GOVERNMENT OF TAMIL NADU

TAMIL NADU IRRIGATED AGRICULTURE

MODERNIZATION PROJECT

(TNIAMP) PHASE – III

GUMMUDIPOONDI SUB BASIN

COMBINED DETAILED PROJECT REPORT

Ayacut area 1672.030 Ha.
Total Project Cost Rs. 610.024 Lakh.

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

CONSOLIDATED PROJECT COST FOR GUMMUDIPOONDI SUB BASIN

Sl.No	Department	Project Cost in Lakh Rs.
1	Agriculture	27.188
2	Horticulture	156.560
3	Tamil Nadu Agricultural University	20.680
4	Agricultural Marketing	354.060
5	Agricultural Engineering	16.500
6	Fisheries	5.500
6	Animal Husbandry	**27.241**
7	TANUVAS	2.295
	TOTAL	**610.024**

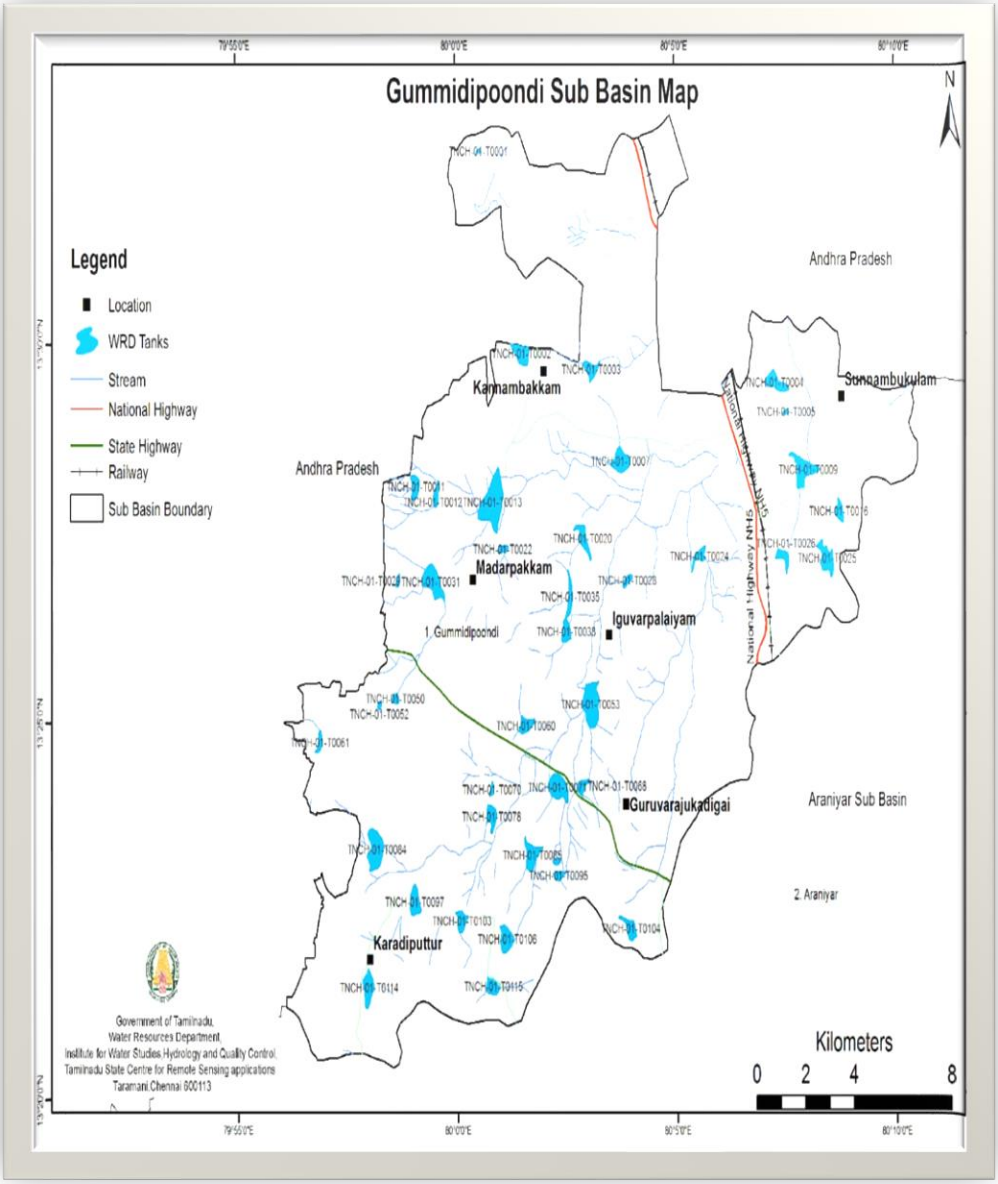
INDEX

Sl. No	Details	Page No.
I	Introduction about Sub basin	4
II	Department wise Interventions	9
1	Agriculture	9
2	Horticulture	18
3	Tamil Nadu Agricultural University	26
4	Agricultural Marketing	30
5	Agricultural Engineering	41
6	Fisheries	45
7	Animal Husbandry	48
8	TANUVAS	56
9	Gender participation, ESMF, GRM, Geo Tagging	59
10	Annexures	66
	A. Walk through survey	66

COMBINED DETAILED PROJECT REPORT
GUMMUDIPOONDI SUB BASIN
THIRUVALLUR DISTRICT

INTRODUCTION

Thiruvallur District is formed on 01.12.1997. On the North of the District lies the Andhra Pradesh state, On the East is Bay of Bengal, On the West is Vellore District and on the South is Kancheepuram District forms the borders of this District. The average rainfall of the District is 1152 mm. Fruit crops like Mango, Guava, Sapota, Vegetables like Bhendi, Brinjal, Greens, Gourds, Watermelon , Spices like Chillies and Flowers like Jasmine & Tube rose etc. are the important Horticulture Crops grown in this District.



GEOGRAPHICAL POSITION

Thiruvallur District is located in the North East part of Tamil Nadu. The District is surrounded by Kancheepuram District in the South, Vellore District in the West, Bay of Bengal in the East and Andhra Pradesh State in the North. The District spreads over an area of about 3422 Sq.kms. .

PHYSICAL FEATURES

The Coastal region is mostly flat while certain areas in Tiruttani and Pallipattutaluks are undulated and even hilly. The types of soil predominantly found are red non-calcareous and coastal alluvial. Sandy soil mixed with soda or other alkali are also found in the District. The soil found in the coastal region is of the erinaceous type (sandy), suitable for casuarina plants.

- District - Thiruvallur
- Blocks covered - Gummidipoondi
- Total registered Ayacut area of the sub basin - 1672.03 Ha
- Split up details of Ayacut area.
  - Fully irrigated - 1076.62 Ha
  - Partially irrigated - 289.73 Ha
  - Gap area - 305.68 Ha
  - Total - 1672.03 Ha

DESCRIPTION OF GUMMIDIPOONDI SUB BASIN

Gummidipoondi sub basin covers an area of 331.11Sq.Km. Numerous small streams originate from Sathiavedu hills at about an altitude of 261m and a few streams originate from Tamilnadu and drain most of the plain areas of Gummidipoondi. These streams flow in the North, Northeast direction filling up several tanks in Pallavada, Periyaopalapuram, Thanipoondi, Sirupulalpettai and Siruvadur. Finally to the west of Elavur, the streams join with the Pulicatlake in Andhra Pradesh. It is one of the sub basin in Chennai basin which is located in the Northern part of Chennai basin and Pulicat lake.

