with seed treatment components -20 Kg/ Ha	100	2,000

2. IMPROVED PRODUCTION TECHNOLOGY CROP DEMOS THROUGH CROP DIVERSIFICATION:

1. PROMOTION OF PULSES PRODUCTION (IPT DEMOS: 15 Ha.):

There is always huge scope for improving the productivity levels of major pulse crops and the poor seed replacement rate, timely availability of quality seeds, zero mineral nutrition, improper pest management practices, poor post-harvest practices etc., are the major constraints for increasing the productivity. The DoA would intervene the farmers with participatory approach and adoption of improved production technologies viz.

a. Usage of high yielding certified seeds of varieties.
b. Pre soaking of seed- 1 kg of seed in 1 lit. of water for 4 hrs. for increasing germination percentage.

c. Promotion of line sowing for maintaining optimum plant population.

d. Balanced Fertilization(Kg/ha) : N : P :K : S MN Mixture
25:50:25: 10 5

e. Productivity enhancement by mass scale spraying of 2% DAPS on 25th and 40th day after sowing.

Sl. No	Technology	Area (ha)	Unit Cost L.Rs.	Budget Rs. In lakh)
1	IPT Demo. of Pulses	15	0.050	0.750

UNIT COST – IPT PULSES (GARDEN LAND):

Sl. No	Particulars	Unit Cost (Rs /Kg)	Amount (Rs.)
1	Cost of Soil testing	20	20
2	Seed cost with seed treatment components - 20 Kg /Ha	150	3,000
3	Pulse Wonder 2 Kg / ha	220	440
4	Fertilizer: i. DAP 25 Kg / Ha	29	725
5	IPM - Plant protection charges	1,000	1,000
	Total Cost	**Rs. 5,185 (Assistance Restricted to) Rs. 5,000**	

2. REVIVAL OF OILSEEDS CULTIVATION (IPT DEMOS: 10 Ha.):

Oilseeds are the next target group to be given special focus in the river sub basins of Tamil Nadu. As they are mostly grown in rainfed situation, the yield levels are far below than the national average and still vast potential untapped to improve the productivity of oilseeds under irrigated conditions. Like pulses, the country being the net importer of oilseeds, and because of increased demand for edible oil consumption by the households in the State, the demand - supply gap is much wider. So, special attention should be envisaged to narrow down this gap. The following interventions are proposed in Oilseeds viz.

a. Usage of high yielding certified seeds of varieties.

b. Promotion of line sowing for maintaining optimum plant population.

c. Application of Gypsum in Groundnut and Manganese Sulphate in Gingelly.

Sl. No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	IPT Demo. of Oilseeds	10	0.050	0.500

UNIT COST : OILSEEDS CULTIVATION

Sl. No	Particulars	Unit Cost (Rs. / Kg)	Amount (Rs.)
1	Cost of Soil testing	20	20
2	Cost of fertilizers (17:34:54 NPK + Gypsum 400 Kg / Ha)		
	i. Gypsum 400 Kg / Ha	4	1,600
	ii. Urea - 40Kgs	6	240
	iii. MOP - 90 Kg.	16	1,440
3	Micro nutrient spray (DAP–2.5 Kg, Ammonium sulphate – 1 Kg, Borax – 500 gm and planofix– 375 Ml) @ Rs.250 for 3 sprays.	250	750
4	Bio fertilizers-20 Packet	10	200
5	IPM - Plant protection charges	1,000	1,000
	Total Cost : Rs. 5,250 /- (Assistance Restricted to) Rs.5,000		

II. AGRICULTURAL IMPLEMENTS:

CONO WEEDING OPERATION IN SRI PADDY CULTIVATION:

- Cono weeder is used two times at the stage of 15th and 25th days of planting SRI .
- The weeds are incorporated into the field by this way it is utilized as nutrients in the same field itself.
- Old roots are removed and new roots have been proliferated by using the cono weeder. Since number of tillers will be increased. It leads to increase in yield (300-400 kg/acre). Hence farmers got more income compared to conventional cultivation
- It reduces labour shortage.
- In this project Conoweeding operation will be done by using the self help groups, Amma farm women groups and Farmers Interest group and farmers themselves. By this way womens will be benefited.
- The cono weeding may be done either by manual or mechanical according to the soil status and growth of the crop.
- Back ended subsidy will be given to the beneficiaries by ensuring the operation with proper Geo tagging of the intervention.

Sl. No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	Cono weeding operation	80	0.01250	1.000

UNIT COST FOR CONO WEEDING:

Sl. No	Particulars	Unit Cost (Rs. / Ha)	Amount (Rs.)
1	Cost of two times of Cono weeding on 15th and 25 th days after planting	1250	1250

III. OTHER CROP BASED COMPONENTS:

1. FARMERS FIELD SCHOOL

- ❖ Farm Schools would be operationalized at Block level in sub basins
- ❖ These FFS would be set up in the field of outstanding or achiever farmers.

- ❖ "Trainee farmers" would also have the responsibility of providing extension support to other farmers in the respective village or neighboring villages.

Sl.No	Technology	Nos.	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	Farm Schools	5	0.200	1.000

Farmers Field School Unit Cost:

Sl. No.	Operationalizing Farmers Field School	Cost Norms in Rs.
1	Frontline demonstration at Farm School on a maximum area of 2 Ha. at same rates as approved under the Guidelines of National Food Security Mission for the crops.	7,500
2	Grant towards logistics support to Farm School	1,000
3	Contingency	2,000
4	Details of interactions / training at Farm School	
a.	*Honorarium for maximum two external trainer for maximum 6 visit @ maximum of Rs.250 per visit per trainer*	3,000
b.	*Travel expenses for maximum two external trainer for maximum 6 visits @ maximum of Rs.150 per trainer per visit*	1,800
c.	*Food expenses for 28 participants @ Rs.30 per participant per day for 6 events.*	5,040
d.	*Printed literature @ Rs.50 per participant for 28 participants and trainers*	1,400
	Total	**21,740**
	Grand Total: Rs.21,740 (Assistance Restricted to) Rs.20,000	

INSTITUTIONAL STRENGTHENING – IEC & CAPACITY BUILDING ACTIVITIES

The Capacity building and Change management training are given to the Agricultural Labourers, Farmers and Extensional Personnel viz., Assistant Director of Agriculture, Agricultural Officers, Deputy Agricultural Officers, Assistant Seed Officers and Assistant Agricultural Officers which are impacted by the reputed Capacity building and Change management Training organizations.

Sl. No	IEC & Capacity Building – Change Management Trainings	Nos.	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	Trainings for SRI skills to 50 No. of Agriculture labours for 2 days	1	0.185	0.185
2	Farmers training-50 Nos. for 1 day	2	0.210	0.420
3	Extensional Personnel training-30 Nos. for 2 days	1	0.275	0.275
	Total	**4**		**0.880**

IEC/CB ACTIVITIES [FIELD SUPPORT, SUSTAINABILITY, DOCUMENTATION CHARGES Etc.,)

In the sub-basins, the total Crop based demonstrations to be conducted are 185 Ha, As these crop demonstrations are conducted on FFS mode, the Village meetings, Seminars, Village Melas, other Publicity & Propaganda activities, POL, Printing of Leaflets /

Pamphlets, Posters, Banners, Relevant Materials for the functions and fields, Documentation Charges etc., are to be imparted in the proposed Crop based demonstrations to be conducted with the allotted amount.

Sl. No	IEC & Capacity Building – Change Management Trainings	Nos.	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	IEC/CB activities [Field support, Sustainability etc., IEC & CB for the Crop Demos Conducted	185	0.0065	1.203
2	Documentation Charges for the Sub- basins	1	0.10	0.100
				1.303

TN IAMP- PHASE III- DETAILED PROJECT REPORT
COMPONENT WISE PHYSICAL AND FINANCIAL REQUIREMENT

Name of the Sub Basin: NAMBIYAR **District: TIRUNELVELI**

Sl. No.	Name of the component	Unit	Unit Cost L.Rs.	Project Activities				Financial in Lakh Rs			
				I Year	II Year	III Year	Tot	I Year	II Year	III Year	Total
I. A. Increasing Crop Productivity by Best Management Practices & Innovations (IPT Demos): [Involving more Women Farmers & addressing Climate Resilient Issues] :											
1	Green Manure Crop	Ha.	0.02	60	60	40	160	1.2	1.2	0.8	**3.20**
2	SRI	Ha.	0.06	60	60	40	160	3.6	3.6	2.4	**9.60**
3	Rice Fallow Pulses	Ha.	0.02	60	60	40	160	1.2	1.2	0.8	**3.20**
4	Pulses	Ha.	0.05	10	5	0	15	0.5	0.25	0	**0.75**
5	Oilseeds	Ha.	0.05	5	5	0	10	0.25	0.25	0	**0.50**
	IPT Demo. Total	**-**	**-**	**75**	**70**	**40**	**185**	**6.75**	**6.5**	**4**	**17.25**
B. Other Crop based Components [Involving more Women Farmers & addressing Climate Resilient Issues] :											
6	Farmers Field Schools (FFS)	Nos.	0.2	0	5	0	5	0	1	0	**1.00**
	Other Crop based Components Total	-						**0**	**1**	**0**	**1.00**
C. Agricultural Implements:											
7	SRI-Conoweeder operation	Nos.	0.0125	30	30	20	80	0.375	0.375	0.25	**1.00**
	Agri. Implements Total	**-**	**-**					**0.375**	**0.375**	**0.25**	**1.00**
I	**Agri. Crop Based Components Total (A+B+C)**	-	-					**7.125**	**7.875**	**4.25**	**19.25**
II. Institutional Strengthening - IEC & Capacity Building Trainings: [Encouraging More Women Farmers & addressing Climate Resilient Issues											
8	Trainings for SRI skills to 50 No. of Agriculture labours for 2 day Total cost : Rs.18,500/- x 1 Training	Nos.	0.185	1	0	0	1	0.185	0	0	**0.185**
9	Farmers training-50 Nos. for 1 day Total cost : Rs.21,000/- x 2 Trainings	Nos.	0.21	2	0	0	2	0.42	0	0	**0.42**
10	Extensional Personnel training-30 Nos. for 2 days Total cost : Rs.27,500/- x 1 Training	Nos.	0.275	1	0	0	1	0.275	0	0	**0.275**
11	IEC/CB activities [Field support, Sustainability etc., IEC & CB for the Crop Demos Conducted	Ha	0.0065	75	70	40	185	0.4875	0.455	0.26	**1.2025**
12	Documentation Charges for the Sub-basins	Nos.	0.1	1	0	0	1	0.1	0	0	**0.10**
II.	**IEC & CB Trainings Total**	**-**	**-**					1.468	0.455	0.26	2.183
	Grand Total	**-**	**-**					**8.5925**	**8.3300**	**4.5100**	**21.432**

DEPARTMENT OF HORTICULTURE

INTERVENTIONS DEMANDED

Introduction of HB vegetables, Drip Irrigation system with fertigation and demos on vegetables are demanded by the farmers.

INTERVENTIONS FINALIZED

CROP DEMONSTRATION

Demonstrations in Brinjal, chillies and bhendi, Mouringa with Micro irrigation & Fertigation are finalized.

JUSTIFICATION FOR THE INTERVENTIONS FINALIZED

In the Villages under Nambiyar Sub basin farmers are cultivating Agriculture Crops mostly Paddy. Now by introducing Horticulture crops like vegetables definitely the status of the farmers will increase.

1.**VEGETABLES:** Short duration, farm income will be enhanced multifold, effective use of land and water, farmers will get better price since the sub basin is near to Bangalore city.

2.**MICRO IRRIGATION:** Increase in irrigated area, increase in production and productivity, labour and power saving.

3.**TRAINING:** Helps farmers to adopt new technologies, follow crop diversification, practice organic farming and finally increase the yield.

4. **BIO-VILLAGES:** Helps farmers to reclamate the soil and provide safe food for future generation.

DETAILS OF CROP DIVERSIFICATION

By implementing this project the farmers will switch over from Agriculture crops like Paddy to Horticulture crops like Vegetables, Turmeric and Mango. This will be achieved by convincing the farmers through awareness meetings, campaigns and other IEC/CB activities.

COST NORMS OF INTERVENTIONS PROPOSED WITH AUTHORITY

Sl. No.	Interventions	Unit	Pattern of Assistance	Cost Norms (Rs.)	Assistance (Rs)	Assistance for first year (%)	Assistance for Ist year (Rs.)	Authority	Remarks
I	**Vegetables** i) Brinjal, Bhendi & Chillies	Ha	40% cost maximum area of 2ha per beneficiary	50,000	Rs.10,000 for Direct sown crops, the remaining Rs.10000 for upscaling for another 4 ha. Rs. 20000 for transplanted crops.	-	20,000	MIDH Pg-4 MDPU – Letter No/F9/TNIAMP/2020 dated 02-07-20201	Inclusive of Seeds & other inputs
II	**Micro irrigation**	Ha	100% cost for SM/MF limited to 1ha per beneficiary for vegetable crops.	1,13,000	1,13,000	-	1,13,000	PMKSY Pg-6	<1.2 mt spacing

MIDH : Operation Guidelines of mission for integrated Development of Horticulture. Ministry of Agriculture, KrishBhavan, New Delhi.

PMKSY : Operational Guidelines for Implementation of Micro irrigation Scheme under Component of Pradhan Mantri krishi Sinchayee Yojana.

INTERVENTIONS WISE TENTATIVE BREAK UP DETAILS OF COST NORMS:

BHENDI

S. No	Interventions	Total Area	Unit Cost Rs./ha	Budget Rs. in lakhs
1	Bhendi	15	20000	3.000

BHENDI : RS.20000 (COST BREAK UP)

Sl. No.	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Bhendi Hybrid Seed	Kg	1.5	3086.00	4630
2	Vermicompost	Kg	67	10.00	670
3	Beauveriabassiana	Lit	1	400.00	400
4	Verticilliumleacani	Lit	1	400.00	400
5	DAP	Kg	100	22.00	2200
6	MOP	Kg	100	11.00	1100
7	Urea	Kg	100	6.00	600
	Total crop Demonstration				**10000**
8	***Bhendi**upscaling for another 4 ha		4 ha	2500	**10000**
	Subsidy				**20000**

- Each Bhendi demonstration will be **up scaled** to another 4 **ha by adopting back ended subsidy method** @ Rs.2500/ha towards purchase of the seeds. The seed cost will be reimbursed by the farmer by submission of seed bill, photos of crop inspection and other documents *viz.*,adangal, e-adangal and Geo tagging.

BRINJAL:

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Brinjal	25	20000	5.000

BRINJAL: RS.20000 (COST BREAK UP)

S.No	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Brinjal Seedlings	Kg	18700	1.00	18700
2	Vermicompost	Kg	50	10	500
3	Beauveriabassiana	Lit	1	400.00	400
4	Verticilliumleacani	Lit	1	400.00	400
5	DAP	Kg	0	0.00	0
6	MOP	Kg	0	11.60	0
7	Urea	Kg	0	5.90	0
	Total				**20000**
	Subsidy				**20000**

GREEN CHILLIES

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Green chillies	20	20000	4.000

GREEN CHILLIES

Sl. No.	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Chillies seedlings	Kg	29000	1	29000
	Total				**29000 ***
	Total eligible subsidy				**20000**

***The farmer will bear the seedlings cost over and above the eligible subsidy**

MORINGA:

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Moringa	35	20000	7.000

MORINGA: RS.20000 (COST BREAK UP)

Sl. No.	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Seeds (PKM1)	Kg	1	3000	**3000**
2	Beauveriabassiana	Lit	1	400	**400**
3	Verticilliumleacani	Lit	1	400	**400**
4	TrichodermaViridi	Kg	4	45	**180**
5	Pseudomonas	Kg	4	45	**180**
6	MOP	Kg	0	11.60	**0**
7	Urea	Kg	0	5.90	**0**
8	DAP	Kg	0	21.52	**0**
9	Vermicompost	Kg	584	10	**5840**
	Total for Demonstration				**10000**
10	***** Moringaupscaling for another 4 ha	**ha**	4 ha	2500	**10000**
	Grand total				**20000**

- Each Moringa demonstration will be **up scaled** to another 4 ha **by adopting back ended subsidy method** @ Rs.2500/ha towards purchase of the seeds. The seed cost will be reimbursed by the farmer by submission of seed bill, photos of crop inspection and other documents *viz.*,adangal, e-adangal and Geo tagging.

