

I AM WARM PROJECT

PALAR SUB BASIN

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EXECUTIVE SUMMARY

Executive Summary

Introduction

The Parambikulam Aliyar Project is an interstate Water Resources Development project carried out jointly by the states of Tamilnadu and Kerala. The objective of the development is harnessing the waters of the Bharathapuzha, the Chalakudi and the Periyar basins for irrigation and power production in both the states. It accomplishes the diversion and integration of eight west flowing rivers, six in the Anaimalai hills and two in the plains for the benefit of the drought prone areas in the Coimbatore and Erode districts of Tamilnadu state and Palghat District of Kerala State.

Storage and diversion works on the Eight Rivers with interconnecting tunnels have been constructed to divert the waters impounded to the plains of the Coimbatore and Erode districts of Tamilnadu state and Chittur area of the Kerala State. The Reservoirs lie at various elevations ranging between EL +3800 feet and +1050 feet and this difference in elevations has made it possible for generation of hydro-power.

RESERVOIRS

The Components of the system comprises one diversion weir, seven storage reservoirs , conveyance system, interconnecting tunnels and wide network of canal distribution system.

The Main components of the system are

- 1.Upper Nirar weir
- 2.Lower Nirar Dam
- 3.Sholayar Reservoir
- 4.Parambikulam Reservoir
- 5.Thunacadavu Reservoir
- 6.Peruvaripallam Reservoir
- 7.Aliyar Reservoir
- 8.Thiurmoorthy Reservoir

SUB BASIN DETAILS

Parambikulam Aliyar Basin comprises the following three sub basins:

1. Sholayar Sub basin
2. Aliyar sub basin
3. Palar Sub basin

In the above, Sholayar sub basin has no direct ayacut and an extent of 20536 ha is irrigated from the Aliyar Reservoir in Aliyar sub basin and 1,53,965 ha is irrigated from Thirumoorthy Reservoir in Palar sub basin.

Aliyar and Palar are the two sub basins in the Parambikulam Aliyar Project selected for implementing the World Bank aided IAM WARM Project.

PALAR SUB BASIN

Palar River is a sub tributary of Aliyar River which joins Bharathapuzha River and empties in to Arabian sea. Thirumoorthy reservoir is one among the main component in PAP and formed in the plains across the river with a gross storage capacity of 1935 Mcft. Apart from its own catchment, Water can be diverted to this reservoir through Contour Canal from the Parambikulam group of reservoirs.

The Palar sub basin consists of the following canal systems.

1. High Level Canal System
2. Udumalpet Canal System
3. Parambikulam Main Canal System
4. Thali Channel system

The command area of the old system is 1,247. Which is of double crop lands whereas the total new command area under the above three canals are 1,52,718 which is of single crop. The entire new ayacut is divided into Four zones and each zone gets water once in two years under alternate sluice irrigation pattern.

THIRUMOORTHY RESERVOIR

The Palar River has its source in the Anamalai Hills. It flows in a north - westerly direction for about 20 miles. It is joined in Aliyar River on its left on its left.

A Reservoir has been formed by construction of a dam across the river Palar and it has a gross capacity of 1935 Mcft. Two irrigation canals i.e., High Level and Common Canals take off from this reservoir. The catchment area at the Thirumoorthy Dam site is 31 Sq.Miles.

CANALS IN THE SUB BASIN

The Palar sub basin consists of the following canal systems.

1. High Level Canal System
2. Udumalpet Canal System
3. Parambikulam Main Canal System
4. Dhali Channel system

AYACUT DETAILS:

Sl. No	Name of the Canal	ZONES				Total in Ha.
		I	II	III	IV	
(a) NEW COMMAND - ZONE WISE						
1	Parambikulam Main Canal	32040	31970	32166	31914	128115
2	Udumalpet Canal	5981	5920	5783	5916	23600
3	High Level Canal	246	249	254	254	1003
(b) OLD COMMAND						
1	Dhali Channel System	-	-	-	-	1247
	Total					153965

Though the total registered ayacut under PWD control is 153965 the average cultivation is only 138797 leaving a gap of 15197 ha. which is approx 9.8% of designed irrigation extent.

Soil type and Crops grown.

The soil types met with are combination of Inceptisol Alfisol and Entisol.

Crops grown in this sub basin area are Coconut, Sugarcane, Banana, Sapota, Mango, Fodder, besides annual crops, such as Paddy, Groundnut, Cotton, Vegetables, Pulses, Fodder, Tomato, Gourds, Maize as I crop, and Paddy and Ground nut as II crop.

WATER BALANCE.

TOTAL WATER POTENTIAL

Surface Water Potential	-	293.00 Mcm
Ground Water Potential	-	242.00 Mcm
Total	-	535.00Mcm

TOTAL WATER DEMAND

Domestic	-	16.42 Mcm
Live Stock	-	13.77 Mcm
Agricultural	-	743.51 Mcm
Total	-	773.70 Mcm

Deficit - 238.70 Mcm

In spite of the deficit scenario, the reasons for substantial gap are.

- (i) No technical attention is paid to the application of water to the fields.
- (ii) Most of the lands are in fragmented condition, consequently, lot of loss of water in field to field irrigation.
- (iii) Farmers are not aware of modern techniques, and hybrid – varieties.
- (iv) Lack of efficient farm management.
- (v) Encroachment on canal banks, and consequently, water is allowed to spread through man made damages prevent inundation to in the upper reaches, (i.e.) the canal sections need redesigning.
- (vi) The cross masonry works need repairs.

Stake holders Meeting

In order to improve the system efficiency and productivity of irrigated agriculture, a multi disciplinary approach involving the following departments is attempted.

- (i) Agriculture
- (ii) Agriculture Engineering
- (iii) Horticulture
- (iv) Agricultural Marketing
- (v) Tamil Nadu Agricultural University
- (vi) Fisheries
- (vii) Animal Husbandry.

WRO officials with the officials of the above line departments, held meetings with the stakeholders in the sub basin and also had joint walk through survey and the following table shows the constraints as observed by them and countermeasures suggested by the departments.

OVERALL PICTURE

Components	Constraints	Counter Measures
<u>WATER RESOURCES ORGANISATION</u>	Deterioration of Parambikulam Main Canal arterial conveyor part	Proposed to rehabilitate the Bed and side Lining, Tunnels , approach roads.
	Damages in Canal networks	Proposed to rehabilitate the damaged portions by lining the bed and sides of the main canal, branch canal and distributories upto 25 acres limit
	Dilapidated conditions of the cross masonry structures	Proposed to rehabilitate the cross masonry structures
	Deficiencies in regulating arrangements in the canal sluices	Proposed to replace the wornout wooden paddle shutters by screw gearing steel shutters 2) Repairs to sluices
	Poor condition of the canal bank / inspection track	Proposed to strengthening and standardizing the canal banks
	Lack of modern flow monitoring and controlling devices	Proposed to install Telemetry, SCADA and measurement devices in the reservoir and canal network.
	Over exploitation of Ground Water	Construction of artificial recharging structures like checkdams etc.,
	Lack of environmental awareness	Proposed to create awareness and implementing environmental projects

	Encroachment in the canal area	Demarcation of canal boundary
<u>AGRICULTURAL MARKETING</u>	Production – Glut / Shortage	Linkages with traders on contract farming and on line trading. Off season varieties to be developed by TNAU and cultivated, marketed by FA's. In case of perishables, agro-processing opportunities to be explored and required facility to be developed.
	Lack of available markets	No such difficulty. For speeding of marketing, formation of marketing sub groups at farmers association and export potential may be tapped.
	Poor post harvest practice	Rural godowns and thrashing floors to be constructed at selected sub groups and Tarpaulins to be distributed. On test basis ready to cook vegetables may either be processed by Farmers' Interest Groups be branded or allowing (FIG's) and the same may be sold through – self help group to enter into their venture of value addition. On realizing the potentials the same will be expanded on large scale through big departmental stores or through vegetable depots at cities. Training with regard to post harvest technology may be imparted to farmers.(TNAU centralized component)
	No collective action	Collective bargaining may be imparted through establishment of FA's / organisation empowering them to establish a retail unit in farmers market operated in nearby town.
	Lack of market	Demand and price forecasting

	information / providing multiple market information	cell of TNAU will provide information to the target groups in liason with personal of Dept. of Agrl. Marketing & Agri. Business on demanding markets, time of sale expected, price advantage etc. It could facilitate the farmers to take decisions on crop diversification on either increasing or decreasing the area under crops.
		The cell positioned in sub basin level will coordinate with the domestic and export market intelligence cell (DEMIC) of TNAU, Coimbatore and periodically will develop the above information to the functionaries at the sub basin level.
	Diversification / Future vision proposed	Farmers interest group will be formed and motivated to do grading standardization and branding of farm produce.
	Transport / Collective Transport	Need based transport arrangement will be provided by out sourcing.
	Processing and Agro Processing	One day interface workshop or stakeholders meet will be arranged with traders, entrepreneurs of CII and selected sub-basin farmers interest group.
	New practice in quality control	The quality norms enunciated in AACCP/Phytosanitary regulation for promotion of exportable produce. Organic certification will also be established to promote organic farming in a highway.
<u>ANIMAL HUSBANDRY DEPARTMENT</u>	Remote villages and villages situated far away from the Government Veterinary Institutions are not getting sufficient	The establishment of sub basin veterinary unit will ensure delivery of veterinary services at the farmer's door steps or nearest to the farmer's in

	veterinary services like veterinary health cover and artificial insemination facilities	remote villages and unserved villages of the sub basin area. Provision of veterinary health cover and artificial insemination are the main works at the farmer's door steps. The unemployed veterinary graduate will be given an entrepreneurship training to establish a Sub basin veterinary unit in the sub basin area and disseminate best animal husbandry practices for his earnings and to upgrade animal husbandry practices of farmers in the sub basin area.
	Lack of upgraded infrastructure at the Government Institutions leading to constraints in delivery of quality veterinary services.	The Government Veterinary Institutions in the sub basin will be provided with additional essential equipments to deliver quality veterinary services in the sub basin. In addition one veterinary dispensary will be upgraded as referral institution for quick and accurate diagnosis of diseases and help in timely treatment thereby preventing economic loss to the farmers.
	There is a wide gap between the requirement and availability of green fodder needed for the livestock in the sub basin.	To reduce the gap between the requirement and availability of green fodder in the sub basin, it is proposed to cultivate CO3 fodder in 150 hectares of private lands, as a part of cropping plan.
	Main problem affecting the fertility in cross bred cattle is infertility leading to loss of milk production days, ultimately leading to loss to the farmers.	To overcome the infertility problems, infertility cum total health cover camps are proposed. The animals having infertility problems will be identified and treated. In addition, mineral mixture supplement will be given to rectify the defects.
	Lack of adequate know-how about the livestock	The farmers in the sub basin will be given on best livestock

	management practices like feeding, breeding, health care and deworming activities.	management practices in livestock breeding activities like signs of oestrus, correct time of artificial insemination, deworming, feeding schedule and other health care measures. In addition, IEC materials will be distributed to farmers in the sub basin. More over hoardings and wall paintings depicting signs of commonly affecting diseases will be erected in places where people congregate in large numbers. Apart from this, quarterly night meetings will be conducted to disseminate information to the farmers in the sub basin.
	Lack of update knowledge and skills of the veterinarians and para-veterinarians in the project area.	Veterinarians in the project area will be given trainers training at Veterinary Colleges to update and refresh their skills and knowledge. They will inturn train the para-veterinarians.
<u>HORTICULTURE DEPARTMENT</u>	1) Identifying suitable crop / varieties according to agro climatic suit abilities and market limitations	Tissue Culture Banana is a new introduction for the sub-basin with fertigation which has a potential yield and income to the farmers
	2) Increased requirement / production of planting material	Monopoly in supply of Tissue Culture plants is from Spic Bio-Tech which is 50 km. from the basin. Plants can also be obtained from M/s. Sunglow Bio-Tech which subsidized through rehabilitation of Tissue Culture Lab under National Horticulture Mission.
	3) Cost of Tissue Culture plantlets are quite high Much can should be given in the early stage till establishment	Increased income of 60% uniformity in bearing Earliness in crop duration Disease free plantlets are produced Responds well to fertigation
	4) Timely supply of seeds	Seeds will be procured from private agencies and supplied in time by the Department of Horticulture. The Kishi Vigyan Kendra attached to Tamil Nadu Agricultural University will also

		ensure supply of good quality seeds.
	5) Improving the water the efficacy to cater to the needs of the additional area.	Drip irrigation can be followed for fruit crops and vegetable crops. Micro sprinklers can be used for onion.
	6) Educating farmers on Good Agricultural Practices	<ul style="list-style-type: none"> • The water user Association can have linkage with the Government officials and Tamil Nadu Agricultural University. • Trainings can be organized for the farmers. • Handouts, folders and Booklet can be printed for the benefit of the farmers. • Promotion of INM/IPM concept by distributing organic manner bio pesticides and Bio fertilizers. It is also implemented under National Horticulture Mission scheme.
	7) Labour demand	Family labour can be utilized.
	8) Credit facilities	Water users Association can be linked to Co-operative banks and Nationalised banks
	9) Additional manpower	For effective implementation and proper monitoring and evaluation a Technical input provider can be appointed for every 200 Ha. Of the extended area.
	10) Protected cultivation – Training to the farmers	New introduction to the basin for increase income.
<u>AGRICULTURE DEPARTMENT</u>	Problem soil	There is no problem soil area. Hence no reclamation is necessary.
	Adverse climatic condition/Drought	On perusing the past rainfall record, drought occurs once in 10 years. Drought tolerant varieties, agronomic practices will be introduced.
	Quality of seeds (Low	High Yielding certified seeds of

	yielding traditional varieties still prevalent)	crops and quality planting materials will be supplied to the farmers through Agrl.Extension Centres, TNAU etc. Low yielding local varieties will be replaced with high yielding varieties during the project period.
	Limited availability and distribution of certified seed from Government source/private and High cost of hybrid seeds	Certified seeds are stocked and distributed in Agricultural Extension Centres as per the SRR prescribed by the Agriculture Department. The private Hybrid seeds costs more and can be utilized. Supply of seeds by NSC and other private sources will also be arranged.
	Improper Irrigation practices (Flood Irrigation)	SRI Technique in paddy crop will be popularized by laying demonstration by TNAU. Drip and sprinkler irrigation is going to be introduced by the Agricultural Engineering Department for all the crops.
	Inadequate extension services	Departmental Extension Workers in all levels are limited in the sub basin. Government extension service is main source. Private extension services like TNAU, Agriculture clinics and Kissan call center can be used.
	Risk aversion	Only a few farmers have known the risk aversion. Many farmers has no idea about this. Farmers will be educated through trainings, and Demonstrations under Centrally Sponsored Schemes Training will impart all improved package of practices to the farmers and demonstrations will act as teaching floor for all farmers.
	Limited Processing Units.	Based on the necessity and demands of the farmers, required units will be set up

		through private entrepreneurs.
	Availability of labour	To overcome the existing labour problem, required from mechanization like Drips and Fertigation units, can be introduced for cotton sugarcane and all farm implements and equipments can be distributed through subsidy schemes to avail labour unavailability during peak season.
	Adoption of traditional method of cultivation	Introducing new planting method for sugarcane like pit method and paired two method instead of mound planting, Introducing SIR technique for paddy, Bund/inter/mixed cropping for pulses, paired row planting for cotton will be introduced.

Details of Activities of each Department.

WRO

Approach: to rehabilitate the irrigation system made be as below:

1. Thematic Maps on land use, soils, crops, water bodies, and other Agriculture, and demographic attributes are prepared by IWS.
2. The crop water requirements for the crops without project and for the crops with the project are prepared by IWS, with the crops proposed by Agriculture, Horticulture and Agricultural Marketing Department.
3. The Adequacy of the canal system, feeder channels to Tanks , distribution system etc, have been checked by the WRO(both regional and Plan Formulation wing) and the following packages are proposed accordingly.

Sl. No.	Name of Work	Estimate Amount Rs. in Lakhs
	CONTOUR CANAL	
1.	Rehabilitation of leftout reaches of contour canal from LS.30.400 km to 49.300 km	450.00
	HIGH LEVEL CANAL	
1	Rehabilitation of left out reaches in High level canal	111.00
	UDUMALPET CANAL	
1	Rehabilitation of left out reaches in Udumalpet main canal from LS. 0/0 km to tail end.	333.00
2	Rehabilitation of left out reaches in Ponnapuram branch canal and its distys taking of at LS 35.200 km of Udumalpet canal.	549.00
3	Rehabilitation of left out reaches distys of Udumalpet main canal between reach from 0/0 km to 17.400 km.	254.00
4	Rehabilitation of left out reaches distys of Udumalpet main canal between reach from 17/400 km to 38.200 km.	490.00
	PARAMBIKULAM MAIN CANAL	
1	Rehabilitation of left out reaches in Parambikulam main canal from L.S.1.200 to 12.000 km	340.00
2	Rehabilitation of left out reaches in Parambikulam main canal from L.S.12.000 to 22.600 km	180.00
3	Rehabilitation of left out reaches in Parambikulam main canal from L.S.22.600 to 28.600 km	140.00
4	Rehabilitation of left out reaches in Parambikulam main canal from L.S.28.600 to 39.500 km	148.00
5	Rehabilitation of left out reaches in Parambikulam main canal from L.S.39.500 to 52.000 km	167.00
6	Rehabilitation of left out reaches in Parambikulam main canal from L.S.52.000 to 68.000 km	388.00
7	Rehabilitation of left out reaches in Parambikulam main canal from L.S.68.000 to 78.000 km	125.00
8	Rehabilitation of left out reaches in Parambikulam main canal from L.S.78.000 to 87.400 km	202.00
9	Rehabilitation of left out reaches in Parambikulam main canal from L.S.87.400 to 103.765 km	260.00
10	Rehabilitation of left out reaches in Parambikulam main canal from L.S.103.765 to 113.000 km	105.00
11	Rehabilitation of left out reaches in Parambikulam main canal from L.S.113.000 to 124.000 km	200.00

	BRANCH CANALS	
1	Rehabilitation of left out reaches in Arthanari palayam branch canal taking off from Parambikulam main canal.	30.00
2	Rehabilitation of left out reaches Thondamuthur branch canal taking off from Parambikulam main canal.	67.00
3	Rehabilitation of left out reaches in Gomangalam disty taking off from Parambikulam main canal.	80.00
4	Rehabilitation of left out reaches in Poolankinar branch canal taking off from Parambikulam main canal.	385.00
5	Rehabilitation of left out reaches in Pudupalayam branch canal taking off from Parambikulam main canal.	440.00
6	Rehabilitation of left out reaches in 28.600 km (L), Poosaripatty branch canal taking off from Parambikulam main canal.	93.00
7	Rehabilitation of left out reaches in Senguttupalayam, branch canal taking off from Parambikulam main canal.	49.00
8	Rehabilitation of left out reaches in Kovil palayam, branch canal taking off from Parambikulam main canal	28.50
9	Rehabilitation of left out reaches in Vadachittur, branch canal taking off from Parambikulam main canal	211.00
10	Rehabilitation of left out reaches in Kundadam branch canal taking off from Parambikulam main canal.	115.00
11	Rehabilitation of left out reaches in Koduvai branch canal taking off from Parambikulam main canal.	20.50
12	Rehabilitation of left out reaches in Tiruppur branch canal taking off from Parambikulam main canal.	150.00
13	Rehabilitation of left out reaches in Alagumalai branch canal taking off from Parambikulam main canal.	13.00
14	Rehabilitation of left out reaches in Nagalingapuram branch canal taking off from Parambikulam main canal.	9.00
15	Rehabilitation of left out reaches in Palladam extension canal taking off from Parambikulam main canal.	114.00
16	Rehabilitation of left out reaches in Vadachinnaripalayam branch canal taking off from Parambikulam main canal.	6.50
17	Rehabilitation of left out reaches in Periyakumarapalayam branch canal from L.S. 0/0 to 13.700 km (R) of Parambikulam main canal.	76.00

	DISTRIBUTORIES	
1	Rehabilitation of Left over reaches in 4.400 km(L) disty, 5.600 km disty, from SI.No. 1 to 10 and 8.600 km disty from SI.No. 1 to 9 (Left side) under the jurisdiction of Kodingium village Water Users Association	34.00
2	Rehabilitation of Left over reaches in 5.600 km disty from SI.No. 11 to tailend under the jurisdiction of Arthanaripalayam village Water Users Association	34.00
3	Rehabilitation of Left over reaches in 13.200 km(L), 14.800 km(L), and 15.400 km(L) distys and branch canal at 16.400 km(L) from SI.No. 1 to 6 under the jurisdiction of Udukkampalayam village Water Users Association	42.00
4	Rehabilitation of Left over reaches in disty branch canal at 16.400 km from SI.No. 7 to 20 under the jurisdiction of Nallur village Water Users Association	43.00
5	Rehabilitation of Left over reaches in the distys branch canal at 16.400 km from SI.No. 21 to tailend under the jurisdiction of Thondamuthur village Water Users Association	32.00
6	Rehabilitation of Left over reaches in the distys of branch canal at 19.200 km(L), 20.400 km(L), 21.600 km(L), 22.600 km(L) and 23.600 km(L) of PMC under the jurisdiction of Kanjampatti village Water Users Association	58.00
7	Rehabilitation of Left over reaches in the distys of Poosaripatti branch canal from 0/0 to tailend and Boligoundanpalayam disty under the jurisdiction of Nallampalli village Water Users Association	75.00
8	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 1 to 11(R) under the jurisdiction of Avallappampatti village Water Users Association	34.00
9	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 13 to 16(A)(L) 12(L) disty from SI.No. 1 to 12(L) and 17(L) disty from SI.No. 1 to 12 under the jurisdiction of Varadhanur village Water Users Association	28.00
10	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 18(L) to 43(R) and 17(L) disty from SI.No. 13 to tailend under the jurisdiction of Cholapur village Water Users Association	32.00
11	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 45(R) to tailend, 12(L) disty extension canal sl.no. 0/0 to tailend, 17(L) disty extension canal, 0/0 to tailend and 40(L) disty under the jurisdiction of Kullichettipalayam village Water Users Association	28.00

12	Rehabilitation of Left over reaches in extension Chandarapuram disty from Sl.No. 0/0 to tailend in 28.600 km branch canal under the jurisdiction of Solapalayam village Water Users Association	47.00
13	Rehabilitation of Left over reaches in Devampadivalasu extension disty upto railway line in 28.600 km(L) branch canal under the jurisdiction of Puliyampatti village Water Users Association	29.00
14	Rehabilitation of Left over reaches in 9.68 km extension disty and Kurumbapalayam extension disty in 28.600 km branch canal under the jurisdiction of Kallipalayam village Water Users Association	38.00
15	Rehabilitation of Left over reaches in Devampadi valasu extension disty below railway line from sl.no. 1 to 12(L) in 28.600 km branch canal under the jurisdiction of R.Ponnapuram village Water Users Association	46.00
16	Rehabilitation of Left over reaches in Devampadivalasu extension disty below railway line from sl.no. 13 (R) to tailend in 28.600 km branch canal under the jurisdiction of Devampadivalasu village Water Users Association	52.00
17	Rehabilitation of Left over reaches in the distys of Kovilpalayam branch canal from sl.no. 1(L) to 8(L) and Chinneripalayam disty under the jurisdiction of Kappalankarai village Water Users Association	35.00
18	Rehabilitation of Left over reaches in the distys of Kovilpalayam branch canal from sl.no. 9 to 24(L) under the jurisdiction of Devanampalayam village Water Users Association	47.00
19	Rehabilitation of Left over reaches in the distys of Kovilpalayam branch canal from sl.no. 25(L) to tailend under the jurisdiction of Kaniyalampalayam village Water Users Association	28.00
20	Rehabilitation of Left over reaches in the distys of Vadachittur branch canal from sl.no. 1(R) to 8(L) under the jurisdiction of Andipalayam village Water Users Association	36.50
21	Rehabilitation of Left over reaches in the Chettiyakkapalayam sub branch of Vadachittur branch under the jurisdiction of Chettiyakkapalayam village Water Users Association	69.00
22	Rehabilitation of Left over reaches in the distys of Vadachittur canal from sl.no. 9(L) to 24(R) under the jurisdiction of Vadachittur village Water Users Association	51.00
23	Rehabilitation of Left out reaches of D.I.Sluices 1 to 8 of Veerapandi disty under Naranapuram II village Water Users Association	26.00