BLOCK WISE AYACUT AREA DETAILS

Block	No of Tanks	Ayacut Area (Ha)	No of Villages Benefitted
Gummidipoondi	26	1672.03	19

Sl. No.	Name of the Cluster / Infrastructure/ Village	Total Ayacut (Ha)			
		FI	PI	Gap	Total
1	2	3	4	5	6
1	Amarambedu	108.240	86.592	21.648	108.240
2	Amirthamangalam	46.140	36.912	9.228	46.140
3	Aramani	48.220	38.576	9.644	48.220
4	Budur	75.270	60.216	15.054	75.270
5	Bommanjikulam	46.350	37.080	9.270	46.350
6	Kanalur	60.300	48.240	12.060	60.300
7	PeriyaBommanjikulam	62.230	49.784	12.446	62.230
8	Pondavakkam	50.590	40.472	10.118	50.590
9	Sedilpakkam	44.900	35.920	8.980	44.900
10	Edur	50.000	40.000	10.000	50.000
11	ThervoyKandigai	45.680	36.544	9.136	45.680
12	Vanamalli	62.850	50.280	12.570	62.850
13	Elavoor	298.220	238.576	59.644	298.220
14	Eguvarpalayam	100.030	80.024	20.006	100.030
15	Narasingapuram	39.200	31.360	7.840	39.200
16	PeriaNatham	69.000	55.200	13.800	69.000
17	Melapakkam	42.500	34.000	8.500	42.500
18	Poovalai	80.390	64.312	16.078	80.390
19	Thervali	48.900	39.120	9.780	48.900

Cropping pattern

Name of the sub Basin : Gummidipoondi | **Fully Irrigated : 1076.62 Ha**

Nodal District : Tiruvallur | **Partially Irrigate : 289.73 Ha**

Registered Ayacut Area : 1672.03 ha | **Gap : 305.68Ha**

No. of WUAs : 26 | **Total Ayacut Area : 1672.03 Ha**

S.No.	Crop	Without Project (Ha)				With Project (Ha)				Increase
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
I	**Perennial crop**									
1	Mango	40.00	0.00	0.00	40.00	40.00	0.00	0.00	40.00	0
	Total	**40.00**	**0.00**	**0.00**	**40.00**	**40.00**	**0.00**	**0.00**	**40.00**	0
II	**Annual Crop**									0
1	Sugarcane	25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	-25
2	Moringa	2.00	0.00	0.00	2.00	120.00	0.00	0.00	120.00	118
3	Tapoca	8.00	0.00	0.00	8.00	50.00	0.00	0.00	50.00	42
	Total	**35.00**	**0.00**	**0.00**	**35.00**	**170.00**	**0.00**	**0.00**	**170.00**	135
III	**1st crop**									0
1. a	Paddy	622.56	199.73	0.00	822.29	22.00	0.00	0.00	22.00	-800.29
b	Paddy SRI	10.00	0.00	0.00	10.00	805.00	0.00	0.00	805.00	795
2	Green Gram	10.00	0.00	0.00	10.00	20.00	0.00	0.00	20.00	10
3	Groundnut	255.06	90.00	0.00	345.06	450.03	0.00	0.00	450.03	104.97
4	Brinjal	22.00	0.00	0.00	22.00	15.00	0.00	0.00	15.00	-7
5	Bhendi	28.00	0.00	0.00	28.00	50.00	0.00	0.00	50.00	22
6	Chillies	13.00	0.00	0.00	13.00	30.00	0.00	0.00	30.00	17
7	Bittergourds	0.00	0.00	0.00	0.00	15.00	0.00	0.00	15.00	15
8	Sanke gourds	0.00	0.00	0.00	0.00	15.00	0.00	0.00	15.00	15
9	Banana sucker	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0
10	Greens	15.00	0.00	0.00	15.00	15.00	0.00	0.00	15.00	0
11	Flowers	25.00	0.00	0.00	25.00	21.00	0.00	0.00	21.00	-4
12	Non Agrl. Purposes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
13	Fallow	0.00	0.00	305.68	305.68	0.00	0.00	0.00	0.00	-305.68
14	Fodder Sorghum	0.00	0.00	0.00	0.00	1.50	0.00	0.00	1.50	1.5
15	Fodder Cowpea	0.00	0.00	0.00	0.00	1.50	0.00	0.00	1.50	1.5
	Total	**1001.62**	**289.73**	**305.68**	**1597.03**	**1462.03**	**0.00**	**0.00**	**1462.03**	-135
	G. Total (I+II+III)	**1076.62**	**289.73**	**305.68**	**1672.03**	**1672.03**	**0.00**	**0.00**	**1672.03**	0
IV	**2 nd crop**									0
1. a	Paddy	210.00	70.58	0.00	280.58	90.00	0.00	0.00	90.00	-190.58
b	Paddy SRI	15.00	10.00	0.00	25.00	450.00	0.00	0.00	450.00	425
5	Brinjal	10.00	0.00	0.00	10.00	10.00	0.00	0.00	10.00	0
6	Bhendi	12.00	0.00	0.00	12.00	55.00	0.00	0.00	55.00	43
7	Chillies	5.00	0.00	0.00	5.00	5.00	0.00	0.00	5.00	0
	Total	**252.00**	**80.58**	**0.00**	**332.58**	**610.00**	**0.00**	**0.00**	**610.00**	277.42
	Grand Total	**1328.62**	**370.31**	**305.68**	**2004.61**	**2282.03**	**0.00**	**0.00**	**2282.03**	277.42
	Cropping Intensity				**120%**				**136%**	

SEASON-WISE FOCUS CROPS

Sl.No	Season	Main crops cultivated
1	Sornavari, Samba and Navarai	Paddy
2	Rabi	Ground nut, Gingelly and Green gram
3	Perennial	Coconut and Mango
4	Annual	Sugarcane

DISTRICT WISE PRODUCTION, PRODUCTIVITY AND MARKETABLE SURPLUS

S.No	Major Crop	Area (Ha.)	Production (Mt)	Productivity (Mt/Ha)	Marketable Surplus
1	Paddy	96348	410635	4.262	369530.44
2	Millets	2578	299	0.116	271.22
3	Pulses	12736	1744	0.137	1569.43
4	Sugarcane	7215	51341	7.116	51341.00
5	Groundnut	6905	2299	0.333	1839.20
6	Banana	666	180	0.271	171.00
7	Vegetables	1323	18	0.061	14.40
8	Mango	9572	8863	0.926	8419.85
9	Gingelly	1607	20	0.013	16.00

DEPARTMENT WISE INTERVENTIONS

DEPARTMENT OF AGRICULTURE

INTERVENTION-WISE BREAK UP OF COST NORMS
IMPROVED PRODUCTION TECHNOLOGY CROP DEMONSTRATIONS THROUGH AGRICULTURE INTENSIFICATION: PRODUCTIVITY ENHANCEMENT IN PADDY (IPT DEMOS: SRI-180 HA)

Paddy is the main staple crop grown in the Nandhiyaru sub- basins where in there is still scope for improving the productivity as the yield gap varies from 1.2 - 1.6 MT / Ha both in first and second seasons (Samba and Navarai). The DoA will analyze the constraints in the sub-basin by conducting 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 model, and also suggesting suitable interventions viz., Introduction of three crop sequence of Green Manure – SRI Paddy – Rice Fallow Pulses.

(i). 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 of antibiotics 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 like wind and rain.

Sl.No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	**IPT Demo. Of Green Manure Crop**	**180**	**0.020**	**3.600**

UNIT COST – GM- 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**

ii) SYSTEM OF RICE INTENSIFICATION ensures 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.

Sl.No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	***IPT Demo SRI***	***180***	***0.060***	***10.800***

b) UNIT COST - 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**	

(iii) 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 and oilseed crops. 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	Rice Fallow Pulses	180	0.020	3.6

c) UNIT COST -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

PULSES

2. PROMOTION OF PULSES PRODUCTION : (IPT DEMOS 5 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. Presoaking 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 enhancements by mass scale spraying of 2% DAP on 25th and 40th day after sowing.

Sl.No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	**Gardenland Pulses**	**5**	**0.050**	**0.250**

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**	

3) REVIVAL OF OILSEEDS CULTIVATION (IPT DEMOS: 45 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. 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.

Usage of high yielding certified seeds of varieties.

- **a.** Promoting Rice fallow Oilseeds wherever possible.
- **b.** Promoting Castor as Bund/Border crop.
- **c.** Promotion of line sowing for maintaining optimum plant population.
- **d.** Promotion of intercropping with pulses.
- **e.** Application of Gypsum in Groundnut
- **f.** Adoption of IWM-including the use of Drought Mitigation Substances and IPM techniques.

Sl.No	Technology	Area (ha)	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	IPT Demo. of Oilseeds	45	0.050	2.25

3. UNIT COST- OIL SEEDS 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:

- Conoweeder 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 Conoweeder. 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 labor shortage.
- In this project Cono weeding operation will be done by using the self help groups , Amma farm women groups and Farmers Interest group and farmers themselves. By this way women 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	90	0.01250	1.125

UNIT COST FOR CONO WEEDING:

Sl.No	Particulars	Unit Cost (Rs. / Ha)	Amount (Rs.)
1	Cost of two times of Cono weeding on 15^{th} 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	10	0.200	2.000

UNIT COST: FARMERS FIELD SCHOOL

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	

2. SEED VILLAGE PROGRAMME FOR GROUNDNUT:

- The farmers may be encouraged to produce the seeds required for their villages on their own especially for the crops Oilseeds by provision of assistance to the farmers.
- Groups are formed for the production of required seeds for the Farmers in the Village itself.
- The Group Members are given Seed Village Concept and Farm management Training (Rs.4400 / group) and also for the Group upliftment, provided revolving fund (Rs.50000 / Group) with Bank tie-up.