BIO VILLAGE (IPM):

To avoid the pesticide residue in vegetables and encourage the importance of organic farming, the project farmers will be encouraged to use Biocides instead of chemical pesticides. Required awareness will be created among the farming community through

various IEC/CB methods. This component will be implemented in the IPM villages selected by the Department of Agriculture. Under the project, selected farmers groups especially women farmers are encouraged by Agriculture Department through financial assistance in the project, to produce such selected biocides in their villages itself for their own use and also to supply to the other fellow farmers in the nearby villages. The vegetables produced using biocides have good demand and fetches premium price in the market. This practice also improves soil health.

BIO VILLAGE

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Bio village	5	0.012	0.060

IPM (ENCOURAGING TO USE BIO PESTICIDES)-RS.1200/

Sl. No.	Name of the Input	Qty. (kgs / Nos./lit)	Rate (Rs.)	Amount (Rs.)
1	Beauveriabassiana	1lit	400/lit	400
2	Verticilliumleacani	1lit	400/lit	400
3	TrichodermaViridi	4kgs	50 / kg	200
4	Pseudomonas	4kgs	50 / kg	200
	Total			**1200**
	Subsidy			**1200**

MICRO IRRIGATION:

In order to save and minimize the irrigation water, it is programmed to cover about one fourth of vegetable demonstrations under micro irrigation with fertigation. MI saves about 30 % of the irrigation water. The saved water will be utilized to cover more area under irrigation crops. Micro irrigation will be installed in cluster villages cultivating vegetables mainly. The department of horticulture has list of approved MI firms. The farmers will choose the firm for installation and the payment will be release to the MI firms by back ended subsidy method by strictly following the quality standards, procedures and guidelines framed for the same.

MICRO IRRIGATION

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Micro irrigation	84	1.13	96.000

CONVERGENCE WITH THE AM & AB DEPARTMENT:

The list of farmers / commodity groups taken up various Horticulture crop demonstrations in the sub basins will be shared with the concerned agriculture marketing and agri business department officials crop wise, area wise village wise and block wise so as to

jointly plan and arrange for marketing the products in time to get the better price in the market.

OUTCOME OF THE PROJECT:

Area under Horticulture crops will be increased to about 20 to 25% of ayacut area by the end of the project period, besides increasing the productivity of the Horticulture crops and farmers income. Through Micro irrigation, about 30 % irrigation water will be saved and the saved water will be utilized to increase the area under irrigation.

INTERVENTIONS PROPOSED FOR 3 YEARS (PHYSICAL & FINANCIAL) – COST TABLE (CONSOLIDATED)

THIRUNELVELI (NAMBIYAR)

Sl. No	Interventions	Subsidy	Physical in ha.				Financial (Rs. in Lakhs)			
			2020 -21	2021-22	2022-23	Total	2020 – 21	2021-22	2022-23	Total
1	Bhendi	0.2	5	5	5	15	1.000	1.000	1.000	3.000
2	Brinjal	0.2	8	8	9	25	1.600	1.600	1.800	5.000
3	Chillies	0.2	7	7	6	20	1.400	1.400	1.200	4.000
4	Moringa	0.2	15	10	10	35	3.000	2.000	2.000	7.000
	Total vegetables		**35**	**30**	**30**	**95**	**7.00**	**6.00**	**6.00**	**19.000**
5	Bio Village	0.012	5	0	0	5	0.060	0.000	0.000	0.060
6	Micro irrigation **	1.13133	28	28	28	84	32.000	32.000	32.000	96.000
	Grand total		**68**	**58**	**58**	**184**	**39.06**	**38.000**	**38.000**	**115.060**

TAMIL NADU AGRICULTURAL UNIVERSITY

FIELD INTERVENTIONS

1.1 PRODUCTIVITY ENHANCEMENT IN RICE

1.1.1. GREEN MANURE – RICE (AWDI) – PULSES

Productivity enhancement in Rice through changing cropping sequence is a promising method of growing rice both under irrigated and rain fed conditions. Under conventional system of rice cultivation the rice yield is low due to poor water and nutrient management. The efficiency of Nitrogen fertilizer applied to rice is low, seldom exceeding 30-35%. This low efficiency of N is due to the loss of N through various mechanisms, such as leaching, volatilization, de-nitrification and surface run-off. Another important component of soil for higher productivity is the organic matter. Available reports indicate that most soils have low organic matter content. Green manure crops have the ability to fix a considerable amount of atmospheric N and can add both N and organic matter to soil. Because of the high price and low efficiency of inorganic N fertilizer and also due to low organic content of soil, the inclusion of green manure crops in a rice-based cropping system, particularly rain fed lowland rice ecosystems, has received priority consideration in recent years.

The interventions proposed Green Manure – Rice (AWDI) - Pulses will improve crop productivity.

S. No.	Technology	Target area (ha)	Unit cost (Rs.)	Amount (Rs.in lakhs)
1.	Green Manure – Rice (AWDI) - Pulses	145	11000	15.95

(I) DETAILS OF UNIT COST SPLIT UP FOR GREEN MANURE

S. No	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs/ha)
1	Seed cost - 40 Kg / Ha	50	2,000	2,000
	Total		**2,000**	**2,000**

(II) DETAILS OF UNIT COST SPLIT UP FOR RICE

S. No.	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs/ha)
1	Cost of Soil testing	20	20	20
2	Seed cost - 10 Kg / Ha	30	300	300
3	Cost of nursery raising		600	-
4	Cost of fertilizers (150:50:50 Kg NPK / Ha)			
	Urea - 300 Kg	6	1800	1800
	Muriate of Potash – 80 Kg	16	1280	1280
	$ZnSO_4$ 25 Kg	76	1300	1300

5	Bio fertilizer & Bio inoculants		1600	1600
	Total		**6900**	**6300**

(III) DETAILS OF UNIT COST SPLIT UP FOR AWDI

S. No	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs/ha)
1	Field water tube 3 Nos/ ha		700	700
	Total		**700**	**700**

(IV) RICE FALLOW PULSES

S. No.	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs./ha)
1	Pulses Seed cost- 20kg/ha	100	2000	2000
	Total		**2000**	**2000**

1.2. GRAFTED BRINJAL TO ENHANCE THE PRODUCTIVITY OF BRINJAL

Tamil Nadu Agricultural University (TNAU) has evolved grafting technology to improve the yield of brinjal with appropriate rootstocks. Brinjal plant is highly vulnerable to pests & diseases. This method of propagation is a boost to plant growth by increasing the uptake of nutrients and developing resistance to soil borne diseases with suitable rootstocks. Susceptibility to pests and disease so brinjalis addressed with the preparation of rootstock of non-bitter *Solanumtorvum* with the seedling of any high yielding variety/hybrid. After beheading the top of rootstock, a small slit is made to accommodate the brinjal seedling and the two are tied using grafting clips or polythene strips. The grafted plant is placed in a mist chamber for three to five days before being transferred to shade net. It would take a month-and-a-half to produce brinjal grafts. The grafts are then transplanted in the field. The root of the grafts run deep into the soil and it does not require as much water. Also it is resistant to nematodes and dry root rot. Above all the plant duration can be extended to a year and there is a three-fold increase in yield over conventional seedling.





TOTAL COST FOR THE PROPOSED DEMONSTRATION ON CULTIVATION OF GRAFTED BRINJAL

S. No.	Technology	Target area (ha)	Unit Cost (Rs.)	Total cost (Rs. In lakh)
1	Grafted Brinjal to enhance the productivity of Brinjal	5	50000	2.50

2. DETAILS OF UNIT COST SPLIT UP FOR GRAFTED BRINJAL

S. No.	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs/ha)
1.	Cost of grafted Plants (6250 plants /	Rs.7/Plant	43750	43750
2.	Cost of fertilizers (150:150:100 Kg NPK / ha)			
	Urea- 440 kg	6	2640	2640
	MoP-166 kg	16	2656	2656
3.	Bio Fertilizer		954	954
	Total		**50000**	**50000**

2. CAPACITY BUILDING & INFORMATION, EDUCATION & COMMUNICATION

2.1. CAPACITY BUILDING

2.1.1. TRAINING TO STAKEHOLDERS

Under this activity, imparting training to all the beneficiaries as off-campus training is planned. The Capacity building programmes at sub-basin level is enlisted below.

S. No	Particulars	Duration (days)	No/ batch	Total batch	Budget / batch	Total budget (lakhs)
1	Productivity enhancement by Green Manure – Rice(AWDI) – Pulses	1	50	5	10000	0.5
2	Improved farming practices For brinjal through Grafted seedlings	1	50	5	10000	0.5
	Total					**1.0**

2.1.2. EXPOSURE VISIT

In-order to have practical knowledge on various improved farming practices prevailing across the District and State, it has been proposed to expose the stakeholders by organizing educational tours for having better cross learning.

2.2. IEC INCLUDING AWARENESS CREATION, DOCUMENTATION AND IEC EQUIPMENT

2.2.1. ORGANIZE AWARENESS CAMPAIGN AND VILLAGE MEETINGS

- Awareness will be created by Explaining about the scheme – organization objectives, activities, project contribution and farmers participation

- Farmers will be sensitized through Village meetings and Campaigns on "Improved cultivation techniques in rice and brinjal" along with the need for new methods and best alternatives for enhancing their farm income.
- Emphasis on efficient technologies in water management for crops will be made
- The role of stake holders in the project will be emphasized.
- IEC materials such as Posters, Pamphlets and leaflets may be used as training aids.

2.2.2. DOCUMENTATION

- Maintenance of records and registers
- Field note for each activity
- Daily memorandum sheet
- Receipt and issue of inputs
- Technical observations on soil, water and crop
- Printing pamphlets, Booklets about the interventions
- Reporting and publications

2.2.3.FOLLOW-UP VISITS:

- Follow-up visits will be made to ensure the sustainable application of new skills, methods and ideas.

2.2.4. OUT SOURCING CHARGES ON VEHICLES

- Expenditure on TA /DA for the purpose of TNIAMP Project
- Fuel bill of university vehicle utilized for the project
- Hire charges of university vehicle utilized for this purpose

3. MANAGEMENT COST

3.1. OUTSOURCING OF TECHNICAL STAFF

Outsourcing of technical staff is included in TNAU sub basin plan to carry out the field activities.

NAMBIYAR SUB-BASIN – YEAR WISE - COST TABLE

Phy in ha, Fin in Rs.in lakhs

S. No.	Particulars	Unit Cost (Rs./ha)	I Year		Total	
I	**A. Field intervention**		**P**	**F**	**P**	**F**
1	GM-Rice AWDI-Pulses	11000	145	15.95	145	15.95
2	Grafted Brinjal to enhance the productivity of brinjal	50000	5	2.50	5	2.50
	Total (I)		**150**	**18.45**	**150**	**18.45**
II	**IEC & CB**					
1	**Capacity Building**					
	a) Training to stake holders			0.50		0.50
	b) Exposure Visit			0.50		0.50
2	**IEC**					0.00
	a) Awareness Creation activities			0.42		0.42

	b) Documentation			0.40		0.40
	c) IEC Equipments			0.70		0.70
	d) Outsourcing of vehicle and TA			0.65		0.65
	Total (II)			**3.17**		**3.17**
III	**Management cost**					
	Outsourcing of Technical staff			1.92		**1.92**
	Overall Total				**150**	**23.54**

DEPARTMENT OF AGRICULTURAL MARKETING AND AGRI BUSINESS

FORMATION OF FARMERS PRODUCE COMPANY

The collectivization of producers, specifically marginal and small farm holders into producers' organizations is emerging as the effective possible pathway to address improved access to investments, technologies, knowledge support, inputs and markets. The Government of Tamil Nadu TN IAMP has identified Farmer Producer Organizations (FPOs) as the appropriate institutional form around which farmers would be mobilized and their collective capacity of production and marketing can be leveraged by strengthening their capacities.

A Farmer Producer Organization (FPO) is typically a society/company consisting of only practicing farmers who are also actual producers of specified commodity/ commodities, and is formed under as a Farmers Producer Company (FPC) under the Companies Act 2013. These organizations are created at the cluster, block, district or state level depending upon the needs of the producers considering the demand potential to adopt value chain approach to enhance farmers'/producers' economic and social benefits.

- The main aim of FPO is to ensure better income for the producers through an organization of their own.
- Small producers do not have the volume individually (both inputs and produce) to get the benefit of economies of scale.
- Through aggregation, the primary producers can avail the benefit of economies of scale.
- They will also have better bargaining power vis-à-vis the bulk buyers of produce and bulk suppliers of inputs.

IMPORTANT ACTIVITIES OF FPO

The primary producers have skill and expertise in producing. However, they generally need support for marketing of what they produce. The FPO will basically bridge this gap. The FPO will take over the responsibility of any one or more activities in the value chain of the produce right from procurement of raw material to delivery of the final product at the ultimate consumers' doorstep. In brief, the FPO could undertake the following activities:

1. Procurement of inputs
2. Disseminating market information
3. Dissemination of technology and innovations
4. Facilitating finance for inputs
5. Aggregation and storage of produce
6. Primary processing like drying, cleaning and grading Brand building, Packaging, Labeling and Standardization Quality control
7. Marketing to institutional buyers
8. Participation in commodity exchanges
9. Export

A FPO will support the members in getting more income by undertaking any/many/all of the activities listed under point above. By aggregating the demand for inputs, the FPO can buy in bulk, thus procuring at cheaper price compared to individual purchase. Besides, by transporting in bulk, cost of transportation is reduced. Thus reducing the overall cost of production. Similarly, the FPO may aggregate the produce of all members and market in bulk, thus, fetching better price per unit of produce. The FPO can also provide market information to the producers to enable them hold on to their produce till the market price become favourable. All these interventions will result in more income to the primary producers.

UTILIZATION OF TNIAMP GRANTS

1. STARTUP GRANT FOR ADMINISTRATIVE AND CONTINGENT EXPENSES

The Project will support for newly formed FPOs with a bridge funding to meet out the initial expenditure involved in engagement of technical manpower, purchase of office equipments and to meet out the other contingencies immediately after registration of new FPOs through start up grant. This grant will be utilized by the FPC from registration to business take off. Registered FPCs supported by TNIAMP will be eligible. The consultancy firm will prepare proposal to get start up grant from the project and it will be sent to Commissioner of Agricultural Marketing and Agri Business through Deputy Directors of Agriculture (Agri Business). The proposal will be scrutinized by ABPF Cell and it will be approved by TNIAMP Cell. It will be released as grant in aid by Deputy Directors of Agriculture (Agri Business) through ECS to FPCs to meet out the following expenditure:

1. Honorarium to CEO
2. Honorarium to accountant
3. Purchase of furniture and computer
4. To meet out the initial office rent of the FPO immediately after FPO formation
5. To meet out the contingencies like electricity bill and stationery.