24	Rehabilitation of Left out reaches in 9 to taildam taking Veerapandi disty under Veerapandi village Water Users Association	55.00
25	Rehabilitation of Left out reaches in Andipalayam disty under Mangalam village Water Users Association	70.00
26	Rehabilitation of Left out reaches in Pumular disty under Pumular village Water Users Association	44.00
27	Rehabilitation of Left out reaches in Malaikovil disty and Ichipatty disty under Jamalapuram village Water Users Association	83.00
28	Rehabilitation of Left out reaches in Kokkampalayam disty and its sub disty taking off Kundadam branch canal under Kokkampalayam village Water Users Association	62.00
29	Rehabilitation of Left out reaches in D.I.Sluices 17 to 29 of Kundadam branch canal, Thayampalayam disty Nelali disty and old Kundadam disty D.I.Sluices 1 to 11 under Kundadam I(Kundadam) village Water Users Association	78.00
30	Rehabilitation of Left out reaches in D.I.Sluices 1 to 24 of Vanchipalayam disty taking off Nelali disty in Kundadam branch canal under Nelali village Water Users Association	27.00
31	Rehabilitation of Left out reaches in Edaiyankinar disty and its sub disty under Suriyanallur I (Edaykiner) village Water Users Association	10.00
32	Rehabilitation of Left out reaches in D.I.Sluices 9(R), 15(L) taildam water course of Kanchipuram disty taking off Edaiyankinar disty under Suriyanallur II (Kanchipuram) village Water Users Association	10.00
33	Rehabilitation of Left out reaches in D.I.Sluices 11(R), 12(L), 13(R), 14(L) taildam W.C. of Juriyallur taking off Edaiyankinar disty under Kundadam II (Suriyanallur) village Water Users Association	8.00
34	Rehabilitation of Left out reaches in D.I.Sluices off taking at L.S.87.425 km, Salaipudur disty, Puthurichel disty, G.N.Palayam disty, Pangampalayam disty under Kokkampalayam village Water Users Association	47.00
35	Rehabilitation of Left out reaches in Thirumalainaichapalayam disty, Santhamanaickam palayam disty, D.I.Sluices 95.254 km, D.I.Sluices 97.9 km, D.I.Sluices 99 km, Kattur disty and Pongalur disty under Kattur village Water Users Association	46.00
36	Rehabilitation of Left out reaches in D.I.Sluice 7 to 16 of TBC, Akkanampalayam disty, Veerapandi disty, Kunnagalpalayam disty fo TBC, under Karaipudhur village Water Users Association	30.00

37	Rehabilitation of Left out reaches in D.I.Sluice 17 to 20 of TBC, and Krishnapuram disty of TBC, under Ganapathipalayam village Water Users Association	312.00
38	Rehabilitation of Left out reaches in D.I.Sluice 1 to 9, Kosavampalayam disty, Kadalaikattupudur disty, Korapalayam disty and Thattavalasu disty of TBC, under Kandiyankovil village Water Users Association	35.00
39	Rehabilitation of Left out reaches in D.I.Sluice 10 to 28, Kurukkalpalayam disty, Pannaikattupudur disty, Karkkattu disty, Amaravathipalayam disty and Vattamalai disty of VBC, under Vadachinneripalayam village Water Users Association	43.00
40	Rehabilitation of Left out reaches in D.I.Sluice 7 to 13, Palavanchipalayam disty, and Rakkipalayam disty, of TBC, under Muthanampalayam A village Water Users Association	21.00
41	Rehabilitation of Left out reaches in D.I.Sluice 1 to 6, Karaipudur disty, under Karaipudur A village Water Users Association	23.00
42	Rehabilitation of Left out reaches in Muthanampalayam disty of TBC under Muthanampalayam village Water Users Association	29.00
43	Rehabilitation of Left out reaches in disty of KBC under South Avinasipalayam - I village Water Users Association	48.00
44	Rehabilitation of Left out reaches in Kovilpalayam disty and Pudupalayam disty of PMC under Alagumalai village Water Users Association	28.70
45	Rehabilitation of Left out reaches in Andipalayam disty, Ramapalayam disty, Ankovil disty and Nagalingapuram branch canal of PMC under South Avinasipalayam -II village Water Users Association	60.00
46	Rehabilitation of Left out reaches from 0/0 to 7.328 km of ABC, Karattupalayam LS. 0/0 to 2/273 km, 14(L) D.I.Sluice, 1 to 4, and 17(L) D.I.Sluice, 1 to 7 disty of ABC under Thouguttpalayam village Water Users Association	62.00
47	Rehabilitation of Left out reaches in Padiyar tail disty. Karattupalayam LS. 2/273 to 3/430 km, 14(L) disty, D.I.Sluice 5 to 10, 17(L) disty, D.I.Sluice 7 to 11 of ABC under Peruntholuvu -I village Water Users Association	25.00
48	Rehabilitation of Left out reaches in tail disty under Kangayam village Water Users Association	38.00
49	Rehabilitation of Left out reaches in Kadaiyur disty under Kadaiyur village Water Users Association	30.00
50	Rehabilitation of Left out reaches in Sivanmalai disty under Sivanmalai village Water Users Association	23.00
51	Rehabilitation of Left out reaches in Kandiyankovil disty under Kandiyankovil village Water Users Association	43.00

52	Rehabilitation of Left out reaches in Peruntholuvu tail disty under Nachipalayam village Water Users Association	28.50
53	Rehabilitation of Left out reaches in Peruntholuvu tail disty under Peruntholuvu-II village Water Users Association	54.00
54	Rehabilitation of disty off taking at L.S. 10.585 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pappini village Water Users Association (Reach 0/0 to 5.325 km)	71.00
55	Rehabilitation of disty off taking at L.S. 10.585 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Palayakottai village Water Users Association (Reach 5/325 to 10.125 km)	93.00
56	Rehabilitation of disty and Water courses off taking from L.S. 20.350 km to 23.050 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Vellakovil village -3 Water Users Association	55.00
57	Rehabilitation of disty and Water courses off taking from L.S. 23.350 km to 27.125 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Mettupalayam village -1 Water Users Association	68.00
58	Rehabilitation of disty and off taking from L.S. 27.480 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Mettupalayam village-2 Water Users Association	68.00
59	Rehabilitation of tailend disty off taking at L.S. 27.650 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Senapathipalayam village-1 Water Users Association (Reach 0/0 to 5.135 km)	87.00
60	Rehabilitation of tailend disty off taking at L.S. 27.650 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Senapathipalayam village-2 Water Users Association (Reach 5/135 to 12.610 km)	86.00
61	Rehabilitation of disty and Water courses off taking from L.S. 1.775 km to 3.350 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Sivanmalai village -1 Water Users Association	15.00
62	Rehabilitation of disty off taking from L.S. 4.135 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Sivanmalai village-2 Water Users Association	71.00
63	Rehabilitation of disty and water courses off taking from L.S. 5.135 km to 7.340 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Kangayam village Water Users Association	28.00
64	Rehabilitation of disty off taking from L.S. 7.760 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Paranjervali village Water Users Association	60.00

65	Rehabilitation of disty and water courses off taking from L.S. 8.500 km to 10.400 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Veeranampalayam village Water Users Association	39.00
66	Rehabilitation of disty and water courses off taking from L.S. 11.025 km to 11.925 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pappini village -II Water Users Association	58.00
67	Rehabilitation of disty and water courses off taking from L.S. 12.580 km to 13.725 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Veeracholapuram village -I Water Users Association	45.00
68	Rehabilitation of disty off taking from L.S. 14.000 km(R)(Reach 0/0 to 3.555 km) and disty off taking at L.S.14.080 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village-I Water Users Association	16.00
69	Rehabilitation of disty off taking L.S. 14.000 km(R)(Reach 3/555 to 8.975 km) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village -II Water Users Association	50.00
70	Rehabilitation of water courses off taking L.S. 15.075 km(R), 15.125 km(R), 15.825 km(L), 16.500(R), 17 km (R), 17.555 km(R) and disty at L.S.15.825 km (R) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village-III Water Users Association	26.60
71	Rehabilitation of water courses off taking L.S. 16.510 km(L), and disty L.S. 17 km(L) and 17.800 km(L), of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Veeracholapuram village-II Water Users Association	19.00
72	Rehabilitation of disty at L.S. 19.200 km(R), and 19.900 km (R) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village-IV Water Users Association	26.00
73	Rehabilitation of disty off taking at L.S. 20.160 km(R), of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Vellakovil village-I Water Users Association (Reach 0/0 km to 5/0 km)	64.00
74	Rehabilitation of disty off taking at L.S. 20.160 km(R), of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Vellakovil village-II Water Users Association (Reach 5/0 km to 11/400 km)	75.00
75	Rehabilitation of left out reaches in disty off taking at L.S. 3.4.500 km(R) of PMC	22.00

76	Rehabilitation of left out reaches in D.I.Sluice 1(L), 2(L), 3(R), 5(L), 6(L), of Kundadam branch canal under Vadamalaipalayam village Water Users Association	27.00
77	Rehabilitation of left out reaches in Nanthavanampalayam disty from L.S. 0/0 to 5.380 km and its sub disty of Kundadam branch canal under Nandhavanampalayam village Water Users Association	64.00
78	Rehabilitation of left out reaches in D.I.Sluice 2(R), 7(L), 10(L), 11(L), 15(R), 16(R) and T.D.W.C. of Eragampatti disty of Nandhavanampalayam disty of Kundadam branch canal under Sadayampalayam village-III Water Users Association	18.00
79	Rehabilitation of left out reaches in D.I.Sluice 7(R), 10(L), 12(R), 13(L), 14(R), of Kundadam branch canal and Muthugoundenpalayam disty from L.S. 0/0 to 5.394 km and its sub disty of Kundadam branch canal under Nandhavanampalayam village-III Water Users Association	64.00
80	Rehabilitation of left out reaches in 3(L),Sankapalay am disty, 7(R) Ammapalayam disty, D.I.Sluice 5(R), 8(R), 9(L), 11(L), of New Kundadam disty taking of Kundadam branch canal under Kundadam II (New Kundadam) village Water Users Association	42.00
81	Rehabilitation of left out reaches in Devaraja pattana m disty from L.S. 8.660 to 11.930 km, 11(L), 3(R), 18(R), 19(L), 20(L), 23(R), 24(L), 26(L) of Kundadam branch canal under Kundadam III (Devarajapattanam) village Water Users Association	82.00
82	Rehabilitation of left out reaches in Sadayapalayam di sty from L.S. 0.0 to 52.800 km, and sub disty of Devarajapattinam disty in Kundadam branch canal under Sadayapalayam IV village Water Users Association	86.00
83	Rehabilitation of left out reaches in distys and water courses of taking off from L.S. 70.030 to 71.800 km, of PMC under Senjeriputhur village Water Users Association	88.00
84	Rehabilitation of left out reaches in distys and water courses of taking off Jallipatti disty and Periyakumarapalayam branch canal under Kasilingampalayam village Water Use rs Association	86.00
85	Rehabilitation of left out reaches in distys and water courses of taking off Periyakumara palayam branch canal, 15(L) disty to 32(L) tail dam disty of PMC under Periyakumara palayam village Water Users Association	64.00
86	Rehabilitation of left out reaches in distys of water courses of taking of 4(L) Manurpalayam disty of Periyakumarapalayam branch canal, under Pellampatti (Manurpalayam) village Water Users Association	78.00
87	Rehabilitation of left out reaches in distys of water courses of taking of 14(L), Pellampatti disty of Periyakumarapalayam branch canal, under Erakampatti (Pellampatti) village Water Users Association	58.00

88	Rehabilitation of left out reaches in distys of water courses of Veruvadampalayam, branch canal of PMC under Nandavanampalayam village Water Users Association	38.00
89	Rehabilitation of left out reaches 20(L) Govindapuram disty taking off Veruvadampalayam branch canal, taking off PMC under Sadayapalayam (Govindapuram) village Water Users Association	26.00
90	Rehabilitation of left out reaches in disty taking off from 79.390 km to 82.410 km of PMC under Vavipalayam village Water Users Association	32.00
91	Rehabilitation of left out reaches in disty and D.I.Sluices of PMC under Anikkadavu village Water Users Association	68.00
92	Rehabilitation of left out reaches in disty and D.I.Sluices of PMC under Vagatholuvu village Water Users Association	61.00
93	Rehabilitation of left out reaches in disty and D.I.Sluices of PMC under Kumarapalayam village Water Users Association	60.00
94	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under J.Krishnapuram village Water Users Association	82.00
95	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under Moongitholuvu village Water Users Association	61.00
96	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under Amandakadavu village Water Users Association	72.00
97	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under Periyapatti village Water Users Association	73.00
98	Rehabilitation of left out reaches in disty and D.I.Sluices 1 to 14 of Palladam extension canal under Naranapuram I village Water Users Association	48.00
99	Providing Telemetry, supervisory control and Data acquisition and measuring devices	1500.00
100	<i>Ground Water Component</i> Providing Check dams	48.00
101	Rehabilitation of Panchayat Union Tanks (2 Nos) in Palar Basin Area	18.00
	Total	12834.00 LAKHS

The Left out reaches in the canal distribution system, under WRCP Phase I have been proposed for rehabilitation to improve the conveyance efficiency to greater extent. It will facilitate rising of value added and less water intensive crops in vast area by merging the gap and partial irrigated areas.

OUTCOME:

- ❖ The irrigation efficiency is expected to improve from the present 50% to 70%.
- ❖ The gap area can be bridged and cultivation of crops in more area.
- ❖ Accurate monitoring and controlling of Reservoir and canal system.
- ❖ Effective water management
- ❖ Ensure predictable, equitable and reliable supply to all the areas of the command.
- ❖ Strengthening of PIM activities.
- ❖ Optimization in using the water for Irrigation.
- ❖ Rainwater harvesting by construction of check dams helps to improve the ground water potential.

TANK COMPONENTS:

The practice of tank irrigation has been prevalent for centuries to store water for lean season and has played a significant role in the irrigation sector. They not only provide a source for irrigation but also help recharging of ground water under suitable conditions. There is nine system tank commanding on Ayacut of 1231.97 Ha, It is quite old and is in urgent need of repairs . The irrigation potential of the tank has declined, with poor maintenance of supply channel, sluices, bund and distribution system.

AGRICULTURE DEPARTMENT

The approach to enhance Agriculture production made be as below.

Approaches

- Demo on Vermi- compost preparation
- Demo on Coir pith compost preparation
- Demo on Integrated Pest management in Coconut
- Demo on Integrated Nutrient management in Coconut
- Distn. of MN mixture for coconut
- Distn. of MN mixture for groundnut

CROPPING PATTERN OF PALAR SUB BASIN

Sino	Crop Details	Area under crops in ha			
		With out project			With project
		Fully	Partially	Rainfed	Total
1	Coconut (surface alone)	9700	5370	0	0
	Coconut (Drip)	21450	0	0	21450
	Coconut (Drip with Fert)	0	0	0	20370
	Coconut (Inter crop)	0	0	0	0
2	Paddy (Aug -dec)	235	0	0	235
	Paddy (Jan - May)	100	0	0	100
3	Cholam (Aug -Dec)	6600	4484	2389	10091
	Cholam (Jan -May)	7000	3075	1220	11240
4	Pulses (Aug - Dec)	6855	3376	1920	7315
	Pulses (Jan - May)	8460	3240	1505	8030
5	Ground nut(Aug - Dec)	3600	786	678	5245
	Ground nut(Dec - May)	3794	576	0	5060
6	Maize (Aug - Dec)	15183	1547	625	21780
	Maize (Jan - May)	13255	1744	681	18000

7	Sunflower (Aug -Dec)	465	234	0	2035
	Sunflower (Jan -May)	1440	272	0	2395
8	Tapioca (Aug - Dec)	930	318	0	1260
9	Cotton (Aug - Dec)	1175	0	0	1175
	Cotton (Jan- May)	-	0	0	0
10	Tomato (Aug - Dec)	670	0	0	745
	Tomato (Jan - May)	610	0	0	710
11	Chilly (Aug - Dec)	815	0	0	915
	Chilly (Jan - May)	883	0	0	980
12	Brinjal (Aug -dec)	115	0	0	125
	Brinjal (Jan -May)	100	0	0	110
13	Bhendi (Aug - Dec)	210	0	0	260
	Bhendi (Jan - May)	175	0	0	225
14	Drumstick	725	0	0	874
15	Mango	965	0	0	1020
16	Amla	315	0	0	365
17	Fodder crops	378	0	0	1410
18	Sapota	182	0	0	280
19	Onion (Aug - dec)	2955	0	0	3825
	Onion (Jan - may)	2512	0	0	4255
20	Beetroot (Aug - Dec)	110	0	0	175
	Beetroot (Jan- May)	132	0	0	160
21	Spices- Turmeric	65	0	0	65
22	Gourds (Aug - Dec)	135	0	0	175
	Gourds (Jan- May)	120	0	0	180
23	Banana (Aug - Dec)	450	0	0	450
24	Sugar cane (Old ayacut)	880	0	0	880
		113744	25024	9018	153965

It can be seen from the above table, that against the gross cropped area of 113744 Ha, with the cropping intensity of 70 % with reference to the registered Ayacut of 153994 Ha, the gross cropped area is expected to reach 153994 ha with cropping intensity 100 % due to improvements in infrastructure by WRO, and other improved components from other line departments, of course, keeping in check the adequacy of crop water requirements with introduction of micro irrigation and other modern Agriculture practices through demos, training etc.

The final outcome can be summaries as below

Outcome

- 10 % of the farmers turn as commercial farmers.
- 10 % to 20 % increase in farm income.
- 20 % to 25 % of the paddy area with SRI technique
- 20 % to 25 % of the paddy area shifted to other commercial crops.
- 40 % to 45 % of coconut area covered under Drip with fertigation.

The Agriculture Department components are below

**Activities proposed to implement in Palar Sub basin of PAP Area of
Coimbatore District**

Sl. No.	Name of the Activity	Unit	Cost / Unit L.Rs.	No / Cost for 1 st year	No / Cost for 2 nd year	No / Cost for 3 rd year	No / Cost for 4 th year	No / Cost for 5 th year	Total cost for 5 years L.Rs.
1.	<i>Demo on Vermi-compost preparation</i>	Nos.	0.200	45	45	45	45	45	225
		L.Rs.		9.000	9.000	9.000	9.000	9.000	45.000
2.	<i>Demo on Coir pith compost preparation</i>	Nos.	0.020	37	30	30	30	30	157
		L.Rs.		0.740	0.600	0.600	0.600	0.600	3.140
3.	<i>Demo on Integrated Pest management in Coconut</i>	Nos.	0.046	16	12	12	12	12	64
		L.Rs.		0.736	0.552	0.552	0.552	0.552	2.944
4.	<i>Demo on Integrated Nutrient management in Coconut</i>	Nos.	0.070	10	9	9	9	9	46
		L.Rs.		0.700	0.630	0.630	0.630	0.630	3.200
5.	<i>Distn. of MN mixture for coconut</i>	Ha.		860	840	840	840	840	4220
		L.Rs.	Rs.35/kg	52.675	51.45	51.45	51.45	51.45	258.475
6.	<i>Distn. of Bio-fertilizer for coconut</i>	Nos.	Rs.6/No.	1630	1630	1630	1630	1630	8150
		L.Rs.	(2Nos./Tree)	34.23	34.23	34.23	34.23	34.23	171.150
7	<i>Integrated Nutrient management demo in groundnut</i>	Nos.	0.050 /No.	5	5	-	-	-	-
		LRs		0.250	0.250	-	-	-	-

Sl. No.	Name of the Activity	Unit	Cost / Unit L.Rs.	No / Cost for 1 st year	No / Cost for 2 nd year	No / Cost for 3 rd year	No / Cost for 4 th year	No / Cost for 5 th year	Total cost for 5 years L.Rs.
8	Micronutrient Distn. To groundnut	Ha.	Rs. 34/kg	358	350	350	350	350	1758
		L.Rs.	(12.5 kg / Ha.)	1.5215	1.4875	1.4875	1.4875	1.4875	7.472
9	Bio fertilizer Distribution to Groundnut	Ha.	Rs. 6 / No.	827	820	820	820	820	4107
		L.Rs.	(20 pkts / Ha.)	0.9924	0.984	0.984	0.984	0.984	4.928
10	Gypsum distribution to Groundnut	Ha.	Rs. 1500 / MT	400	400	400	400	400	2000
		L.Rs.		1.200	1.200	1.200	1.200	1.200	6.000
11	Integrated Nutrient Management Demonstration in Maize	Ha.	Rs. 0.050 / No.	6	6	6	6	6	30
		L.Rs.		0.300	0.300	0.300	0.300	0.300	1.500
12	Micronutrient Distribution to Maize	Ha.	Rs. 33/kg	2900	2750	2750	2750	2750	13900
		L.Rs.	(12.5 kg / Ha.)	11.9625	11.34375	11.34375	11.34375	11.34375	57.338
13	Bio fertilizers Distribution to Maize	Ha.	Rs. 6 / No.	2860	2860	2860	2860	2860	14300
		L.Rs.	(20 Nos./ Ha.)	3.432	3.432	3.432	3.432	3.432	17.160
	TOTAL	L.Rs		117.7394	115.45925	115.20925	115.20925	115.20925	578.827

Activities proposed to implement in Palar Sub basin of PAP Area of Erode District

Sl. No.	Name of the Activity	Nos. for 5 years	Cost / Unit L.Rs.	No / Cost for 1st year	No / Cost for 2nd year	No / Cost for 3rd year	No / Cost for 4th year	No / Cost for 5th year	Total cost for 5 years L.Rs.
1.	<i>Demo on Vermi-compost preparation</i>	205	0.2	41 L.Rs.8.2	41 L.Rs.8.2	41 L.Rs.8.2	41 L.Rs.8.2	41 L.Rs.8.2	205 L.Rs.41.0
2.	<i>Demo on Coir pith compost preparation</i>	205	0.02	41 0.82	41 0.82	41 0.82	41 0.82	41 0.82	205 4.1
3	<i>Distn. Of Soil health cards</i>	2050	0.0001	410 0.041	410 0.041	410 0.041	410 0.041	410 0.041	2050 0.205
4	<i>Pulses Integrated Nutrient mgt</i>	205	0.0174	41 0.7134	41 0.7134	41 0.7134	41 0.7134	41 0.7134	205 3.567
5.	<i>Maize –crop prod. Demo</i>	205	0.0397	41 1.6277	41 1.6277	41 1.6277	41 1.6277	41 1.6277	205 8.139
6.	<i>Coconut - INNT</i>	205	0.070	41 2.87	41 2.87	41 2.87	41 2.87	41 2.87	205 14.35
7.	<i>Distn. Of HOP</i>	490	0.015	98 1.47	98 1.47	98 1.47	98 1.47	98 1.47	490 7.35
8.	<i>Distn. of Power Sprayers</i>	490	0.050	98 4.9	98 4.9	98 4.9	98 4.9	98 4.9	490 24.5
	TOTAL			20.642	20.642	20.642	20.642	20.642	103.210

The estimated cost is Rs. 682.037 Lakhs

HORTICULTURE DEPARTMENT

The Horticulture department serves with an objective of increasing the area under horticulture crops substantially with varieties up gradation such as tissue culture and hybrid crops. It also proposed controlled cultivation in shade net and poly green houses. It also proposes to promote inter-cropping. The above are proposed carefully with reference to market linkages especially perishables.

The Approach to achieve these objectives is as follows.

- (i) Improving the knowledge of the farmer in better cultivation techniques through demos, training etc.
- (ii) Encouraging micro irrigation with fertigation and less water intensive.
- (iii) Introduction of maintainable, agro-climatic enterprise, Hybrid Varieties of Horticulture crops.
- (iv) Promoting inter-cropping and controlled cultivation etc.

The following table shows the horticulture activities proposed in the sub basins with cost details

S.No	Component s	Estimated cost	Physical target in Hectares					
			I Year	II Year	III Year	IV Year	V Year	Total
I.	AREA EXPANSION							
A.	Fruits plants							
1	Amla	0.300	-	7.50	7.50	-	-	15.00
2	Mango	0.300	-	7.50	7.50	-	-	15.00
3	Sapota	0.300	-	9.00	15.00	6.00	-	30.00
	Total			25.00	30.00	6.00		60.00
B	<u>Vegetables</u>							
1	Hyb tomato	0.300	-	12.00	12.00	21.00	-	45.00
2	Onion	0.300	30.00	90.00	240.00	240.00	-	600.00
3	Bhendi	0.300	-	7.50	7.50	15.00	-	30.00
4	Beetroot	0.300	-	15.00	15.00	-	-	30.00
5	Moringa	0.300	-	6.00	9.00	15.00	-	30.00
6	Brinjal	0.300	-	4.50	-	-	-	4.50
7	Pandal Veg	0.500	10.00	10.00	10.00	12.50	-	42.50
	Total		40.00	145.00	293.50	303.50		782.00
C.	Spices							
1	Chillies	0.150	7.50	7.50	7.50	7.50	-	30.00
	Total		7.50	7.50	7.50	7.50	-	30.00
	Over all Total		47.50	176.5	331.00	317.00		872.00
II - 1	Extension Support @ Rs 8000/- month (360 man month for 5 years)	0.96/ year	1.92	5.76	10.56	10.56	-	28.8

3	Hiring computers	0.50	0.5	0.50.	0.5	0.5	0.5	2.50
	Total		2.66	6.50	11.30	11.30	0.74	32.50
III	Organic farming	Amount already proposed in area expansion programmes.						
IV	INM /IPM	1000	1.20	4.70	9.65	9.95	-	25.5
V	Micro Irrigation	Implemented by Agriculture Engineering Department.						
	Grand Total		51.36	187.70	351.95	338.25	0.74	930.00

The total estimated cost of investment is Rs. 930.00 Lakhs and following increased production shall be achieved with the project as outcome.

OUTCOME OF THE PROJECT

SL.NO	DETAILS	WITHOUT PROJECT	WITH PROJECT	% INCREASE
1	Area in Horticulture crops(Ha)	7042	2950	41
2	Introduction of IPM/INM(Ha)	0	2750	2750
3	Introduction of Organic Farming(Ha)	0	200	200
4	Average Increase in Production (MT)	51	85	60

The other outcomes shall be saving of water to expand the area of cultivation and to increase productivity and farm income. There will be also an increased non - from employment opportunities through including private sector participation in Agro-processing units to be developments in this sub basin.

AGRICULTURE ENGINEERING DEPARTMENT

With the main objective to bring water directly to root zone of the crop, thus reducing the wastage of water due to flood irrigation, The following are the approaches to achieve these objectives.

Approach:

- Micro Irrigation.
- Precision farming.
- Farm Mechanization
- Pilot Project For Underground PVC Pipe Line Conveyance System With Sump Provision In Canal Command
- Farm ponds with fish culture.
- Check dams
- Percolation ponds.
- Conversion of abounded wells.