Sl.No	Technology	Nos.	Unit Cost L.Rs.	Budget (Rs. In lakh)
1	Groundnut	2	0.544	1.088
	TOTAL	**2**	**0.544**	**1.088**

3. INSTITUTIONAL STRENGTHENING – IEC & CAPACITY BUILDING ACTIVITIES

The Capacity building and Change management training are given to the Agricultural Laborers, 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.

	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 labors	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 230 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	230	0.0065	1.495
2	Documentation Charges for the Sub-basins	1	0.100	0.100
				1.595

4. CLUSTER WISE / INFRASTRUCTURE WISE / VILLAGE WISE CONVERGENT TABLE

Sl No	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Ayacut (Ha)			WRD	Agriculture	
		FI	PI	Gap	Wop	WP	Gap		Act	No./ Ha
1	2	3	4	5	6	7	8	9	10	11
Cluster I										
1	Amarambedu Parikkeri	26.18	6.560	7.920	32.740	40.660		Strengthening of tank bund, Repairs to Sluice & Weir, Improvements to Supply Channel, &Fixing of tank Boundary stones and Repairs to Kondam.	SRI	7
2	Amarambedu Tank	43.89	12.840	10.850	56.730	67.580			SRI and Ground nut	13
3	Amirthamangalam tank	29.52	7.380	9.240	36.900	46.140			SRI	7
4	Aramani Tank	31.05	7.760	9.410	38.810	48.220			SRI	8
5	Budur Anicut Thangal	48.9	13.100	13.270	62.000	75.270			SRI	10
6	Chinna Bommanjikulam Tank	29.73	7.450	9.170	37.180	46.350			SRI and Ground nut	13
7	KanalurPeduEri	38.59	9.640	12.070	48.230	60.300			SRI	10
8	Periya Bommanjikulam Tank	40.07	10.020	12.140	50.090	62.230			SRI and Pulses	13
9	PondavakkamPuduTank	32.58	9.140	8.870	41.720	50.590			SRI and Pulses	10
10	Sedilpakkam Tank	28.91	7.220	8.770	36.130	44.900			SRI	5
11	Edur Tank	32.2	8.050	9.750	40.250	50.000			SRI and Ground nut	12
12	Thervoy Kandigai Chitteri	29.23	7.300	9.150	36.530	45.680			SRI	8
Cluster II										
13	Vanamalli Tank	40.47	10.080	12.300	50.550	62.850		Strengthening of tank bund, Repairs to Sluice & Weir, Improvements to Supply Channel, &Fixing of tank Boundary stones and Repairs to Kondam.	SRI	8
14	ElavoorHissaKattuThangal	51.52	13.880	14.600	65.400	80.000			SRI and Ground nut	15
15	ElavoorKatteri Tank	47.68	11.920	14.450	59.600	74.050			SRI	10
16	Elavur Large Tank	92.84	29.220	22.110	122.060	144.170			SRI	15
17	EguvarpalayamOdaperi	64.41	18.120	17.500	82.530	100.030			SRI	15
18	Narasingapuram Tank	25.24	6.120	7.840	31.360	39.200			SRI	5
19	PeriaNathamThattan Tank	44.43	13.120	11.450	57.550	69.000			SRI and Ground nut	5
20	MelapakkamPettaiCheruvu	27.37	7.850	7.280	35.220	42.500			SRI	5
21	Poovalai Large Tank	51.77	14.940	13.680	66.710	80.390			SRI and Ground nut	11
22	Thervali Thamarai Tank	31.48	8.870	8.550	40.350	48.900			SRI	5
23	Panchalai Maduvu Anicut	65.170	16.280	19.72	81.450	101.170			SRI and Ground nut	10
24	SedhilpackamAnicut	38.940	9.730	12.03	48.670	60.700			SRI and Ground nut	10
25	RallaKalvoyAnicut	32.650	8.170	9.88	40.820	50.700			SRI and Ground nut	10
26	SanaputhurAnicut	51.800	14.970	13.68	66.770	80.450			SRI and Ground nut	10
	Grand Total	**888.060**	**240.580**	**250.370**	**1128.64**	**1379.01**				**180+ 5+45**
	Agricultural activity- SRI-180 demos,Pulses-5 demos, Ground nut-45 demos Total-230 demos									

TN IAMP- PHASE III- Detailed Project Report

Component wise Physical and Financial Requirement

Name of the Sub Basin: GUMMIDIPOONDI **District: TIRUVALLUR**

Sl. No.	Name of the component	Unit	Unit Cost L.Rs.	Project Activities				Financial in Lakh Rs.			
				I Year	II Year	III Year	Total	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.	0.020	60	60	60	180	1.200	1.200	1.200	**3.600**
2	SRI	Ha.	0.060	60	60	60	180	3.600	3.600	3.600	**10.800**
3	Rice Fallow Pulses	Ha.	0.020	60	60	60	180	1.200	1.200	1.200	**3.600**
4	Maize	Ha.	0.100	0	0	0	0	0.000	0.000	0.000	**0.000**
5	Cumbu	Ha.	0.050	0	0	0	0	0.000	0.000	0.000	**0.000**
6	Ragi	Ha.	0.050	0	0	0	0	0.000	0.000	0.000	**0.000**
7	Cholam	Ha.	0.050	0	0	0	0	0.000	0.000	0.000	**0.000**
8	Minor Millets	Ha.	0.040	0	0	0	0	0.000	0.000	0.000	**0.000**
9	Pulses	Ha.	0.050	5	0	0	5	0.250	0.000	0.000	**0.250**
10	Oilseeds	Ha.	0.050	15	15	15	45	0.750	0.750	0.750	**2.250**
	IPT Demo. Total	**-**	**-**	**80**	**75**	**75**	**230**	**7.000**	**6.750**	**6.750**	**20.500**
B. Other Crop based Components [Involving more Women Farmers & addressing Climate Resilient Issues] :											
1	Farmers Field Schools (FFS)	Nos.	0.200	0	5	5	10	0.000	1.000	1.000	**2.000**
2	Promotion of IPM										
	a) IPM Villages	Nos.	1.000	0	0	0	0	0.000	0.000	0.000	**0.000**
	b)INM-Vermicompost (Silpaulin)	Nos.	0.060	0	0	0	0	0.000	0.000	0.000	**0.000**
9	Seed Village - a. Pulses	Nos.	0.544	0	0	0	0	0.000	0.000	0.000	**0.000**
	b.Groundnut	Nos.	0.544	0	2	0	2	0.000	1.088	0.000	**1.088**

	c. Green Manure	Nos.	0.544	0	0	0	0	0.000	0.000	0.000	**0.000**
	Other Crop based Components Total	-						**0.000**	**2.088**	**1.000**	**3.088**
C. Agricultural Implements:											
10	SRI-Conoweeder operation	Nos.	0.0125	30	30	30	90	0.3750	0.3750	0.3750	**1.1250**
	Agri. Implements Total	-	-					**0.3750**	**0.3750**	**0.3750**	**1.1250**
I	**Agri. Crop Based Components Total (A+B+C)**	-	-					**7.3750**	**9.2130**	**8.1250**	**24.7130**
II. Institutional Strengthening - IEC & Capacity Building Trainings: [Encouraging More Women Farmers & addressing Climate Resilient Issues											
11	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	0.000	0.000	**0.185**
12	Farmers training-50 Nos. for 1 day Total cost : Rs.21,000/- x 2 Trainings	Nos.	0.210	2	0	0	2	0.420	0.000	0.000	**0.420**
13	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	0.000	0.000	**0.275**
14	IEC/CB activities [Field support, Sustainability etc., IEC & CB for the Crop Demos Conducted	Ha	0.0065	80	75	75	230	0.5200	0.4875	0.4875	**1.4950**
15	Documentation Charges for the Sub- basins	Nos.	0.100	1	0	0	1	0.100	0.000	0.000	**0.100**
II.	**IEC & CB Trainings Total**	-	-					1.500	0.488	0.488	2.475
	Grand Total	-	-					**8.8750**	**9.7005**	**8.6125**	**27.1880**

DEPARTMENT OF HORTICULTURE

INTERVENTIONS DEMANDED BY THE FARMERS

Introduction of hybrid vegetables, Drip Irrigation system with fertigation, demonstrations on vegetables are demanded by the farmers.