An amount to meet out the above expenditure is Rs.10.00 Lakh (Rs.5 Lakh/year) for 2 years period after completion of registration.

2. PRODUCTIVE/CAPITAL INVESTMENT FOR NEW FPC ON MATCHING GRANT BASIS (80:20)

It is proposed to create Farmer Common Service Centre (FCSC) which will provide the facilities like cleaning, grading, packing and input marketing to FPCs with the main objective of aggregation of agricultural produce. The business plan of the FPC with a maximum ceiling amount of Rs.60.00 Lakh will be supported through this intervention. An FPO formed under TNIAMP fund by following the procedure laid down in the TNIAMP and a business plan scrutinized and approved by ABPF Cell will be eligible for getting matching grant. The business plan prepared by the Consultancy firm will be sent to TNIAMP Cell and the business plan will further be scrutinized by the ABPF Cell and sent to TNIAMP Cell for approval with their objective in assessment and recommendations.

It is proposed to create Farmer Common Service Centre (FCSC) which will provide the facilities like cleaning, grading, packing and input marketing to FPCs with the main

objectives of aggregation of agricultural produce and distribution of Seeds and fertilizers. Approved FPCs may avail the grant by contributing 20% and project will release 80% subject to a ceiling of Rs.20 Lakh.

BUSINESS SUMMARY OF SEED FACILITATION

Particular	Y1	Y2	Y3	Y4	Y5
No. of Members	500	525	550	575	600
Area in Ha					
Pulses	100	110	120	130	140
Groundnut	100	110	120	130	140
Seed Quantity (in KG)					
Pulses-20Kgs/Ha	2000	2200	2400	2600	2800
Groundnut-140Kgs/Ha	14000	22400	23800	25200	26600
Seed Value (in Rs.)					
Pulses. 60/kg	120000	132000	144000	156000	168000
Groundnut.80/kg	1120000	1792000	1904000	2016000	2128000
TOTAL	1240000	1924000	2048000	2172000	2296000
Seed Revenue (in Rs.)					
Pulses.80/kg	160000	176000	192000	208000	224000
Groundnut.100/kg	1400000	2240000	2380000	2520000	2660000
TOTAL	1560000	2416000	2572000	2728000	2884000
Profit					
Pulses	40000	44000	48000	52000	56000
Groundnut	280000	448000	476000	504000	532000
TOTAL	**320000**	**492000**	**524000**	**556000**	**588000**

BUSINESS SUMMARY – FERTILIZER

Sl. No.	Particular	Y1	Y2	Y3	Y4	Y5
1	**Fertilizer Quantity (in KG)**					
	DAP	18.5	18	19	20	21
	Urea	2.5	3	4	5	6
	MoP	9	10	11	12	13
2	**Fertilizer purchase Value (in Rs.)**					
	DAP	444000	432000	456000	480000	504000
	Urea	14805	17766	23688	29610	35532
	MoP	144000	160000	176000	192000	208000
	TOTAL	**602805**				
3	**Fertilizer sale Revenue (in Rs.)**					
	DAP	457320	444960	469680	494400	519120
	Urea	15243	18291	24388	30485	36582
	MoP	148320	164800	181280	197760	214240
	TOTAL					
4	Fertilizer Profit					
	DAP	13320	12960	13680	14400	15120
	Urea	437.5	525	700	875	1050
	MoP	4320	4800	5280	5760	6240
	TOTAL	**18078**	**18285**	**19660**	**21035**	**22410**

(III). ACTIVITY-2 (FACILITATION OF AGGREGATION AND SALE OF SURPLUSPRODUCE)

NEED OF THE PROPOSED BUSINESS ACTIVITY

Farmers of this cluster undertake individual sale of their produce. They sell their produce to traders in the local mandis only. They've limited exposure to other markets or sales channels. They have inadequate knowledge of business terms & conditions of other procurers like processors, traders of terminal markets, direct license holders etc. They submit to the dictates of the local traders due the inability to scout and link with other potential buyers and suffer from unfavourable trading terms.

Around 50% of the famers in this cluster go for distress sale of their produce in order to service credit availed for agro-input purchase and domestic requirements. This becomes more pressing after khariff due to the need for reinvesting on agro-inputs for rabi cropping.

The PC members decided to explore other markets with assistance from the FCSC service provider and line department officials to help the farmers expand their market in search for better prices and trade terms. They also decided to facilitate aggregated sale of produce.

BUSINESS SUMMARY OF AGGREGATION OF PRODUCE

Particulars	Y1	Y2	Y3	Y4	Y5
No. of Members	500	525	550	575	600
Area in Ha					
Pulses	100	105	110	115	120
Groundnut	100	105	110	115	120
Production					
Pulses-0.6	60	63	66	69	72
Groundnut- Kernal. 1.977	197.7	207.585	217.47	227.355	237.24
20% of produce					
Pulses.	12	12.6	13.2	13.8	14.4
Groundnut.	39.54	41.517	43.494	45.471	47.448
Purchase price					
Pulses.60000/Mt	720000	756000	792000	828000	864000
Groundnut.80000/Mt	3163200	3321360	3479520	3637680	3795840
TOTAL	**3883200**	**4077360**	**4271520**	**4465680**	**4659840**
20% of purchase value					
Pulses	144000	151200	158400	165600	172800
Groundnut	632640	664272	695904	727536	759168
TOTAL	**776640**	**815472**	**854304**	**893136**	**931968**
Selling value					
Pulses.80000/Mt	960000	1008000	1056000	1104000	1152000
Groundnut. 100000	3954000	4151700	4349400	4547100	4744800
Total	4914000	5159700	5405400	5651100	5896800
Profit					
Pulses	**240000**	**252000**	**264000**	**276000**	**288000**
Groundnut	**790800**	**830340**	**869880**	**909420**	**948960**
Total	**1030800**	**1082340**	**1133880**	**1185420**	**1236960**

II. BUSINESS EXPANSION GRANT FOR NEW FPC (75:25)

The project will also support for expansion of business. FPCs who successfully utilized the start up and matching grant released from the project will be eligible for availing business expansion grant of up to Rs. 30.00 Lakh. The business plan for expansion grant can either be a part of and a progress of the (1) original business plan prepared for availing matching grant or (2) it may be fresh business expansion plan in addition to or (3) in deviation of the original Business Plan. The business plan prepared by the Consultancy firm will be sent to TNIAMP Cell and the business plan will further be scrutinized by the ABPF Cell and sent to TNIAMP Cell for approval with their objective in assessment and recommendations.

Approved FPCs may avail the grant by contributing 25% in a Joint Account after which the project would release 75% subject to a ceiling of Rs. 30.00 Lakh to FPCs account through ECS. MoU would be signed between FPCs and the Department for release of project grant to FPCs. Funds will be released in three instalments @ 50%, 30% and 20% based on performance appraisal by ABPF. Deputy Directors of Agriculture (Agri Business) will monitor the performance on regular basis and report to TNIAMP Cell in Head quarter. The new business like hiring of Farm Implements will be encouraged as detailed below as a business.

The project funding will be sanctioned only after ascertaining the farmer contribution is fully invested.

CUSTOM HIRING CENTRE

Sl. No	Name of the Machine	Nos required	Cost per unit	Total Cost	No of days in operation	Profit per day after all expenses	Total profit (6*7)
1	2	3	4	5	6	7	8
1	Paddy Transplanter	1	400000	400000	200	200/hr*8 hrs	320000
2	Paddy Combined Harvester	1	2000000	2000000	200	1100/hr*8	1760000
3	Weighing machine-100 Kg capacity	4	15000	60000			
4	Gunny bag stitching	4	5000	20000			
	TOTAL			**2480000**			**2080000**

MAN POWER REQUIRMENT

Sl. No	Man Power	Total requirement	Monthly salary	Annual financial requirement
1	Supervisor cum Store keeper -For value addition & Farm Machineries	1	15000	180000
2	Skilled labour	2	12000	288000
3	Unskilled labour	3	8000	288000
4	Postage			5000
5	Travel expenses			100000
6	Other Mis expenses			100000
	Total			**961000**

ABSTRACT

Sl. No	Purpose	Project Cost	TNIAMP Grant	FPC Share/Individual share	Profit
I	**Productive Investment for New FPC (80:20)**		**2000000**		
1	Seed supply	1240000			320000
2	Fertilizer supply	602805			18078
3	Produce Aggregation (20% of 3883200)	776640			1030800
4	FCSC	1044000			
	TOTAL	**3663445**	**2000000**	1663445	1368878
II	**Business Expansion grant for new FPC (75:25)**		**3000000**		
	Custom Hiring machineries	2480000	-		2080000
	Value added Pulses	1008000	-		1800000
	Man power	961000			
	TOTAL	**4449000**	**3000000**	**1449000**	**3880000**
	Net profit				5248878

GRANT FOR EXISTING FPO FOR EXPANSION OF BUSINESS PLAN (75:25):

- The project will also support for expansion of business. FPCs who successfully utilized the startup and matching grant released from the project will be eligible for availing business expansion grant of up to Rs.30.00 Lakh. The business plan for expansion grant can either be a part of and a progress of the original business plan prepared for availing matching grant or it may be fresh business expansion plan in addition to or in deviation of the original Business Plan.
- Approved FPCs may avail the grant by contributing 25% in a Joint Account after which the project would release 75% subject to a ceiling of Rs. 30.00 Lakh to FPCs account through ECS. MoU would be signed between FPCs and the Department for release of project grant to FPCs.

E-NEGOTIABLE WAREHOUSE RECEIPT FINANCING

The department will pilot e-Negotiable Warehouse Receipt Financing (e-NWR) for mitigating price risk to farmers on tripartite agreement between beneficiaries, private and public sector banks and Collateral Management Agencies.

PROMOTING AGRI ENTERPRISES

Agricultura and Horticulture Department has planned for intensification of crop production activities, which leads to increased crop production. In this context, absence of local entrepreneurship, the opportunities in agriculture are exploited by outsiders , particularly the urban businessmen and traders, leading to exploitation and deprivation of employment for the farmers. Considering the growing unemployment in rural areas and slow growth of the agricultural sector, it is necessary to tap the opportunities for promoting entrepreneurship in agriculture, which in turn can address the present problems related to agricultural production and profitability. The intervention proposed are

1. **FACILITATING PPP MECHANISM**

It is proposed to conduct interface workshops, seminars, consultative meeting and conferences at State and District level for market linkages with stake holders and banks.

2. **FACILITATION WORKSHOP**

The workshop for lead farmers, existing entrepreneurs, new entrepreneurs, etc will be conducted.

3. **TRAINING FOR ENTREPRENEURSHIP**

Selected farmers/individuals/entrepreneurs through workshop will be trained as Agri Entrepreneurs.

4. **BUSINESS PLAN DEVELOPMENT**

Business plan of small scale enterprises with project cost of Rs. 5.000 Lakh will be supported and Rs. 1.000 Lakh will be given to entrepreneur for facilitating credit support.

5. **CREDIT FACILITATION AND BUSINESS EXECUTION SUPPORT**

The Agri Business specialist will facilitate necessary credit support through bank for agri entrepreneurship business plan to take up business activities. If the annual turnover exceeds Rs. 2.000 Lakh, an amount of Rs. 1.000 Lakhs will be given to the beneficiary as back ended subsidy.

6. **MATCHING GRANT FOR ENTREPRENEURS**

The project will promote agro entrepreneurship by entrepreneur in the area of value addition, food processing and other agri related activities. If the business plan project cost is Rs. 10.000 Lakhs, an amount of Rs.5.000 Lakhs will be given to the beneficiary as back ended subsidy.

CONVERGENCE OF AGRI, HORTI AND TNAU ACTIVITIES

Those demonstration farmers of Agri, Horti and TNAU will be treated as a share holder of the Farmers Producer Company and the produce of those farmers will be facilitated by new way of marketing to get higher income.

BUDGET OUTLAY FOR 3 YEARS TIRUNELVELI DISTRICT

S. No	Name of the Interventions	Budget (In lakhs)	2020-21	2021-22	2022-23	Total
I	**Improving Farmer Access to Markets**					
A	**Formation of new Farmer Producer Company**					
1	Consultancy charges for Formation of FPCs for first year and Business plan development and execution for next 2 years (i.e totally for 3 years)	13.800	1.920	5.940	5.940	13.800
2	1 MTS (Mobilisation Training Specialist) and 2 FOs (Field Organizers) for first year only	4.680	4.680			4.680
3	FPCs formation and registration (Awareness Campiagn, meetings with CGs, Registration Cost)	3.800	3.800			3.800
4	Start up grant for administrative and contingent expenses	10.000		5.000	5.000	10.000
5	Productive Investments for FPCs (Matching grant basis on the basis of Approved Business Plans). This could include support for investment on processing, grading/ sorting, mechanization, storage, packacing, value addition, input sale to members, branding and promotional activities etc) 80% Grant : 20 % farmer contribution	20.00		20.00		20.00
6.	Business expansion Matching Grant : (75% Grant - 25 % Farmer contribution)	30.00		30.00		30.00
7.	**Support for Existing FPC**	42.00	42.00			42.00
	Grand Total (A)					**124.28**
II	**Promoting Agri Enterprises**					
A.	Facilitating PPP Mechanism	3.00				3.00
B.	**Supporting Agro-enterprenuers to provide services to farmers**					
1	Facilitation workshop (50participants per workshop)	0.75	0.750			0.750
2	Business Plan development routed through ABPF	10.000		10.000		10.000
3	Credit facilitation and business execution support through service providers routed through ABPF	10.000		10.000		10.000
4	Training for Enterprunership	1.00		1.00		1.00
5	Matching grant for individual enterpruner	1		5.00		5.00
	Grand Total (B)					**29.75**
	Grand Total (A+ B)					**154.03**

EXPECTED OUTPUT

1. Increase in area under production and productivity.
2. Diversification from food grains into high value agriculture.
3. Improved marketing, postharvest management and value addition.
4. Establishing CGs and FPOs and facilitating PPPs will lead to increased incomes of beneficiaries.
5. Higher price through better aggregation and new market channels.
6. Dissemination of improved market information.
7. Reduced input prices resulting from procurement by FPOs in bulk.
8. Increased value addition.

DEPARTMENT OF AGRICULTURAL ENGINEERING

CONCEPT OF FARMPOND

Farm Ponds are constructed to harvest rain water from smaller catchments of about 2.5 to 5 hectares, which forms the land holding of a single farmer and to provide supplemental irrigation at critical stages of crop growth mainly as a 'life saving irrigation' to save the crop without wilting during the terminal stress period . Since, the Farm Pond are constructed in the Farmer's lands, the conveyance loss is minimized due to localized irrigation and thus improving the water use efficiency. The size depends on the catchment area and quantity of runoff water in principle. But most important factor is the willingness of the farmer to part the portion of his land for the construction of Farm Pond. If soil conditions permit, the depth can be increased to accommodate more water storage. Constructing a farm pond depends on soil condition, topography, drainage capacity, infiltration, rainfall of the area in which the farm land issituated.

Besides, Aquaulture is proposed to be promoted through Fisheries Department in selected Farm Ponds as an additional source of income, wherever the impounded water is available for four months and above.

SELECTIONCRITERIA:

The site selection should have high potential for the construction of Farm Ponds with clay/alluvium soil which holds water for a longer time and has less seepage and percolation losses. As far as possible, Farm Ponds should be selected as clusters in the sub basin area, not as isolated ones, so as to evaluate the impact of this intervention. The beneficiary for the construction of Farm Pond is selected based on the willingness of the land owning farmers with preference to small Farmers. The topography of the land should be such that there is sufficient catchment area for the Farm pond to harvest rain water.