The project component shall be as below.

Sl.No.	Components Proposed	Unit	Unit cost (Rs)	Physical (Ha)	Fin (Rs.in Lakhs)
I	Micro Irrigation				
a.	Drip Irrigation				
	Fruit crops 6m x 6 m (Mango & Sapota)	Ha.	33200	200	66.40
	Drumstick 3m x 3m	Ha.	38600	700	270.20
	Gourds 1.5 m x 1.5 m	Ha.	58000	280	162.40
	Hybrid Tomato 1mx1m	Ha.	60600	600	363.60
	Sugar cane 1.5mx1.5m	Ha.	58000	500	290.00
	Cotton	Ha.	58000	200	116.00
	Coconut with fertigation 8m x 8m	Ha.	22900	12100	2770.90
	Tapioca 1m x 1m	Ha.	60600	500	303.00
	Turmeric 1m x 1m	Ha.	60600	65	39.39
	Banana 2m x 2m	Ha.	52800	350	184.80
	Ground Nut	Ha.	15000	300	45.00
			Total	14995	4566.69
b.	Sprinkler Irrigatiion				
	Ground Nut	Ha..	15000	2500	375.00
	chillies	Ha	15000	1100	165.00

	Onion	Ha.	15000	4450	667.50
	Brinjal	Ha.	15000	200	30.00
	Bhendi	Ha..	15000	400	60.00
	Beet root	Ha..	15000	250	37.50
	Total			8900	1335.00
II	Precision Farming				
	Drip Irrigation for hybrid Tomato	Ha..	75000	150	112.50
III .	PVC Buried pipe line for water conveyance and sprinkler system 209.25.0 Ha. Block				
	Construction of Sump	No.	150000	21	31.50
d.	Electrification and pumping mach.	No.	85000	21	17.85
	90mm 4 KSC PVC pipe laying	Ha.	15000	209.25.0	31.39
	Total			209.25.0	80.74
IV	Farm Mechanisation with advanced user friendly implements				
	a)Maize Husk Sheller	No.	90000	31	27.90
	b)Tractor operated G.Nut digger	No.	40000	12	4.80
	c)Power operated G.Nut Stripper	No.	45000	12	5.40
	d)manually operated G.nut digger	No.	5000	31	1.55
	e)Coconut dehusker	No.	30000	43	12.90
	Total			129	52.55
V	Others(Water harvesting structure)				
	Farm Ponds	No.	40000	452	180.80
	Minor Check Dam *	No.	100000	126	126.00
	Major Check Dam *	No.	200000	66	132.00
	Percolation Pond *	No.	300000	91	273.00
	Percolation Pond *	No.	500000	54	270.00
	Conversion of Abandoned well	No.	26000	102	26.52
	Others Total			439	1008.32
	Total				7155.80

OUTCOME INDICATORS.

1. Increased area under Hi-tech Irrigation like Drip and Sprinkler Irrigation.
2. Precision Farming practices to an extent of 20 ha. for increased income.
3. Increased Farm Productivity per unit area and unit quantity of water.
4. Diversification of new crops in the gap area.
5. Increase in Irrigation efficiency by laying of PVC underground pipe line system in canal command area
6. Technology dissemination to the farmers
7. Increase in awareness in Farm Mechanisation
8. Supplement income generation by diversified farm activities through fisheries(from Farm Ponds),cattle breeding
9. Increase in per capita income to the beneficiary farmers
10. Increase in the irrigated area due to supplemental well irrigation by providing rainwater harvesting structures.

Thus a sum of Rs 7155.80 Lakhs is proposed to be invested by this Department in this sub-basin, to help farmers association to effect substantial saving in water and to help them go in for mechanisation in their farms. 452 numbers of farm ponds, Minor Check dams -126 nos, Major check dams – 66 nos, Percolation pond - 145 nos are proposed to augment water resources through rain water harvesting and good recharging of ground water.

TAMIL NADU AGRICULTURE UNIVERSITY

The following table shows the details of demonstration and inputs proposed by TNAU under the Project and Mission mode. The total investment works out Rs. 694.13 Lakhs.

The approach to enhance usefulness of document under be as below.

Approaches:

- Demonstration of drip fertigation component technology in, Coconut in an area of 1500 ha.
- Quality control seedling production.
- Demonstration of organic farming and IFS modal in Model villages
- On-farm demonstration training to farmers.

The outcome of new constructs made be.

Outcome:

- At the end of 5th year, nearly 50% Coconut area will be under drip fertigation with 10 to 15% increased productivity and 20% water saving.
- 20 % to 25 % of rice area will be under SRI in the post project period. 15% increase in productivity and 20% water saving could be achieved by this technology adoption.

Sl.No	Particulars	Physical	Financial (in lakhs)
I	Activities		
	Precision farming in vegetables	100 ha	67.1
3	Improved production technology for Maize + 3 field days	150 ha	9.30
4	Improved production technology for Sunflower + 3 field days	100 ha	5.30
5	Drip fertigation – Coconut	1500 ha	433.50
6	Quality coconut seedling production	3 lakhs Nos.	15.0
7	Demonstration of organic farming and IFS modal in Model villages	20 ha	1.00
8	OFD and skill development	-	2.20
		Sub Total	533.4
II	Out Sourcing for technical assistance		
1	24 nos for first 3 years, 5 nos for 4th and 5th year	9000 Salary + 1000 FTA per Month	98.4
		<i>Sub Total</i>	<i>98.4</i>
III	Contingencies		
	a. Vehicle hire charge for Scientists @		3.00

	Rs.60000/yr	
	b. Documentation and Reporting	2.00
	c. Stationeries and publicity	2.50
	<i>Sub Total</i>	<i>7.50</i>
	Total	639.30
	Incentive 1% of the total cost	6.40
	Total	645.7
	Institutional charges @ 7.5 %	48.43
	Grand Total	694.13

Under project mode, transfer of technologies in major crops, and demonstration of labour saving implements high yielding varieties, scientific irrigation management and high harvesting technologies are proposed .

These will enhance productivity by 15% and water saving of 20% besides improved soil health and farm income.

AGRICULTURE MARKETING

In the background of stakeholders demand for identifying markets for new and diversified crops, improving existing market s utilization, improving access to market by better collective transport, specialised storages as per crop needs, the following components are the approach.

The table below shows the project component in the below.

Approaches:

- Strengthening the infrastructural facilities. ie. Rural godowns, Drying yards and Agri business centre.
- IT based market information network. ie. Expanding TNAU based DEMIC.
- Contract farming / MOU arrangements. ie. Maize produce with poultry feed manufactures.
- Collective bargaining through FIG, Farmers Commodity Groups.
ie. Gourds cultivators in Aliyar Sub basin.
- Capacity building / IEC. ie. Centralized programme.
- Private – Public participation. ie. Interface Workshop of Cultivators / producers by Cell.

Sl. No	Item	No	Cost in lacs
1.	Storage godowns	26	130.00
2.	Drying yard	26	57.20
3.	Plastic tarpaulins	260	13.00
4.	Dunnages	2600	52.00
5.	Weighing scales	30	3.00
6.	Specialised Storage open shed for onion	4	20.00
7.	Electronic Moisture meter	10	2.00
8	Agri Business Centre	1	11.00
TOTAL			288.20

Thus the investment of Rs. 288.20 Lakhs, will propel agricultural growth from production front to the marketing front thus making the Agriculture sector more profitable and vibrant to face competition both at national and international scene.

Outcome

- Percentage of increase in farm gate sale price.
ie. 10% increase over 2006-07 level]
- Extent of use of marketing Kiosk.
ie. 10-15% of stakeholders per year.
- Percentage of output taken for agro processing.
ie. 5% increase over 2006-07 level.
- Percentage of diversified crops marketed.
ie. 33% of the produce during 1st year.

FISHERIES

Palar sub basin has one reservoir (Thirumoorthy) and nine System Tanks. Aquaculture is been done by the Tamil Nadu Fisheries Development Corporation in the Thirumoorthy reservoir. Stock, manage and capture is the technology adopted with the Indian Major carp seeds been the stocked fish species. There is a good productive reservoir in terms of fish production. The fishery constitute mostly the Indian major carps. Tank fishery exists in the 9 tanks and which comprises of the stocked and unstocked natural fishery.

One seed farm is functioning at Thirumoorthy Dam run by the TNFDC. It is functioning effectively and is able to meet the fish seed demand of the basin. There are no private seed farm in this basin. The quality of water in the basin is suitable for aquaculture.

There is effective marketing chain with the TNFDC for marketing the fresh water fishes produced in this sub basin. Fishes are mostly marketed fresh and also proper icing to prevent spoilage.

Considering the above fishery status the following proposals are made under IAM WARM project.

AQUACULTURE IN FARM PONDS :

Farm ponds are been proposed to be excavated in the sub-basin by the Agriculture Engineering departments, primarily as rain water harvesting and storage tanks in the farmers field with a water spread area of 1000 m². aquaculture will be promoted in these farm ponds as an integrated component. Some alteration shall be made in the pond by providing a layer of clay on the pond bottom to prolong the retention of water at least for 4 months.

Interaction were made with the members of WUA, the water manager / Engineers of WRO and also with the Engineers of Agriculture Engineering

Department regarding the period of retention / availability of water in the farm ponds. It is inferred that though the AED (Agricultural Engineering Development) is proposing more than 1000 farm ponds, more than 90% of the ponds may not get water for a reasonable period of time, facilitating aquaculture.

However to promote and also considering the interest of some agriculture farmer who optimum for aquaculture, few farm ponds with bore well or open well facilities will be identified for aquaculture and fish culture shall be promoted. After excavation of farm pond by AED, aquaculture inputs shall be given to 50 farm ponds and the estimated cost is Rs. 16,500 per pond.

Stocking density of 1 stock size fish of 50 kg per 1 m² of WSA is proposed and production 600 kg of fish per pond is envisaged. In terms of revenue the farmer shall get an additional revenue of about Rs. 10,000/- per pond. This shall be an additional income for the agriculture farmer with out interfering in agricultural activity.

ORNAMENTAL FISH CULTURE

The Water Quality of the Sub Basin is suitable for ornamental fish rearing. Marketing potential is also available. Hence to promote commercial ornamental fish culture two units shall be established in this basin on pilot basis.

Like cash crop of Agriculture ornamental fish culture is a fast growing business venture in the field of fisheries. Aquarium keeping is a healthy hobby recommended by doctors to avoid stress and to have peace of mind.

In Aliyar Dam the TNFDC is running successfully an aquarium for public and a culture unit attached to it. The Climatic condition and water quality are suitable for aquarium fish rearing.

The pilot unit proposed shall have 4 nos of rearing ponds (4000 Sq.mt) each. The pond is a earthen one apart from rain water harvesting , to support

continuous maintenance of water level a 6 “ dia borewell with motor will be provided.

Young once of ornamental fishes (1 - 2 cm) will be purchased from TNFDC farmers and grown upto marketable size of about 6-10 cm depending on the species.

An investment of 1.27 lacs per unit and an operational cost of 0.93 lacs per 3 cycles is proposed.Net return of about 1 lacs per year is envisaged.

TRAINING AND CAPACITY BUILDING

IAMWARM projects target groups are primarily WUA whose members are agriculture farmers with little knowledge on aquaculture .Hence training and capacity building on fresh water aquaculture and ornamental fish culture etc., is highly essential. The IAMWARM project training component shall lay emphasis on planning the aquaculture training.

- For monitoring the aquaculture activities vehicle hire charges of 1.20 lakhs and documentation charges of 0.30 lakhs are provided.

OUTCOME EXPECTED/ ANNUALS

Slno	Description	Fish fingerings (nos in Lakhs)	Fish production (Tonnes)	Net Revenue (Rs. In lakhs)
1	Aquaculture in Farm ponds (50 Nos)	Nil	30.00	5.00
2	Ornamental Fish culture (2 units)	0.84	Nil	2.34

ABSTRACT

1.	Input cost for 50 farm ponds (50 X 16,500)	=	8.25Lakhs
2.	Ornamental fish culture (2x 2.20)	=	4.40 Lakhs
3.	Vehicle hire charges	=	1 .20 Lakhs
4.	Documentation	=	0.30 Lakhs
	TOTAL	=	14.15Lakhs

Outcome:

- (i) Timely availability of crop fish seeds
- (ii) Additional income Rs. 10000/- per crop farmer and fish production.
- (iii) Hygienic time meeting with better transport facilities for increase price for fish.
- (iv) Increases fish catch efficiency.

The total cost works out to Rs. 14.15 Lakhs.

Animal Husbandry

Improved delivery of Veterinary services, Fodder availability with increased extent of 1025 ha, capacity building of farmers on Veterinary health care camps, Artificial insemination techniques, and Human resources developments by way of training to farmers and in-service officials etc, are the main areas of concentration of A.H. Development in the sub basin. The following table shows the components and their cost.

	Components	Physical	Financial (In Lakhs)
1	Productivity enhancement by improving delivery of veterinary services		
	<i>a. Establishment of Sub basin Veterinary Units (SBVU) @ Rs.5,72,720/- per unit</i>	5	28.64
	<i>b. Improving the essential infrastructure in the Government institutions (graduate institutions) @ Rs.33,000/-unit</i>	33	10.89
	<i>c. Improving the essential infrastructure in the Government institutions(subcentres) @ Rs.20,000/-unit</i>	30	6.00
	<i>d. Strengthening the diagnostic facilities in the sub basin by providing special diagnostic tools to sub basin referral institutions @ Rs.3,00,000/- per unit</i>	2	6.00
2	Increasing availability of green fodder in private lands (in ha.) - Co3 - 1025 ha. - Kollukattai Grass - 300 ha.		91.50
3	Out reach programmes.		
	<i>a. Infertility cum Total Veterinary Health Care camps @ Rs.6,000 per camp per month for each SBVU</i>	300	18.00
	<i>b. Distribution of mineral mixture @ Rs.1,82,500 per SBVU</i>	5	9.13
	<i>c. Information, education and communications campaigns</i>	38	20.90
4	Enhancing the knowledge level of human resource		
	<i>a. Training of Farmers</i>	2000	8.00
	<i>b. Enterpruneship training to 6 unemployed veterinary graduates to be placed as Sub basin Veterinary Extension Officer @ Rs.50,000/- per person</i>	6	3.00
	<i>c.. Orientation Training for Sub basin Veterinary Extension Officers @ Rs.1,350/- trainee</i>	5	0.07
	<i>d. In-service Training for Veterinarians @ Rs.2,000/- per person</i>	33	0.66
			202.79

The Approach to achieve these area

- (i) Productivity enhancement by improving delivery of Veterinary services in the project area of the Government and private level (WUA.)
- (ii) Increasing the availability of green fodder for sustainable growth of livestock.
- (iii) Improving the infrastructure and diagnostic facilities in the project area.
- (iv) Improving the knowledge level of the farmers about the livestock activities through various outreaches programmers, training etc.

Animal Husbandry can nature a better quality of life for the rural farmer by not only providing sustainable employment of their location --- but can also act as assets or rural currencies.

The outcome of these intervention are

- ❖ Bridged improvements in the project area
- ❖ Improvement in health and productivity status of livestock in the project area
- ❖ In area in Milk production and there by increase the economic status.

ECONOMIC ANALYSIS

The project focus on improving water resources management and service delivery to maximize productivity in 153965 Ha of net irrigated area in the project. Only 80% of the area currently full irrigation per year. Water sector related institutional reforms and scheme improvements based on physical interventions in association with Agriculture intensification and diversification will maximize farm profitability and economically sustain the productivity in the project area. The Economic Rate of return works out to % muc h above the opportunity cost of 12%. This will yield a net of profit of Rs million during the project cycle of 25 years at 2006 prices. The incremental benefit in the project area is derived from increased irrigation coverage and efficiency, dependable water supplies to high yielding variety of crops and input to other agriculture components of horticulture livestock fisheries etc. besides sustainable environmental benefits.

Project benefits and poverty Alleviation Impeachment

Area Expansion Shifts:

The project shall help maximizing water productivity in its entire 153994 ha. Nearly 55% of the farmers of marginal and small categories shall be fully benefited with increased food production and farm income. The present irrigation intensity of 90% shall increase to 100%.

Enhanced irrigation coverage and service delivery with scheme productivity improvements intervention in the scheme is expected to increase the annual production of major crop such as Coconut with out drip from 15070 ha to 23070 ha of Drip with fertigation, Groundnut from 4386 ha to 5245 ha, Maize from 31729 ha to 39780 ha, onion 5467 ha to 8080 ha .The existing cropping intensity of 90% shall improve to 100 % . Diversification with increased area in Coconut with fertigation, Sugarcane, Maize, Groundnut, and fodder which are added with micro-irrigation technologies for substantial saving of water for such area expansion activities.

Technologies Impacts

Drip with fertigation for coconut crops, SRI techniques for Paddy , and Micro irrigation for Horticulture crops and Sugarcanes are purposed. These not only increase water savings, but also increase the productivity of crops.

This intervention represents at 80% increase in record farm employment above the existing level of labour strength as most of the increased demand would be made from hired labours impact on employment and income would be more than the above estimate in view of off farm employment opportunity in marketing and Agro processing through diversified farming activities as envisaged in the project. Implementation of the project involving civil works shall further add temporary employment opportunities during project implementation.



CHAPTER – I

INTRODUCTION

TN IAM WARM PROJECT
PARAMBIKULAM ALIYAR BASIN
PALAR SUB BASIN – PROJECT PROPOSAL

I. INTRODUCTION

1.1 GENERAL:

In continuation of the WRCP Programme funded by the World Bank, the follow on project proposed by the government of Tamilnadu , to a tune of Rs.3900/- covering 111 sub basins, has been fully considered by the World Bank in order to extent its financial assistance to fund the Irrigated agricultural Modernisation and Water resources Management (IAM WARM) project with integrated approach.

This project has been proposed based on the experiences gained through the implementation of WRCP in Tamilnadu as well as the recorded information on pilot project implemented in Hanumanathi sub basin. It also involves the participation of line departments and the water using sta ke holders with a multi disciplinary approach and princip al objective of improving the water use efficiency, overall system efficiency and increasing the agricultural productivity, along with additional ben efits to the farming community.

1.2 PARAMBIKULAM ALIYAR SUB BASIN:

The Parambikulam – Aliyar Project (PAP) is an interstate Water Resources Development project carried out jointly by the states of Tamilnadu and Kerala. The objective of the development is harnessing the waters of the Bharathapuzha, the Chalakudi and the Periyar basins for irrigation and power production in both states. It accomplishes the diversion and integration of eight west flowing rivers six in the Anaimalai hills and two in the plains for the benefit of the drought prone areas in the Coimbatore and Erode districts of Tamilnadu state. The six rivers are

- Anaimalaiyar
- Nirar
- Sholayar

- Parambikulam
- Thunacadavu
- Peruvaripallam and

The Two Rivers on the plains are

- Aliyar
- Palar

Storage and diversion works on the Eight Rivers with interconnecting tunnels have been constructed. The tunnels divert the waters impounded in the reservoirs to the plains of the Coimbatore and Erode districts of Tamilnadu state and Chittur area of the Kerala State. The Reservoirs lie at various elevations ranging between EL 1146 M (+3760 feet) and 320 M (+1050 feet) and this difference in elevations has made it possible to utilize the drop between them for the development of hydro - power.

1.2.3 RESERVOIRS

Component of the system includes one diversion weir, seven storage reservoirs, conveyance system, interconnecting tunnels and wide network of canal distribution system.

The Main components of the system are

1. Upper Nirar weir
2. Lower Nirar Dam
3. Sholayar Reservoir
4. Parambikulam Reservoir
5. Thunacadavu Reservoir
6. Peruvaripallam Reservoir
7. Aliyar Reservoir
8. Thiurmoorthy Reservoir

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1.2.4 SUB BASIN

Parambikulam aliyar Basin comprises the following three sub basins:

1. Sholayar Sub basin
2. Aliyar sub basin
3. Palar Sub basin

In the above, Sholayar sub basin has no direct ayacut and an extent of 205 36 ha is irrigated from aliyar dam in aliyar sub basin and 1,53,9 65 ha is irrigated from Thirumoorthy dam in Palar sub basin. Aliyar and Palar are the two sub basins in the Parambikulam Aliyar Project selected for IAM WARM Project

1.3 PALAR SUB BASIN

Palar River is a sub tributary of Aliyar River which joins Bharathapuzha River and empties in to Arabian sea. Thirumoorthy reservoir is one among the main component in PAP and formed in the plains across the river with a g ross storage capacity of 1935 Mcft. Apart from its own catchment, Water can be diverted to this reservoir through Contour Canal from the Parambikulam group of reservoirs.

The Palar sub basin consists of the following canal systems.

5. High Level Canal System
6. Udumalpet Canal System
7. Parambikulam Main Canal System
8. Dhali Channel system

The command area of the old system is 1,247 ha. Which is of double crop lands whereas the total new command area under the above three canals are 1,52,718 ha which is of single crop. The entire new ayacut is divided into Four zones and each zone gets water once in two years under alternate sluice irrigation pattern.

1.4 RESERVOIR – THIRUMOORTHY RESERVOIR

The Palar River has its source in the Anamalai Hills. It flows in a north-westerly direction for about 20 miles. It is joined in Aliyar River on its left on its left.

A Reservoir has been formed by construction of a dam across the river Palar and it has a gross capacity of 1935 Mcft. Two irrigation canals i.e., High Level and Common Canals take off from this reservoir. The catchment area at the Thirumoorthy Dam site is 31 Sq.Miles.

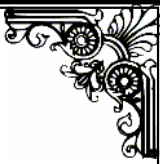

1.5 CANALS IN THE SUB BASIN

The Palar sub basin consists of the following canal systems.

1. High Level Canal System
2. Udumalpet Canal System
3. Parambikulam Main Canal System
4. Dhali Channel system

1.6 VILLAGES BENEFITED UNDER REVENUE ADMINISTRATIVE SETUP

S.No	Name of district	Name of Taluk	Name of block	No. of Villages	Area in Hectare
1	Coimbatore	Pollachi	Pollachi North Pollachi South Kinathukadavu	12	26606
		Udumalpet	Udumalpet Madathukulkam Gudimangalam	48	45448
		Palldam	Sulthanpet Palladam	23	11889
		Thirupur	Thirupur Pongalur	18	20474
2	Erode	Dharapuram	Dharapuram Kundadam	19	26770
		Kangeyam	Kangeyam Vellakovil	22	22778
					153965 ha



CHAPTER – II

SCOPE OF THE PROJECT

II. PREVAILING STATE OF THE PROJECT

2.1 GENERAL

The deficiencies in the structure and functions of Irrigation network causes the insufficient functioning of Parambikulam Aliyar Project system and creates hardship to the farming community.

2.2 SYSTEM DEFICIENCY

Due to long run and age and also due to inadequate maintenance owing to the paucity of funds, the farm gate efficiency of the canal system was reduced to an average against in designed area of 77071 ha for average area 69482 ha is being irrigated with agap of 7589 ha.

The composite cropping pattern for the four Zone areas for even and odd years shows there the main crop is coconuts. Being a perennial, it is either irrigated by canal water (when scheduled) or by ground water (during non scheduled season)

The pattern of other crops varies considerably between scheduled seasons and unscheduled seasons, reflecting the limited availability of ground water.

In order to improve the system efficiency, necessary proposals were formulated under WRCP phase I based on the walk through survey conducted with farmers during the year 1995 under which partial rehabilitation works were carried out at various vulnerable and critical stretches through which the structural and conveyance efficiency of the system was improved to some extent.

At present, as the left out portions of the canal system network have been further deteriorated and damaged. It is now observed that the conveyance efficiency gets reduced to certain extent in supplying equitable and assured quantum of water especially to the tailend reaches.

The other major problems being experienced in the Palar sub basin are as follows.

1. Improper or non maintenance of canal system in past years.
2. Lack of efficient on farm water management.
3. Poor infra structure facilities.
4. Non-adoption of modern micro irrigation methods and new agricultural practices.
9. Depleting ground water.
10. Inadequate farm machinisation.
11. Inadequate coordination among rural agencies, Government departments and other financial institution etc.
12. Lower crop yield.
13. Encroachments of canal banks.
14. Low field application efficiency
15. Traditional method of farming.
16. Excess use of chemical fertilizers and pesticides.
17. Inadequate post harvest management facilities.

SCOPE OF THE PROJECT

Rehabilitating of the system in co ordination with line departments and water using stake holders for improving the overall system efficien cy and maximize agricultural productivity along with additional benefits.

2.3 WATER RESOURCES ORGANISATION

To improve the conveyance and operational efficiency it is now proposed to improve and modernize the structural components as follows

- Rehabilitation of controlling structures.
- Rehabilitation of cross masonry structures.
- Construction of inlets.
- Standardizing canal bank and bank roads.
- Lining the bed and sides of the canal network.
- Installation of Telemetry, SCADA and Measurement System in the Reservoirs and Canal Network

- Providing Artificial Recharge Structures.
- Provision for environmental monitoring of River basins creating awareness and implementing environmental projects.
- Demarcation of Canal boundaries

2.4 AGRICULTURAL ENGINEERING DEPARTMENT

Agricultural Engineering Department Proposes to implement the following activities to improve the conveyance and field application efficiency as follows

- i. Reducing the conveyance and distribution losses at on farm (Farm Gate) and thereby improving the conveyance efficiency from 70% to 90% by carrying out required lining up to the tail end.
- ii. Increasing the application efficiency by adopting high tech micro irrigation systems in well irrigated area.
- iii. Recharging the ground water through rain water harvesting by providing percolation ponds and check dams.