INTERVENTIONS FINALIZED

a) CROP DEMONSTRATION

Demonstrations in Bhendi, Brinjal Chillies, tapioca, gourds, moringwith Micro irrigation & Fertigation are finalized.

I. INCREASE IN CROP PRODUCTIVITY BASED ON BEST MANAGEMENT PRACTICES.

(INVOLVING MORE WOMEN FARMERS ALSO)

Under this program, Horticulture crop demonstrations by diversification, to produce quality / healthy Horticulture crops in clusters will be taken up.

I.A. HORTICULTURE CROP DEMONSTRATIONS (BY ADDRESSING THE CLIMATE RESILIENT ISSUES)

- The demonstration plots cover mainly vegetables. All the latest crop production technologies and the agronomic practices will be adopted in all the demonstrations.
- Required HYBRID seeds, planting materials and the other required inputs will be procured and supplied to the stakeholders well before the season.
- The demonstrations will be selected, based on the climate-resilient that promote sustainable use of land and water resources.
- The cost norm per hectare covers HYBRID seeds/seedlings manures & fertilizers, bio-fertilizers, bio-pesticides etc.

a. Vegetables.

This Intervention is to improve the productivity of the existing vegetable crops nearby and also to increase the area under vegetables.

- The demonstration on intensification of existing vegetable area will help the farmers to adopt the latest agronomic practices, nutrient management, and pest control and value addition.
- Proposed to lay demonstrations in Brinjal, Bhendi, Green Chillies, Tapioca,gourds and Moringa etc., in the farmers field in clusters by diversification.
- Vegetable demonstrations will be taken up in almost all the tank/villages.

I.B. PROMOTION OF REDUCED PESTICIDE VILLAGES FOR VEGETABLES CLUSTERS.

- This programme encourages the farmers to use only bio-pesticides instead of chemical pesticides.
- This programme will be implemented in IPM villages in clusters selected by the Agriculture Department.
- Under this programme demonstrations are proposed only for vegetable crops.
- Village campaigns will be organized in the selected villages to educate the farmer's regarding production of pesticide free vegetables, and its market potentials.
- The cost norms cover the cost of bio pesticides and fungicides.

I C. PROMOTION OF HI-TECH IRRIGATION (MICRO IRRIGATION-BY ENCOURAGING WOMEN FARMERS ALSO)

- About one fourth of vegetable demonstrations proposed in the project will be covered under micro irrigation with fertigation.
- This programme will be implemented in cluster villages. (for Vegetables)
- The provision includes the cost and installation of drip and fertigation equipments and accessories (head and field units)
- Depends on area, required exclusive agencies will be engaged for providing the end to end solutions and support to the farmers by following the World Bank procurement norms towards installation and maintaining the micro irrigation system in the vegetable fields.

JUSTIFICATION FOR THE INTERVENTIONS FINALIZED.

In the Villages under Gummidipoondi Sub basin farmers are cultivating Agriculture Crops mostly like Groundnut and 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 Chennai city.
2. **MICRO IRRIGATION:** Increase in irrigated area, increase in production and productivity, labour and power saving.

DETAILS OF CROP DIVERSIFICATION

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

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	21	20000	4.200

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				**10000**
8	***Bhendiupscaling**		4 ha	2500	**10000**
	Subsidy				**20000**

- EachBhendi 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	15	20000	3.000

BRINJAL: RS.20000 (COST BREAK UP)

S.No	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Brinjal Seedlings	No	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	30	20000	6.000

GREEN CHILLIES

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

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

TAPIOCA

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Tapioca	24.5	20000	4.900

TAPIOCA: RS.20000 (COST BREAK UP)

Sl. No.	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount Rs.)
1	Tapioca setts	No	1500	2.00	3000
2	Vermicompost	Kg	120	10.00	1200
3	Beauveriabassiana	Lit	1	400.00	400
4	Verticilliumleacani	Lit	1	400.00	400
5	Tricodermaviridii	Kg	0	0.00	0
6	DAP	Kg	150	22.00	3300
7	MOP	Kg	100	11.00	1100
8	Urea	Kg	100	6.00	600
	Total crop Demonstration				**10000**
9	***Tapioca** upscaling for another 4 ha		4 ha	2500	**10000**
	Subsidy				**20000**

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

BITTER GOURD

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Bitter gourd	3	20000	0.600

BITTER GOURD:RS.20000 (COST BREAK UP)

Sl. No.	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Seeds (Bitter gourd)	Kg	1.5	3000.00	4500
2	Vermicompost	Kg	80	10.00	800
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	***Bitter gourd** upscaling for another 4 ha		4 ha	2500	**10000**
	Subsidy				**20000**

- EachBitter gourds 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.

SNAKE GOURD

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Snake gourd	3	10000	0.600

SNAKE GOURD: RS.20000 (COST BREAK UP)

Sl. No.	Name of the Input	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Seeds (Bitter gourd)	Kg	1.5	3000.00	4500
2	Vermicompost	Kg	80	10.00	800
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 Demontration				**10000**

8	***Snake gourd** upscaling for another 4 ha		4 ha	2500	**10000**
	Subsidy				**20000**

- Each Snake gourds 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.

MORINGA:

S.No	Interventions	Total Area	Unit Cost Rs/ha	Budget Rs in lakhs
1	Moringa	56	20000	11.200

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**

- EachMoringa 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	111	1.13	126.000

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)

THIRUVALLUR (GUMMUDIPOONDI)

S. 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	8	8	5	21	1.600	1.600	1.000	4.200
2	Brinjal	0.2	5	5	5	15	1.000	1.000	1.000	3.000
3	Chillies	0.2	10	10	10	30	2.000	2.000	2.000	6.000
4	Tapioca	0.2	10.5	10.5	3.5	24.5	2.100	2.100	0.700	4.900
5	Bitter gourd	0.2	1	1	1	3	0.200	0.200	0.200	0.600
6	Snake gourd	0.2	1	1	1	3	0.200	0.200	0.200	0.600
7	Moringa	0.2	22	10	24	56	4.400	2.000	4.800	11.200
	Total vegetables		**57.5**	**45.5**	**49.5**	**152.5**	**11.5**	**9.1**	**9.9**	**30.5**
8	Bio Village	0.012	5	0	0	5	0.060	0.000	0.000	0.060
9	Micro irrigation ***	1.13	37	37	37	111	42.000	42.000	42.000	126.000
	Grand total		**99.5**	**82.5**	**86.5**	**268.5**	**53.56**	**51.1**	**51.9**	**156.56**

TAMIL NADU AGRICULTURAL UNIVERSITY

1. ACTIVITIES/ FIELD INTERVENTION

1.1. GREEN MANURE – RICE (AWDI)- PULSES

Use of water saving technologies *viz.*, Alternate Wetting and Drying (AWD) method of irrigation up to panicle initiation stage to increase Water Use Efficiency (WUE) and grain yield**.**

OUTCOME:

- The Alternate Wetting and Drying Irrigation (AWDI) will be an appropriate technology for water saving in rice. This technology saves up to 30 percent of irrigation water without any yield penalty
- 4-5 irrigations will be reduced under AWDI when compared to conventional method.

GREEN MANURE

Green manure application is a must to maintain the organic carbon content and humus in soil so that soil problems like salinity can be prevented; soil nutrient availability is enhanced; activity of beneficial macro and microbial organisms is favored. Hence this technology is to be popularized before raising rice crop to show because the farmers on the merits of maintaining the soil health for better crop bio-environment.

PULSES

Pulses cultivation followed by Rice cultivation is essential for crop rotation and to maintain soil fertility. It also promotes crop diversification and brings additional area under pulse cultivation. These rice fallow areas offer a huge potential niche for short season pulse crops. It enhances the soil fertility status for the next crops due to nitrogen fixation.