1. Farm pond will be constructed at the lowest portion of the farmer's land to received maximum runoff water during rainy days
2. The pond should be formed with side slope of 1:1. The side slope will enhance the soil stability and allow the pond to maintain its size for a long period.
3. Inlet and Outlet or inlet cum outlet with head wall arrangements may be provided to regulate the inflow and to dispose the excess water safely.
4. The soil should be non porous such that, there is not much seepage and percolation losses and thus rain water can be stored for longer days for making use of it during critical stages of the crop period. In case of porous soil, clay lining / polythene sheet lining can be suggested.
5. A uniform berm width of 1 m must be maintained all around the pond. Vegetative measures should be taken up along the berm width to prevent erosion and sliding of earth. The berm width area can also be utilized to raise homestead garden for additional income.
6. Larger size with shallow depth increase evaporation losses and wastage of cultivable land area. Greater depth reduces evaporation but it increases the seepage losses due to the hydrostatic pressure which is however beneficial for ground water recharge.

7. The farmers opting for Farm Pond may also be motivated for adopting Drip/Sprinkler Irrigation systems to economize water usage.

UNIT COST OF FARMPOND:

Unit cost of Farm pond as approved by the World Bank as given bellow,

A) 21.50 m X 21.50 m with 3.00 m depth with 2 step berms at every 1 m interval, for soils having sufficient depth(or)

B) 28.00 m X 28.00 m with 1.50 m depth with single berm, for soils having limited depth, both for an unit cost of Rs.75,000/- per Farm pond as project cost, to be adopted from Phase II onwards, with a capacity to hold about 1,100 cubicmeters.

C) Based on the field condition, actual Farm pond size, shape and cost can be decided, but it should be on pro – rata basis of volume of storage.

D) The total cost for the above mentioned two models of Farm ponds, work out to Rs. 1,00,000/- per Farm pond , i.e., Rs.75,000/- per Farm pond for works (project cost) and Rs. 25,000/- per Farm pond as Farmer's contribution for disposal/Transportation of excess soil, for all category of farmers at their cost.

BENEFITS OF CREATION OF FARM PONDS

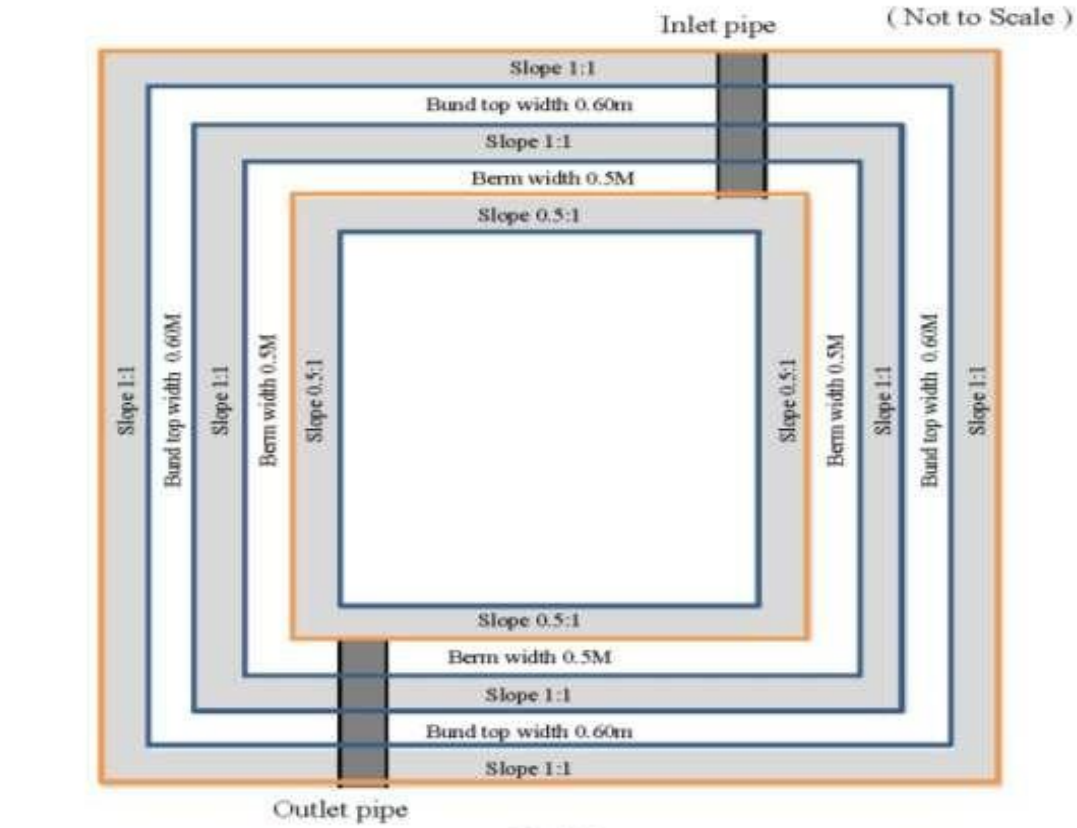
i. Currently available irrigation facility does not cover the entire cultivable land. In most cases, it is not the lack of water but lack of proper water management that causes water shortage. Improved modern methods of rain water harvesting like construction of farm ponds are a viable solution. It can help in providing supplemental irrigation, Farm ponds can retain water for 4-5 months of the year; thus farmers could enhance cropping intensity and crop diversification within and across seasons.

ii. With very low maintenance cost and no requirement of intensive technology, farm ponds can provide extra income to farmers not only through better crops but also through other methods like aquaculture, Horticulture and fishery in farm ponds

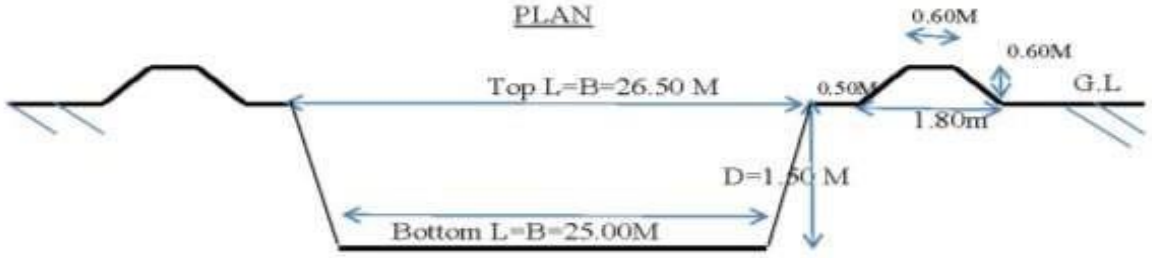
Today 90% farmers want processing unit and cold storage facility in the villages, especially for vegetables and fruits. The farmers to acquire new skills to reduce the dependence, So that farmers will get proper marketing & rates. This will reduce middlemen exploitation.

FARM POND

(SIZE 26.50 m X 26.50 m X 1.50 m)-Trapezoidal section



PLAN

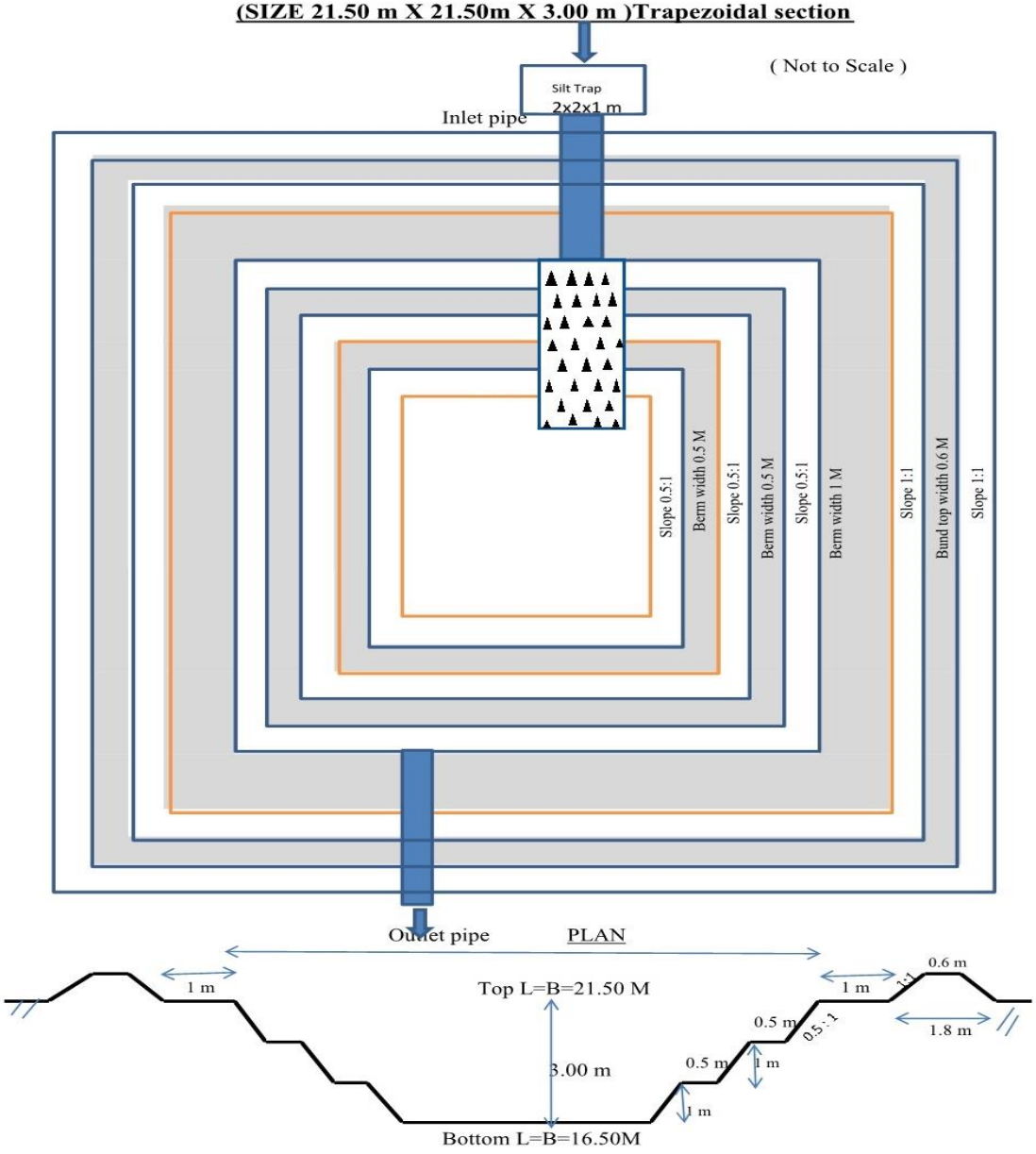


SECTION

FARM POND

(SIZE 21.50 m X 21.50m X 3.00 m)Trapezoidal section

(Not to Scale)



SECTION

PHYSICAL AND FINANCIALPROPOSALS

Based on the joint walk through survey along with all line Departments, Awareness meetings in the village clusters in the sub basin area, Wide publicity given by issue of notices/pamphlets, Announcements in Farmer's grievance day meetings in District Collectorates, Communication in Grama Sabha meetings, DPR has been finalized.

During implementation of the intervention, the Environmental and Social Safeguards aspects will be followed. Grievance Redressal Mechanism will be adhered.

Grievance Redressal Mechanism will be adhered.

COST ESTIMATE

PROPOSALS IN NAMBIYAR SUB BASIN

S. No.	Component	Physical in No.	Financial in Rs. Lakh
1	Farm Pond	12Nos	9.000
	Total	**12Nos**	**9.000**

DEPARTMENT OF FISHERIES

OBJECTIVES

The tank rehabilitation activities under TN IAM Project in this Sub-basin will improve water storage and delivery through modernization of irrigation system and improved water management practices. Hence there is scope for more water retention in the tanks and thus promoting aquaculture. The interventions are planned with the following objectives:-

- Increasing the water spread area under aquaculture.
- Increasing the overall inland fish production.

INTERVENTIONS PROPOSED IN NAMBIYARSUB BASIN IN TIRUNELVELI DISTRICT

1. FISH CULTURE IN SHORT SEASONAL IRRIGATION TANKS (CARP @ 2000 SEED / Ha. EWSA)

(I) OBJECTIVE

Demonstration of fish culture in suitable short seasonal tanks will be taken up by stocking quality fish seeds viz. Catla, Rohu, Mrigal, Common Carp and Grass Carp of >8cm size at stocking density of 2,000 Nos. / ha. of EWSA. Species combination and species will be decided after assessing the water quality, productivity of the tanks and availability of the fish seed at the time of the stocking to get maximum fish production.

It is proposed to take up fish culture activities in 'Short Seasonal Irrigation Tanks' of Nambiyar Sub-basin by direct stocking in 200 ha. EWSA in Tirunelvelidistrict.

(ii) COST (PHYSICAL & FINANCIAL)

PHYSICAL

(i)	Type of Aquaculture	Stock, Manage and Exploit.
(ii)	Proposed Effective Water Spread Area	**200ha.**
(iii)	Stocking Density	2000 nos. / ha. of EWSA
(iv)	Total Seed Requirement	4.00 lakh
(v)	Fish Species (based on availability at the time of stocking)	Catla, Rohu, Mrigal, Common Carp and Grass Carp
(vi)	Stocking Size	>8 cm

FINANCIAL ***(Rs. in lakh)***

(i)	Fish Seed (Carp >8 cm @ Rs.2 / Seed x 2000 nos./ha. EWSA)	0.04 / ha
(ii)	Total Seed Cost *(Area (200) x Rs.0.04 lakh)*	**8.00**

The tentative list of tanks and the EWSA proposed for stocking is given below.

Sl. No.	Unique ID	Tank Name	Village	District	WSA (ha.)	EWSA (ha.)
1	TNTP04T1050	Senthilanpannaikulam	Kottaikarungulam	Tirunelveli	10.9	5.50
2	TNTP04T1051	Nambikurichikulam	Kottaikarunkulam	Tirunelveli	27.4	14.00
3	TNTP04T1054	Kottaikarunkulam	KottaikarunKulam	Tirunelveli	88.8	44.00
3	TNTP04T1022	Tuthikulam	Kottaikarunkulam	Tirunelveli	13.9	7.00
4	TNTP04T0994	Kannankulam	Kottaikarunkulam	Tirunelveli	18.9	10.00
5	TNTP04T1032	Erumaikualam	Thisayanvilai	Tirunelveli	25.13	13.00
6	TNTP04T1042	Urumankulam	Urmankulam	Tirunelveli	42.8	21.00
7	TNTP04T1037	KesavaneriKulam	Vadakkuvallioor	Tirunelveli	7.8	4.00
8	TNTP04T1048	ValliyoorPeriyakulam	VadakkuValliyoor	Tirunelveli	146.8	73.00
9	TNTP04T1039	Karisalkulam	Thirukkurangudy	Tirunelveli	4.7	2.00
10	TNTP04T1045	Padalayar Tank	Thirukkurangudy	Tirunelveli	12.88	6.50

(V) OUTPUT

The increase in inland fish culture area and production will provide additional income to the fishermen/ lessee and ensure availability of protein rich quality fish at a cheaper cost to public. The expected fish production of 338 kg. / ha. EWSA of short seasonal tanks with 40% survival rate.