2.5 AGRICULTURAL MARKEETING AND AGRI BUSINESS DEPARTMENT

The existing cropping pattern is dominated by coconut followed by Millets, Groundnut and Vegetables. It is likely that, the area under veget ables will increase besides fruit crops. Hence the marketing activities are to be strengthened towards facilitating the post harvest management activities.

2.6 AGRICULTURAL DEPARTMENT

Out of 20558 Ha of registered ayacut area, Major area is under coconut cultivation. Hence the department gives more importance for the improvement of coconut yield from the present level of 90 nuts/tree/annum to 120 nuts/tree/annum. In consultation with the WUA, the following components are suggested. The coconut farmers of the sub basin are in the habit of applying excess quantity of fertilizers. To create the awareness and educate the farmers suitably , the INM and IPM demonstrations are suggested under this project.

Similar to fertilizers, the farmers are also in the habit of using excess plant protection chemicals. Hence, IPM demonstrations are suggested to minimize the plant protection cost and to educate farmers to go in for plant protection chemicals only as a last resort. Coir pith demonstration and Vermicompost demonstration are suggested to encourage organic farming concept. An amount Rs. 67.36 Lakhs is proposed under this project.

- a) Maximize multipurpose benefits from surface and ground water land and other resources
- b) Evolving a cropping pattern for deriving an optimum benefit per unit of water.
- c) Intensification of Agricultural Productivity and income.

2.7 ANIMAL HUSBANDRY DEPARTMENT

Aliyar sub basin lands are mostly under Coconut trees. Hence there is a definite shortage of adequate green and dry fodder. As the command area gets water once in two years the period of non-irrigation months shall be utilized by concentrating on the Animal Husbandry activities for increasing the additional income to the farmers.

The following proposals are made in this project.

- Mobile unit with artificial insemination facilities.
- Entrepreneurship development programme for unemployed BVSc Graduates.
- Green fodder development.
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2.8 TAMILNADU AGRICULTURAL UNIVERSITY

To create an awareness among farmers in adopting latest techniques, and for increasing WUE, Profit and reducing labour requirement the Tamil Nadu Agricultural University has proposed the following programmes.

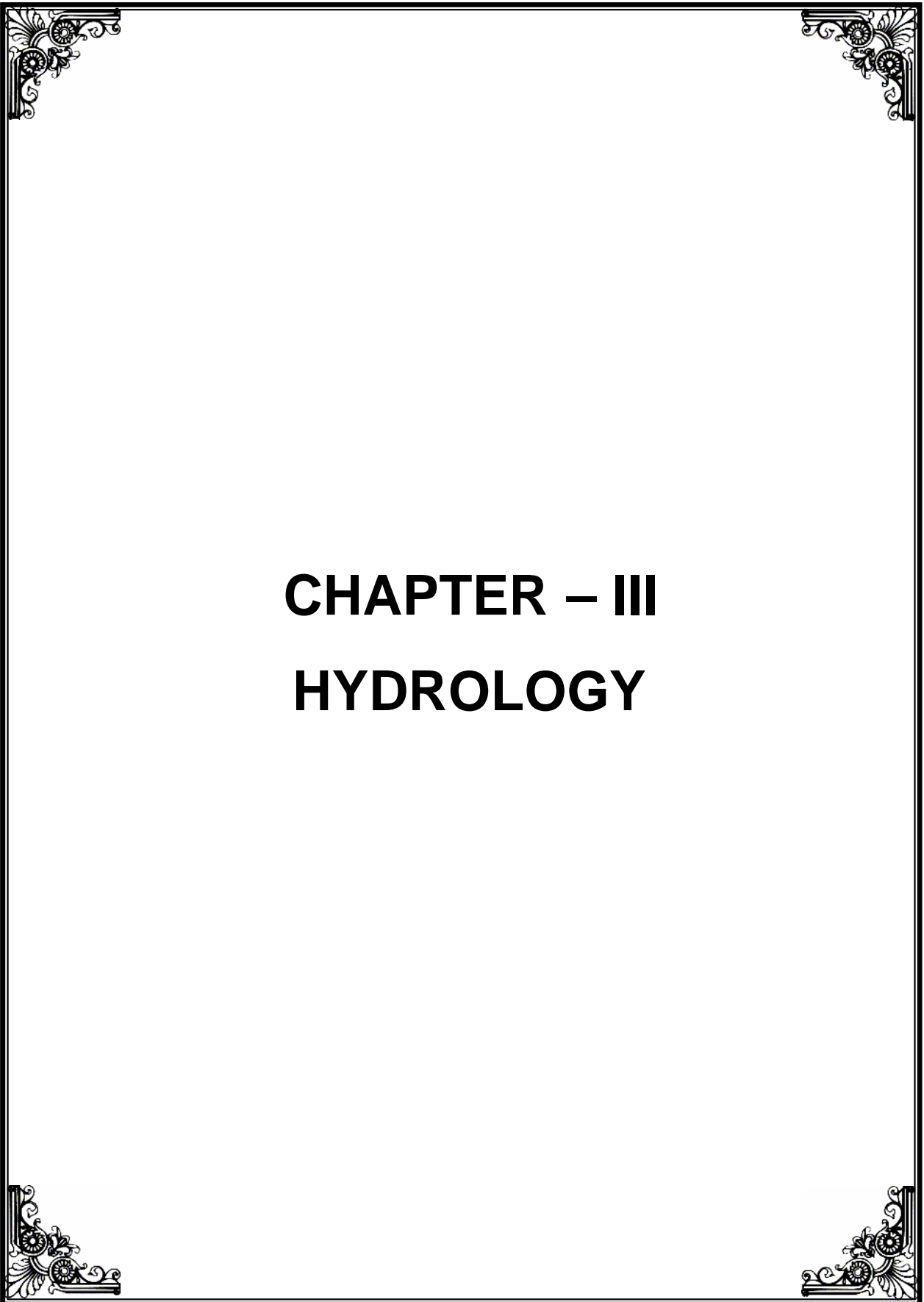
- Adaptive Research Trial (ART)
- Front Line Demonstration (FLD)
- Integrated farming System
- Improving the existing nursery complexes

2.9 HORTICULTURAL DEPARTMENT

Enhancing the farm income with available water resources, introducing high yielding vegetables, tissue culture banana, pandal gourds, poly green house and shade net cultivation are proposed.

2.10 FISHERIES DEPARTMENT

Aquaculture farm ponds is proposed for providing additional income to the farmers.



CHAPTER – III
HYDROLOGY

HYDROLOGY

3.1 GENERAL

Thirumoorthy Dam is a tributary of Bharathapuzha River System. Palar r River originates on the Eastern slopes of the western ghats in Anaimalai hills in Udumalpet Taluk of Coimbatore District.

Palar River traverses about 32 km and confluence with Aliyar River. Thirumoorthy reservoir is one among in PAP and formed across the River Palar.

3.2 LOCACTION

The River Palar ranging from latitude $10^{\circ} 29'0''N$ and $77^{\circ} 09'30''E$ longitude in Udumalpet taluk. There is one reservoir (Thirumurthy). The basin area comprises of Udumapet and Pollachi Taluk .

3.3 CATCHMENT AREA OF PALAR SUB-BASIN

The Palar Sub Basin has a typical climate, owing to the extensive catchment area in the western ghats. Palar enjoys the benefits of two monsoons.

3.4 HYDRO METEOROLOGY

The Hydro Meteorology parameters includes rainfall, temperature, humidity, wind velocity, evaporation and duration of sun shine which determine the climate of the basin.

3.5 RAIN FALL

The 50% and 75% dependable rainfall in mm for hilly area, plain area and Ayacut area of this basin are given below :

Sl. No	Basin Details	50% Dependable			75% Dependable		
		S W	N E	Annual	S W	N E	Annual
1.	Hilly Area	1829	381	2546	1413	271	2166
2.	Plain Area	923	337	1489	777	214	1195
3.	Old Ayacut area	854	318	1390	732	219	1142
4.	Four Zone area	166	278	605	117	48	488

3.6 TEMPERATURE

For the measurement of Hydrometeorological parameters in the basin area, there are three weather stations viz 1. Sundakampalaym maintained by Ground Water Wing of Public Works Department, 2. Coimbatore Airport maintained by IMD and 3. Aliyar Nagar are there. Since the Weather Station at Coimbatore is full pledged one, its data is taken for the study.

Sl. No	Climatological Parameters	South West	North West	Winter	Summer
1	Temperature max/min in C-deg	24.2/24.7	24.5/22.1	25.9/23.7	29.9/23.1
2	Avg. Temperature in C-deg	25.95	23.23	24.80	26.83
3.	Avg. Relative humidity in %	74.50	85.70	87.50	75.00
4	Avg.Wind velocity Km/hr	2.28	0.69	0.95	1.02
5	Avg.Pan Evaporation	-----140 mm per month -----			
6	Avg. Sunshine hours/day	5.63	4.20	7.85	8.97

3.6.1 HUMIDITY & WIND

Month	Relative Humidity		Evaporation Loss
	Morning	Evening	
January	85.28	52.64	8.16
February	86.72	46.37	5.30
March	84.33	43.47	5.60
April	87.64	45.18	4.50
May	82.68	48.01	5.60
June	80.83	59.64	4.80
July	82.11	64.48	4.30
August	83.13	64.10	4.70
September	82.00	58.73	5.40
October	85.59	61.31	4.46
November	88.86	63.13	3.73
December	88.98	58.40	3.92

3.7 SOIL

In this sub basin, due to different stages, Weathering of parent material, the soil types are met with in combination of Inceptisol, Alfisol and Entisol. More prominent type is Inceptisol.

Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained.	Suited for commonly grown crops with exceptions
Alfisol & Entisol	The red or brown soils having accumulation of illuviated clay in sub surface horizon, it is well drained, poor water and nutrient holding capacity.	Annual crops with shallow root systems come up well

3.8 LAND HOLDINGS

The details of agriculturist (farmers) based on the land holdings of Palar basin is given below :

Category	Size of holdings	Numbers	Ayacut in ha	Percentage
Marginal	Below 1.00 Ha	28601	43611.10	28.32 %
Small	1.00 – 2.00 Ha	38385	58533.12	38.01 %
Medium	2.00 – 4.00 Ha	20919	31892.16	20.71%
Big	4.0 ha & above	13083	19957.62	12.96 %
Total		100988	153994	100 %

3.9 DEMOGRAPHY

Sl. No.	Name Of Taluk	Total No. Of Blocks	Total No. Of Villages	Population			Type Of workers			
				Male	Female	Total	Agri. Labours	Cultivators	Industrial Workers	Others
Coimbatore District										
1	Pollachi	3	12	63,332	62,623	125,955	30,557	16,072	174	79,152
2	Udumalpet	3	48	96,988	95,733	192,721	50,784	20,822	199	120,916
3	Palladam	2	23	37,809	36,131	73,940	12,832	8,625	215	52,268
4	Tiruppur	2	18	47,524	45,673	93,197	19,010	12,806	247	61,134

Erode District										
5	Dharapuram	2	19	28,810	28,524	57,334	16,600	16,345	163	24,226
6	Kangeyam	2	22	37,669	36,856	74,525	17,055	16,836	251	40,383
		14	142	312,132	305,540	617,672	146,838	91,506	1,249	378,079

3.10 GROUND WATER POTENTIAL

GROUND WATER POTENTIAL

(a) LIST OF BLOCKS AND STAGE OF GROUND WATER EXPLOITATION

Sno	Name of district	Name of Block	Category
1	Coimbatore	Pollachi North	Over Exploited
2	Coimbatore	Pollachi South	Over Exploited
3	Coimbatore	Kinathukadavu	Over Exploited
4	Coimbatore	Udumalpet	Critical
5	Coimbatore	Madathukulam	Semi Critical
6	Coimbatore	Gudimangalam	Critical
7	Coimbatore	Sulthanpet	Over Exploited
8	Coimbatore	Palladam	Critical
9	Coimbatore	Pongalur	Semi Critical
10	Coimbatore	Thiruppur	Semi Critical
11	Erode	Kundadam	Semi Critical
12	Erode	Dharapuram	Semi Critical
13	Erode	Kangeyam	Semi Critical
14	Erode	Vellakovil	Semi Critical

(b) WELLS IN THE COMMAND AREA

Coimbatore District	Taluk	Wells	
		Energised	Diesel
Coimbatore District			
1	Pollachi	11,154	368
2	Udumalpet	8,517	1,024
3	Palladam	9,639	144
4	Tiruppur	7,355	22
Erode District			
5	Dharapuram	2,287	372
6	Kangeyam	7,956	1,659
Total		46,908	3,589

(c) BLOCK - WISE AVAILABILITY OF GROUND WATER

Sl. No.	Name Of District	Name Of Blocks	Net ground Water Available In M cum	Ground water Availability in command area In M cum	Domestic Draft In the Command Area
1	Coimbatore	Udumalpet	90.5408	81.4867	1.4258
2	Coimbatore	Gudimangalam	49.6537	47.1710	1.3177
3	Coimbatore	Pollachi- North	58.1892	46.5514	1.3095
4	Coimbatore	Pollachi- South	28.6852	24.3824	1.6661
5	Coimbatore	Kinathukadavu	42.8347	25.7008	0.8336
6	Coimbatore	Palladam	27.4561	19.2193	1.1347
7	Coimbatore	Pongalur	36.3610	32.7249	1.3586
8	Coimbatore	Sultanpet	30.7874	24.6299	0.9293
9	Coimbatore	Tirupur	18.2509	11.8631	1.5814
10	Coimbatore	Madathukulam	63.0751	31.5376	0.7795
11	Erode	Dharapuram	68.0080	44.2052	0.7886
12	Erode	Kangeyam	33.2636	26.6109	1.1399
13	Erode	Kundadam	38.3664	34.5298	1.0291
14	Erode	Vellakoil	39.1167	33.2492	1.1213
TOTAL			624.5888	483.8622	16.4151

Potential Available in the 50% of the Command Area

241.93 M cum .

SURFACE WATER POTENTIAL

Based on Average Yield from 1974-75 to 2003-2005

- a. Quantity received from own catchment : 1090 Mcft
- b. Quantity diverted through Contour Canal : 9268 Mcft
to Thirumoorthy Reservoir

Total Surface Water Potential: 10358 Mcft (or) 293 Mcm

3.11 CROPPING PATTERN

(For 1 Year)

S/no	Crop Details	Area under crops in ha				
		With out project			With project	
		Fully	Partially	Rainfed	Fully	Partial
1	Coconut (surface alone)	4800	3300	0	8100	0
	Coconut (Drip)	10050			9000	
	Coconut (Drip with Fert)				3900	
	Coconut (Inter crop)					
2	Paddy (Aug -dec)	350	0	0	350	0
	Paddy (Jan - May)	90	0	0	90	0
3	Cholam (Aug -Dec)	2500	1175	1150	1835	1000
	Cholam (Jan -May)	3550	1255	805	3820	1230
4	Pulses (Aug - Dec)	3015	980	985	1900	675
	Pulses (Jan - May)	3870	1225	765	1600	1100
5	Ground nut(Aug - Dec)	2200	715	250	3950	315
	Ground nut(Dec - May)	2800	905	0	4700	0
6	Maize (Aug - Dec)	8150	1415	250	11600	0
	Maize (Jan - May)	5630	1135	240	6600	0
7	Sunflower (Aug -Dec)	195	95	0	850	0
	Sunflower (Jan -May)	840	160	0	1400	0
8	Tapioca (Aug - Dec)	450	152	0	550	60
9	Cotton (Aug - Dec)	770	0	0	770	0
	Cotton (Jan- May)	-	0	0	0	0
10	Tomato (Aug - Dec)	275	0	0	350	0
	Tomato (Jan - May)	270	0	0	340	0
11	Chilly (Aug - Dec)	390	0	0	490	0
	Chilly (Jan - May)	395	0	0	495	0
12	Brinjal (Aug -dec)	50	0	0	60	0
	Brinjal (Jan -May)	45	0	0	50	0

13	Bhendi (Aug - Dec)	70	0	0	120	0
	Bhendi (Jan - May)	65	0	0	115	0
14	Drumstick	350	0	0	450	0
15	Mango	965	0	0	1015	0
16	Amla	320	0	0	370	0
17	Fodder crops	375	0	0	1400	0
18	Sapota	180	0	0	280	0
19	Onion (Aug - dec)	885	0	0	1780	0
	Onion (Jan - may)	1200	0	0	2300	0
20	Beetroot (Aug - Dec)	150	0	0	225	0
	Beetroot (Jan- May)	100	0	0	125	0
21	Spices- Turmeric	65	0	0	65	0
22	Gourds (Aug - Dec)	115	0	0	150	0
	Gourds (Jan- May)	100	0	0	150	0
23	Banana (Aug - Dec)	450	0	0	450	0
24	Sugar cane (Old ayacut)	880	0	0	880	0
		56955	12512	4445	72675	4380

CROPPING PATTERN OF PALAR SUB BASIN (FOR 2 YEARS)

Slno	Crop Details	Area under crops in ha			With project
		With out project			
		Fully	Partially	Rainfed	Fully
1	Coconut (surface alone)	9700	5370	0	0
	Coconut (Drip)	21450	0	0	21450
	Coconut (Drip with Fert)	0	0	0	20370
	Coconut (Inter crop)	0	0	0	0
2	Paddy (Aug -dec)	235	0	0	235
	Paddy (Jan - May)	100	0	0	100
3	Cholam (Aug -Dec)	6400	4486	2389	10091
	Cholam (Jan -May)	5500	3075	1220	11240
4	Pulses (Aug - Dec)	6855	3376	1920	7315
	Pulses (Jan - May)	8460	3240	1505	8030
5	Ground nut(Aug - Dec)	3800	786	678	5245
	Ground nut(Dec - May)	5294	576	0	5060
6	Maize (Aug - Dec)	15183	1547	625	21780
	Maize (Jan - May)	13255	1744	681	18000
7	Sunflower (Aug -Dec)	465	234	0	2035
	Sunflower (Jan -May)	1440	272	0	2395
8	Tapioca (Aug - Dec)	930	318	0	1260
9	Cotton (Aug - Dec)	1175	0	0	1175
	Cotton (Jan- May)	-	0	0	0
10	Tomato (Aug - Dec)	670	0	0	745
	Tomato (Jan - May)	610	0	0	710
11	Chilly (Aug - Dec)	815	0	0	915
	Chilly (Jan - May)	883	0	0	980
12	Brinjal (Aug -dec)	115	0	0	125

	Brinjal (Jan -May)	100	0	0	110
13	Bhendi (Aug - Dec)	210	0	0	260
	Bhendi (Jan - May)	175	0	0	225
14	Drumstick	725	0	0	874
15	Mango	965	0	0	1020
16	Amla	315	0	0	365
17	Fodder crops	378	0	0	1410
18	Sapota	182	0	0	280
19	Onion (Aug - dec)	2955	0	0	3825
	Onion (Jan - may)	2512	0	0	4255
20	Beetroot (Aug - Dec)	110	0	0	175
	Beetroot (Jan- May)	132	0	0	160
21	Spices- Turmeric	65	0	0	65
22	Gourds (Aug - Dec)	135	0	0	175
	Gourds (Jan- May)	120	0	0	180
23	Banana (Aug - Dec)	450	0	0	450
24	Sugar cane (Old ayacut)	880	0	0	880
		113744	25024	9018	153965

- 1 Total Command area 1,53,965 ha
- 2 Fully Irrigated area 1,13,744 ha
- 3 Partially Irrigated area 25,024 ha
- 4 Gap 15,197 ha
- 5 Rainfed area in gap 9,018 ha

3.12 CROP WATER REQUIREMENT WITHOUT PROJECT

Sl. No.	Crop	Area in Ha.	Net crop water requirement in mm	Net Irrigation water Requirement in MCM
1	Coconut	10047	1460	244.48
2	Coconut (Drip)	10047	834	139.65
3	Gingelly	2899	374	18.07
4	Sorghum	7694	373	47.83
5	Pulses	7384	306	37.66
6	Ground nut – 1	3589	278	16.63
7	Ground nut -2	2921	423	20.59
8	Maize	13818	335	77.15
9	Sunflower	1287	350	7.51
10	Tapioca	600	750	7.50
11	Cotton	1951	454	14.76
12	Tomato	564	445	4.18
13	Chillies	1023	551	9.39
14	Brinjal	1070	445	7.94
15	Bhendy	183	445	1.36
16	Drumstick	150	250	0.63
17	Mulberry	46	750	0.58
18	Mango	81	250	0.34
19	Amla	76	250	0.32
20	Fodder	135	413	0.93
21	Sapota	38	250	0.16
22	Onion	2079	393	13.62
23	Beet root	320	445	2.37
24	Spices – Turmeric	65	504	0.55
25	Gourds	50	445	0.37

26	Rice	443	750	5.54
27	Banana	42	1707	1.19
28	Sugarcane	880	1486	21.79
				703.08 Mcm

3.13 CROP WATER REQUIREMENT WITH PROJECT

Sl. No.	Crop	Area in Ha.	Net crop water requirement in mm	Net Irrigation water Requirement in MCM
1	Coconut	1186	834	449.67
2	Coconut (Drip)	23100	1460	13.19
3	Gingelly	2647	374	13.20
4	Sorghum	3282	373	16.32
5	Pulses	2615	306	10.67
6	Ground nut – 1	7355	423	41.48
8	Maize	16953	335	75.72
9	Sunflower	1557	350	7.27
10	Tapioca	1135	750	11.35
11	Cotton	1850	454	11.20
12	Tomato	2243	350	10.47
13	Chillies	1023	445	6.07
14	Brinjal	1070	445	6.35
15	Bundy	398	445	2.36
16	Drumstick	250	445	1.48
17	Mulberry	336	650	2.91
18	Mango	131	125	0.22
19	Amla	126	125	0.21
20	Fodder	2835	350	13.23
21	Sapota	138	125	0.23
22	Onion	5379	393	28.19
23	Beet root	300	445	1.78
24	Spices – Turmeric	150	504	1.01
25	Gourds	90	445	0.53

26	Banana	42	1707	0.96
27	Sugarcane	880	1486	17.44
				743.51 Mcm

3.14 WATER BALANCE WITHOUT PROJECT

I. WATER POTENTIAL



(a)	Surface Water Potential	---	293 mcm
(b)	Ground Water Potential	---	242 mcm
(c)	Total	---	535 mcm

II. WATER DEMAND

(a)	Net Irrigation Demand	---	743.51 mcm
(b)	Domestic Demand	---	16.42 mcm
(c)	Live Stock Demand	---	13.77 mcm
(d)	Total Demand	---	773.70 mcm

III. WATER BALANCE

Deficit 238.70 mcm



CHAPTER – IV
HYDRAULICS OF THE
COMPONENTS

HYDRAULICS OF THE COMPONENTS

4.1 GENERAL

Thirumoorthy Reservoir is a tributary of Bharathapuzha River System. Palarr River originates on the Eastern slopes of the western ghats in Udumala Taluk of Coimbatore District.