S. No	Technology	Area (ha)	Unit Cost (Rs./ ha)	Budget (Rs. in lakh)
1	Green manure – Rice (AWDI) -Pulses	60	11000	6.60

DETAILS OF UNIT COST SPLIT UP FOR GREEN MANURE

S. No	Particulars	Unit cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs./ha)
1	Green manure Seed cost-40kg/ha	50	2000	2000
	Total		2000	2000

DETAILS OF UNIT COST SPLIT UP FOR RICE

S. No.	Particular	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**

DETAILS OF UNIT COST SPLIT UP FOR AWDI

Sl. No.	Particular	Amount (Rs.)	TNAU Cost (Rs./ha)
1	Field water tubes 3 Nos./ha	700	700
	Total		**700**

DETAILS OF UNIT COST SPLIT UP FOR RICE FALLOW PULSES

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

1.2. INTRODUCTION OF DROUGHT RESISTANT/ FLOOD TOLERANT/ SALT TOLERANT RICE CULTIVARS

In Tiruvallur district, soil is having salinity problem, rice grown in these areas often experience poor yield. In order to overcome the salinity problem introduction of high yielding salinity tolerant rice variety is necessary.

S. No.	Technology	Area (ha)	Unit Cost (Rs./ ha)	Budget (Rs. In lakh)
1	Introduction of drought resistant/ Flood Tolerant/ Salt tolerant Rice Cultivars	80	6000	4.80

DROUGHT RESISTANT/ FLOOD TOLERANT/ SALT TOLERANT RICE CULTIVARS

S.No.	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs/ha)
1.	Seed cost - 10 Kg / ha	30	300	300
2.	Cost of fertilizers (150:50:50 Kg NPK / ha)			
	Urea - 300 Kg	6	1,800	1,800
	Muriate of Potash – 80 Kg	16	1,280	1,280
	$ZnSO_4$ 25 Kg /ha	40	1,000	1,000
3.	Bio fertilizer & Bio inoculants	-	1,170	1,170
4.	PPFM Spray (3 times/ha.) @500ml/ha	Rs.300/lt.	450	450
	Total		**6,000**	**6,000**

1.3. REVIVAL OF OIL SEED CULTIVATION THROUGH IPT

In Tiruvallur district, groundnut cultivated in large area. The yield of groundnut is minimum due to lack improved production technologies. In order to overcome the problem introduction of IPT technologies to groundnut for higher yield.

S. No	Technology	Area (ha)	Unit Cost (Rs./ ha)	Budget (Rs. In lakh)
1	Revival of Oil seed cultivation through IPT (Groundnut)	70	5000	3.50

REVIVAL OF OIL SEED CULTIVATION THROUGH IPT

S. No	Particulars	Unit Cost (Rs.)	Amount (Rs.)	TNAU Cost (Rs/ha)
1	Gypsum 400 Kg / Ha	5	2,000	2,000
2	Fertilizer cost	-	1,500	1,500
3	Pheromone trap and lure for *Spodopteralitura*	-	750	750
4	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	750
	Total		**5,000**	**5,000**

5.0. TOTAL BUDGET (YEAR WISE) FOR GUMMIDIPOONDI SUB BASIN

S. No.	Particulars	Unit Cost (Rs./ha)	I year		II year		Total	
			P	F	P	F	P	F
I	**A. Field intervention**							
1	GM-Rice(AWDI)-Pulses	11000	30	3.30	30	3.30	60	6.60
2	Introduction of drought resistant/ Flood Tolerant/ Salt tolerant Rice Cultivars	6000	40	2.40	40	2.40	80	4.80
3	Revival of Oil seed cultivation through IPT-Ground nut	5000	35	1.75	35	1.75	70	3.50
	Total (I)		**105**	**7.45**	**105**	**7.45**	**210**	**14.90**
II	**IEC & CB**							
	Capacity Building							
1	a.Training to farmers			0.30		0.30		0.60
2	b.Exposure Visit			0.15		0.15		0.30
	IEC							
3	a. Awareness creation			0.08		0.08		0.16
4	b. Documentation			0.12		0.12		0.24
5	c. IEC Equipments			0.70		0.00		0.70
6	d. Outsourcing of vehicles and TA			0.65		0.65		1.30
	Total (II)			**2.00**		**1.30**		**3.30**
III	**Management Cost**							
1	Outsourcing of Technical staff			**0.96**		**1.52**		2.48
	Total (I+II+III)		**105**	**10.41**	**105.00**	**10.27**	**210.00**	**20.68**

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 TN IAMP 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 equipment's 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.

(I). DISTRIBUTION OF SEEDS:

FOLLOWING IS THE BUSINESS SUMMARY OF SEED FACILITATION;

Sl. No.	Particular	Y1	Y2	Y3	Y4	Y5
1	No. of Members	500	525	550	575	600
	Area in Ha					
	Pulses	150	160	170	180	190
	Groundnut	200	210	220	230	240
	Seed Quantity (in KG)					
	Pulses-20Kgs/Ha	3000	3150	3308	3473	3647
	Groundnut-140Kgs/Ha	28000	29400	30870	32414	34034
2	**Seed Value (in Rs.)**					
	Pulses. 60/kg	180000	189000	198450	208373	218791
	Groundnut.80/kg	2240000	2352000	2469600	2593080	2722734
	TOTAL	**2420000**	**2541000**	**2668050**	**2801453**	**2941525**
3	**Seed Revenue (in Rs.)**					
	Pulses.65/kg	195000	204750	214988	225737	237024
	Groundnut.90/kg	2520000	2646000	2778300	2917215	3063076
	TOTAL	**2715000**	**2850750**	**2993288**	**3142952**	**3300099**
4	**Profit**					
	Pulses	15000	15750	16538	17364	18233
	Groundnut	280000	294000	308700	324135	340342
	TOTAL	**295000**	**309750**	**325238**	**341499**	**358574**

FOLLOWING IS THE BUSINESS SUMMARY OF FERTILIZER FACILITATION:

Sl. No.	Particular	Y1	Y2	Y3	Y4	Y5
1	Fertilizer Quantity (in KG)					
	DAP	31.5	33	35	36	38
	Urea	4.5	5	5	5	5
	MoP	18.0	19	20	21	22
2	Fertilizer purchase Value (in Rs.)					
	DAP	756000	793800	833490	875165	918923
	Urea	25169	26427	27749	29136	30593
	MoP	288000	302400	317520	333396	350066
	TOTAL	**1069169**	**1122627**	**1178759**	**1237697**	**1299582**
3	Fertilizer sale Revenue (in Rs.)					
	DAP	778680	817614	858495	901419	946490
	Urea	25914	27210	28570	29999	31499
	MoP	296640	311472	327046	343398	360568
	TOTAL	**1101234**	**1156296**	**1214110**	**1274816**	**1338557**
4	Fertilizer Profit					
	DAP	22680	23814	25005	26255	27568
	Urea	745	782	821	862	906
	MoP	8640	9072	9526	10002	10502
	TOTAL	**32065**		**35352**	**37119**	**38975**

(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

Sl.No	Particulars	Y1	Y2	Y3	Y4	Y5
1	No. of Members	500	525	550	575	600
	Area in Ha					
	Pulses	150	160	170	180	190
	Groundnut	200	210	220	230	240
	Production Productivity. Mt/Ha					
	Pulses-0.6	90	95	99	104	109
	Groundnut- Kernal. 1.977	395.4	415	436	458	481
	20% of produce					
	Pulses.	18	19	20	21	22
	Groundnut.	79	83	87	91	96
	TOTAL		**102**	**107**	**112**	**118**
2	**Purchase price**					
	Pulses.54000/Mt	972000	1020600	1071630	1125212	1181472
	Groundnut.100000/Mt	7900000	8295000	8739750	9145238	9602499
	TOTAL	**8872000**	**9315600**	**9781380**	**10270449**	**10783971**
	20% of purchase value					
	Pulses	194400	204120	214326	225042	236294
	Groundnut	1580000	1659000	1741950	1829048	1920500
	TOTAL	**1774400**	**1863120**	**1956276**	**2054090**	**2156794**
	Selling value					
	Pulses.58000/Mt	1044000	1096200	1151010	1208561	1268989
	Groundnut. 105000	8295000	8709750	9145238	9602499	10082624
	Total	9339000	9805950	102962248	10811060	11351613
	Profit					
	Pulses	72000	75600	79380	83349	87516
	Groundnut	395000	414750	435488	457262	480125
	Total	467000	490350	514868	540611	567641