2. AQUACULTURE IN FARM PONDS

(I) OBJECTIVES

Farm Ponds excavated for harvesting rain water in agricultural fields in the sub-basin will be promoted to do aquaculture. Besides farm ponds excavated by the Agriculture Engineering Department in the sub-basin, farm ponds excavated by other schemes (0.1 ha size) will also be taken up for aquaculture under this project.

The farm ponds are proposed to be stocked with quality GIFTilapia seeds which would grow to marketable size within 4-6 months. Stocking density of 1500 Nos. / Pond is proposed. Department of fisheries and TNFU will also provide training on Good Aquaculture Practices to the selected farmers.

The project will provide fish seed and feed to the farmers at an estimated cost of Rs.27,000/. It is proposed to promote aqua farming in 10farm ponds in Tirunelvelidistrict.

(ii) Cost (Physical & Financial)

Physical

(i)	No. of Units	**10 Units**
(ii)	Total Area to be developed for Aquaculture	1.0ha.

Financial

(i)	Fish Seed (GIFT seed >3 cm @ Rs.4 / seed – 1,500 Nos.)	0.06
(ii)	Fish Feed (Max. of 600 kg.) @Rs.40/kg	0.24
(iii)	Project Contribution – Total	0.30
	Total Cost *(No. of Units(10) x Rs.0.30 lakh)*	**3.00**

(v) Implementation

Department will create awareness on the intervention. Interested farmers will be identified and their ponds will be inspected. Suitability of the pond with respect to critical soil and water parameters to take up fish culture shall be studied. After selection of farm pond, the beneficiaries will be given training on Good Aquaculture Practices to get maximum yield.

(vi) Output

With 80 % survival rate and 500 grams of average body weight, fish production of about 600 kg per farm pond is expected which will give additional income to farmers.

ABSTRACT

Sl.No	Interventions	Unit (ha/No)	Amount (Rs.in Lakh)
		Tirunelveli	
1.	Fish culture in Short seasonal irrigation tanks	200 ha	8.00
2.	Aquaculture in Farm ponds	10 Units	3.00
	Total		**11.00**

ANIMAL HUSBANDRY DEPARTMENT

I. INTRODUCTION

Livestock production, in particular dairy sector contributes significantly to the livelihoods and income generation for millions of small and marginal farming communities in the sub basin by way of producing high value products. Dairy sector provide employment opportunity throughout its value chain starting from inputs, service delivery, aggregation, processing and marketing. Dairy production is highly gender and nutrition sensitive as two-thirds of dairy production depends on women labour and the nutritional benefits of milk is a well-known fact. Therefore, additional investments in this sector will provide an opportunity to increase milk production, leading to positive impacts in the overall socio-economic-nutritional status of smallholder farmers in the project sub-basin.

II. LIVESTOCK SECTOR PROFILE OF THE SUB BASIN

Total livestock in the sub basin area: 12957 crossbred cattle, 206 Non-descript cattle, 493 buffaloes, 15397 sheep and 16930 goats. Around 50% of the cattle and buffalo population constitutes breedable population. Presence of 94% crossbred cattle population provides an opportunity for investments aimed at improving milk productivity in the project area. Average per day milk production in different type of animals: Crossbred cow- 4.80 lit, Non-descript cow – 1.45 lit, Buffalo- 5.03 lit. The sub basin base line details is furnished in Annexure II. Fodder requirement in the sub-basin is met through production of cropped fodder, grass and weeds from common lands and crop residues as dry fodder from cereal and leguminous crops. In addition, the concentrate feed requirement is met through pre-formulated feed supplement available through commercial agencies and cooperatives. The cropped fodder and dry fodder are fed as fresh and farmers hardly preserve the fodder for future use, except drying.

Veterinary and breeding services are provided through 9 Veterinary Institutions located across the sub basin. The cooperative and private dairy sector also involved in provision of breeding and veterinary inputs to the farmers. The project area contains one Animal Disease Intelligence Unit providing animal health, diagnostic and epidemiologic services. This unit is equipped with preliminary diagnostic infrastructures and receives minimum operational assistance. The milk collection, storage and processing in the sub-basin is being carried out both by the cooperative and private dairy processors. The processing and marketing is being carried out by Tamilnadu Cooperative Milk Producers Union and Private Companies. There is still scope for improving the milk collection and chilling facilities in the sub-basin.

III. DETAILED ACTIVITY DESCRIPTION

1. DAIRY INTEREST GROUPS

Farmer training, demonstrations, exposure visits, field days and extension program will be implemented through organizing Dairy Interest Groups (DIG) in conjunctions with the activities of Water User Associations. Farmers' Field School approach will be used to demonstrate the new technologies. Sub basin will have 1 DIG and the group will consist of 25 members, of which 30% will be women. Organizing the group will follow consultative

meetings in each of the group village followed by one day training and one day exposure visit. In year two and three, the groups will be followed by one group meetings every year.

Besides, continuous interaction will be ensured in DIGs by way of fodder, calf management, mastitis management and infertility management demonstrations. This activity is expected to demonstrate better dairy farming practices to large number of farmers resulting in sustained adoption and improvements in milk productivity. Each farmer of the DIG in turn is expected to horizontally disseminate the advantages of better animal husbandry practices to other farmers in their village. It is expected that at least 100 farmers in total will acquire and adopt improved animal husbandry practices through the project intervention.

TABLE 1 - COST BREAK UP FOR DIG ORGANIZATION

Sl. No	Activity description	Amount (Rs)
	Expenditure per group	
1	Group organization meeting (3 meetings @ Rs.1000 / meeting)	3000
2	One day training expenses	8250
3	One day exposure visit	15250
4	Follow up group meeting in year 2	1000
5	Follow up group meeting in year 3	1000
	Total cost per group on DIG organization & training	**28500**

2. DEMOS THROUGH DAIRY INTEREST GROUPS

2. A. CALF MANAGEMENT DEMONSTRATIONS

Farmers' hardly pay attention to the younger female animals and invest very little, which results in delayed age at first calving, non-availability of replacement heifers in sufficient numbers and poor economic returns. To demonstrate the impacts of better calf management, the genetically improved female calves born through AI program will be followed through heifer stage by means of regular deworming and mineral supplementation. Since deworming and growth follow up requires constant monitoring, one of the female members of the dairy interest group will be trained in regular deworming and growth monitoring of the female calves. Around 75 calves are targeted per year per DIG for three years period under this activity.

TABLE 2 - COST BREAK UP FOR CALF MANAGEMENT DEMOS PER GROUP

Sl. No	Activity description	Amount (Rs)
1	Number of targeted calves per DIG / year	75
2	Deworming and mineral supplementation expenses per DIG / year	39000
	Total cost for calf management demo / DIG	**39000**

2. B. MASTITIS MANAGEMENT DEMONSTRATIONS

Next to infertility, mastitis is the major issue affecting the economics of dairy animal production. The mastitis incidence in the sub basin is around 30%. The project aims to reduce this incidence to 5% levels by way of implementing mastitis control program. A mix of control measures using teat dips and sub clinical mastitis detection kits along with use of modern traditional medicinal systems will be demonstrated to the farmers that could result in effective control of mastitis, and improving milk quality and reduction of antibiotic residues in milk. Around 90 animals are targeted per DIG in a year for three years period under this activity.

TABLE 3 - COST BREAK UP FOR MASTITIS MANAGEMENT DEMONSTRATIONS

Sl. No	Activity description	Amount (Rs)
1	Number of milking animals targeted per DIG / year	90
2	Mastitis management kit cost per DIG / year	23400
	Total cost for mastitis management demo / DIG / year	23400

2. C. INFERTILITY MANAGEMENT PROGRAMS

Around 30% of the breedable animals face some kind of infertility or sub fertility which directly affects the milk yield, productive life cycle and number of calves born. The project aims to reduce the level to 15%. The expected reduction in days in inter-calving period due to correction of infertility problem would be 60 days, which is expected to bring in savings of Rs.3,000 per animal in terms of avoiding feeding during long dry period due to infertility.

Under this intervention, special camps (Fertility cum Health Care Camps) and 3 follow up visits will be organized at a cost of Rs.14,000 and focused fertility treatment will be carried out. Every group will receive 12 infertility camps in a year for three years period. Ten animals will be covered under estrous synchronization per infertility camp to demonstrate the impacts of controlled breeding and also to reduce the calving interval, thereby bringing better economic returns to the farmers and the estimated cost saving is around Rs.4,000 per animal.

TABLE 4 - COST BREAK UP FOR ONE INFERTILITY MANAGEMENT CAMPAIGN

Sl. No	Activity description	Amount (Rs)
1	Number of milking animals targeted per DIG	50
2	Cost for one infertility campaign(including 3 follow up visits)	14000
3	Number of animals targeted for estrous synchronization per camp	10
4	Cost of estrous synchronization for 10 animals (including logistics)	14500
	Total Cost of one infertility campaign	**28500**

2. D. FODDER CULTIVATION DEMONSTRATIONS

Fodder deficit in the sub basin villages is to the tune of 30-40%. The shortfall need to be addressed by increasing the fodder bio mass by providing improved varieties and technology dissemination through Dairy Interest Groups. For every DIG, AHD proposes to undertake fodder development as per the cropping pattern with a combination of seasonal fodder crops.

Tree fodder cultivation will be demonstrated in about 0.8 ha per group. Efforts will be made to demonstrate the importance of fodder conservation by exposing them to practices adopted by nearby progressive farmers in the village. To fill the short fall, there is a need to invest heavily in this activity, but the TNIAMP fodder demo is expected to act as a stimulating factor to adopt extensive fodder development initiatives of the Government. TNIAMP fodder initiatives are expected to reduce the fodder gap by around 2% in the project villages.

TABLE 5 - COST BREAK UP FOR FODDER DEVELOPMENT DEMONSTRATIONS

Fodder crop variety	Cost per Hectare (In Rs.)
Fodder Cholam seeds	2500
Agathi seeds	4100
Transport charges for seeds	200

3. STRENGTHENING MOBILE ARTIFICIAL INSEMINATION NETWORK

Animal Husbandry Department has veterinary and breeding institutions in the sub-basin villages which are mainly stationary centres. Farmers have to bring the animal to the institutions to carry out the artificial insemination and they find great difficulties in souring the man power to bring the animals for artificial insemination. Further, in some areas farmers have to bring the animals from long distances. All the above factors have a negative effect on the success of AI program and farmers prefer to have their animals inseminated at their door steps as this not only saves their man hours but also increases the success rate. On technical ground, timing of AI contributes greatly to the success.

To circumvent the issues of mobility and round the clock AI services, AHD is planning to convert the existing AI centres into mobile AI centres by providing mobile AI infrastructures (AI gun, mobile 1.5 litres liquid nitrogen containers, semen straws, AI accessories), mobility charges to meet the mobility costs and capacity building for the existing staff on good AI techniques. Further, he will be permitted to collect a maximum of Rs.50 as professional charges or at rates fixed by the Government from time to time from the farmer. The input requirement such as liquid nitrogen will be made available through regular AHD supply.

Presently AI coverage in the sub-basin villages is around 45-50% of the breedable population, and this project aims to improve the AI coverage by an additional 15%. Over a period of three years, TNIAMP will perform an additional 1500 artificial insemination per

year on mobile in this sub basin. On a pilot basis, the project will validate the results of sexed semen in limited AI centres of the AHD. 100 doses will be procured in year one and will be used in the sub basin AI centres.

Dam's yield or the parental average is the few parameters considered while selecting good quality semen for performing artificial insemination in the current conventional method of selection. In practice, it is noticed that many inseminators don't even bother about dam's yield and they expect only the cow to get conceived. This results in low quality heifers with lesser milk production capacity from the calf born; poor udder resulting in higher incidence of mastitis; poor legs and feet resulting in hoof issues, poor fertility resulting in longer inter-calving period, dystocia and retention of placenta, etc. Moreover, the reliability of a selected bull ultimately transmitting the milk production trait to its offspring is less than 20%. All these may lead to higher cost of milk production resulting in economic loss to the farmers.

These problems can be greatly reduced by the usage of genomic semen. Genomic selection can have a major impact on animal breeding programs, especially where traits that are important in the breeding objective are hard to select. It provides more accurate estimates for breeding value earlier in the life of breeding animals, giving more selection accuracy and allowing lower generation intervals. It has a greater reliability of 75% of transmitting the traits like milk volume, fat percent, SNF, somatic cell score, good legs and feet, fertility, calving ease, low mastitis and udder improvement. The use of genomic straw may lead to lower cost of milk production as more milk can be produced from less number of cows resulting in economic profit to the farmers. Over a period of three years, TNIAMP will perform 400 artificial inseminations per year on mobile in this sub basin using genomic semen straws.

TABLE 6 - COST AND INCENTIVE BREAK UP FOR ONE EXISTING AI CENTRE OF AHD

Sl. No	Activity description	Amount (Rs.)
1	AI Equipment (AI gun - 3 nos, 1.5 litre LN container, Digital Thawing flask, thermal strip, etc.)	19000
2	Cost of frozen semen (1 straw)	24
3	Gloves (1 glove)	3
4	Mobility charges for AI	20
5	Mobility charges for Pregnancy diagnosis	20
6	Mobility charges for calf born verification	20
7	Miscellaneous (per AI) – towards handling charges of CBFD	3
9	Cost of one Sexed semen straw (including GnRH)	1500
10	Cost of one Genomic semen straw	100

4. IMPROVING THE DELIVERY OF VETERINARY SERVICES THROUGH STRENGTHENING ESSENTIAL INFRASTRUCTURE IN THE VETERINARY INSTITUTIONS AND DIAGNOSTIC CENTRES

4. A. STRENGTHENING OF FIELD VETERINARY INSTITUTIONS

Government institutions like Veterinary Hospitals, Veterinary Dispensaries and Sub-centres provide the delivery of veterinary services and breeding support in the sub basin. Well-equipped infrastructure is the key to provide quality veterinary services and breeding coverage to the livestock in the sub basin. Equipment like sterilizer, refrigerator, milk teat instruments and LN2 transfer devise are essential to carry out the routine functions of the veterinary institution in an efficient, hygienic and environment friendly way. At present some of the veterinary institutions in the sub basin do not have the above equipment or may not be in working condition. The equipment may be beyond repair and needs replacement. Hence, it is proposed to strengthen the essential infrastructure like sterilizer, refrigerator, milk teat instruments and LN2 transfer devise for institutions functioning in the sub basin which do not have it / or not in working condition at present.

5. **TABLE 8 – COST BREAK UP FOR EQUIPMENT**

Equipment	Unit Cost (In Rs.)
Refrigerator	22000
Sterilizer	3500
Milk Teat Instrument Set	1500
LN2 transfer devise	15000

6.

4. B. STRENGTHENING OF ANIMAL DISEASE INTELLIGENCE UNITS (ADIU)

Diagnosing the problems and diseases at an early stage will go a long way in not only improving the health status of livestock in the sub basin but will also help to sustain the animal productivity, thereby improving the profitability through livestock rearing. At present, various readymade kits are available to detect not only multi-various diseases but also to assess the health status of the animal at pre-clinical stage itself. Hence for early and accurate diagnosis, it is proposed to procure various diagnostic kits at a cost of Rs.50,000 per year and make it available to the veterinary institutions and diagnostic centres providing services in the sub basin.