4.2 RESERVOIR

SALIENT FEATURES OF THE THIRUMOORTHY RESERVOIR

a. Hydrology

1. Catchment Area	-	31 Sq.Miles
2. Maximum Designed Discharge	-	15,800 C/S
3. Discharge Capacity provided	-	15,800 C/S

b. Reservoir

1. Maximum and full reservoir level	-	+1337 Feet
2. Deepest sill of the supply sluice	-	+1277 Feet
3. Capacity at FRL	-	1935 Mcft

c. Masonry Dam

1. Maximum Height of dam	-	+128 Feet
2. Length of Masonry Dam	-	170 Feet

d. Outlet works

1. No & Size of Sluice (River Sluice)	-	1 No 5'43" X 6'0"
2. Sill of Sluice	-	+1277.00

e. Spill Way

1. Crest Level	-	+1325
3. Maximum Discharge @ FRL	-	15800 C/S
4. No. & Size of Spill Way Gate	-	5 Nos 26'0" X 12'0" Lift Gates

f. Earth Dam

- | | | |
|------------------------------|---|-----------|
| 1. Maximum Height of Dam | - | 128 Feet |
| 2. Total length of earth dam | - | 8622 Feet |

4.3 CANALS

a. High Level Canal

The Hydraulic Particulars of the High Level Canal as follows

Sl. No.	Chainage	Bed Width	FSD	Bed Fall	Velocity	Side Slope	Design Dis.
1	0–1.8 km	1.75'0 "	1.75'0"	1/2640	1.74' /Sec.	1:1	10.48 C/S
2	1.8–2.65 km	1.75'0 "	1.75'0"	1/2640	1.67' /Sec.	1:1	10.17 C/S
3	2.650 - 3.640 km	1.00'0 "	2'0"	1/2640	1.65' /Sec.	1:1	9.98 C/S
4	3.640 - 4.435 km	1.64'0 "	1.40'0"	1/800	1.92' /Sec.	0.5:1	8.16 C/S
5	4.435 - 6.635 km	3.25'0 "	2.25'0"	1/2000	1.60' /Sec.	1:1	15.34 C/S
6	6.635 - 8.835 km	2.3'0"	2.25'0"	1/2000	1.32' /Sec.	1:1	10.96 C/S
7	8.835 - 10.075km	2.3'0"	2.25'0"	1/2000	1.32' /Sec.	1:1	10.96 C/S

b. Parambikulam main Canal

The Hydraulic Particulars of the Parambikulam Main Canal as follows

Sl. No.	Chainage	Bed Width	FSD	Bed Fall	Velocity	Side Slope	Design Dis.
1	0–1.2 km	22'0"	9.25'0"	1'/mile	5.487' /Sec.	½ :1	1343 C/S
2	1.2 - 5.76 km	10'0"	9.25'0"	1'/mile	3.803' /Sec.	2 :1	1003 C/S
3	5.760 -	10'0"	9.25'0"	1'/mile	3.803'	2 :1	1003

	7.600 km				/Sec.		C/S
4	7.600 – 30.210 km	18'0"	9.25'0"	1'/mile	4.08' /Sec.	1 : 1	1028 C/S
5	30.210 – 33.790 km	10'0"	9.25'0"	1'/mile	3.803' /Sec.	2 : 1	1003 C/S
6	33.790– 36.200 km	18'0"	9.25'0"	1'/mile	4.08' /Sec.	1 : 1	1029 C/S
7	36.200 – 44.400 km	10'0"	9.25'0"	1'/mile	3.803' /Sec.	2 : 1	1003 C/S
8	44.400 – 45.430 km	10'0"	9.25'0"	1'/mile	3.803' /Sec.	2 : 1	1003 C/S
9	45.430– 5.76 km	10'0"	9.25'0"	1'/mile	3.803' /Sec.	2 : 1	1003 C/S

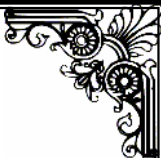

UDUMALPET CANAL
HYDRAULIC PARTICULARS

Sl. No.	Chainage In m	Bed Width	FSD	Free Board	Bed Fall	Velocity	Side Slope	Design Dis.
1	0-5030	2.90M	1.52	0.30	2'/mile	3.816' /Sec.	1 : 1	278 C/S
2	5030- 6400	2.59M	1.45	0.30	2'/mile	3.650' /Sec.	1 : 1	224 C/S
3	6400-8150	2.59M	1.45	0.30	2'/mile	3.650' /Sec.	1 : 1	216 C/S
4	8150-13110	2.13M	1.37	0.30	2.5'/ mile	3.890' /Sec.	1 : 1	207 C/S
5	13110 -14590	2.45M	1.37	0.30	2'/mile	3.520' /Sec.	1 : 1	199 C/S
6	14590 -18010	2.30M	1.30	0.30	2'/mile	3.479' /Sec.	1 : 1	169 C/S
7	18010 -18277	2.30M	1.30	0.30	2'/mile	3.383' /Sec.	1 : 1	169 C/S
8	18277 -20760	2.30M	1.30	0.30	2'/mile	3.381' /Sec.	1 : 1	152 C/S

9	20760 -23310	1.98M	1.30	0.30	2'/mile	3.300' /Sec.	1 :1	145 C/S
10	23310 -24550	1.70M	1.30	0.30	2'/mile	3.200' /Sec.	1 :1	130 C/S
11	24550 -26840	1.55M	1.22	0.30	2'/mile	3.168' /Sec.	1 :1	114 C/S
12	26840 -37430	1.22M	1.07	0.30	2'/mile	2.760' /Sec.	1 :1	78 C/S
13	37430 -38150	1.10M	1.05	0.45	2'/mile	2.610' /Sec.	1 :1	67 C/S

Tanks

Sl. No	Name of Tanks	Name of Village	Total Ayacut in ha.	Length of Bund in metres	Total Sluice in Nos.	Length of Weir in Metres	Total discharge capacity in Cumecs	Full Tank Level F.T.L. in Metres	Sill Level in Metre	Maximum Water level (MWL) in Metres	Tank Bund level (TBL) in Metres	Capacity in M.Cum	Catchment free in Sq.Km	Water Spread area in Sq.Km	Top Bund Width in Metres	Supply channel
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Ottukulam	North Boothi Natham	175.81	2627.00	5	a) 50.90 b) 51.21 c) 2.44	98.13	(+) 8.015	(+)8.015	(+) 8.625	(+) 10.454	0.400	18.95	10.15	3.00	Branch of Dhali Channel of Channel No. 1
2	Periyakulam	North Boothi Natham	472.69	5035.00	8	a) 67.00 b) 55.50	107.28	(+) 13.578	(+) 10.058	(+) 14.187	(+) 16.016	1.998	20.15	28.40	3.00	Supply Channel No. 1
3	Sengulam	South Boothi Natham	115.34	2377.00	4	a) 24.38 b) 29.56	35.58	(+) 8.555	(+) 5.504	(+) 9.164	(+) 10.536	0.361	9.94	8.44	3.00	Supply Channel No. 1
4	Settikulam	South Boothi Natham	92.27	1402.00	2	a) 2.13 b) 2.44	2.61	(+) 13.584	(+) 11.307	(+) 14.041	(+) 15.413	0.224	Nil	7.61	3.00	Supply Channel No. 1
5	Thenikulam	South Boothi Natham	81.34	1347.00	2	15.24	1.96	(+) 11.621	(+) 8.817	(+) 11.773	(+) 13.145	0.205	7.77	5.77	3.00	Supply Channel No. 1
6	Karisal kulam	South Boothi Natham	78.92	1259.00	2	a) 4.27 b) 11.58	7.96	(+) 13.105	(+) 10.774	(+) 13.715	(+) 15.086	0.080	0.97	3.52	3.00	Supply Channel No. 1
7	Ammapatti Kulam	North Boothi Natham	56.25	969.00	3	36.00	10.87	(+) 10.210	(+) 8.765	(+) 10.591	(+) 11.508	0.050	2.83	3.52	3.00	Supply Channel No. 1
8	Valayapalayam Tank	Valakundapuram	57.92	945.00	4	9.80	13.82	(+) 18.515	(+) 3.148	(+) 18.607	(+) 18.793	0.261	3.11	5.95	3.00	Valayapalayam Supply Channel of Palar System
9	Elavakkarai Tank	Samathur	101.00	1860	5	28.60									3.00	



CHAPTER – V

**COMMAND AREA AND WATER
USERS ASSOCIATION**

COMMAND AREA AND WATER USERS ASSOCIATION

(a) NEW COMMAND - ZONE WISE

Sl. No	Name of the Canal	Total in Ha.	ZONES			
			I	II	III	IV
1	Parambikulam Main Canal	128090	32040	31970	32166	31914
2	Udumalpet Canal	23600	5981	5920	5783	5916
3	High Level Canal	1003	246	249	254	254

(b) OLD COMMAND

Sl. No	Name of the Canal	Total Ayacut in Ha.
1	Dhali Channel System	1247

DISTRICT / TALUK WISE AYACUT :

COIMBATORE DISTRICT (in Ha)				
Pollachi Taluk	Udumalpet Taluk	Palladam Taluk	Tirupur Taluk	TOTAL
26606	45448	11889	20474	104417
ERODE DISTRICT (in Ha)				
Dharapuram Taluk		Kangeyam Taluk		TOTAL
26770		22778		49548
TOTAL				153965

WATER USERS ASSOCIATION – DETAILS

Total Command	:	1,53,965 Ha
Number of WUAs	:	134 Nos
Date of Election (Based on TNFMIS Act)	:	07.02.2004
Presidents Elected	:	134 Nos
Vacancies	:	Nil
TC Members Elected	:	864
Vacancies	:	Nil
Responsibilities Handed over on	:	11.02.2004

WATER USERS ASSOCIATION

GENERAL

Water is the most essential commodity for all the human beings. Agricultural Development is mainly depending on the availability of water. Water potential is available in two forms namely surface water and ground water. The need of water for the fast growing population is increasing day by day whereas the availability of useful water is decreasing rapidly. The application of modern Technique and the efficient way of using the water alone will help to manage the critical situation. The Government is trying various ways and means to improve the water usage. The formation of Water Users Association is one among them.

AGRICULTURAL PRACTICES

Water received from rain is either directly used or taken through conveyance system comprising river, channels and tanks. At present the Government is distributing the water to the farmers through Water Resources Organisation. Due to inadequate cooperation among the farmers, the tail end farmers are often suffering from either non receipt of water or untimely receipt. Moreover the conjunctive use of ground and surface water is not effectively done. In order to overcome such difficulties and create integrative and involvement of farmers in the best management and use of water, the Government has introduced the system of distribution of water by themselves, by forming Water Users Association.

ROLE OF WATER USERS ASSOCIATION

The Government has taken many projects to increase the food production and thereby improve the related industries for the development of the nation. The role of the water resources organisation in the irrigation is

- Development of new irrigation projects
- Operation and maintenance of irrigation systems

- Distribution of water from storages
- Improving the efficiencies of irrigation systems
- Rehabilitation of irrigation system
- Prevention of flood damages
- Population control in the irrigation system
- Eviction of encroachments in the irrigation system
- Distribution of water to other essential requirements, such as drinking water, industries etc.,

**TAMILNADU FARMERS MANAGEMENT OF IRRIGATION SYSTEM
ACT, 2000 (Tamilnadu Act 7 of 2001)**

The Government of Tamilnadu has formulated “Tamilnadu farmers Management of Irrigation system Act, 2000 (TNFMIS Act) to get more involvement of farmers in the irrigation management, integrity of farmers by forming associations and delegating powers required for the management of irrigation system. The act is applicable for all the irrigation system under the control of water resources organisation of Public Works Department. This act is having 7 chapters and 50 sections. Accordingly number of water users association has been formed in Tamilnadu for the projects implemented by Water Resources Organisation with World Bank aid, as first stage.

The Water Users Association is formed for each main canal of the system. This comprises of one president and even number of members representing territorial constituency having about 40 H a. of command. Both the president and members are elected through election. The term of the Water Users Association, is for five years. The election and responsibilities of the water users association is as follows.

- Preparation of irrigation schedule
- Distribution of water to distributories from supply channel
- Rotational water supply during water deficit period
- Distribution of water to the sluices
- Maintenance and improvements of the Distribution system
- Optimum use of water

- Assisting the revenue department in collection of water taxes
- Settlement of disputes among the members
- Maintenance of accounts and records.
- Finance management including planning and collection of revenue from members

The section 27 of the TNFMIS Act, 2000 provides sources for income to the association as follows.

- Share in the water taxes
- Membership fee, service charges
- Government aid, subsidy
- Income from the assets in the command area
- Loans
- Income from services etc.,

The accounts are to be maintained properly and submitted for auditing

WATER USERS ASSOCIATION RESPONSIBILITIES

The Responsibilities of the Association are as follows

a) President

All meetings should be conducted by the president. All correspondence, contacts with departmental officials, office management and all activities of the association are the responsibility of the president. The president is to accept the advices of the majority of members. All approved expenditure proposed by the secretary should be drawn by the treasuries only after the authorization of the president.

b) Vice-President

In the absence of the president the vice president shall look after the duties of the president.

c) Secretary

Management of Office Administration, correspondences, implementation of detritions. Keeping the accounts and submitting the annual returns and other reports to the district registrar on or before June 30 th of each year.

DETAILS OF AYACUT BENIFITTED UNDER PARAMBIKULAM MAIN CANAL IN BLOCK WISE / DISTRICT WISE COIMBATORE DISTRICT

1.	Udumalpet Block	:	21202.60 Ha
2.	Madathukulam	:	3960.51 Ha
3.	Pollachi South	:	7697.06 Ha
4.	Pollachi North	:	10497.82 Ha
5.	Kinathukadavu	:	8187.29 Ha
6.	Palladam	:	6662.32 Ha
7.	Sultanpet	:	6654.68 Ha
8.	Pongalur	:	15828.72 Ha
9.	Gudimangalam	:	19866.24 Ha
10.	Kundadam	:	379.91 Ha
11.	Tiruppur	:	<u>3728.01 Ha</u>
	Total	:	<u>104665.66 Ha</u>

Or

104666.00 Ha

ERODE DISTRICT

1.	Dharapuram	:	4704.09 Ha
2.	Kangeyam	:	15635.01 Ha
3.	Vellakoil	:	7200.40 Ha
4.	Kundadam	:	<u>21760.21 Ha</u>
	Total	:	<u>49299.71 Ha</u>

Net Total : 104666 + 49299.71
= **153965.00 Ha**
= (or) **1,53,965 ha**



CHAPTER – VI
DESIGNS

PARAMBIKULAM MAIN CANAL
DISCHARGE CALCULATION SHEET
SECTION AT L.S. 16.490KM

Required Discharge = 709.38 C/s
 Bed width = 18'
 Side slope = 1:1
 Bed fall = 1.00'
 = 5280'

Assuming Depth of flow 'h' = 7.55'

Assuming co-efficient of rugosity to be 0.016 for lined channel

Manning's Formula

$$\text{Velocity } V = \frac{1.486}{0.016} \times R^{2/3} \times S^{1/2}$$

$$R = \frac{A}{P}$$

$$\begin{aligned} \text{Area } A &= (7.55)^2 + (18 \times 7.55) \\ &= 192.90 \text{ Sq.ft.} \end{aligned}$$

$$\begin{aligned} P &= 18 + 2 \times \sqrt{2} \times 7.550 \\ &= 39.35 \end{aligned}$$

$$\begin{aligned} \text{Velocity } V &= \frac{1.486}{0.016} \times \left(\frac{192.90}{39.35} \right)^{2/3} \times \left(\frac{1.00}{5280} \right)^{1/2} \\ &= 3.688 \text{ ft / Sec} \end{aligned}$$

$$\begin{aligned} \text{Discharge} &= A \times V = 192.90 \times 3.688 \\ &= 711.42 \text{ C/s} \end{aligned}$$

Hence OK

HIGH LEVEL CANAL
DISCHARGE CALCULATION SHEET
SECTION AT L.S. 6.300KM

Required Discharge = 7.070 C/s
 Bed width = 3.25'
 Side slope = 1:1
 Bed fall = 1.00'
 = 2000'

Assuming Depth of flow 'h' = 1.32'

Assuming co-efficient of rugosity to be 0.016 for lined channel

Manning's Formula

$$\text{Velocity } V = \frac{1.486}{0.016} \times R^{2/3} \times S^{1/2}$$

$$R = \frac{A}{P}$$

$$\begin{aligned} \text{Area } A &= (1.32)^2 + (3.25 \times 1.32) \\ &= 6.032 \text{ Sq.ft.} \end{aligned}$$

$$\begin{aligned} P &= 2 \times 1.866 + 3.25 \\ &= 6.983 \end{aligned}$$

$$\begin{aligned} \text{Velocity } V &= \frac{1.486}{0.025} \times \left(\frac{6.032}{6.983} \right)^{2/3} \times \left(\frac{1.00}{2000} \right)^{1/2} \\ &= 1.180 \text{ ft / Sec} \end{aligned}$$

$$\begin{aligned} \text{Discharge} &= A \times V = 6.032 \times 1.180 \\ &= 7.12 \text{ C/s} \end{aligned}$$

Hence OK



CHAPTER – VII
PROJECT PROPOSALS

WATER RESOURCES ORGANISATION (PWD)

1.1 IRRIGATION SYSTEM

In Palar Basin the command area of the old system is 1, 247 ha. Which is of double crop lands whereas the total new command area under the three canals are 1,52,718 ha which is of single crop. The entire new ayacut is divided into Four zones and each zone gets water once in two years under alternate sluice irrigation pattern.

1.2 IRRIGATION PRACTICES

The Zoning pattern of irrigation is followed in the Palar Sub basin command area. From the year 2000 onwards based on the requisition of farmers to enable to recharge the ground water alternate sluice irrigation pattern is followed in this sub basin.

In this sub basin the water is being supplied based on average duty. The water has been drawn from the reservoir at 120 duty and delivered in the farm gates at 60 duty adopting on and off system for irrigating the dry crops.

1.3 PARTICIPATORY IRRIGATION MANAGEMENT (PIM)

In this sub basin 134 water user associations have been formed based on the TNFMIS Act 2000 and the operation & maintenance responsibilities of the distribution network have been turned over to Water User Association. The Associations are functioning effectively in water management activities.

1.4 GROUND REALITIES

Due to ageing continuous usage of the distribution system and paucity of maintenance grant the efficiency have been reduced gradually and considerably, which deprived the tail end farmers in getting their due share.

The Condition of the various components of the distribution system network are as follows.

Contour Canal :

The Contour Canal has been designed to take the tailrace water from Sarkarpathy Power House and formed on the slope of rocky mountains by cutting on one side and forming inner excavated material. It runs for a length of 45.900 km mostly in dense forest area.

This Canal Transmits the impounded water of Parambikulam Group of Reservoir to Aliyar and Thirumoorthy Reservoirs. Since the canal is subjected to natural damages such as rock slide, root wedging, Algae growth etc., and the condition have been seriously deteriorated and this conveyance loss exceeds its allowable limit.

In WRCP Phase – I Programme part of the vulnerable and critical reaches only have been rehabilitated and left out reaches further determined and conveyance efficiency has been reduced to greater extent.

Parambikulam Main Canal :

Parambikulam Main Canal is the longest and the biggest canal. It is 125 Km in Length and is designed to carry a discharge of 1031 cusecs for irrigating an area of 316383 acres.

Udumalpet Canal :

Udumalpet Canal -30 Km. Long is designed to carry a discharge of 278 cusecs for irrigating an area of 58292 acres.

High Level Canal :

Hardly 2 Km in length, this canal is designed to irrigate an area of 2477 acres.

DISTRIBUTION OF NETWORK :

Due to continuous usage and ageing the condition of the canal networks has been badly damaged and heavy losses are observed and it resulting inadequate supply to the tail end areas. Also the most of the cross masonry structures such as syphons, aqueduct, under tunnel, drops, sluices and pipe points are in dilapidated condition, consequently the distribution and efficient management of irrigation management supply could not be attained.

SUPPLY BASED SYSTEM

Since the available water resource is not adequate to meet the growing demand of the various water using sectors in the basin, the annually available water has been being supplied without the crop requirement.

Even though the project has been designed for irrigated seasonal dry crops, the most of the farmers in the sub basin has slowly switched over to perennial crops such as coconut (More than 60%) mainly due to non availability of farm labour and easy management compared to seasonal crops.

Since the water is supplied once in two years for 4 ½ months the farmers are mainly depending upon the ground water to irrigate the perennial crops. Due to this the ground water have been over exploited in this sub basin.

CONSTRAINTS / CHALLENGES – COUNTER MEASURES

S.No	CONSTRAINTS / CHALLENGES	COUNTER MEASURES
1	Deterioration of Contour Canal arterial conveyer part	Proposed to rehabilitate the reaches leftout under WRCP Phase – I
2	Damages in Canal networks	Proposed to rehabilitate the damaged portions by lining the bed and sides of the main canal, branch canal and distributories upto 25 acres limit
3	Dilapidated conditions of the cross masonry structures	Proposed to rehabilitate the cross masonry structures
4	Deficiencies in regulating arrangements in the canal sluices	Proposed to replace the wornout wooden paddle shutters by screw gearing steel shutters 2) Repairs to sluices
5	Poor condition of the canal bank / inspection track	Proposed to strengthening and standardizing the canal banks
6	Lack of modern flow monitoring and controlling devices	Proposed to install Telemetry, SCADA and measurement devices in the reservoir and canal network .
7	Over exploitation of Ground Water	Construction of artificial recharging structures like checkdams etc.,
8	Lack of environmental awareness	Proposed to create awareness and implementing environmental projects
9	Encroachment in the canal area	Demarcation of canal boundary

CHALLENGES THROWN UP BY REHABILITATION

- Ensure predictable, equitable and reliable supply to all areas of the command
- Improve the conveyance efficiency in the canal system
- Effective water management
- Accurate monitoring and controlling of reservoir and canal system
- Strengthening of PIM Activities
- Optimizing of irrigation water in the sub basin

List of works to be carried out under IAM WARM PROJECT

WATER RESOURCES ORGANISATION

Sl. No.	Name of Work	Estimate Amount Rs. in Lakhs
CONTOUR CANAL		
1.	Rehabilitation of leftout reaches of contour canal from LS.30.400 km to 49.300 km	450.00
HIGH LEVEL CANAL		
1	Rehabilitation of left out reaches in High level canal	111.00
UDUMALPET CANAL		
1	Rehabilitation of left out reaches in Udumalpet main canal from LS. 0/0 km to tail end.	333.00
2	Rehabilitation of left out reaches in Ponnapuram branch canal and its distys taking of at LS 35.200 km of Udumalpet canal.	549.00
3	Rehabilitation of left out reaches distys of Ud umalpet main canal between reach from 0/0 km to 17.400 km.	254.00
4	Rehabilitation of left out reaches distys of Udumalpet main canal between reach from 17/400 km to 38.200 km.	490.00
PARAMBIKULAM MAIN CANAL		
1	Rehabilitation of left out reaches in Pa rambikulam main canal from L.S.1.200 to 12.000 km	340.00
2	Rehabilitation of left out reaches in Parambikulam main canal from L.S.12.000 to 22.600 km	180.00
3	Rehabilitation of left out reaches in Parambikulam main canal from L.S.22.600 to 28.600 km	140.00
4	Rehabilitation of left out reaches in Parambikulam main canal from L.S.28.600 to 39.500 km	148.00

5	Rehabilitation of left out reaches in Parambikulam main canal from L.S.39.500 to 52.000 km	167.00
6	Rehabilitation of left out reaches in Parambikulam main canal from L.S.52.000 to 68.000 km	388.00
7	Rehabilitation of left out reaches in Parambikulam main canal from L.S.68.000 to 78.000 km	125.00
8	Rehabilitation of left out reaches in Parambikulam main canal from L.S.78.000 to 87.400 km	202.00
9	Rehabilitation of left out reaches in Parambikulam main canal from L.S.87.400 to 103.765 km	260.00
10	Rehabilitation of left out reaches in Parambikulam main canal from L.S.103.765 to 113.000 km	105.00
11	Rehabilitation of left out reaches in Parambikulam main canal from L.S.113.000 to 124.000 km	200.00
BRANCH CANALS		
1	Rehabilitation of left out reaches in Arthanari palayam branch canal taking off from Parambikulam main canal.	30.00
2	Rehabilitation of left out reaches Thondamuthur branch canal taking off from Parambikulam main canal.	67.00
3	Rehabilitation of left out reaches in Gomangalam disty taking off from Parambikulam main canal.	80.00
4	Rehabilitation of left out reaches in Poolankinar branch canal taking off from Parambikulam main canal.	385.00
5	Rehabilitation of left out reaches in Pudupalayam branch canal taking off from Parambikulam main canal.	440.00
6	Rehabilitation of left out reaches in 28.600 km (L), Poosaripatty branch canal taking off from Parambikulam main canal.	93.00
7	Rehabilitation of left out reaches in Senguttupalayam, branch canal taking off from Parambikulam main canal.	49.00
8	Rehabilitation of left out reaches in Kovil palayam, branch canal taking off from Parambikulam main canal	28.50
9	Rehabilitation of left out reaches in Vadachittur, branch canal taking off from Parambikulam main canal	211.00
10	Rehabilitation of left out reaches in Kundadam branch canal taking off from Parambikulam main canal.	115.00
11	Rehabilitation of left out reaches in Koduvai branch canal taking off from Parambikulam main canal.	20.50
12	Rehabilitation of left out reaches in Tiruppur branch canal taking off from Parambikulam main canal.	150.00
13	Rehabilitation of left out reaches in Alagumalai branch canal taking off from Parambikulam main canal.	13.00
14	Rehabilitation of left out reaches in Nagalingapuram branch canal taking off from Parambikulam main canal.	9.00

15	Rehabilitation of left out reaches in Palladam extension canal taking off from Parambikulam main canal.	114.00
16	Rehabilitation of left out reaches in Vadachinnaripalayam branch canal taking off from Parambikulam main canal.	6.50
17	Rehabilitation of left out reaches in Periyakumarapalayam branch canal from L.S. 0/0 to 13.700 km (R) of Parambikulam main canal.	76.00
	DISTRIBUTORIES	
1	Rehabilitation of Left over reaches in 4.400 km(L) disty, 5.600 km disty, from SI.No. 1 to 10 and 8.600 km disty from SI.No. 1 to 9 (Left side) under the jurisdiction of Kodingium village Water Users Association	34.00
2	Rehabilitation of Left over reaches in 5.600 km disty from SI.No. 11 to tailend under the jurisdiction of Arthanaripalayam village Water Users Association	34.00
3	Rehabilitation of Left over reaches in 13.200 km(L), 14.800 km(L), and 15.400 km(L) distys and branch canal at 16.400 km(L) from SI.No. 1 to 6 under the jurisdiction of Udukkampalayam village Water Users Association	42.00
4	Rehabilitation of Left over reaches in disty branch canal at 16.400 km from SI.No. 7 to 20 under the jurisdiction of Nallur village Water Users Association	43.00
5	Rehabilitation of Left over reaches in the distys branch canal at 16.400 km from SI.No. 21 to tailend under the jurisdiction of Thondamuthur village Water Users Association	32.00
6	Rehabilitation of Left over reaches in the distys of branch canal at 19.200 km(L), 20.400 km(L), 21.600 km(L), 22.600 km(L) and 23.600 km(L) of PMC under the jurisdiction of Kanjampatti village Water Users Association	58.00
7	Rehabilitation of Left over reaches in the distys of Poosaripatti branch canal from 0/0 to tailend and Boligoundanpalayam disty under the jurisdiction of Nallampalli village Water Users Association	75.00
8	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 1 to 11(R) under the jurisdiction of Avallappampatti village Water Users Association	34.00
9	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 13 to 16(A)(L) 12(L) disty from SI.No. 1 to 12(L) and 17(L) disty from SI.No. 1 to 12 under the jurisdiction of Varadhanur village Water Users Association	28.00
10	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 18(L) to 43(R) and 17(L) disty from SI.No. 13 to tailend under the jurisdiction of Cholanur village Water Users Association	32.00