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 MACHINE

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 Thrasher	1	125000	125000	200	250/hr*8 hrs	400000
2	Paddy Combined Harvester	1	2000000	2000000	200	1100/hr*8	1760000
3	Weighing machine 100 Kg capacity	2	15000	30000			
4	Gunny bag stitching	2	5000	10000			
5	Groundnut Decardicator	1	700000	700000	150	200/ hr*8	240000
	TOTAL			**2865000**			**2400000**

MAN POWER REQUIRMENT

Sl.No	Man Power	Total requirement	Monthly salary	Annual financial requirement
1	Supervisor cum Store keeper -For value addition & Farm Machinieries	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: FPC-1

Sl.No	Purpose	Project Cost	TNIAMP Grant	FPC Share/Individual share	Profit
I	**Productive Investment for New FPC (80:20)**				
1	Seed supply	2420000			295000
2	Fertilizer supply	1069169			32065
3	Produce Aggregation (20% of 8523000)	1774400			467000
4	FCSC	1068000			
5	**Production of Certified seeds**	**112150**			**120000**
	TOTAL	**6443719**			**914065**
	33% amount of Sl.No.1,2,4 &5 +3	**2420000+ 1069169+ 1068000+ 112150= 4669319/33= 1556439+ 1774400= 3330839**	**2000000**	**1330839**	
II	**Business Expansion grant for new FPC (75:25)**		**3000000**		
	Custom Hiring machineries	2865000	-		2400000
	Value added Pulses	185000	-		800000
	Man power	961000			
	TOTAL	**4011000**	**3000000**	**1011000**	**3200000**
	Net profit				4114065

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

Agriculture 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.

ABSTRACT FOR INTERVENTIONS: TIRUVALLUR DISTRICT SOUTH & NORTH FPCs

Sl. No	Interventions	Phy	Fin (Rs. in L.)
I	**Improving farmer Access to Markets**	2	134.560
II	**Supporting Existing FPO**	2	84.000
	e-Negotiable warehouse model	1	100.000
II	**Promoting Agri Enterprises**		
a	Interface workshop	1	3.000
b.	Facilitating workshop	2	1.500
c.	Training for entrepreneurship	1	1.000
d.	Business Plan development routed through ABPF	10	10.000
e.	Credit facilitation and business execution support	10	10.000
f.	Matching grant for women individual agri-entrepreneur	2	10.000
	TOTAL		**354.06**

BUDGET OUTLAY FOR 3 YEARS – TIRUVALLUR DISTRICT -FPC SOUTH & NORTH

S. No	Name of the Interventions	Gummidipoondi- Tiruvallur						Total Fin (L.Rs.)
		2020-21		2021-22		2022-23		
		Phy (nos)	Fin L.Rs.)	Phy (nos)	Fin L.Rs.)	Phy (nos)	Fin L.Rs.)	
I	**Improving Farmer Access to Markets**							
A	**Support for 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)		3.840		11.880		11.880	27.600
2	1 MTS (Mobilisation Training Specialist) and 2 FOs (Field Organizers) for first year only		9.360					9.360
3	FPCs formation and registration (Awareness Campaign, meetings with CGs, Registration Cost)		7.600					7.600
4	Start up grant for administrative and contingent expenses		-		10.000		10.000	20.000
	TOTAL	2						**64.560**
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				20.000		20.000	40.000
6	Business expansion Matching Grant : (75% Grant - 25 % Farmer contribution)				15.000		15.000	30.000
	Sub-total	**2**	**20.8**		**56.880**		**56.880**	**134.650**
B	**Supporting Existing Farmer Producer Companies**							
	1. Consulting support for Business Expansion (2 years)	2	12.000		12.000			24.000
	2. Business expansion Matching grant (75% Grant - 25 % Farmer contribution)		30.000		30.000			60.000
	Sub Total	**2**	**42.000**		**42.000**			**84.000**
C.	**e-Negotiable Warehouse Receipt Financing**							
	1. Pilot Investment in 4 selected godowns	1	100.00	0	0.000	0	1	100.00
II	**Promoting Agri Enterprises**							
A	**Facilitating PPP Mechanism**							
	Interface Workshops/ Seminars/ Conferences at State and District level	1	3.000	0	0.000	0	0.000	3.000
B.	**Supporting Agro-enterprenuers to provide services to farmers**							
1	Facilitation workshop (50participants per workshop)	2	1.500	0	0.000	0	0.000	1.500
2	Training for Entreprenuership (30 participants/batch) for 2 days	1	1.000	0	0.000	0	0.000	1.000
3	Business Plan development routed through ABPF	10	10.000	0	0.000	0	0.000	10.000
4	Credit facilitation and business execution support through service providers routed through ABPF	10		0	10.000	0	0.000	10.000
5	Matching grant for women individual agri-entrepreneur as back ended subsidy through bank on pilot basis (Agro Processing, Value Addition)	2	10.000	0	0.000	0	0.000	10.000
	Sub-total	**-**	**25.500**	**0.000**	**10.000**	**-**	**0.000**	**35.500**
	Grand Total (I+II)	**-**	**188.300**	**-**	**108.880**	**-**	**56.880**	**354.060**

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 run off 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.

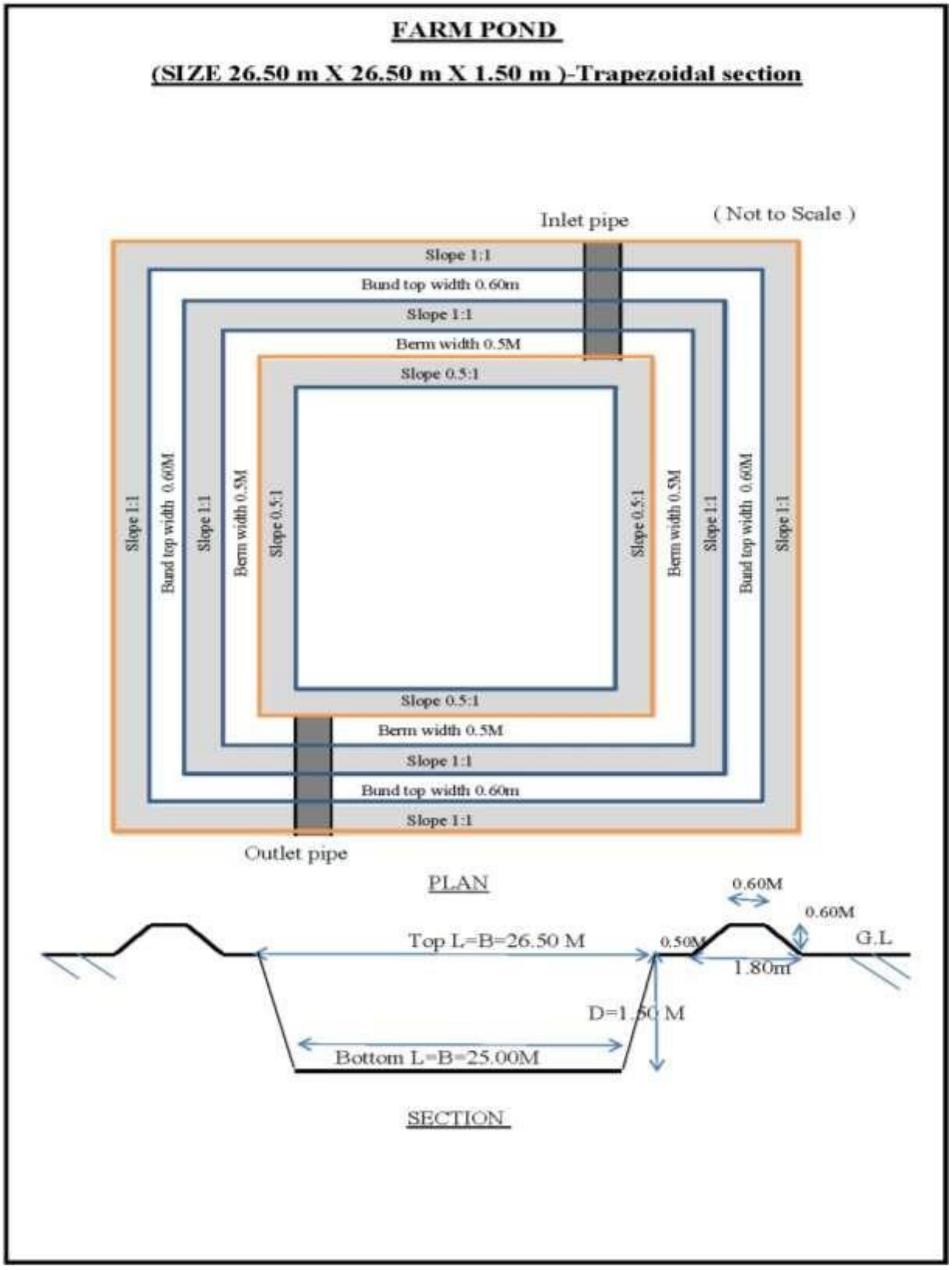
D) The total cost for the above mentioned two models of Farm ponds, work out to Rs. 1,00,000/- per Farm pond , i.e., Rs.75,000/- per Farm pond for works (project cost) and Rs. 25,000/- per Farm pond as Farmer's contribution for disposal/Transportation of excess soil, for all category of farmers at their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