5. DATA CAPTURE ON PROJECT INTERVENTIONS AT FIELD LEVEL

To assess the success or failure of the project interventions carried out under the Project, it is essential to properly and systemically document all the activities carried out under the project. For proper data capture, it is imperative to provide the necessary hard and soft ware. At present the facilities available at the sub basin Nodal offices (Regional Joint Director’s office) and implementing offices (Deputy Director’s office) for data capture is

low. More over reports will be called regularly by the Collectorate, Government, WRO, MDPU and AHD Head quarters. Hence, there is a need to strengthen these offices. It is proposed to strengthen these offices with computer with accessories at a cost of Rs.70,000 per office.

6. DOCUMENTATION OF THE PROJECT ACTIVITIES

For routine documentation of the project activities at the veterinary institution level, it is necessary to print records and registers. A lump sum would be required for printing of health card, fodder distribution register, fertility camp register, follow-up visit register, artificial insemination register, etc. for documentation of the activities under the project. Like wise to maintain records, duplicate vouchers and to carry out miscellaneous and unforeseen expenditure, funds are needed at the Nodal and Implementing Offices level. Hence, it is proposed to provide funds for the above activity. To assess the success or failure of the project interventions carried out under the project, it is essential to properly and systematically document them. Hence, it is proposed to conduct impact studies on the project interventions at the field level. Impact studies will be carried out on milk production through appropriate sampling and validated methodologies.

For the above purpose, veterinarians / para-veterinarians and farmers will be involved. Suitable proformas and guidelines will be developed in consultation with the World Bank. The selected veterinarians / para-veterinarians will be provided training on capturing the data at the field level. Each veterinarian / para-veterinarian will randomly select 10 farmers in their jurisdiction for the above work and they will enlighten the farmers on the methodology to be adopted for recording the data and provide suitable proformas for recording. The farmer will record the needed data once in a month on a specified data for a minimum of 5 months. The veterinarian / para-veterinarian will make periodical visit to the farmer to assist the farmer in recording the data. After recording the data, the data will be compiled, evaluated and outputs assessed.

The veterinarian / para-veterinarian has to make a minimum of 7 visits per farmer and a cost of Rs.140 would be required per veterinarian / para-veterinarian to make 7 visits per farmer. The farmer to provide the data, they will be provided a onetime lump sum incentive of Rs.100 per individual after successful completion of the data collection. In addition, Rs.100 per veterinarian / para-veterinarian towards data entry at field level and Rs.60 towards data compilation at HO level has been ear marked.

7. CAPACITY BUILDING FOR ANIMAL HUSBANDRY DEPARTMENT OFFICERS

7. A. ORIENTATION TRAINING ON IMPLEMENTATION OF THE PROJECT:

The veterinarians, para-veterinarians and staff working in the sub basin may not be in a position to know the guidelines for implementing the project. In addition, they may not be aware of the demands of the project and for smooth implementation of the project, it is necessary to provide the orientation training on the methodology to be adopted for implementing the project activities. Hence, it is proposed to provide two days orientation

training to veterinarians, para-veterinarians and staff working in the sub basin during the afternoon without disturbing the day to day activities of the veterinary institution. In the training, they will be enlightened on the methodology to be adopted for implementing the project activities. Also, information will be shared regarding the registers to be maintained and the documentation to be followed. Further, in the above training programme the office staff of the nodal offices / implementing offices will be explained on the guidelines to be followed during World Bank procurement and filling of MIS report. A cost of Rs.400 per candidate would be required for the orientation training for two days.

7. B. TRAINING TO VETERINARIANS ON TECHNICAL AREAS:

Veterinarians have an overall knowledge on breeding, management, diagnosis and treatment of livestock. With advancing science and technology, the techniques followed may have become obsolete. Moreover, new and simple techniques have evolved in animal husbandry breeding. Hence it is essential to update the knowledge and skills of the veterinarians in the sub basin. The veterinarians in the sub-basin will be given training on various technical aspects like animal feeding, breeding, fertility, animal health, food safety and traditional systems like ethno-veterinary practices. The cost would be Rs.15,000 per training.

7. C. TRAINING TO VETERINARIANS ON DISEASE DIAGNOSIS:

Early accurate pin point diagnosis is the key for not only saving the individual animal, but will also help to improve the overall health status of the livestock maintained in the sub basin, which will help to improve the profitability. Though, veterinarians have an overall knowledge on disease diagnosis, new and re-emerging diseases are emerging challenges to the veterinarians. Hence it is essential to update the knowledge and skills of veterinarians especially involved in disease diagnosis activities in the sub basin. The veterinarians will be given training on morphological, histo-pathological and molecular diagnosis of prevailing, emerging and re-emerging diseases of livestock in various collages / institutes across the country. In addition, they will be permitted to attend important seminars / conferences / workshops conducted on disease diagnosis across the country. The cost would be Rs.10,000 per training.

8. GEO TAGGING

Geo tagging of the project activities ensures / confirms the location of the interventions; required other details such as survey number of the demo plots, name and address of the stake holder etc., could be assessed easily. Geo tagging technique is useful for validation of components of activities implemented under the project, besides facilitate field visit by higher officers and WB as a valued document.

As a part of the documentation strategy for the interventions proposed to be implemented in this sub basin under the project, it is planned to Geo tag wherever possible the field activities using the TN IAMP APP developed for the purpose. The Geo tagging shall be done by the concerned field officers who are in charge of implementation of the interventions.

All the field officers in charge of the interventions shall register to log in the APP by using their respective mobile numbers. Each intervention shall be Geo tagged during key operations. Minimum of two photos shall be taken (except AI) during each operation, one close to the crop/operations and other photo covering the whole field of execution and uploaded.

IV. ENVIRONMENTAL AND SOCIAL MANAGEMENT:

This chapter envisages the mitigation of environmental impacts by assessing and effectively managing the potential environmental impacts due to the interventions under TNIAMP in this sub basin. The primary aim is to manage the impacts by suggesting suitable mitigation measures and monitoring its implementation. Further, Gender participation strategy and Grievance Redressal Mechanism will be devised and implemented suitably for all the sub-projects pertaining to TNIAMP.

IV.1. SUMMARY OF WALK THROUGH SURVEY

Walkthrough surveys were conducted in the sub basin villages along with the officials from Water Resources Department (WRD), Agriculture Department, Horticulture Department, Tamil Nadu Agriculture University (TNAU), Agriculture Engineering Department (AED) and Fisheries Department jointly. Farmers from farming and allied sectors participated and shared their views and expectations. Interaction with farmers was made for improving agriculture and allied activities.

Livestock production is widely practised in this sub basin area. Dairy sector is dominantly based on women. Milk collection, storage and processing is being carried out both by the cooperative and private dairy processors in this sub basin. The processing and marketing is being carried out by Tamil Nadu Cooperative Milk Producers Union and private companies. There is still scope for improving the milk collection and chilling facilities in the sub-basin.

Major issues identified in this sub basin are:

1. Fodder demand and supply gap keeps increasing in the sub-basin.
2. Insufficient knowledge on managing the improved dairy herd, increasing disease incidence like mastitis, worm infestations and infertility poses challenges in harnessing the production potential from the improved dairy stock.
3. Although, AHD has increased the numbers of breeding and veterinary institutions considerably in the sub-basins, still there is a scope to bring additional breedable population under AI coverage. Further, availability of disease free good quality bulls is another limiting factor for undertaking bull based natural service.
4. Lack of an animal identification system and recording constraints the disease control and planned breeding interventions.
5. Insufficiency of disease diagnostic facilities and veterinary facilities at the veterinary institutions and district diagnostic units limits the implementation of effective preventive animal health measures.

IV.2. SUMMARY OF FEEDBACK ALONG WITH PLANNED ACTIVITIES

The summarized feedback of walk through survey is as below:

Livelihood production in the sub basin area is gender specific. This sector is dominated by women laborers. There is gap in demand to supply in fodder for livestock. Also, there prevails knowledge lacking in managing crossbred animals. Hence diseases like mastitis, worm infestations are major issues for cattle owners. Lack of proper animal identification system constraints the disease control and planned breeding interventions.

To address this, the following activities have been planned:

1. Farmer extension and technology dissemination programs through farmers' group approach – Dairy Interest Groups (DIG) will be promoted in the sub-basin villages
2. Infertility issues in productive cows will be addressed by conducting special camps with follow up visits
3. Preventive health care and nutrition interventions aimed at improving the survival by periodical deworming and mineral lick supplementation.
4. Fodder development promotion by distribution of fodder seeds.
5. Strengthening breeding program through strengthening the existing artificial insemination (AI) network and establishing new AI units by placing a locally trained youth.
6. Infrastructure strengthening for veterinary and disease surveillance units
7. Linking Government of India Animal identification system program to enable ICT based MIS.
8. Capacity development programs for AHD officers
9. Project documentation and impact assessment

IV.3. SPECIAL FEATURES OF THE SUB BASIN

There are no special features in this sub basin.

IV.4. Gender Strategy

Gender mainstreaming plays a vital role in livelihood sector. To enhance women participation in the project, women farmers will be informed and made aware of their role in operation and maintenance of water management activities, decision making in the agriculture, labour opportunities in agriculture, encourage their participation in WUA, involvement in livelihood activities etc. Specific capacity building programs like exposure visits could be organized for WUA representatives, women in Farmer Producer Organizations (FPO), Farmer Producer Companies (FPC), Dairy Interest Groups (DIG), etc. Team involvement of women in organized groups such as Self Helping Groups will be encouraged. In anticipation, the percentage of women expected to involve in WRD, Agri related and livelihood related activities are 30%, 50% and 54% respectively.

IV.5. GRIEVANCE REDRESS MECHANISM AND SCHEDULE FOR ESTABLISHMENT

Grievance Redress Mechanism (GRM) is an essential component of any project implementation, particularly if the project involves the local communities with diverse socio economic backgrounds as the major stakeholders. The grievance redress process will be a

continuous, transparent and participatory process that would be an integral part of the project's accountability and governance agenda.

A project level GRM will be in place for addressing social, environmental and project related grievances. The GRM will have multi-level structures and processes. At the district level the committee is made up of respective JDs of line departments and EE, WRD of the sub-basin, this committee meets on weekly basis. This committee will look after the grievances related to irrigation and water management. At the next level the Collector heads the committee and convenes the meetings monthly once. The Collectors will take care of the other grievances related to the project activities. The next level is the HODs at the state level they contact remotely monthly once and organize meetings at every redress; he calls for a meeting once in six months and annually. For every six months report is prepared at all levels and send to the Secretary. Secretary occupies the next level in the structure and in charge of overall appeals and supervision of grievance at all levels.

A register for GRM and a box for receiving the Complaints and Grievances shall be maintained in the O/o of Joint Director of Animal Husbandry, who is implementing the TNIAMP intervention in that respective Sub Basin and a monthly report on the Grievances received and the action taken shall be sent to the respective Environmental Cell Division for review and submission to the MDPU. Periodical Monitoring of the Implementation of the GRM will be carried out by the Regional Joint Director (AH).

The project information boards provided at the working sites, along with the details of the project, the contact address along with official email and contact numbers of the officer to whom the Grievances has to be addressed shall be displayed.

Efforts will be made to create awareness about GRC mechanism to the beneficiaries by meetings and infertility camps organized at the village, Block and District level. The implementation of GRM will operate by the Grievance Redress Cell (GRC) at the Block and District level .The grievances received should be entered in the GRM Register comprising of (a) Serial Number; (b) Case Number; (c) Name of the Grieved/Complainant; (d) Name of Father/Husband; (e) Gender (f) Age; (g) Full Address; (h) Brief details of grievance/complaint; (i) List of documents, if any, attached; (j) Details of previous grievance/complaint, if any; (k) Date of receipt of grievance/complaint and (l) Date of acknowledgement of grievance/complaint.The GRC will acknowledge receipt of all grievances/complaints, by registered post, within 7 days of receipt and will communicate its decisions/redress in writing to the complainants within 4 weeks depending on the nature of complaints and when closing the complaint, agreement should be made with the complainant on remedy, and both parties sign to their approval of the case being closed and outcome accepted. Copies are kept in both hard copy and electronic by both parties.

IV.6. ESMF, ESMP & SCREENING CHECK LIST

For the environmental and social impacts (both positive and negative), Environmental and Social Management Framework (ESMF) enumerates a set of measures to minimize the adverse impacts and enhance the positive impacts which are intended to be adopted during the project implementation. This will not only ensure that environmental and social safeguard

activities are implemented in accordance with the framework and processes but also that there are adequate funds/resources for implementation and supervision of social and environmental management plans. Accounting the nature and scale of environmental and social impacts, specific and reliable departmental Standard Operating Procedures along with suggested mitigation measures will be adopted for environmental and social safeguards. The Environmental and Social Management Plan (ESMP) is not applicable for AHD activities.

IV.7. PLAN OF ACTIVITIES FOR ENVIRONMENTAL MONITORING AND AWARENESS

- Fodder development and preservation
- AI waste management
- Manure management
- Involve TN Veterinary University for various technical inputs
- Provide livestock management training to a wide range of livestock owners, particularly women who tend to animals – make training available at doorstep as women are often not able to leave homes for offsite training for long duration
- Ensure regular animal checkup through extension services and organize animal health camps in project supported sub basins
- Department specific standard operating procedure and safety measures for proper disposal and recycling of generated wastes viz. Syringes, Needles, Gloves and Glass wares during artificial insemination, deworming programmes and other AHD related activities.
- Training and demonstrations

IV. FINANCIAL ABSTRACT

TABLE 9

Sl. No	Activity description	Amount (Rs. In Lakh)
1	Dairy Interest Group Formation	0.285
2	Demos through Dairy Interest Groups	12.976
3	Strengthening mobile Artificial Insemination network	8.822
4	Institutional Strengthening	4.011
5	ICT at Nodal and Implementing Offices	0
6	Documentation	0.594
7	Capacity Building	0.686
8	Environmental and Social Management	0.72
	Total	**28.0944**

DOCUMENTATION OF THE PROJECT ACTIVITIES

For routine documentation of the project activities at the veterinary institution level, it is necessary to print records and registers. A lump sum would be required for printing of health card, fodder distribution register, fertility camp register, follow-up visit register, artificial insemination register, etc. for documentation of the activities under the project. Like wise to maintain records, duplicate vouchers and to carry out miscellaneous and unforeseen expenditure, funds are needed at the Nodal and Implementing Offices level. Hence, it is

proposed to provide funds for the above activity. To assess the success or failure of the project interventions carried out under the project, it is essential to properly and systematically document them. Hence, it is proposed to conduct impact studies on the project interventions at the field level. Impact studies will be carried out on milk production through appropriate sampling and validated methodologies.

For the above purpose, veterinarians / para-veterinarians and farmers will be involved. Suitable proformas and guidelines will be developed in consultation with the World Bank. The selected veterinarians / para-veterinarians will be provided training on capturing the data at the field level. Each veterinarian / para-veterinarian will randomly select 10 farmers in their jurisdiction for the above work and they will enlighten the farmers on the methodology to be adopted for recording the data and provide suitable proformas for recording. The farmer will record the needed data once in a month on a specified data for a minimum of 5 months. The veterinarian / para-veterinarian will make periodical visit to the farmer to assist the farmer in recording the data. After recording the data, the data will be compiled, evaluated and outputs assessed.

The veterinarian / para-veterinarian has to make a minimum of 7 visits per farmer and a cost of Rs.140 would be required per veterinarian / para-veterinarian to make 7 visits per farmer. The farmer to provide the data, they will be provided a onetime lump sum incentive of Rs.100 per individual after successful completion of the data collection. In addition, Rs.100 per veterinarian / para-veterinarian towards data entry at field level and Rs.60 towards data compilation at HO level has been ear marked.