11	Rehabilitation of Left over reaches in the distys of Senguttupalayam branch canal from SI.No. 45(R) to tailend, 12(L) disty extension canal sl.no. 0/0 to tailend, 17(L) disty extension canal, 0/0 to tailend and 40(L) disty under the jurisdiction of Kullichettipalayam village Water Users Association	28.00
12	Rehabilitation of Left over reaches in extension Chandarapuram disty from SI.No. 0/0 to tailend in 28.600 km branch canal under the jurisdiction of Solapalayam village Water Users Association	47.00
13	Rehabilitation of Left over reaches in Devampadivalasu extension disty upto railway line in 28.600 km(L) branch canal under the jurisdiction of Puliyampatti village Water Users Association	29.00
14	Rehabilitation of Left over reaches in 9.68 km extension disty and Kurumbapalayam extension disty in 28.600 km branch canal under the jurisdiction of Kallipalayam village Water Users Association	38.00
15	Rehabilitation of Left over reaches in Devampadivalasu extension disty below railway line from sl.no. 1 to 12(L) in 28.600 km branch canal under the jurisdiction of R.Ponnapuram village Water Users Association	46.00
16	Rehabilitation of Left over reaches in Devampadivalasu extension disty below railway line from sl.no. 13 (R) to tailend in 28.600 km branch canal under the jurisdiction of Devampadivalasu village Water Users Association	52.00
17	Rehabilitation of Left over reaches in the distys of Kovilpalayam branch canal from sl.no. 1(L) to 8(L) and Chin neripalayam disty under the jurisdiction of Kappalankarai village Water Users Association	35.00
18	Rehabilitation of Left over reaches in the distys of Kovilpalayam branch canal from sl.no. 9 to 24(L) under the jurisdiction of Devanampalayam village Water Users Association	47.00
19	Rehabilitation of Left over reaches in the distys of Kovilpalayam branch canal from sl.no. 25(L) to tailend under the jurisdiction of Kaniyalampalayam village Water Users Association	28.00
20	Rehabilitation of Left over reaches in the distys of Vadachittur branch canal from sl.no. 1(R) to 8(L) under the jurisdiction of Andipalayam village Water Users Association	36.50
21	Rehabilitation of Left over reaches in the Chettiyakkapalayam sub branch of Vadachittur branch under the jurisdiction of Chettiyakkapalayam village Water Users Association	69.00

22	Rehabilitation of Left over reaches in the distys of Vadachittur canal from sl.no. 9(L) to 24(R) under the jurisdiction of Vadachittur village Water Users Association	51.00
23	Rehabilitation of Left out reaches of D.I.Sluices 1 to 8 of Veerapandi disty under Naranapuram II village Water Users Association	26.00
24	Rehabilitation of Left out reaches in 9 to taidam taking Veerapandi disty under Veerapandi village Water Users Association	55.00
25	Rehabilitation of Left out reaches in Andipalayam disty under Mangalam village Water Users Association	70.00
26	Rehabilitation of Left out reaches in Pumular disty under Pumular village Water Users Association	44.00
27	Rehabilitation of Left out reaches in Malaikovil disty and Ichipatty disty under Jamalapuram village Water Users Association	83.00
28	Rehabilitation of Left out reaches in Kokkampalayam disty and its sub disty taking off Kundadam branch canal under Kokkampalayam village Water Users Association	62.00
29	Rehabilitation of Left out reaches in D.I.Sluices 17 to 29 of Kundadam branch canal, Thayampalayam disty Nelali disty and old Kundadam disty D.I.Sluices 1 to 11 under Kundadam I(Kundadam) village Water Users Association	78.00
30	Rehabilitation of Left out reaches in D.I.Sluices 1 to 24 of Vanchipalayam disty taking off Nelali disty in Kundadam branch canal under Nelali village Water Users Association	27.00
31	Rehabilitation of Left out reaches in Edaiyankinar disty and its sub disty under Suriyanallur I (Edaykiner) village Water Users Association	10.00
32	Rehabilitation of Left out reaches in D.I.Sluices 9(R), 15(L) taidam water course of Kanchipuram disty taking of Edaiyankinar disty under Suriyanallur II (Kanchipuram) village Water Users Association	10.00
33	Rehabilitation of Left out reaches in D.I.Sluices 11(R), 12(L), 13(R), 14(L) taidam W.C. of Juriyallur taking of Edaiyankinar disty under Kundadam II (Suriyanallur) village Water Users Association	8.00
34	Rehabilitation of Left out reaches in D.I.Sluices off taking at L.S.87.425 km, Salaipudur disty, Puthurichel disty, G.N.Palayam disty, Pangampalayam disty under Kokkampalayam village Water Users Association	47.00
35	Rehabilitation of Left out reaches in Thirumalainaichapalayam disty, Santhamanaickam palayam disty, D.I.Sluices 95.254 km, D.I.Sluices 97.9 km, D.I.Sluices 99 km, Kattur disty and Pongalur disty under Kattur village Water Users Association	46.00

36	Rehabilitation of Left out reaches in D.I.Sluice 7 to 16 of TBC, Akkanampalayam disty, Veerapandi disty, Kunnagalpalayam disty fo TBC, under Karaipudhur village Water Users Association	30.00
37	Rehabilitation of Left out reaches in D.I.Sluice 17 to 20 of TBC, and Krishnapuram disty of TBC, under Gan apathipalayam village Water Users Association	312.00
38	Rehabilitation of Left out reaches in D.I.Sluice 1 to 9, Kosavampalayam disty, Kadalaihattupudur disty, Korapalayam disty and Thattavalasu disty of TBC, under Kandiyankovil A village Water Users Association	35.00
39	Rehabilitation of Left out reaches in D.I.Sluice 10 to 28, Kurukkalpalayam disty, Pannaikattupudur disty, Karkkattu disty, Amaravathipalayam disty and Vattamalai disty of VBC, under Vadachinneripalayam village Water Users Association	43.00
40	Rehabilitation of Left out reaches in D.I.Sluice 7 to 13, Palavanchipalayam disty, and Rakkipalayam disty, of TBC, under Muthanampalayam A village Water Users Association	21.00
41	Rehabilitation of Left out reaches in D.I.Sluice 1 to 6, Karaipudur disty, under Karaipudur A village Water Users Association	23.00
42	Rehabilitation of Left out reaches in Muthanampalayam disty of TBC under Muthanampalayam village Water Users Association	29.00
43	Rehabilitation of Left out reaches in disty of KBC under South Avinasipalayam - I village Water Users Association	48.00
44	Rehabilitation of Left out reaches in Kovilpalayam disty and Pudupalayam disty of PMC under Alagumalai village Water Users Association	28.70
45	Rehabilitation of Left out reaches in Andipalayam disty, Ramapalayam disty, Ankovil disty and Nagalingapuram branch canal of PMC under South Avinasipalayam -II village Water Users Association	60.00
46	Rehabilitation of Left out reaches from 0/0 to 7.328 km of ABC, Karattupalayam LS. 0/0 to 2/273 km, 14(L) D.I.Sluice, 1 to 4, and 17(L) D.I.Sluice, 1 to 7 disty of ABC under Thouguttpalayam village Water Users Association	62.00
47	Rehabilitation of Left out reaches in Padiyarkottai disty. Karattupalayam LS. 2/273 to 3/430 km, 14(L) disty, D.I.Sluice 5 to 10, 17(L) disty, D.I.Sluice 7 to 11 of ABC under Peruntholuvu -I village Water Users Association	25.00
48	Rehabilitation of Left out reaches in tail disty under Kangayam village Water Users Association	38.00
49	Rehabilitation of Left out reaches in Kadaiyur disty under Kadaiyur village Water Users Association	30.00

50	Rehabilitation of Left out reaches in Sivanmalai disty under Sivanmalai village Water Users Association	23.00
51	Rehabilitation of Left out reaches in Kandiyankovil disty under Kandiyankovil village Water Users Association	43.00
52	Rehabilitation of Left out reaches in Peruntholuvu tail disty under Nachipalayam village Water Users Association	28.50
53	Rehabilitation of Left out reaches in Peruntholuvu tail disty under Peruntholuvu-II village Water Users Association	54.00
54	Rehabilitation of disty off taking at L.S. 10.585 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pappini village Water Users Association (Reach 0/0 to 5.325 km)	71.00
55	Rehabilitation of disty off taking at L.S. 10.585 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Palayakottai village Water Users Association (Reach 5/325 to 10.125 km)	93.00
56	Rehabilitation of disty and Water courses off taking from L.S. 20.350 km to 23.050 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Vellakovil village -3 Water Users Association	55.00
57	Rehabilitation of disty and Water courses off taking from L.S. 23.350 km to 27.125 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Mettupalayam village -1 Water Users Association	68.00
58	Rehabilitation of disty and off taking from L.S. 27.480 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Mettupalayam village-2 Water Users Association	68.00
59	Rehabilitation of tailend disty off taking at L.S. 27.650 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Senapathipalayam village -1 Water Users Association (Reach 0/0 to 5.135 km)	87.00
60	Rehabilitation of tailend disty off taking at L.S. 27.650 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Senapathipalayam village -2 Water Users Association (Reach 5/135 to 12.610 km)	86.00
61	Rehabilitation of disty and Water courses off taking from L.S. 1.775 km to 3.350 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Sivanmalai village -1 Water Users Association	15.00
62	Rehabilitation of disty off taking from L.S. 4.135 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Sivanmalai village -2 Water Users Association	71.00
63	Rehabilitation of disty and water courses off taking from L.S. 5.135 km to 7.340 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Kangayam village Water Users Association	28.00

64	Rehabilitation of disty off taking from L.S. 7.760 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Paranjervali village Water Users Association	60.00
65	Rehabilitation of disty and water courses off taking from L.S. 8.500 km to 10.400 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Veeranampalayam village Water Users Association	39.00
66	Rehabilitation of disty and water courses off taking from L.S. 11.025 km to 11.925 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pappini village -II Water Users Association	58.00
67	Rehabilitation of disty and water courses off taking from L.S. 12.580 km to 13.725 km of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Veeracholapuram village -I Water Users Association	45.00
68	Rehabilitation of disty off taking from L.S. 14.000 km(R)(Reach 0/0 to 3.555 km) and disty off taking at L.S.14.080 km(L) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village-I Water Users Association	16.00
69	Rehabilitation of disty off taking L.S. 14.000 km(R)(Reach 3/555 to 8.975 km) of Vellakovil branch canal off taking at L. S. 126.100 km of PMC under Pachapalayam village -II Water Users Association	50.00
70	Rehabilitation of water courses off taking L.S. 15.075 km(R), 15.125 km(R), 15.825 km(L), 16.500(R), 17 km (R), 17.555 km(R) and disty at L.S.15.825 km (R) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village-III Water Users Association	26.60
71	Rehabilitation of water courses off taking L.S. 16.510 km(L), and disty L.S. 17 km(L) and 17.800 km(L), of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Veeracholapuram village-II Water Users Association	19.00
72	Rehabilitation of disty at L.S. 19.200 km(R), and 19.900 km (R) of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Pachapalayam village-IV Water Users Association	26.00
73	Rehabilitation of disty off taking at L.S. 20.160 km(R), of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Vellakovil village-I Water Users Association (Reach 0/0 km to 5/0 km)	64.00
74	Rehabilitation of disty off taking at L.S. 20.160 km(R), of Vellakovil branch canal off taking at L.S. 126.100 km of PMC under Vellakovil village-II Water Users Association (Reach 5/0 km to 11/400 km)	75.00
75	Rehabilitation of left out reaches in disty off taking at L.S. 3.4.500 km(R) of PMC	22.00

76	Rehabilitation of left out reaches in D.I.Sluice 1(L), 2(L), 3(R), 5(L), 6(L), of Kundadam branch canal under Vadamalaipalayam village Water Users Association	27.00
77	Rehabilitation of left out reaches in Nanthavanampalayam disty from L.S. 0/0 to 5.380 km and its sub disty of Kundadam branch canal under Nandhavanampalayam village Water Users Association	64.00
78	Rehabilitation of left out reaches in D.I.Sluice 2(R), 7(L), 10(L), 11(L), 15(R), 16(R) and T.D.W.C. of Eragampatti disty of Nandhavanampalayam disty of Kundadam branch canal under Sadayampalayam village-III Water Users Association	18.00
79	Rehabilitation of left out reaches in D.I.Sluice 7(R), 10(L), 12(R), 13(L), 14(R), of Kundadam branch canal and Muthugoundenpalayam disty from L.S. 0/0 to 5.394 km and its sub disty of Kundadam branch canal under Nandhavanampalayam village-III Water Users Association	64.00
80	Rehabilitation of left out reaches in 3(L),Sankapalayam disty, 7(R) Ammapalayam disty, D.I.Sluice 5(R), 8(R), 9(L), 11(L), of New Kundadam disty taking of Kundadam branch canal under Kundadam II (New Kundadam) village Water Users Association	42.00
81	Rehabilitation of left out reaches in Devaraja pattanam disty from L.S. 8.660 to 11.930 km, 11(L), 3(R), 18(R), 19(L), 20(L), 23(R), 24(L), 26(L) of Kundadam branch canal under Kundadam III (Devarajapattanam) village Water Users Association	82.00
82	Rehabilitation of left out reaches in Sadayapalayam disty from L.S. 0.0 to 52.800 km, and sub disty of Devarajapattinam disty in Kundadam branch canal under Sadayapalayam IV village Water Users Association	86.00
83	Rehabilitation of left out reaches in distys and water courses of taking off from L.S. 70.030 to 71.800 km, of PMC under Senjeriputhur village Water Users Association	88.00
84	Rehabilitation of left out reaches in distys and water courses of taking off Jallipatti disty and Periyakumarapalayam branch canal under Kasilingampalayam village Water Users Association	86.00
85	Rehabilitation of left out reaches in distys and water courses of taking off Periyakumara palayam branch canal, 15(L) disty to 32(L) tail dam disty of PMC under Periyakumara palayam village Water Users Association	64.00
86	Rehabilitation of left out reaches in distys of water courses of taking of 4(L) Manurpalayam disty of Periyakumarapalayam branch canal, under Pellampatti (Manurpalayam) village Water Users Association	78.00
87	Rehabilitation of left out reaches in distys of water courses of taking of 14(L), Pellampatti disty of Periyakumarapalayam branch canal, under Erakampatti (Pellampatti) village Water Users Association	58.00

88	Rehabilitation of left out reaches in distys of water courses of Veruvadampalayam, branch canal of PMC under Nandavanampalayam village Water Users Association	38.00
89	Rehabilitation of left out reaches 20(L) Govindapuram disty taking off Veruvadampalayam branch canal, taking of PMC under Sadayapalayam (Govindapuram) village Water Users Association	26.00
90	Rehabilitation of left out reaches in disty taking off from 79.390 km to 82.410 km of PMC under Vavipalayam village Water Users Association	32.00
91	Rehabilitation of left out reaches in disty and D.I.Sluices of PMC under Anikkadavu village Water Users Association	68.00
92	Rehabilitation of left out reaches in disty and D.I.Sluices of PMC under Vagatholuvu village Water Users Association	61.00
93	Rehabilitation of left out reaches in disty and D.I.Sluices of PMC under Kumarapalayam village Water Users Association	60.00
94	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under J.Krishnapuram village Water Users Association	82.00
95	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under Moongitholuvu village Water Users Association	61.00
96	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under Amandakadavu village Water Users Association	72.00
97	Rehabilitation of left out reaches in disty and D.I.Sluices of J.Krishnapuram branch canal of PMC under Periyapatti village Water Users Association	73.00
98	Rehabilitation of left out reaches in disty and D.I.Sluices 1 to 14 of Palladam extension canal under Naranapuram I village Water Users Association	48.00
99	Providing Telemetry, supervisory control and Data acquisition and measuring devices	1500.00
100	<i>Ground Water Component</i> Providing Check dams	48.00
101	Rehabilitation of Panchayat Union Tanks (2 Nos) in Palar Basin Area	18.00
	Total	12834.00 LAKHS

PROPOSAL FOR PROVIDING DISCHARGE STRUCTURE - HYDROLOGY

In Coimbatore District the Palar sub basin covers part of North & South and part of Udumalpet Blocks. The Udumalpet block comes under C critical block.

In all the villages covered by Palar sub basin there are several artificial ground water recharge structures like check dams, percolation ponds and desilting of ponds etc have been constructed by different agencies like Agricultural Engineering and TWARD Board, more over by the concern Panchayat Union, under different schemes like Samburana Village development – Special components scheme and Rajiv Gandhi Self Finance Scheme etc., hundred of check dams, percolation ponds and desilting of ponds have been constructed at wherever sites are available in the streams and odais by contributing certain percentage of amount by the farmers and the rest by the concern Panchayat union.

It is observed during field study in the sub basin area that in all the streams or odais from its origing to the confluence point of Palar river large number of structures like check dams, percolation ponds etc., have been constructed with a distance between two structures even below 500 mts in all the villages.

Hence as per the guidelines given in the reference cited, considering the feasibility of the area, existing structures, distance between the existing structure to the propose selected location, and the representation or local people etc., totally 5 locations have been selected for the artificial recharge structure under IAMWARM project proposals. In all the sites it has been

proposed to construct CHECKDAMS across the stream / odai. The details of the selected sites are given in the enclosed prescribed format. Preliminary Estimates (Tentative) given in the enclosed prescribed format. The detailed estimate and other required details will be prepared and submitted after finalizing of sites.

Sl. No.	Proposal site Village	Block	Sub-basin	Proposed Structure	Estimate (Approximate)
1	Thondamuhur	Pollachi South	Palar	CHECK DAM	10.00 Lakhs
2	Ravanapuram	Udumalpet	Palar	CHECK DAM	20.00 Lakhs
3	Udukkampalayam	Udumalpet	Palar	CHECK DAM	12.00 Lakhs
4	Karattur H/O Pungamuthur	Udumalpet	Palar	CHECK DAM	7.00 Lakhs
		Total			49.00 Lakhs

**FORMAT FOR PRELIMINARY ESTIMATES FOR ARTIFICIAL
RECHARGE SCHEMES IN IAMWARM PROJECT**

Sl.No	CRITERIA	DESCRIPTION
1	Circle	Thanjavur
2	Division	Hydrology Division Pollachi
3	Sub Basin	Palar
4	District	Coimbatore
5	Taluk / Block	Pollachi / Pollachi South
6	Village	Thondamuthur
7	Name of Project	IAMWARM Project
8	Nature of the project	Construction of check dam across the odai near thondamuthur Village
9	Latitude/Longitude of the site	Latitude : 10°34'29" Longitude : 77°03'45"
10	General lithology of the site	GL-2.50M top black cotton loamy soil, 2.5 – 5.0 m weathered rock, below 5.0 fissured rock
11	Name of the stream	--
12	Estimate value (Rs)	10.00 Lakhs
13	Technical brief	Length of the Check dam : 15.00 m Height of the Check dam : 1.50 m

**FORMAT FOR PRELIMINARY ESTIMATES FOR ARTIFICIAL
RECHARGE SCHEMES IN IAMWARM PROJECT**

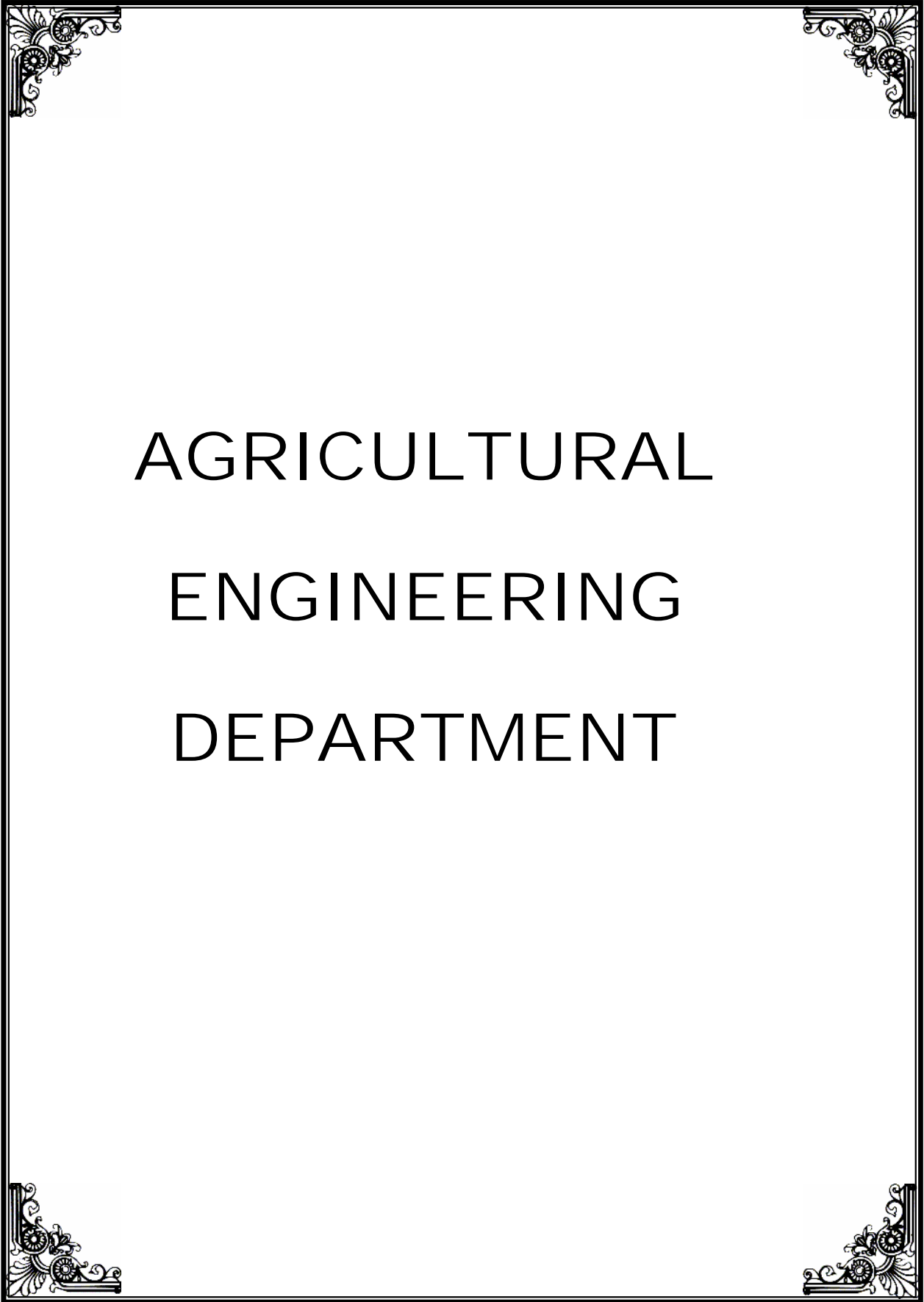
Sl.No	CRITERIA	DESCRIPTION
1	Circle	Thanjavur
2	Division	Hydrology Division Pollachi
3	Sub Basin	Palar
4	District	Coimbatore
5	Taluk / Block	Udumalpet / Udumalpet
6	Village	Ravanapuram
7	Name of Project	IAMWARM Project
8	Nature of the project	Construction of check dam across the Varapallam odai south of Ravanapuram Village
9	Latitude/Longitude of the site	Latitude : 10'29'23 Longitude : 77'05'10"
10	General lithology of the site	GL-5.00M top soils and sand, 5.0 – 12.00 m Alluvium and Highly Weathered rock, Below 12.00 m weathered & fissured rock.
11	Name of the stream	Varapallam
12	Estimate value (Rs)	20.00 Lakhs
13	Technical brief	Length of the Check dam : 35.00 m Height of the Check dam : 1.75 m

**FORMAT FOR PRELIMINARY ESTIMATES FOR ARTIFICIAL
RECHARGE SCHEMES IN IAMWARM PROJECT**

Sl.No	CRITERIA	DESCRIPTION
1	Circle	Thanjavur
2	Division	Hydrology Division Pollachi
3	Sub Basin	Palar
4	District	Coimbatore
5	Taluk / Block	Udumalpet / Udumalpet
6	Village	Udukkampalayam
7	Name of Project	IAMWARM Project
8	Nature of the project	Construction of check dam across the Udukkampalayam Pallam near Udukkampalayam
9	Latitude/Longitude of the site	Latitude : 10'33'34 Longitude : 77'06'25"
10	General lithology of the site	GL-1.50M top soil, 1.5 – 5.0 m weathered rock, below 5.0 m fissured rock
11	Name of the stream	Udukkampalayam Pallam
12	Estimate value (Rs)	12.00 Lakhs
13	Technical brief	Length of the Check dam : 18.00 m Height of the Check dam : 1.50 m

**FORMAT FOR PRELIMINARY ESTIMATES FOR ARTIFICIAL
RECHARGE SCHEMES IN IAMWARM PROJECT**

Sl.No	CRITERIA	DESCRIPTION
1	Circle	Thanjavur
2	Division	Hydrology Division Pollachi
3	Sub Basin	Palar
4	District	Coimbatore
5	Taluk / Block	Udumalpet / Udumalpet
6	Village	Karattur H/O Pungamuthur
7	Name of Project	IAMWARM Project
8	Nature of the project	Construction of check dam across the stream near Karattur
9	Latitude/Longitude of the site	Latitude : 10'32'26 Longitude : 77'06'18"
10	General lithology of the site	GL-2.00M top soil, 2.0 – 6.0 m weathered rock, below 6.0 m fissured rock & fractured rock
11	Name of the stream	---
12	Estimate value (Rs)	7.00 Lakhs
13	Technical brief	Length of the Check dam : 12.00 m Height of the Check dam : 1.20 m



AGRICULTURAL
ENGINEERING
DEPARTMENT

AGRICULTURAL ENGINEERING DEPARTMENT
DETAILED PROJECT REPORT ON IAM WARM
IN PALAR SUB BASIN

1.Profiles of Palar sub-basin

In continuation of the WRCP Programme funded by the World Bank, the follow on project proposed by the Government of Tamilnadu to a tune of Rs.3900/- crores covering 111 sub basins, has been fully considered by the World Bank in order to extent its financial assistance to fund the Irrigated Agricultural Modernisation and Water Resources Management (IAM WARM) Project with an integrated approach.