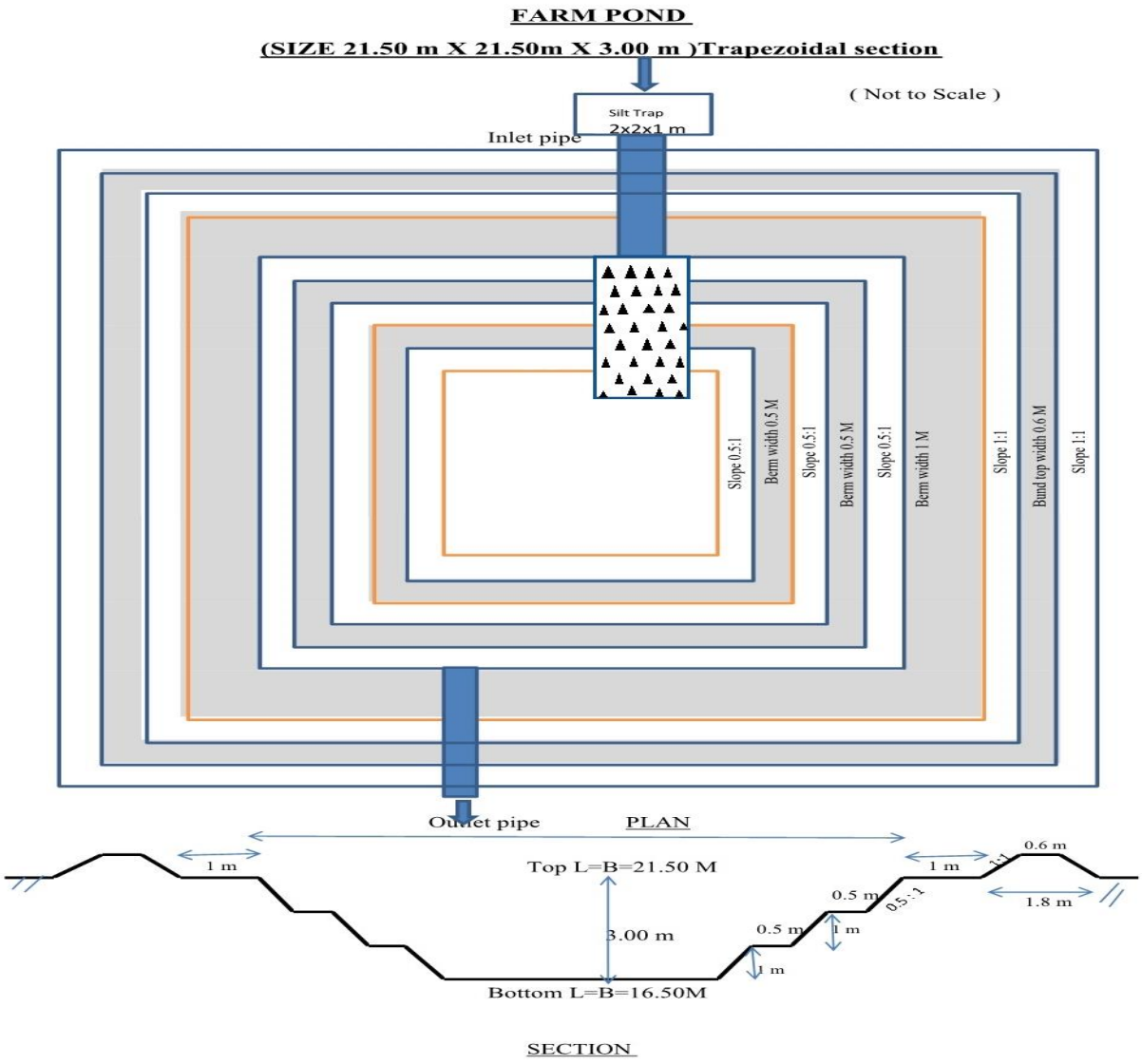
BENEFITS OF CREATION OF FARM PONDS

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.





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 Gummidipoondi sub basin

S. No.	Component	Total			
		Cluster I	Cluster II	Physical in No.	Financial in Rs. Lakh
1	Farm Pond	10	12	22	16.50
	Grand Total	**10**	**12**	**22**	**16.50**

DEPARTMENT OF FISHERIES

OBJECTIVES

The tank rehabilitation activities under TN IAMP 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 tanks and thus promoting aquaculture. The interventions are planned with the following objectives:-

- Increasing the water spread area under aquaculture
- Introducing Improved Production Models using fast growing fish varieties &Increasing the overall inland fish production

INTERVENTIONS PROPOSED IN GUMMIDIPOONDISUB BASIN IN TIRUVALLURDISTRICT.

1.FISH CULTURE IN SHORT SEASONAL IRRIGATION TANKS (@ 2000 CARP 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 Gummidipoondi Sub-basin by direct stocking in 100 ha. EWSA in Tiruvallur district.

(ii) COST (PHYSICAL & FINANCIAL)

PHYSICAL

(i)	Type of Aquaculture	Stock, Manage and Exploit.
(ii)	Proposed Effective Water Spread Area	**100ha.**
(iii)	Stocking Density	2000 nos. / ha. of EWSA
(iv)	Total Seed Requirement	2.00 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 (100 ha) x Rs.0.04 lakh)*	**4.00**

(III) AREA OF IMPLEMENTATION

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

Sl. No	Unique ID	Tank/Reservoir Name	Village	District	WSA (ha.)	EWSA (ha.)
1	TNCH-01-T0003	Poovalai Large Tank	Poovalai	Thiruvallur	33.00	15.00
2	TNCH-01-T0007	Edur Tank	Edur	Thiruvallur	42.00	20.00
3	TNCH-01-T0009	Elavur Large Tank	Elavur	Thiruvallur	44.00	20.00
4	TNCH-01-T0026	Narasingapuram Tank	Narasingapuram	Thiruvallur	29.00	10.00
5	TNCH-01-T0025	Peria Natham Thattan Tank	PeriaNatham	Thiruvallur	56.00	20.00
6	TNCH-01-T0004	Elavoor Hissa Kattu Thangal	Elavur	Thiruvallur	38.00	15.00

(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 (0.1 HA.)

(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.30,000/. It is proposed to promote aqua farming in 5 farm ponds in Tiruvallur district.

(ii) COST (PHYSICAL & FINANCIAL)

PHYSICAL

(i)	No. of Units	**5 Units**
(ii)	Total Area to be developed for Aquaculture	0.5ha.

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(5) x Rs.0.30 lakh)*	**1.50**

(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)
		Tiruvallur	
1.	Fish culture in Short seasonal irrigation tanks	100 ha	4.00
2.	Aquaculture in Farm ponds	5 Units	1.50
		TOTAL	**5.50**

ANIMAL HUSBANDRY DEPARTMENT

I. INTRODUCTION

Livestock production, in particular dairy sector contributes significantly to the livelihood sand income generation for million so small and marginal farming communities in the subbasin by way of producing high value products. Dairy sector provide employment Opportunity through out its value chain starting from inputs, service delivery, aggregation, processing and marketing. Dairy production is highly gender and nutrition sensitive as two third so 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 over all socio-economic nutritional status of small holder farmers in the project sub-basin.