6. CAPACITY BUILDING FOR ANIMAL HUSBANDRY DEPARTMENT OFFICERS

6. a. ORIENTATION TRAINING ON IMPLEMENTATION OF THE PROJECT:

The veterinarians, para-veterinarians and staff working in the sub basin may not be in a position to know the guidelines for implementing the project. In addition, they may not be aware of the demands of the project and for smooth implementation of the project, it is necessary to provide the orientation training on the methodology to be adopted for implementing the project activities. Hence, it is proposed to provide two days orientation training to veterinarians, para-veterinarians and staff working in the sub basin during the afternoon without disturbing the day to day activities of the veterinary institution. In the training, they will be enlightened on the methodology to be adopted for implementing the project activities. Also, information will be shared regarding the registers to be maintained and the documentation to be followed. Further, in the above training programme the office staff of the nodal offices / implementing offices will be explained on the guidelines to be followed during World Bank procurement and filling of MIS report. A cost of Rs.400 per candidate would be required for the orientation training for two days.

6. b. TRAINING TO VETERINARIANS ON TECHNICAL AREAS:

Veterinarians have an overall knowledge on breeding, management, diagnosis and treatment of livestock. With advancing science and technology, the techniques followed may

have become obsolete. Moreover, new and simple techniques have evolved in animal husbandry breeding. Hence it is essential to update the knowledge and skills of the veterinarians in the sub basin. The veterinarians in the sub-basin will be given training on various technical aspects like animal feeding, breeding, fertility, animal health, food safety and traditional systems like ethno-veterinary practices. The cost would be Rs.15,000 per training.

6. c. TRAINING TO VETERINARIANS ON DISEASE DIAGNOSIS:

Early accurate pin point diagnosis is the key for not only saving the individual animal, but will also help to improve the overall health status of the livestock maintained in the sub basin, which will help to improve the profitability. Though, veterinarians have an overall knowledge on disease diagnosis, new and re-emerging diseases are emerging challenges to the veterinarians. Hence it is essential to update the knowledge and skills of veterinarians especially involved in disease diagnosis activities in the sub basin. The veterinarians will be given training on morphological, histo-pathological and molecular diagnosis of prevailing, emerging and re-emerging diseases of livestock in various collages / institutes across the country. In addition, they will be permitted to attend important seminars / conferences / workshops conducted on disease diagnosis across the country. The cost would be Rs.10,000 per training.

V. FINANCIAL ABSTRACT

Table 8

Sl. No	Activity description	Amount (Rs. In Lakh)
1	Dairy Interest Group Formation	0.2850
2	Demos through Dairy Interest Groups	12.9764
3	Strengthening mobile Artificial Insemination network	8.9120
4	Institutional Strengthening	5.2800
5	Documentation	0.5940
6	Capacity Building	0.6860
7	Environmental and Social Management	0.8200
	Total	**29.5534**

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

SENSITIZING FARMERS ON "NUTRITIONAL SUPPLEMENTAL STRATEGY" DEVELOPED AT TANUVAS TO INCREASE PRODUCTIVITY IN DAIRY CATTLE AND MITIGATE METHANE EMISSION

A. INTRODUCTION:

Dairy cattle and buffalo population in the project area is around 548,839 of which 55% of the cattle and buffalo population constitutes breedable and milch animal population and 76% of them are crossbred which provides an opportunity for investments aimed at improving milk productivity in the project area. Majority of the dairy production in the state is achieved through small holder farms having less than four animals. In general, the feeding practices are unbalanced leading to low milk yield which is less than the genetic potential of the animals reared. Survey on the feeding practice adopted by the owners of these animals indicates that there is a mismatch between energy and protein supply apart from deficiency of other nutrients. Hence, the performance of these animals is limited due to want of critical nutrients, and supplying them as supplement would augment productivity. Besides, dietary manipulations resulting in increased feed intake, digestibility and improved animal productivity would result in reduced enteric methane production per unit of product.

B. CURRENT SCENARIO:

Over the last two decades there has been a major shift in the direction of research in dairy science. Previous research laid focus on altering different aspects of dairy production systems and, such an integrated approach had its merit; however, the main thrust of dairy research today is to improve the efficiency of milk production. This is accomplished by manipulating fundamental biological processes regulating milk yield. The past 20 years have seen tremendous progress in the field of rumen microbiology enabling us to better understand the complex microbial interactions governing efficient nutrient utilization by ruminants. Rumen microbes play an important role in digesting feed and forages consumed by ruminants. In this process the rumen microbes also proliferates and provides protein to host when they are digested in the lower gut. The microbial processes of the rumen confer the ability to convert fibrous feeds and low quality protein, and non-protein nitrogen into valuable nutrients for the ruminant animals. Rumen microbial protein represents a major source of amino acids to the ruminant animal. Microbial protein contributes about two thirds of the amino acids absorbed by ruminants. Increased microbial protein synthesis leads to increased milk production and enteric methane mitigation. Balancing of ration reduced enteric methane emission in terms of g/d and g/kg milk yield by 10.1 ($P<0.01$) and 13.5% ($P<0.05$), respectively, which further reduced the part of dietary gross energy loss as methane by 10.3% ($P<0.01$).

TANUVAS GRAND supplement developed by TANUVAS ameliorates nutritional deficiencies, in low yielders, and increases microbial proliferation resulting in improved milk production. The acronym for this supplement is GRAND in which G stands for Gruel, R stands for rooted, A stands for Additive, N stands for Nourishment and D stands for Drops. Experiments on the effect of GRAND supplementation have shown that the *in vitro* apparent digestibility of fodder and microbial biomass increases by threefold over non-supplementation group. TANUVAS GRAND supplement is beneficial to nitrogen deficient diet and is more effective when diet contains sufficient energy. TANUVAS GRAND supplement is expected to increases milk production by 500 ml to 700 ml /day/cow and potentially could lead to 20% reduction in methane emission per animal. To demonstrate this impact in the small holder dairy production system, TNIAMP project envisages to pilot and validate the benefits of feeding TANUVAS GRAND to 300 lactating cows in the Nambiyar sub basin project villages. The piloting will be undertaken in tandem with the activities of Animal Husbandry activities and will be implemented through the Dairy Interest Groups (DIGs).

OBJECTIVES:

a. Demonstrating the impacts of critical nutrient supplementation to dairy cattle to increase milk production and mitigate methane production
b. Establishment of mineralized salt lick production units using TANUVAS technology for Dairy Interest Groups
c. Popularizing the technology for adoption.

C. BROAD ACTIVITIES PROPOSED:

The following activities are proposed

I. Selection of Lactating cattle, Pre-supplementation data collection and interpretation
II. Production and distribution of supplement at free of cost
III. Post supplementation data collection and documentation
IV. Setting up of mineralized salt lick production units in selected farmers dairy groups
    a. Orientation training for farmers
    b. Selection of farmers dairy groups
    c. Technical training to members of selected groups
    d. Setting up of mineralized salt lick production units in selected farmers dairy groups
V. Report preparation and Preparing plant for sustainable production

D. OUTCOME INDICATORS

- Projected increase of 500 ml of milk / animal / day in the animals supplemented with TANUVAS GRAND
- Projected decrease of 20% enteric methane emission per litre of milk increase in the animals supplemented with TANUVAS GRAND

- Enhanced adoption by 150 farmers a balanced feeding regimen to their animals.
- Orientation training on salt lick production to 15 farmers and technical training to 2 farmers.
- Capacity building of one farmer groups to produce mineralized salt lick (100 licks per day) for calves on an entrepreneurial mode

E. COST TABLE FOR NAMBIYAR SUB BASIN

The Nambiyar sub basin has been identified with one dairy interest group by Animal Husbandry Department according to the bovine population. TANUVAS activity of TANUVAS GRAND feed supplement distribution will be combined with AHD and it covers 300 lactating cattle. The year wise physical and financial targets are presented as follows.

YEAR WISE PHYSICAL AND FINANCIAL TARGETS FOR NAMBIYAR SUB BASIN

Sl. No	Name of the activity	Unit	Unit cost (Rs in lakhs)	Year I	
				Phy	Fin (in lakhs)
1	Selection of Lactating cattle, Pre-supplementation data collection and interpretation	1	0.00090	300	0.270
2	Production and distribution of supplement at free of cost*	1	0.00180	300	0.540
3	Manpower for supplement production	1	0.00060	300	0.180
4	Post supplementation data collection and documentation	1	0.00060	300	0.180
5	**Setting up of mineralized salt lick production units in selected farmers dairy groups**				
5a	Orientation training for farmers and Selection of farmers dairy groups	1	0.00500	15	0.075
5b	Technical training to members of selected groups	1	0.02500	2	0.050
5c	Setting up of mineralized salt lick production units in selected farmers dairy groups	1	1.00000	1	1.000
	GRAND TOTAL				**2.295**

*Distribution of TANUVAS GRAND for 3 months

GUIDELINE TO ALL LINE DEPARTMENT

1. GENDER PARTICIPATIONPLAN

The focus group discussions with women groups and stakeholders held at different project locations (during walk through survey) by a team to identify gender issues relevant to TN IAMP which are given below:

- Low/ less participation of women in development program.
- Women play significant role in agriculture and other related activities, however these are not recognized by communities.
- Ownership of agricultural land is generally in the name of men.
- Women cultivators have problems in accessing markets particularly because of social and economic constraints in reaching near by markets.
- Wages to women are generally underpaid and are not at par with male workers for same type of work.

Though it is not realistic to address all issues and concerns of women, a right approach would be to focus on specific issues that could address those that are most relevant to the project outcome. The approach therefore is to formulate specific project interventions focusing on women and supplement them with the existing government programs for the socio-economic benefit of women. Specific measures under the project could include creating required infrastructure (like resting place, clean sanitation facilities etc.) to facilitate women visiting the markets and help them participate in the trading activities. Following this approach, the gender development strategy of the project includes specific activities such as: identifying infrastructure needs and facilities for women members at market, working with women Self Help Groups (SHGs) in the construction activities, organizing training for active participation of women members in the market committees, and ensuring that women members attend all meetings of the market committee or Producer Company.

GUIDELINES FOR IMPLEMENTING GENDER STRATEGY

Stage	Process	Activities	Output
Preparation	Identify gender concerns through participatory consultations	List issues and prioritize	Issues identified that need to be addressed if possible under the project
	Inform about the project activities and benefits	Organize meetings with the women farmers	Sensitization of women on project objectives and activities
	Sensitize other stakeholders on gender concerns/issues	Organize workshops on gender sensitization	Sensitization of other stakeholders on the importance of gender
Implementation	Encourage women participation in project activities	Work with women Farmers/groups for active participation in the project activities	Active women participation
	Encourage equal wages for equal work in all project works		Actual wages paid to women
Operation	Encourage women participation in WUA	Organize training for active participation of women in WUA Encourage more women members to attend meetings of WUA	No of training organized No of women attended

2. THE STRATEGY FOR THE INCLUSION OF WOMEN IS GIVENBELOW:

Stages	Strategy	Planned Activities
Preparation	Inform on project details, identify gender concerns/ issues in relation to the project activities	• A stakeholder consultation meeting will be conducted in which the issues related to women will be discussed. • Pre launch workshop will be organized at APMC for stakeholders including women.
Implementation	Ensure women participation in project activities	• Local women workers will be given preference in construction activities to be undertaken under e-Negotiable Warehouse. • Appropriate representation to women is already given and will be ensured further in APMC Managing Committee.
	Ensure equal wages for equal work in all construction related works.	A wage register will be maintained at work site to ensure, check and monitor whether equal wage is paid to equal work involved in construction activities under e-Negotiable Warehouse.
	Ensure no women harassment under the project	• An Anti- harassment Cell comprising members at APMC will be formed to discuss the issues related to women harassment. • A complaint register will be maintained at RM to ensure quick redressed of women abuse and related issues.
Operation	Ensure women participation in the working of APMC	• The RM will organize need based trainings, meetings etc. • Women representatives will be given opportunities to participate in various outside trainings and workshops. • Participation of women in management of RM will been sured.
	Employment generation for women in sub project activities	Involvement of local women in RM activities will be encouraged and ensured that the RM continue in operation & post operation period.

3. GRIEVANCE REDRESSES MECHANISM

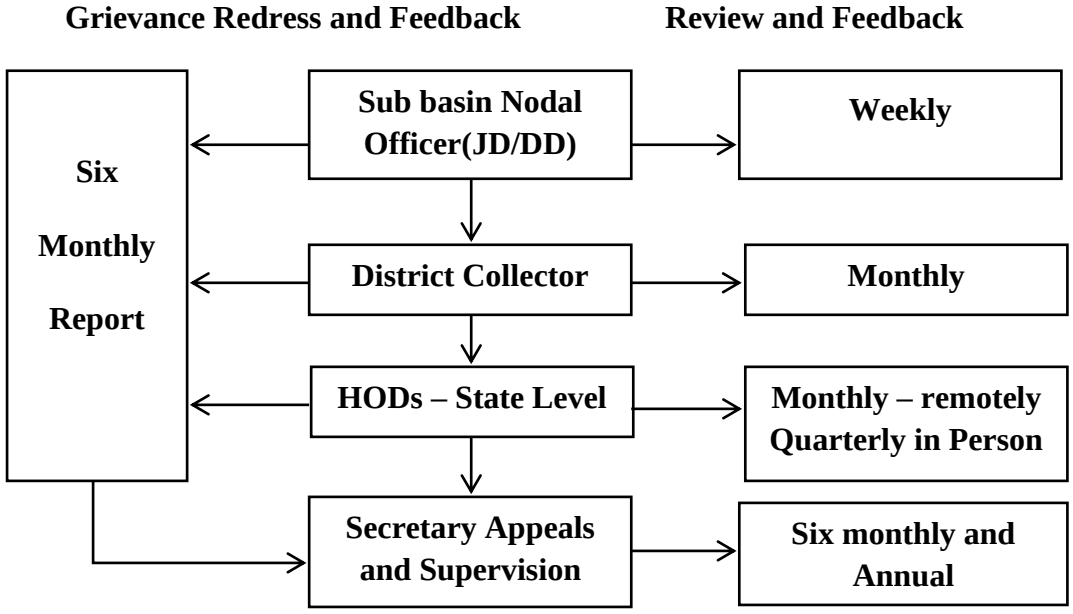
Grievance Redress Mechanism is part and parcel of the machinery of any project. No administration can claim to be accountable, responsive and user-friendly unless it has established an efficient and effective grievance redress mechanism. In fact, the grievance redress mechanism of an organization is the gauge to measure its efficiency and effectiveness as it provides important feedback on the working of the administration.

- ❖ The grievance redress process will be a continuous, transparent and participatory process that would be an integral part of the project's accountability and governance agenda.
- ❖ A project level GRM will be in place for addressing social, environmental and project related grievances.

PROMPT AND EFFECTIVE REDRESS OF GRIEVANCES

a. grievances should be necessarily acknowledged, with an interim reply within 5 days of receipt and redressed within 1 month of receipt in the Organisation. The same time limit should apply even if co- ordination with subsidiary offices or another Department/Organisation is involved. In such instances special efforts, to be suomoto disclosed when reports are called, should be made.
b. No grievance will be rejected without having been independently examined. At a minimum, this means that an officer superior, to the one who delayed taking the original decision or took the original decision that is cause for grievance, should actually examine the case as well as the reply, intended to be sent to the grievance holder.