This project has been proposed based on the experiences gained through the implementation of WRCP in Tamilnadu as well as the recorded information on pilot project implemented in the Hanumanathi sub basin. It also involves the participation of various line departments and the water using stake holders with a multi disciplinary approach and with a principal objective of improving the water use efficiency, overall system efficiency and increasing the agricultural productivity, along with additional benefits to the farming community.

1.1 PARAMBIKULAM ALIYAR BASIN:

The Parambikulam – Aliyar Project (PAP) is an interstate Water Resources Development project carried out jointly by the states of Tamilnadu and Kerala . The objective of the development is harnessing the waters of the Bharathapuzha, the Chalakudi and the Periyar basins for irrigation and power production in both the states. It accomplishes the diversion and integration of eight west flowing rivers six in the Anaimalai hills and two in the plains for the benefit of the drought prone areas in the Coimbatore and Erode districts of Tamilnadu state. The six rivers are

- Anaimalaiyar
- Nirar
- Sholayar
- Parambikulam

- Thunacadavu
- Peruvaripallam and

The Two Rivers on the plains are

- Aliyar
- Palar

Storage and diversion works on the Eight Rivers with interconnecting tunnels have been constructed. The conveyance canals and tunnels divert the waters impounded in the upstream reservoirs to the plains of the Coimbatore and Erode districts of Tamilnadu state and Chittur area of the Kerala State. The Reservoirs lie at various elevations ranging between EL 1146 M (+3760 feet) and 320 M (+1050 feet) and this difference in elevations has made it possible to utilize the drop between them for the generation of hydro -power.

1.2 **RESERVOIRS**

The Components of the system include one diversion weir, seven storage reservoirs , conveyance system, interconnecting tunnels and wide network of canal distribution system.

The Main components of the system are

- 1.Upper Nirar weir
- 2.Lower Nirar Dam
- 3.Sholayar Reservoir
- 4.Parambikulam Reservoir
- 5.Thunacadavu Reservoir
- 6.Peruvaripallam Reservoir
- 7.Aliyar Reservoir
- 8.Thiurmoorthy Reservoir

1.3. **SUB BASIN**

Parambikulam Aliyar Basin comprises the following three sub basins:

- 1.Sholayar Sub basin
- 2.Aliyar sub basin
- 3.Palar Sub basin

In the above, Sholayar sub basin has no direct ayacut and an extent of 20558 ha is irrigated from the Aliyar dam in Aliyar sub basin and 1,53,998 ha is irrigated from Thirumoorthy dam in Palar sub basin. Aliyar and Palar are the two sub basins in the Parambikulam Aliyar Project selected for the IAM WARM Project

1.7 PALAR SUB BASIN

Palar River is a sub tributary of Aliyar River which joins Bharathapuzha River and empties in to Arabian sea. Thirumoorthy reservoir is one among the main component in PAP and formed in the plains across the river with a gross storage capacity of 1935 Mcft. Apart from its own catchment, Water can be diverted to this reservoir through Contour Canal from the Parambikulam group of reservoirs.

The Palar sub basin consists of the following canal systems.

1. High Level Canal System
2. Udumalpet Canal System
3. Parambikulam Main Canal System
4. Dhali Channel system

The command area of the old system is 1,247 ha. Which is of double crop lands whereas the total new command area under the above three canals are 1,52,718 ha which is of single crop. The entire new ayacut is divided into Four zones and each zone gets water once in two years under alternate sluice irrigation pattern.

1.8 RESERVOIR – THIRUMOORTHY RESERVOIR

The Palar River has its source in the Anamalai Hills. It flows in a north-westerly direction for about 20 miles. It is joined in Aliyar River on its left on its left.

A Reservoir has been formed by construction of a dam across the river Palar and it has a gross capacity of 1935 Mcft. Two irrigation canals i.e., High Level and Common Canals take off from this reservoir. The catchment area at the Thirumoorthy Dam site is 31 Sq.Miles.

1.9 CANALS IN THE SUB BASIN

The Palar sub basin consists of the following canal systems.

1. High Level Canal System
2. Udumalpet Canal System
3. Parambikulam Main Canal System
4. Dhali Channel syste

1.10 VILLAGES BENEFITED UNDER REVENUE ADMINISTRATIVE SETUP

S.No	Name of district	Name of Taluk	Name of block	No. of Villages	Area in Hectare
1	Coimbatore	Pollachi	Pollachi North Pollachi South Kinathukadavu	12	26606
		Udumalpet	Udumalpet Madathukulkam Gudimangalam	48	45448
		Palldam	Sulthanpet Palladam	23	11889
		Thirupur	Thirupur Pongalur	18	20474
2	Erode	Dharapuram	Dharapuram Kundadam	19	26770
		Kangeyam	Kangeyam Vellakovil	22	22778
					153965 ha

3.15 LOCACTION

The River Palar ranging from latitude 10° 29'0"N and 77° 09'30"E longitude in Udumalpet taluk. There are one reservoir. The basin area comprises of Udumalpet and Pollachi Taluk.

3.16 CATCHMENT AREA OF PALAR SUB-BASIN

The Palar Sub Basin has a typical climate, owing to the extensive catchment area in the western ghats. Palar enjoys the benefits of two monsoons.

3.17 HYDRO METEOROLOGY

The Hydro Meteorology parameters includes rainfall, temperature, humidity, wind velocity, evaporation and duration of sun shine which determine the climate of the basin.

3.18 RAIN FALL

The 50% and 75% dependable rainfall in mm for hilly area, plain area and Ayacut area of this basin are given below :

Sl. No	Basin Details	50% Dependable			75% Dependable		
		S W	N E	Annual	S W	N E	Annual
1.	Hilly Area	1829	381	2546	1413	271	2166
2.	Plain Area	923	337	1489	777	214	1195
3.	Old Ayacut area	854	318	1390	732	219	1142
4.	Four Zone area	166	278	605	117	48	488

3.19 TEMPERATURE

For the measurement of Hydrometeorological parameters in the basin area, there are three weather stations viz 1. Sundakampalaym maintained by Ground Water Wing of Public Works Department, 2. Coimbatore Airport maintained by IMD and 3. Aliyar Nagar are there. Since the Weather Station at Coimbatore is full pledged one, its data is taken for the study.

Sl. No	Climatological Parameters	South West	North West	Winter	Summer
1	Temperature max/min in C-deg	24.2/24.7	24.5/22.1	25.9/23.7	29.9/23.1
2	Avg. Temperature in C-deg	25.95	23.23	24.80	26.83
3.	Avg. Relative humidity in %	74.50	85.70	87.50	75.00
4	Avg.Wind velocity Km/hr	2.28	0.69	0.95	1.02
5	Avg.Pan Evaporation	-----140 mm per month -----			
6	Avg. Sunshine hours/day	5.63	4.20	7.85	8.97

3.20 HUMIDITY & WIND

Month	Relative Humidity		Evaporation Loss
	Morning	Evening	
January	85.28	52.64	8.16
February	86.72	46.37	5.30
March	84.33	43.47	5.60
April	87.64	45.18	4.50
May	82.68	48.01	5.60
June	80.83	59.64	4.80
July	82.11	64.48	4.30
August	83.13	64.10	4.70
September	82.00	58.73	5.40
October	85.59	61.31	4.46
November	88.86	63.13	3.73
December	88.98	58.40	3.92

3.21 SOIL

In this sub basin, due to different stages, Weathering of parent material, the soil types are met with in combination of Inceptisol, Alfisol and Entisol. More prominent type is Inceptisol.

Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained.	Suited for commonly grown crops with exceptions
Alfisol & Entisol	The red or brown soils having accumulation of illuviated clay in sub surface horizon, it is well drained, poor water and nutrient holding capacity.	Annual crops with shallow root systems come up well

3.22 LAND HOLDINGS

The details of agriculturist (farmers) based on the land holdings of Palar basin is given below :

Category	Size of holdings	Numbers	Ayacut in ha	Percentage
Marginal	Below 1.00 Ha	28601	43611.10	28.32 %
Small	1.00 – 2.00 Ha	38385	58533.12	38.01 %
Medium	2.00 – 4.00 Ha	20919	31892.16	20.71%
Big	4.0 ha & above	13083	19957.62	12.96 %
Total		100988	153994	100 %

3.23 DEMOGRAPHY

Sl. No.	Name Of Taluk	Total No. Of Blocks	Total No. Of Villages	Population			Type Of workers			
				Male	Female	Total	Agri. Labours	Cultivators	Industrial Workers	Others
Coimbatore District										
1	Pollachi	3	12	63,332	62,623	125,955	30,557	16,072	174	79,152
2	Udumalpet	3	48	96,988	95,733	192,721	50,784	20,822	199	120,916
3	Palladam	2	23	37,809	36,131	73,940	12,832	8,625	215	52,268
4	Tiruppur	2	18	47,524	45,673	93,197	19,010	12,806	247	61,134

Erode District										
5	Dharapuram	2	19	28,810	28,524	57,334	16,600	16,345	163	24,226
6	Kangeyam	2	22	37,669	36,856	74,525	17,055	16,836	251	40,383
		14	142	312,132	305,540	617,672	146,838	91,506	1,249	378,079

3.24 GROUND WATER POTENTIAL

GROUND WATER POTENTIAL

(a) LIST OF BLOCKS AND STAGE OF GROUND WATER EXPLOITATION

Sino	Name of district	Name of Block	Category
1	Coimbatore	Pollachi North	Over Exploited
2	Coimbatore	Pollachi South	Over Exploited
3	Coimbatore	Kinathukadavu	Over Exploited
4	Coimbatore	Udumalpet	Critical
5	Coimbatore	Madathukulam	Semi Critical

6	Coimbatore	Gudimangalam	Critical
7	Coimbatore	Sulthanpet	Over Exploited
8	Coimbatore	Palladam	Critical
9	Coimbatore	Pongalur	Semi Critical
10	Coimbatore	Thiruppur	Semi Critical
11	Erode	Kundadam	Semi Critical
12	Erode	Dharapuram	Semi Critical
13	Erode	Kangeyam	Semi Critical
14	Erode	Vellakovil	Semi Critical

(c) WELLS IN THE COMMAND AREA

Coimbatore District	Taluk	Wells	
		Energised	Diesel
Coimbatore District			
1	Pollachi	11,154	368
2	Udumalpet	8,517	1,024
3	Palladam	9,639	144
4	Tiruppur	7,355	22
Erode District			
5	Dharapuram	2,287	372
6	Kangeyam	7,956	1,659
Total		46,908	3,589

(c) BLOCK - WISE AVAILABILITY OF GROUND WATER

Sl. No.	Name Of District	Name Of Blocks	Net ground Water Available In M cum	Ground water Availability in command area In M cum	Domestic Draft In the Command Area
1	Coimbatore	Udumalpet	90.5408	81.4867	1.4258
2	Coimbatore	Gudimangalam	49.6537	47.1710	1.3177
3	Coimbatore	Pollachi- North	58.1892	46.5514	1.3095
4	Coimbatore	Pollachi- South	28.6852	24.3824	1.6661
5	Coimbatore	Kinathukadavu	42.8347	25.7008	0.8336
6	Coimbatore	Palladam	27.4561	19.2193	1.1347
7	Coimbatore	Pongalur	36.3610	32.7249	1.3586
8	Coimbatore	Sultanpet	30.7874	24.6299	0.9293
9	Coimbatore	Tirupur	18.2509	11.8631	1.5814
10	Coimbatore	Madathukulam	63.0751	31.5376	0.7795
11	Erode	Dharapuram	68.0080	44.2052	0.7886
12	Erode	Kangayam	33.2636	26.6109	1.1399
13	Erode	Kundadam	38.3664	34.5298	1.0291
14	Erode	Vellakoil	39.1167	33.2492	1.1213
TOTAL			624.5888	483.8622	16.4151

Potential Available in the 50% of the Command Area

241.93 M cum .

SURFACE WATER POTENTIAL

Based on Average Yield from 1974-75 to 2003-2005

- a. Quantity received from own catchment : 1090 Mcft
- b. Quantity diverted through Contour Canal : 9268 Mcft
to Thirumoorthy Reservoir

Total Surface Water Potential: 10358 Mcft (or) 293 Mcm

COMMAND AREA AND WATER USERS

ASSOCIATION

COMMAND AREA AND WATER USERS ASSOCIATION

(a) NEW COMMAND - ZONE WISE

Sl. No	Name of the Canal	Total in Ha.	ZONES			
			I	II	III	IV
1	Parambikulam Main Canal	128090	32040	31970	32166	31914
2	Udumalpet Canal	23600	5981	5920	5783	5916
3	High Level Canal	1003	246	249	254	254

(b) OLD COMMAND

Sl. No	Name of the Canal	Total Ayacut in Ha.
1	Dhali Channel System	1247

DISTRICT / TALUK WISE AYACUT :

COIMBATORE DISTRICT (in Ha)				
Pollachi Taluk	Udumalpet Taluk	Palladam Taluk	Tirupur Taluk	TOTAL
26606	45448	11889	20474	104417
ERODE DISTRICT (in Ha)				
Dharapuram Taluk		Kangayam Taluk		TOTAL
26770		22778		49548
TOTAL				153965

WATER USERS ASSOCIATION – DETAILS

Total Command	:	1,53,965 Ha
Number of WUAs	:	134 Nos
Date of Election (Based on TNFMIS Act)	:	07.02.2004
Presidents Elected	:	134 Nos
Vacancies	:	Nil
TC Members Elected	:	864
Vacancies	:	Nil
Responsibilities Handed over on	:	11.02.2004

1.5 ROLE OF WATER USERS ASSOCIATION

The Government has taken many projects to increase the food production and thereby improve the related industries for the development of the nation. The role of the Water Resources Organisation in the irrigation sector is

- Development of new irrigation projects
- Operation and maintenance of irrigation systems
- Distribution of water from storages
- Improving the efficiencies of irrigation systems
- Rehabilitation of irrigation system
- Prevention of flood damages
- Population control in the irrigation system
- Eviction of encroachments in the irrigation system
- Distribution of water to other essential requirements, such as drinking water, industries etc.,

1.6 TAMILNADU FARMERS MANAGEMENT OF IRRIGATION SYSTEM ACT, 2000 (Tamilnadu Act 7 of 2001)

The Government of Tamilnadu has formulated “Tamilnadu farmers Management of Irrigation System Act, 2000 (TNFMIS Act) to get more involvement of farmers in the irrigation management, integrity of farmers by forming associations and delegating powers required for the management of irrigation system. The act is applicable for all the irrigation systems under the control of Water Resources Organisation of Public Works Department. This act is having 7 chapters and 50 sections. Accordingly number of water users association has been formed in Tamilnadu for the projects implemented by Water Resources Organisation with the World Bank aid, as first stage.

The Water Users Association is formed for each main canal of the system. This comprises of one president and even number of members representing territorial constituency having about 40 Ha. of command. Both the

President and Members are elected through public election. The term of the Water Users Association, is for five years. The election and responsibilities of the water users association is as below.

- Preparation of irrigation schedule
- Distribution of water to distributories from supply channel
- Rotational water supply during water deficit period
- Distribution of water to the sluices
- Maintenance and improvements of the Distribution system
- Optimum use of water
- Assisting the revenue department in collection of water taxes
- Settlement of disputes among the members
- Maintenance of accounts and records.
- Finance management including planning and collection of revenue from members

The section 27 of the TNFMIS Act, 2000 provides sources for income to the association as follows.

- Share in the water taxes
- Membership fee, service charges
- Government aid, subsidy etc
- Income from the assets in the command area
- Loans
- Income from services etc.,

The accounts are to be maintained properly and submitted for auditing.

WATER USERS ASSOCIATION RESPONSIBILITIES

The Responsibilities of the Association are as follows

a) President

All meetings should be conducted by the president. All correspondence, contacts with departmental officials, office management and

all activities of the association are the responsibility of the president. The president is to accept the advices of the majority of members. All approved expenditure proposed by the secretary should be drawn by the treasuries only after the authorization of the president.

b) Vice-President

In the absence of the president the vice president shall look after the duties of the president.

c) Secretary

Management of Office Administration, correspondences, implementation of detritions. Keeping the accounts and submitting the annual returns and other reports to the district registrar on or before June 30 th of each year.

DETAILS OF AYACUT BENIFITTED UNDER PARAMBIKULAM MAIN CANAL IN BLOCK WISE / DISTRICT WISE COIMBATORE DISTRICT

1.	Udumalpet Block	:	21202.60 Ha
2.	Madathukulam	:	3960.51 Ha
3.	Pollachi South	:	7697.06 Ha
4.	Pollachi North	:	10497.82 Ha
5.	Kinathukadavu	:	8187.29 Ha
6.	Palladam	:	6662.32 Ha
7.	Sultanpet	:	6654.68 Ha
8.	Pongalur	:	15828.72 Ha
9.	Gudimangalam	:	19866.24 Ha
10.	Kundadam	:	379.91 Ha
11.	Tiruppur	:	<u>3728.01 Ha</u>
	Total	:	<u>104665.66 Ha</u>

Or

104666.00 Ha

ERODE DISTRICT

1.	Dharapuram	:	4704.09 Ha
2.	Kangeyam	:	15635.01 Ha
3.	Vellakoil	:	7200.40 Ha
4.	Kundadam	:	<u>21760.21 Ha</u>
	Total	:	<u>49299.71 Ha</u>
	Net Total	:	104666 + 49299.71
			= 153965.00 Ha
			= (or) 1,53,965 ha

2.EXISTING FARM PRACTICES

2.1 Soil

In this sub basin, due to different stages, weathering of parent material , the soil types are met with in combination of red soil and black soil. The red soil occupies 85% of the palar sub basin area and remaining 15% occupied by the black soil. The red soil is suitable for commonly grown crops and in black soils are suitable for maize, sun flower, Bengal gram.

2.2. Implements and equipments usage

In the Palar sub-basin area there are 1630 tractors,150 Power tillers owned by the farmers as well as private owners for agricultural operations. Hence the availability of tractors is more than sufficient to meet the demand of agricultural operations. The availability of modernized farm implements for preparatory cultivation to post harvest operations is very limited in the palar sub basin command. Hence the popularisation of agricultural machinery is absolutely necessary in the palar sub basin area where the shortage of labour is in the increasing trend,

2.2 Water:

A. Irrigation Practices:

Water received from rain is either directly used or taken through conveyance system comprising river, channels and tanks. At present the Government is distributing the water to the farmers through Water Resources Organisation. Due to inadequate cooperation among the farmers, the tail end farmers are often suffering from either non receipt of water or untimely receipt. Moreover the conjunctive use of ground and surface water is not effectively done. In order to overcome such difficulties and create integrative and involvement of farmers in the best management and use of water, the Government has introduced the system of distribution of water by themselves, by forming Water Users Association

The farmers in the palar basin is following flood irrigation methods at the time of Canal irrigation period. In the non.irrigation period they use well water for irrigating their crops as supplemental irrigation and for the coconut crops they follow check basin method which is the major crop in the sub basin. Due to non-availability of irrigation water and over exploitation of well water farmers adopted high-tech micro irrigation methods from the year 1992 onwards 22915 ha area has been covered under micro irrigation for all crops in which 21450 ha is under coconut crops. The big farmers has adopted micro irrigation system. The small farmers even though they are readily coming forward to adopt the high tech micro irrigation system it is not possible for them due to poor social economic status.

B. On Farm Development:

The basic objective of On Farm Development work can be defined as the effective utilization of available water for maximum water use efficiency and maximum crop production. On Farm Development works aims at creating necessary infrastructure facilities in the form of open channels/underground pipe lining system with water control and distribution structures etc in well defined micro blocks with in the outlet command. In the palar sub basin lining of field channels had been executed to ensure proper delivery of irrigation water to individual land holdings from the year 1986 onwards. Almost entire area has been covered with 20% lining . Now pilot study can be taken to take the water

from the pipe point through PVC underground pipe line system and water is given to the individual farmers field and the farmers can use the water for both drip and sprinkler irrigation.

C. Level of Mechanisation:

The preparatory cultivation is being done with available tractors in the sub basin areas. The level of mechanisation in respect of preparatory cultivation, sowing, post harvest technology is very poor. In this area there is shortage in the availability of labour due to mobilization of industries in the surrounding areas so that Farm Mechanisation is a must for the sub basin area. The agricultural labourers are migrating to nearby Tiruppur area which is famous for hosiery industry. The awareness for the farmers as well as the WUAs regarding the coconut digger, maize dehusker farm machineries is very limited and popularisation of these machineries is necessary in this sub basin. Because of the high income the farmers are now switching over to maize crop in major parts of the sub basin. Hence the user friendly maize husker sheller will have an impact among the WUAs as well as farmers due to labour shortage.

D. Labour:

The agricultural labour available in the sub basin is 20% of the total population. In view of heavy industrialisation in the sub basin area the labour availability in the sub basin area is very acute. The labour force prefers to go to nearby hosiery industries due to higher income as compared to farming operations. Migration of agricultural labour to urban areas is on the increasing trend due to discontinued agricultural operations.

E. Farm Practices –Ground realities

Even though the farmers are adopting drip irrigation they are not adopting fertigation in the sub basin area. The farmers are finding difficulty to market the harvested produces and availability of transport facilities is also not sufficient.

3. CONSTRAINTS OBSERVED:

The Line departments P..W.D.,,Agriculture Department,Agricultural Engineering Department conducted discussions along with WUAs at various places regarding the present scenario and constraints in the sub basin. The WUAs also conducted individual meeting along with their members . After detailed discussions and also detailed walkthrough survey along with the PWD officials the following constraints are widely observed.

- ✓ Deficit of water for irrigation
- ✓ Availability of water to a particular zone for 135days only once in two years.
- ✓ Wastage of water due to flood irrigation
- ✓ Lack of equity in distribution between head reach and tail end farmers
- ✓ Non-availability of labour for all agricultural practices
- ✓ Over Exploitation of ground water
- ✓ Non-adoption of modern high-tech irrigation techniques such as drip irrigation,Sprinkler Irrigation to a larger extent
- ✓ Low field application efficiency
- ✓ Non availability of ground water during the critical period of crop growth
- ✓ Not harvesting the excess rainwater in the sub basin ayacut area
- ✓ No correlation between available water and cropping pattern
- ✓ Inadequate Farm Mechanization
- ✓ Non adoption of fertigation through drip
- ✓ Traditional method of farming
- ✓ Inadequate post harvest management facilities

CROPPING PATTERN PALAR BASIN

Sino	Crop Details	Area under crops in ha				
		With out project			With project	
		Fully	Partially	Rainfed	Fully	Partial
1	Coconut (surface alone)	4800	3300	0	8100	0
	Coconut (Drip)	10050			9000	
	Coconut (Drip with Fert)				3900	
	Coconut (Inter crop)					
2	Paddy (Aug -dec)	350	0	0	350	0
	Paddy (Jan - May)	90	0	0	90	0
3	Cholam (Aug -Dec)	2500	1175	1150	1835	1000
	Cholam (Jan -May)	3550	1255	805	3820	1230
4	Pulses (Aug - Dec)	3015	980	985	1900	675
	Pulses (Jan - May)	3870	1225	765	1600	1100
5	Ground nut(Aug - Dec)	2200	715	250	3950	315
	Ground nut(Dec - May)	2800	905	0	4700	0
6	Maize (Aug - Dec)	8150	1415	250	11600	0
	Maize (Jan - May)	5630	1135	240	6600	0
7	Sunflower (Aug -Dec)	195	95	0	850	0
	Sunflower (Jan -May)	840	160	0	1400	0
8	Tapioca (Aug - Dec)	450	152	0	550	60
9	Cotton (Aug - Dec)	770	0	0	770	0
	Cotton (Jan- May)	-	0	0	0	0
10	Tomato (Aug - Dec)	275	0	0	350	0
	Tomato (Jan - May)	270	0	0	340	0
11	Chilly (Aug - Dec)	390	0	0	490	0
	Chilly (Jan - May)	395	0	0	495	0
12	Brinjal (Aug -dec)	50	0	0	60	0
	Brinjal (Jan -May)	45	0	0	50	0

13	Bhendi (Aug - Dec)	70	0	0	120	0
	Bhendi (Jan - May)	65	0	0	115	0
14	Drumstick	350	0	0	450	0
15	Mango	965	0	0	1015	0
16	Amla	320	0	0	370	0
17	Fodder crops	375	0	0	1400	0
18	Sapota	180	0	0	280	0
19	Onion (Aug - dec)	885	0	0	1780	0
	Onion (Jan - may)	1200	0	0	2300	0
20	Beetroot (Aug - Dec)	150	0	0	225	0
	Beetroot (Jan- May)	100	0	0	125	0
21	Spices- Turmeric	65	0	0	65	0
22	Gourds (Aug - Dec)	115	0	0	150	0
	Gourds (Jan- May)	100	0	0	150	0
23	Banana (Aug - Dec)	450	0	0	450	0
24	Sugar cane (Old ayacut)	880	0	0	880	0
		56955	12512	4445	72675	4380

4. DIVERSIFICATION /FUTURE VISION PROPOSED

Water saving technologies and appropriate cropping patterns should be followed in order to achieve the maximum profitability per unit of water available by implementing the work components proposed by the P.W.D., Agricultural Department, Agricultural Engineering Department, Horticulture, Animal Husbandry Departments. Thus integrated development approach is essential to attain the desired results.