II. LIVESTOCK SECTOR PROFILE OF THE SUB BASIN

Total livestock in the sub basin area: 2392 cross bred cattle, 1332 Non-descript cattle, 2883 buffaloes, 5926 sheep and 5392 goats. Around 50% of the cattle and buffalo population constitutes breedable population. Presence of 36% 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: Cross bred cow-4.0 lit, Non-descript cow–2.0lit, Buffalo 3.5 lit.T he sub basin baseline details is furnished in Annexure II. Fodder requirement in the sub-basin is met through production of cropped fodder, grass and weeds from common land sand 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 5 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 subbasin is being carried out both by the cooperative and private airy processors. 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.

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 1DIG 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 meeting every year.

Besides, continuous interaction will be insured 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 off armers 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 the farmers in their village. It is expected that atleast 100 farmers in total will acquire and adopt improved animal husbandry practices through the project intervention.

TABLE1-COSTBREAKUPFORDIGORGANIZATION

Sl.No	Activity description	Amount(Rs)
	Expenditure per group	
1	Group organization meeting (3meetings@ 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 insufficient 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.

TABLE2-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 around30%. The project aim store duce 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 form astitis management demo/DIG/year	23400

2.C. INFERTILITY MANAGEMENT PROGRAMS

Around 30% of the breed able 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 aim store duce the level to 15%. The expected reduction in days in inter-calving period due to correction of in fertility 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, there by bringing better economic returns to the farmers and the estimated cost saving is around Rs.4,000 per animal.

TABLE 4-COST BREAKUPFORONEINFERTILITYMANAGEMENTCAMPAIGN

Sl.No	Activity description	Amount (Rs)
1	Number of milking animal stargeted per DIG	50
2	Cost for one infertility campaign (including3followupvisits)	14000
3	Number of animal 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 short fall need to be addressed by increasing the fodder bio mass by providing improved varieties and technology dissemination through Dairy Interest Groups. Fore very DIG, AHD proposes under take fodder development as per the cropping pattern with a combination of seasonal fodder crops.

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 around2% in the project villages.

Table 5-Cost breakup for Fodder Development Demonstrations

S.No.	Fodder crop variety	Cost per Hectare (In Rs.)
1.	Fodder Cholam seeds	2500
2.	Cowpea seeds	4000
3.	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 institution to carry out the artificial insemination and they find great difficulties in souring the manpower 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 doorsteps 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 (AIgun,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 atrates 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 breed able population, and this project aims to improve the AI coverage by an additional 15%.Over a period of three years, TNIAMP will per for man additional 1000 artificial insemination per year on mobile in this sub basin. On a pilot basis, the project will validate the result so 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 per forming 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 off spring is less than 20%. All the sea my 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. Genomics election 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 per form 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 (1straw)	24
3	Gloves (1glove)	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
8	Cost of one Sexed semen straw (including GnRH)	1500
9	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- quipped infrastructure is the key to provide quality veterinary services and breeding coverage to the live stock in the subbasin. 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 subbasin 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 and LN2 transfer devise for institutions functioning in the subbasin which do not have it/or not in working condition at present.

Table 7– COST BREAK UP FOR EQUIPMENT

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

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

Diagnosing the problems and diseases at a nearly stage will go a long way in not only improving the health status of livestock in the subbasin 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 it's at a cost of Rs.50,000 per year and make it available to the veterinary institutions and diagnostic centres providing services in the subbasin.

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 hardand software. At present the facilities available at the subbasin 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 Headquarters. 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. Likewise to maintain records, duplicate vouchers and to carryout 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 specific field 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 earmarked.

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 offices 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 subbasin, which will help to improve the profitability. Though, veterinarians have an overall knowledge on disease diagnosis, new andre-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	0.285
2	Demos through Dairy Interest Groups	12.789
3	Strengthening mobile Artificial Insemination network	7.287
4	Institutional Strengthening	4.440
5	Documentation	0.462
6	Capacity Building	0.678
7	Environmental and Social Management	0.600
	Total	**27.241**

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

DETAILED PROJECT REPORT FOR GUMMIDIPOONDI SUB BASIN – PHASE III

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 breed able 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 three fold 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 Gummidipoondi 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 GUMMIDIPOONDI SUB BASIN

The Gummidipoondi 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 GUMMIDIPOONDI 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

GENERAL 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
Implementa-tion	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 given below:

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.

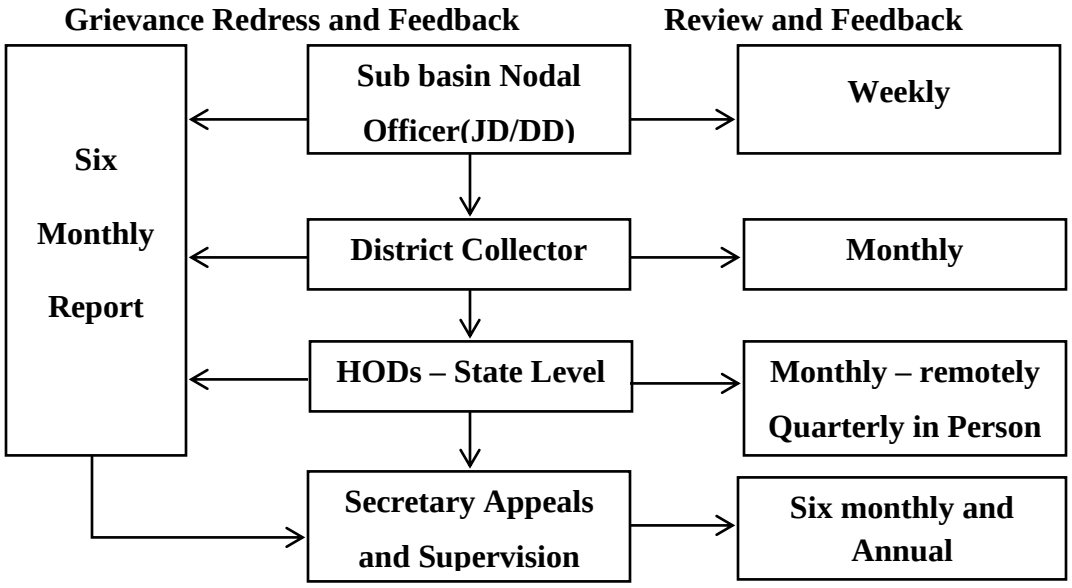
❖ The grievance redress process will be a continuous, transparent and participatory

- ❖ 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 theSecretary.
- ❖ 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 if such 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 andaccountability;
- The GRC will communicate its decisions/redress in writing to the complainants within 4 weeks depending on the nature ofcomplaints.

COMPLAINTS/GRIEVANCES REGISTER

- (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
- 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)

Walkthrough surveys were conducted through villages situated in Gummidipoondi sub basin during the month of February 2019. Officials from 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 324 public people from farming and allied sector participated and shared their views and expectations. Gummidipoondi Sub Basin were selected and proposed for rehabilitation under TNIAMP phase II. Interaction with farmers was made for improving agriculture and allied activities.

It was inferred that the Gummidipoondi sub basin constitutes Red soil of red sandy/clay loam type across the sub basin. Due to the soil suitability, Paddy is widely cultivated along the sub basin. Perennial crops such as Mango has a good market in nearby urban cities. Mango, Guava, Acid lime was also other perennial crops cultivated in this sub basin. Vegetable crops such as Brinjal, Bhendi 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.

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.

Details of walk through survey undertaken in the sub basin with date and photo etc.

Sl.No	Name of the Village	Date
1	Amarambedu Tank	08-06-2020
2	Amirthamangalam tank	08-06-2020
3	Aramani Tank	08-06-2020
4	BudurAnicutThangal	08-06-2020
5	Chinna Bommanjikulam Tank	08-06-2020
6	Kanalur Pedu Eri	08-06-2020
7	Periya Bommanjikulam Tank	08-06-2020
8	Pondavakkam PuduTank	08-06-2020
9	Sedilpakkam Tank	08-06-2020
10	Edur Tank	08-06-2020
11	Thervoy Kandigai Chitteri	08-06-2020
12	Vanamalli Tank	08-06-2020
13	Elavoor Hissa KattuThangal	09-06-2020
14	Elavoor Katteri Tank	09-06-2020
15	Elavur Large Tank	09-06-2020
16	Eguvarpalayam Odaperi	09-06-2020
17	Narasingapuram Tank	09-06-2020
18	Peria NathamThattan Tank	09-06-2020
19	Melapakkam Pettai Cheruvu	09-06-2020
20	Poovalai Large Tank	09-06-2020
21	Thervali Thamarai Tank	09-06-2020
22	Amarambedu Parikkeri	09-06-2020

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**