GRIEVANCE REDRESS MECHANISM-FLOW CHART



- For every six months report is prepared at all levels and sent to the Secretary.
- Effort will be made to create awareness about GRC mechanism to the beneficiaries through use of flyers and pamphlets at the village, Block and District level.
- The GRC will receive and redress grievances and complaints that are formally brought to the GRC in writing by the persons and/or group of persons who have a grievance because of the Program's adverse impact on him/her and them.
- The grievance would, among others, relate to payment of compensation and involuntary resettlement assistance in accordance with the eligibility criteria as set out in this Resettlement Policy Framework (RPF).

PROCESS OF GRC

- Open House at the Block and District levels.
- The GRC will receive all grievances/complaints and enter them in the Grievance Register;
- The GRC will work out a timeframe to redress grievances/complaints ifsuch grievances/complaints are not redressed during the first meeting;
- The GRC will acknowledge receipt of all grievances/complaints, by registered post, within 7 days of receipt;
- The GRC will consider and redress grievances/complaints through public and transparent process in which all those who have lodged their grievances and complaints in order to facilitate transparency and accountability;
- The GRC will communicate its decisions/redress in writing to the complainants within 4 weeks depending on the nature of complaints.

COMPLAINTS/GRIEVANCES REGISTER

- Serial Number;
- Case Number;
- Name of the Grieved/Complainant;
- Name of Father/Husband;
- Gender (f) Age;
- Full Address;
- Brief details of grievance/complaint;
- List of documents, if any, attached;
- Details of previous grievance/complaint, if any;
- Date of receipt of grievance/complaint and
- Date of acknowledgement of grievance/complaint
- When closing the complaint, agreement should be made with the complainant on remedy, and both parties sign to their approval of the case being closed and outcome accepted. Copies are kept in both hard copy and electronic (please see documentation of Grievance process) by both parties.

The contact details of the officials concerned are included in the individual chapter of Implementing Agencies (IA) and the combined list enclosed in the Environmental chapter of the DPR

ESMF, ESMP & SCREENING CHECK LIST

For the environmental and social impacts (both positive and negative), Environmental and Social Management Framework (ESMF) enumerates a set of measures to minimize the adverse impacts and enhance the positive impacts which are intended to be adopted during the project implementation. This will not only ensure that environmental and social safeguard activities are implemented in accordance with the framework and processes but also that there are adequate funds/resources for implementation and supervision of social and environmental management plans. Accounting the nature and scale of environmental and social impacts, specific and reliable departmental Standard Operating Procedures along with suggested mitigation measures will be adopted for environmental and social safeguards.

5. ENVIRONMENTAL SOCIAL MANAGEMENT PLAN (ESMP) NOT APPLICABLE FOR AGRICULTURE ACTIVITIES.

PLAN OF ACTIVITIES FOR ENVIRONMENTAL MONITORING AND AWARENESS

Develop Information, Education and Communication (IEC) material in local language for generating awareness regarding safe use of pesticides

- Promote wide application of safe and bio pesticides, wherever possible
- Promote expansion of System of Rice Intensification (SRI) to reduce water demand
- Work with WUAs in encouraging market based non-water intensive crops where possible and for promoting conjunctive use of water resources
- Demonstrate and scale-up IPM strategy and approach; monitor the adoption rate
- Promote wide use of organic inputs, such as, bio-manure, Farm Yard Manure and bio-fertilizers and provide training on production and use of these alternatives
- Ensure that marginal farmers and poor households are also covered for such demonstrations and training
- Shift to less water intensive crops
- Efficient use of water resources – micro irrigation
- Moderate use of agrochemicals – soil test based fertilizer application
- Pest Management in concurrence with Pest Management Plan (PMP)
- Trainings and demonstrations on restricted pesticides and safe use of pesticides
- Trainings and demonstrations on Integrated Crop Management Practices
- Specific plans with respect to environmental awareness are listed in the individual chapters of Implementing Agencies (IA)

GEO TAGGING

As a part of documentation strategy for the interventions proposed to be implemented in this sub basin under the project, it is planned to Geo tag all the field activities using the TN IAMP APP developed for the purpose. The Geo tagging will be done by the concerned field officers who are in charge of implementation of the interventions.

As the Geo tagging of the project activities ensures /confirms the location of the interventions, required other details such as survey number of the demo plots ,name and address of the stake holder etc., could be assesses easily. Geo tagging technique is useful for validation of components of activities implemented under the project, besides facilitate field visit by higher officers and WB as a valued document.

All the field officers in charge of the interventions will register to log in the APP by using their respective mobile numbers. Each intervention will be Geo tagged at least four times during key operations. Minimum of two photos will be taken during each operation one close to the crop/operations and other photo covering the whole field of execution and uploaded.

ANNEXURE-1

DETAILS OF WALK THROUGH SURVEY (PRA) WITH DATE & PHOTOS ETC..,

Sl. No	Date of Visit	Name of the Tanks Visited	Name of the Villages Visited	Awareness Programme (No.of farmers attended)	Walk-through Survey (No.of farmers Participated)	Remarks
1	2	3	4	5	6	7
		Cluster I				
1	3.2.20	Nadukkam paraikulam	Mahiladi	10	4	WUA formed
2	3.2.20	KesavaneriKulam	Nambithalaivan pattayam	9	5	WUA formed
3	3.2.20	Padalayar Tank	Thirukkurangudy	8	5	WUA formed
4	3.2.20	Karisalkulam	Thirukkurangudy	11	6	WUA formed
		Cluster II				
5	4.2.20	Vallioor Puthukulam	TherkkuVallioor	8	4	WUA formed
6	4.2.20	Devarkulam	TherkkuVallioor	7	5	WUA formed
7	4.2.20	Ganapathiyar kulam	TherkkuVallioor	10	6	WUA formed
8	4.2.20	Alankulam	A.Thirumalapuram	11	7	WUA formed
9	4.2.20	Vattakulam	VaddakuVallioor	15	7	WUA formed
		Cluster III				
10	12.2.20	Kattayanerikulam	Samutharengapuram	13	4	WUA formed
11	12.2.20	Eluvarkulam	Kumbikulam	16	5	WUA formed
12	12.2.20	Valatharvalavaithan kulam	Samuharengapuram	9	4	WUA formed
13	12.2.20	Mannarkulam	Samuharengapuram	10	4	WUA formed
14	12.2.20	Kurunchikulam	Samuharengapuram	8	4	WUA formed
		Cluster IV				
15	14.02.20	Nambikurichi Kulam	Kottaikaraunkulam	12	6	WUA formed
16	14.02.20	Kannankulam	Kottaikaraunkulam	9	6	WUA formed
17	14.02.20	Vilimankulam	Urumankulam	9	5	WUA formed
18	14.02.20	Aimudikulam	Kasthurirengapuram	8	4	WUA formed
19	14.02.20	Palathikulam	Kasthurirengapuram	11	5	WUA formed
20	14.02.20	Pappankulam	Kasthurirengapuram	10	4	WUA formed
21	14.02.20	Periyalankulam	Kasthurirengapuram	5	3	WUA formed
22	14.02.20	Kailasaperikulam	Kasthurirengapuram	9	5	WUA formed
23	14.02.20	Ponathikulam	Kasthurirengapuram	8	4	WUA formed
		Cluster V				
24	15.2.20	Karuthanerikulam	Dhalabathy samuthiram	11	4	WUA formed
25	15.2.20	Singmmalapuram Bigtank	Dhalabathy samuthiram	9	4	WUA formed
26	15.2.20	Nallapethankulam	Dhalabathy samuthiram	9	4	WUA formed
27	15.2.20	Kandiaperikulam	Dhalabathy samuthiram	6	5	WUA formed
28	15.2.20	Kovanerikulam	VadakkuVallioor	7	4	WUA formed

		Cluster VI				
29	17.2.20	Kallikulam	T.Kallikulam	7	5	WUA formed
30	17.2.20	Karuppukalkulam	Anaikulam	5	4	WUA formed
31	17.2.20	Veetrithankulam	Anaikulam	9	5	WUA formed
32	17.2.20	Thankaiyankulm	Anaikulam	6	4	WUA formed
33	17.2.20	Vilvarayankulam	Kannanallur	15	5	WUA formed
34	17.2.20	Achampadukulam	Achampadu	15	4	WUA formed
35	17.2.20	Thanuvankulam	Achampadu	15	4	WUA formed
36	17.2.20	Poopillaikulam	Achampadu	15	6	WUA formed
37	19.2.20	Panisakulam	Kannanallur	15	4	WUA formed
38	19.2.20	Thambakulam	Kannanallur	7	4	WUA formed
39	19.2.20	SitturKeelkulam	Kannanallur	10	5	WUA formed
40	19.2.20	Iyyapanerikulam	Kannanallur	15	5	WUA formed

SUMMARY OF WALK THROUGH SURVEY

Walkthrough surveys were conducted through 6 villages situated in nambiyar sub basin during the month of 11.03.2020. Officials from Agriculture Marketing Dept, Water Resources Department (WRD), Agriculture Department, Horticulture Department, Tamil Nadu Agriculture University (TNAU), Agriculture Engineering Department (AED), Animal Husbandry and Fisheries Department jointly conducted the survey. Around 89 public people from farming and allied sector participated and shared their views and expectations. Regarding WRD, 40 tanks, 1supply channel for a total length of 4 km in Nambiyar Sub Basin were selected and proposed for rehabilitation under TNIAMP phase III. Interaction with farmers was made for improving agriculture and allied activities.

It was inferred that the Nambiyar sub basin constitutes 4 type of soil viz. Inceptisol, Alfisol, Entisol and Vertisol. Inceptisol type is dominantly prevailing across the sub basin. Due to the soil suitability, Paddy and pulses is widely cultivated along the sub basin.. Annual crops Banana are also grown here. Paddy is the major seasonal crop which is grown in areas where irrigation facility is available. Paddy is repeated as second crop in areas where well irrigation facility is available. Vegetable crops such as Onion, Brinjal, Tomato, Chilly and Cucumber are also cultivated as first crop in this sub basin. When water is available, paddy is cultivated as second crop followed by pulses as third crop. It was inferred, that farmers are interested in water harvesting structures to prolong the water availability to their crops.

WALK THROUGH SURVEY (WTS)

1. Walk Through Survey in Nambiyar Sub Basin conducted on11.03.2020
2. No. of Villages covered - 6 villages
3. Category of Villagers participated :
   - i. No. of farmers/ WUA Members participated : 89
   - ii. No. of Women Self Help Group Members participated : ---
   - iii. No. of representatives from NGO's : ---
   - iv. No. of Landless farmers : ---
   - v. Panchayat Representatives Participation:
     - a) President - ~~Yes~~ /No
     - b) Secretary - ~~Yes~~ /No

c) Members - ~~Yes~~ /No

4. Feed Back (Mention the chapter in DPR where the WTS feedback is recorded):

i. WRD WORKS:

Tanks (No's)	Anicuts (No's)	Supply Channel/Canal (km)
40	0	4

SUMMARY OF FEEDBACK ALONG WITH PLANNED ACTIVITIES

The feedback of walk through survey and the planned activities are summarized below Agricultural related.

It was inferred that the farmers are mostly relying on conventional farm methodologies and following same cropping pattern. Hence to make them adopting new methodologies, the following activities are proposed. Farmers can be educated through introduction of field demonstration of improved production technology. Farmer's field schools to educate farmers shall be operationalized at block levels followed by capacity building through exposure field visits. During the survey, it was reported by the farmers about reduced soil fertility; hence, it was proposed to encourage the farmers for green manuring by adopting technologies like vermicomposting, practicing rice fallow pulses cropping in order to enhance the soil fertility. Another common problem prevailing in agriculture is water scarcity. Farmers have reported that often they cannot avail water for their crops upto full maturity. For this, it was proposed to switch from conventional paddy cultivation method to System of Rice Intensification (SRI). Through this, they can save appreciable quantity of water and also seed. It was also proposed to divert from high water guzzling crops to less water consuming crops like maize, oil seeds and horticulture crops.

ii.AGRI. RELATED (AGRICULTURE/HORTICULTURE/TNAU/AED):

Soil Type	Existing Cropping Pattern	Major Crops	Major Issues	Farm Ponds	Others
Inceptisol, Alfisol, Entisol, Vertisol	**Perennial crops:** Banana, Coconut, Mango, Amla, Guava, Acid lime, Flowers Others:Sapota, Cashewnut, Casuarina,Teak, Tamarind, Jack **Annual Crop:**Banana, **Seasonal crops:** Paddy, Pulses, Groundnut, Gingelly, Tomato, Brinjal, Onion, Cucumber, Chillies	Banana, Coconut, mango, Annual crop like Banana and Seasonal crops like paddy, tomato, gingelly, onion, pulses,Ground nut	1. Prevailing gap in irrigation 2. Water scarcity 3. Poor agricultural management practices 4. Less yield 5. Reduced soil fertility 6. Necessity for increased usage of Pesticides 7. Disposal of farm waste 8. Labour scarcity during harvest times 9. Non adoption of multicut fodder crops.	To sustain water for crops by introducing farm ponds were requested by farmers and 5 locations were identified for Farm ponds	

iii.LIVELIHOOD RELATED (ANIMAL HUSBANDRY/FISHERIES):

Veterinary Services (Artificial Insemination, Deworming, Infertility, Disease Surveillance & Prevention, Fodder Development)	Fisheries Activity(Aquaculture in Farm Ponds and Irrigation Tanks)	Others
1. There is gap in demand to supply of fodder for farm animals. 2. Lack of knowledge in managing Cross breed animals. Hence diseases like mastitis, worm infestations are major issues for cattle owners. 3. Infertility of cattles. Many breedable population has not yet been covered under Artificial insemination. 4. Lack of animal identification system which constraints the disease control and planned breeding interventions.	Where ever the impounded water is available for four months and above aquaculture is proposed to be carried out in selected farm ponds.	

5. Special Features of the sub basin:
   i. Ecologically sensitive area if any - Nil
   ii. Sensitive Crops :
      a) Water guzzling: Paddy, Sugarcane, Banana
      b) Less Water : Maize, Minor Millets, Pulses
      c) Others:
6. Gender Strategy:
   i. Percentage of Women expected to involve in
      a) WRD Activities - 30%
      b) Agri. related Activities - 50%
      c) Livelihood related - 54%
7. Environmental Interventions proposed based on Observations:

For agricultural based activities,

Educating the farmers through Capacity building programme for practising on-farm green manure production from their own, farm generated organic solid wastes.

DETAILS OF WATER WALK WITH DATE AND PHOTOS ETC.,

1. Walk Through Survey in Nambiyar Sub Basin conducted during 03.02.2020, 04.02.2020, 12.02.2020, 14.02.2020, 15.02.2020, 17.02.2020 and 19.02.2020
2. No. of Villages covered - 18 villages
3. Category of Villagers participated :
4. No. of farmers/ WUA Members participated : 188

5. No. of Women Self Help Group Members participated : ---
6. No. of representatives from NGO's : ---
7. No. of Landless farmers : ---
8. PanchayatRepresentatives Participation:
9. President :~~Yes~~ /No
10. Secretary :~~Yes~~ /No
11. Members :~~Yes~~ /No

CHECKLIST

1. Walk through survey form attached : Yes
2. Environmental and Social Management Plan (ESMP) and Screening Checklist for packages costing more than Rs.6.00 Crore and individual tank costing more than Rs. 4.00 Crore :
3. Summary of Walk- Through survey Included : **Yes**
4. Summary of Feed Back along with planned activities Included: **Yes**
5. Special features of the Sub Basin Included: No
6. Overview of Gender Strategy Included: **Yes**
7. Mechanism & Schedule for establishment of GRM Included: **Yes**
8. Plan of activities for Environmental Monitoring and Awareness Included: **Yes**