In order to address the problems/grievances by the farming community the following features are incorporated in the project for the entire development of the Palar sub basin.

1. Assured supply of water at 3R(Right quantity, Right time and Right place)
2. Promotion of conjunctive use of surface and ground water and on Farm development works.

3. Devising water saving technologies
4. Introduction of high-tech Micro Irrigation system especially for the coconut crops left over for the gap areas under Agri/Hort crops proposed by the respective departments and also providing drip irrigation with fertigation to coconut crops.
5. Adoption of optimum cropping pattern and high income cash crops to achieve maximum cropping intensity.
6. Promotion of Farm Mechanization for effective farming operations.
7. Providing Farm Ponds in the individual farmers field with provision of additional income through Fish culture.
8. Providing rain water harvesting structures such as Check dam, Percolation Pond, Conversion of abandoned wells.
9. Providing PVC conveyance Buried pipe line system for effective water conveyance at the time of Canal Irrigation.
10. Promotion and popularisation of precision Farming for hybrid Tomato.
11. Providing Sprinkler Irrigation to maize, onion and other vegetable crops.
12. Providing high tech drip irrigation for Fruit Crops, Drumstick, Hybrid Tomato, Tapioca, Banana, cotton, sugar cane, Turmeric

5. CHALLENGES THROWN UP BY DIVERSIFICATION /A REA EXPANSION

In order to meet the challenges, the WUAs and Farmers should be trained and educated . The innovative farmers of Palar sub basin will readily adopt new innovative technologies in all areas if there are trained properly. The following issues in which the farmers are to be trained:

1. Equity distribution of Irrigation water from upper reaches to tail end areas by adopting proper rotational water supply system.
2. Significance of Micro Irrigation system i.e drip with fertigation to all crops especially to predominant coconut crops.
3. Significance of Sprinkler Irrigation system to Maize, onion vegetable crops.
4. Popularisation of advanced user friendly agricultural implements.
5. Consolidation of fragmented land holdings.
6. Significance of rain water harvesting in order to store maximum run off available in the sub basin areas.

7. Training the farmers to have added income through Aquaculture in Farm Pond.
8. Significance of Community based water sharing in the canal command area through providing P.V.C under ground pipe line system.
9. Significance of usage of high tech drip and sprinkler system even at the time of Canal Irrigation period.

6. SOLUTIONS AND RECOMMENDATIONS

To redress the problems/constraints explained by the sub-basin ayacut farmers, the solutions should be arrived. For this, active participation of Ayacut farmers, the solutions should be arrived. The water users Association has been formed since 2004 and the operation and maintenance of canal system upto sluice level has been handed over since 2004. The WUAs are effectively functioning in the Palar Sub basin. Based on the active discussion and readiness to adopt modern innovative technologies the work components are arrived to implement the project.

1. Suitable cropping pattern has to be evolved based on the available water for agricultural/horticultural crops. High-tech Drip and Sprinkler Irrigation system has been proposed to be implemented to improve the field application efficiency and to fetch more productivity.
2. Drip Irrigation is to be provided for coconut crops with fertigation in order to improve fertilizer application efficiency and to reduce the cost of fertilizer.
3. Providing underground PVC Pipe line system from the canal command and construction of a sump in the sluices for community based irrigation for canal irrigation as well as for Sprinkler/Drip irrigation during non-irrigation period.
4. Demonstration and supply of advanced user friendly Farm Machineries and Equipments like Maize husker sheller, Ground nut digger, Ground nut stripper, Coconut Dehusker.
5. Construction of Farm ponds with Fish culture to supplement additional income to the farmers.
6. Construction of Check Dams(Stream Augmentation),Percolation ponds

for rain water harvesting and recharging system for Farmstead in the sub basin.

7. Farm Ponds ,Percolation ponds, Check dams, Conversion of abandoned wells are rainwater harvesting structures which would facilitate supplemental irrigation to the crops in the Palar sub basin
Areas which is getting irrigation water once in 2 years for a period of 18 months.

7. DETAILS OF DEVELOPMENT COMPONENTS PROPOSED

In the IAMWARM project, the following work components are proposed in the sub basins on the basis of needs and requirements of Water Users Association in view of achieving the project objectives and uplifting the socio economic status of the farmers of the Palar Sub basin.

7.1. MICRO IRRIGATION

The Micro Irrigation System components are proposed in accordance with the cropping pattern proposed by the Agriculture and Horticulture Departments in their DPR (with project) and minimum 60% to maximum of 100% of the crop area in respect of Coconut, Mango, T.C.Banana, Sappota, Intercrop. In respect of crops like gourds, cotton ,ground nut. bendi minimum 25% to max 100% subject to the availability and improvement of well water or wells and effective diversification of cropping pattern. The remaining farmers would be motivated and will definitely come forward for micro irrigation before the completion of the project after seeing the benefits from the nearby farmers.. The benefits of precision farming components will also be witnessed by the other farmers after the implementation in the first year. The benefits of Micro Irrigation are

- In the cropped area only 40 to 50% is moistured which reduces conveyance Losses, evaporation losses which saves about 40 to 50%
- Requirement of water for micro irrigation and ordinary flood irrigation is in the Ratio of 1:3 based on irrigation requirement
- Labour savings upto 25 to 30%

The fertilizer can be applied directly to the root zone there by reducing the Cost as well as application efficiency

By implementation of micro irrigation system more area will be brought under irrigation with the available water. The MIS will be implemented with 50% project investment from World Bank and 50% assistance by state or central Government. The beneficiaries will contribute 10% of the total cost of MIS and will be deposited as corpus fund for maintenance. TNAU has proposed MIS with fertigation for 1500ha under coconut as project mode and 100 ha under Sugar Cane.

CROPWISE PROPOSED AREA FOR MICRO IRRIGATION SYSTEM IN PALAR SUB BASIN UNDER IAMWARM PROJECT

Ayacut Area 153965

Sl. No.	Name of Crop	With project area in Ha	Existing area under Drip/Sprinkler (Ha)	Area Proposed by TNAU (Ha)	Balance area available (Ha)	Proposed by AED for micro Irrigation (Ha)		% of area covered
						Drip	Sprinkler	
1	2	3	4	5	6	7	8	
1	Mango	1020	870	0	150	150	0	100
2	Amla	365	335	0	30	30	0	100
3	Sapota	280	260	0	20	20	0	100
4	Banana	450	0	0	450	350	0	78
5	Coconut	41820	21450	1500	18870	12100	0	64
6	Tomato	1455	0	0	1455	750	0	52
7	Drumstic	874	0	0	874	700	0	80
8	Tapyaco	1260	0	0	1260	500	0	40
9	Turmeric	65	0	0	65	65	0	100
10	Gourds	355	0	0	355	280	0	79
11	Cotton	1175	0	0	1175	200	0	17
12	Sugarcane	880	0	100	780	500	0	64
13	Groundnut	10305	0	0	10305	0	2500	24
14	Chillies	1895	0	0	1895	0	1100	58
15	Onion	8080	0	0	8080	0	4450	55
16	Brinjal	235	0	0	235	0	200	85
17	Bendi	485	0	0	485	0	400	82
18	Beetroot	335	0	0	335	0	250	75
19	Paddy	335	0	0	335	0	0	NP
20	Cholam	21360	0	0	21360	0	0	NP

21	Pulses	15345	0	0	15345	0	0	NP
22	Maize	39780	0	0	39780	0	0	NP
23	Sunflower	4430	0	0	4430	0	0	NP
24	Fodder crop	1410	0	0	1410	0	0	NP
	Total	153994	22915	1600	129479	15645	8900	

☆ Drip- 600,Precision farming-150 for hybrid tomato

a. Drip Irrigation system

Drip irrigation with fertigation for the coconut crops in the Palar sub basin are proposed over an area of 12100 ha for predominant coconut crop, For other crops like Mango, Sappota, Banana ,Sugar cane ,Hybrid tomato, gourds, cotton an area of 3545 ha has been proposed and a total extent of 15645 ha under Drip system. Already an existing area of 22915 ha under Drip Irrigation system in the Palar Sub basin area. There will be possibility of covering 100% area under Drip system especially for the coconut crop at the end of the project.

The yield of the coconut crop will increase considerably by providing drip with fertigation. To minimize the utilization of canal irrigation water as well as ground water and also to save labour costs the innovative farmers will readily come forward for adoption of drip irrigation system

b. Sprinkler Irrigation system

Sprinkler Irrigation system component is proposed for Ground nut, Chillies, Onion ,Brinjal, Bendi, Beet root to the extent of 8900 ha for economic usage of irrigation water to attain the field capacity for effective growth of the plants. The conveyance and application efficiency will be enhanced and also the pest will be effectively controlled by adoption of sprinkler Irrigation system. In the palar basin the availability of canal water is very limited and the farmers has to switch over to modern high tech irrigation like sprinkler irrigation to save every drop of water.

7.2 PRECISION FARMING

Precision farming is a farm practice in which all the inputs such as water, seed, nutrients, fertilizers, plant protection chemicals, other innovative production technologies are supplied in optimum quantity at the right time in right manner to get the highest possible yield. 150 ha has been proposed for tomato crop under precision farming in which all inputs will be given to the farmers at 100% funded from the project cost. The beneficiary contribution will be 10% of the total cost and deposited in the corpus fund for the maintenance of precision farming. The other innovative farmers will come forward to adopt precision farming after seeing the results from the proposed area. The WUAs wise proposed area are furnished in the annexure.

7.3 FARM MECHANISATION:

To promote and demonstrate the advanced farm machinery and farm implements introduced by the TNAU among the WUA, the implements shall be distributed to the Water Users Associations (100% Funding) to attain more productivity. These implements proposed to be given to the WUAs on popularisation mode. These Implements shall be hired out to the beneficiaries by the WUA and hire charges will be prescribed by the WUA. The collected hire charges will be utilized for maintenance.

Tractor drawn Groundnut digger, Power operated Ground nut stripper, Maize husk sheller would be useful for irrigated dry crop. For the predominant crop coconut, coconut dehusker would be very useful. Due to this the farming operation shall be carried out effectively. Farm mechanisation is the only solution for the shortage of labour due to urbanization in the sub basin area. The innovative and progressive farmers of this sub basin will definitely switch over to Farm mechanisation in large scale at the end of the project.

7.4 PILOT PROJECT FOR UNDERGROUND PVC PIPE LINE CONVEYANCE SYSTEM WITH SUMP PROVISION IN CANAL COMMAND

Adopting the new pattern of irrigation and the experiences gained in the executed Hanumanadhi sub-basin project i.e providing underground PVC pipe

line system from the pipe outlets and construction of sump to store the canal water at the time of canal irrigation. The individual farmers will be given outlets in their field through PVC pipe line system. The wells of the farmers also will be interconnected with the system. From the farmers outlet the installation of drip or sprinkler system is possible. Provision is also made for electrification and pumping machineries.

The laying of PVC pipe line system, sump cost, Pumping Machinery, Electrification cost will be carried out with farmers contribution of 10% cost of estimate and deposited in the corpus fund. The recurring expenditure will be met out from the water charges collected from the collection of amount on hour basis from the beneficiary and non recurring expenditure will be met out from the corpus fund. The experimental implementation of the above project will yield good results for more farm productivity for each drop of water. On evaluation of the above community based system the same will be extended to other sub basin areas in large scale.

7.4 FARM PONDS WITH FISH CULTURE:

The Farm ponds are the ideal water harvesting structures proposed in the sub basin areas. The excess run off from the individual farmers field will be stored in the pond. During the critical stage of the crop period the water stored in the Farm Pond will be utilized as life saving irrigation.

The Farm Ponds will be constructed in the dimension of 30M X 30M X 1.50M and the capacity of the farm pond will be 1350 Cubic Metre. With the help of 13.5 lakhs liters of water an extent of 2.7 ha under dry irrigated crops can be irrigated and stabilized. The Farm Pond will have 4 to 6 fillings of rain water during one year period in all monsoon rains.

For instance if maize crop is raised to an extent of 2.70 ha with the life irrigation from Farm ponds a yield of 9.45 M.T. will be obtained (3.5 M.T/ha) which could fetch Rs 56,700/- to the farmer @ 6000/ M.T. with project. The farmer could get nominal profit of Rs.11,000/ ha after deduction of cultivation cost of Rs.10,000/- which exceeds the unit cost of Farm pond of Rs.40,000/- over a period of 4 years.

Besides this the Farm ponds will act as Fish ponds for Fish production. The Department has proposed 452 Farm ponds in which based on the run off

and ground water availability maximum numbers will be proposed to Fish culture which would yield an additional income of Rs.10,000/- .The contribution @10% of the total cost of the estimate will be collected from the farmers for the work component.

7.5 CHECK DAMS

Ephemeral streams in the sub basin offer a good opportunity for storing water in the sub basin by constructing check dams. Check dams are constructed across small streams for stream augmentation to collect and impound surface run off from the catchments of streams during the monsoon seasons. The structures are useful in augmenting the ground water in the surrounding areas. The wells in the D/S side are reported to have good yield of water. On an average 5 wells will be benefited.

For instance if maize crop is raised from the 5 wells 7.5 ha. With supplemental irrigation from the recharge of wells which could fetch 26.25 M.T(3.5 M.T./ha) with an income of Rs.1,57, ,500/- to 5 farmers @Rs.6000/M.T with the project. The farmers could get nominal profit of Rs11,000/- per ha. after deducting the cost of Rs.10,000/- ha of cultivation cost which exceeds the unit cost of check dam over a period of 3 years.

About 126 nos. of Minor Check Dams (Rs. 1,00,000/-) and 66 nos. of Major Check Dams(Rs2,00,000/-) are proposed. The Farmers contribution will be 5% of the total estimated cost for the work component and the farmers would be motivated for drip and sprinkler system.

7.6 PERCOLATION POND:

Percolation ponds are the tanks constructed across natural water courses, gullies, drainage points of water shed etc. in the sub basin to impound run off water and retain it for a longer time for effecting percolation in the sub surface both laterally and vertically. The purpose of the percolation pond is to raise the ground water table in the downstream of the tank so as to improve the yield in the surrounding wells.6 to 10 wells in the surrounding areas will be benefited in the zone of influence 450 m to 900m and the ground water salinity will be reduced.

For instance if maize crop is raised from the 8 wells(avg.), 12 ha. will be benefited (1.5 ha/well) With supplemental irrigation from the recharge of wells which could fetch 42 M.T(3.5 M.T./ha) with an income of Rs.2,52,000/- to 8 farmers @Rs.6000/M.T with the project. The farmers could get nominal profit of Rs11,000/- per ha. after deducting the cost of Rs.10,000/- ha of cultivation cost which exceeds the unit cost of Percolation pond over a period of 4 years.

It is proposed to construct 91nos of Percolation Pond(Rs3,00,000/-) and 54 nos of Percolation pond(Rs.5,00,000/-) in the Palar sub basin with 5% contribution from the farmers to the total cost of the work component and these farmers will be motivated for drip and sprinkler system.

7.7. CONVERSION OF ABANDONED WELLS:

In the PAP sub Basin there are number of wells which are in abandoned condition due to scanty rainfall in the region and also non recharge of ground water to large extent. .A pilot study has been taken up in this project to utilize the wells into rainwater storing structure in the farmers field. The rain water comes as a run off in the farmers field that is run off water is guided through an earthen channel to the recharge pit dug in front of the well. The recharge pit are constructed generally 1 to 2mwide and 1 to 2m deep. Before using the well as recharge structure the bottom of the well should be cleaned and all the debris and fine deposits should be removed. The recharge water collected is salt free.

102 nos. of abandoned wells are proposed in the Palar sub basin@Rs.26000/-. The contribution @ 10% of the total estimated cost will be collected from the beneficiaries for the work component.

ABSTRACT OF WORKS (PALAR SUB BASIN)

Sl.No.	Components Proposed	Unit	Unit cost (Rs)	Physical (Ha)	Fin (Rs.in Lakhs)
I	Micro Irrigation				
a.	Drip Irrigation				
	Fruit crops 6m x 6 m (Mango & Sapota)	Ha.	33200	200	66.40
	Drumstick 3m x 3m	Ha.	38600	700	270.20
	Gourds 1.5 m x 1.5 m	Ha.	58000	280	162.40
	Hybrid Tomato 1mx1m	Ha.	60600	600	363.60
	Sugar cane 1.5mx1.5m	Ha.	58000	500	290.00
	Cotton	Ha.	58000	200	116.00
	Coconut with fertigation 8m x 8m	Ha.	22900	12100	2770.90
	Tapioca 1m x 1m	Ha.	60600	500	303.00
	Turmeric 1m x 1m	Ha.	60600	65	39.39
	Banana 2m x 2m	Ha.	52800	350	184.80
	Ground Nut	Ha.	15000	300	45.00
			Total	14995	4566.69
b.	Sprinkler Irrigation				
	Ground Nut	Ha..	15000	2500	375.00
	chillies	Ha	15000	1100	165.00
	Onion	Ha.	15000	4450	667.50
	Brinjal	Ha.	15000	200	30.00
	Bhendi	Ha..	15000	400	60.00
	Beet root	Ha..	15000	250	37.50
	Total			8900	1335.00
II	Precision Farming				
	Drip Irrigation for hybrid Tomato	Ha..	75000	150	112.50
III .	PVC Buried pipe line for water conveyance and sprinkler system 209.25.0 Ha. Block				
	Construction of Sump	No.	150000	21	31.50
d.	Electrification and pumping mach.	No.	85000	21	17.85
	90mm 4 KSC PVC pipe laying	Ha.	15000	209.25.0	31.39
	Total			209.25.0	80.74
IV	Farm Mechanisation with advanced user friendly implements				
	a)Maize Husk Sheller	No.	90000	31	27.90
	b)Tractor operated G.Nut digger	No.	40000	12	4.80
	c)Power operated G.Nut Stripper	No.	45000	12	5.40
	d)manually operated G.nut digger	No.	5000	31	1.55
	e)Coconut dehusker	No.	30000	43	12.90
	Total			129	52.55
V	Others(Water harvesting structure)				
	Farm Ponds	No.	40000	452	180.80
	Minor Check Dam *	No.	100000	126	126.00
	Major Check Dam *	No.	200000	66	132.00
	Percolation Pond *	No.	300000	91	273.00
	Percolation Pond *	No.	500000	54	270.00
	Conversion of Abandoned well	No.	26000	102	26.52
	Others Total			439	1008.32
	Total				7155.80

* These are Community Works

Ayacut Area	153965 Ha..
Porject Proposals Rs. in Lakhs.	7155.80
Cost per Ha. in Rs.	4647

8. BENEFITS ANTICIPATED:

The following benefits will be derived from the ayacut area development works under IAMWARM Project

1. Improved irrigation efficiency resulting in enhanced productivity per unit of Irrigation water.
2. The Gap area is bridged.
3. Sustained farm income to the farming community.
4. The farm productivity per unit area is increased.
5. Increase in cropping intensity.
6. Improvement in socio-economic status of the farmers.

9. CONTRIBUTION BY THE BENEFICIARIES;

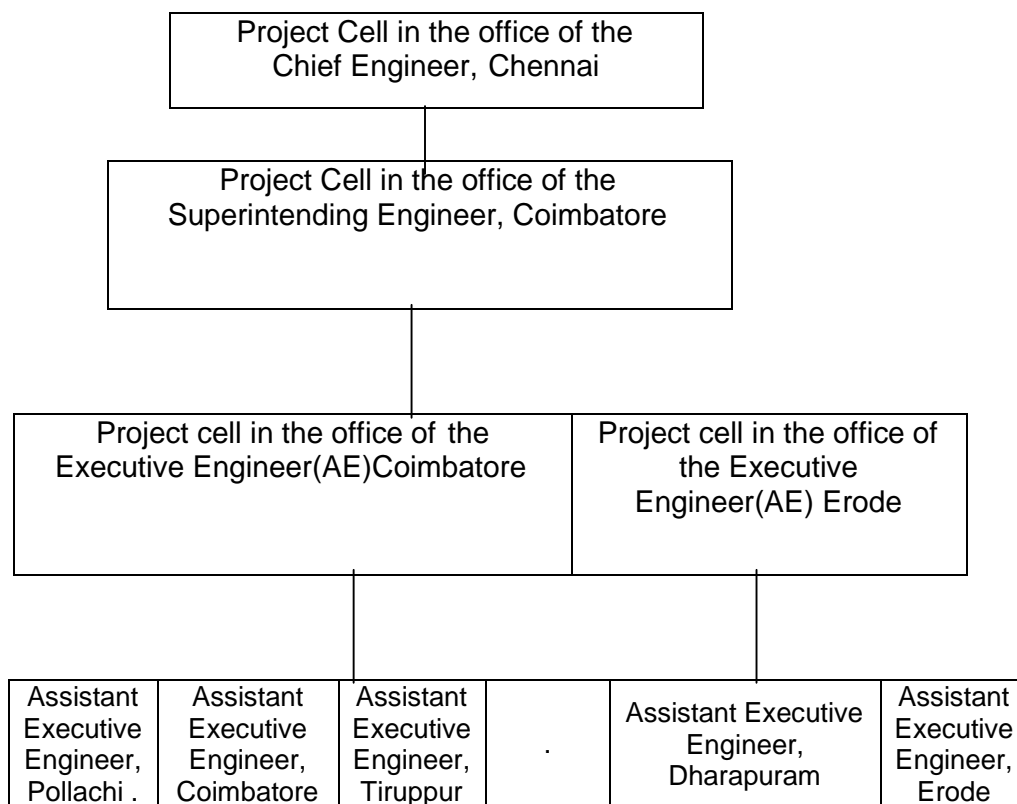
The beneficiaries are motivated to contribute for the works component proposed for their effective participation in the project. The work components like drip and sprinkler system are individual oriented benefit schemes and as per the present norms farmers are insisted to contribute 50%. But in this sub basin only small and marginal farmers has not gone to micro irrigation system due to financial constraint for initial investment. The farmers expressed that they can contribute only upto 10% of the total cost. Hence the beneficiary contribution may be fixed to 10% in respect of micro irrigation system, Farm ponds and Conversion of abandoned wells. For community based works like check dams, percolation ponds 5% of the total cost of the work component

10. IMPLEMENTATION STRATEGY:

The project cell for IAMWARM project has been created in the office of Chief Engineer(AE),Chennai-35 comprising Superintending Engineer(AE),Executive Engineer(AE),Assistant Executive Engineers(AE) and Assistant Engineers to formulate the project proposals, to carry out procurement plans to co-ordinate with the line departments and to monitor the performance of the district level officers.

The District Level Project cell for IAMWARM project has been formed comprising the Executive Engineer(AE),Asst.Exe.Engineer(AE) and Assistant Engineer (AE) to finalise the DPR to co-ordinate with the district level line department and to monitor the performance of the field personnel.

The Flow chart showing the HR pattern and the sanctioned strength of the available field personnel for implementation of IAMWARM project is furnished below:



The Work components like underground PVC pipe line system, Farm ponds, Check Dams, Percolation Ponds, Abandoned wells shall be executed through concerned beneficiaries/WUA

In respect of Farm Mechanisation, the Farm Implements will be procured by the Agricultural Engineering Department from the approved suppliers and distributed to the concerned WUA.

The Work Components like Micro Irrigation, Precision Farming will be executed by National Shopping, adopting procurement procedures.

11. OUTCOME INDICATORS.

1. Increased area under Hi-tech Irrigation like Drip and Sprinkler Irrigation.
2. Precision Farming practices to an extent of 20 ha. for increased income.
3. Increased Farm Productivity per unit area and unit quantity of water.
4. Diversification of new crops in the gap area.
5. Increase in Irrigation efficiency by laying of PVC underground pipe line system in canal command area
6. Technology dissemination to the farmers
7. Increase in awareness in Farm Mechanisation
8. Supplement income generation by diversified farm activities through fisheries(from Farm Ponds),cattle breeding
9. Increase in per capita income to the beneficiary farmers
10. Increase in the irrigated area due to supplemental well irrigation by providing rainwater harvesting structures.



AGRICULTURAL
MARKETING AND
AGRI BUSINESS

TN IAMWARM PROJECT
PARAMBIKULAM ALIYAR BASIN
PALAR SUB BASIN – PROJECT PROPOSAL

PREAMBLE

In Continuation of the WRCP Programme funded by the world bank the follow on Project proposed by the Government of Tamil Nadu to a tune of Rs.3900 crores covering 111 sub basins has been duly considered by the World Bank inorder to extend its financial assist ance to fund the irrigated Agriculture Modernization and Water Resources Management (IAMWARM) Project with integrated approach as follow on project to WRCP

This project has been proposed based in the experiences gained through the implementation of WRCP in Tamil Nadu as well as the recorded information on Participatory irrigation Management (PIM) being successfully practiced in this PAP system. Also it involves an integrated approach with the participation of line departments and the water using stake ho lders with a multi disciplinary approach and principal objective of improving the water use efficiency, over all system efficiency, increasing the agricultural productivity, along with additional benefits to the farming community.

General :

The Parambikulam – Aliyar Project (PAP) is an interstate Water Resources Development carried out jointly by the states of Tamil Nadu and Kerrala. The objective of the development is harnessing the waters of the Bharathpuzha, the Chalakudi and the Periyar basins for irrigation and power production in both states. It accomplishes the diversion and integration of Eight west flowing rivers Six in the Anaimali hills and two in the pains for the benefit of the drought prone areas in the Coimbatore and Erode Districts of Tamil Nadu state.

PALAR SUB BASIN

Palar is a tributary of Aliyar river. Thirumoorthy reservoir is one among the main component of PAP and has been constructed across the river Palar with a cross storage capacity of 54.76 MCM (19 35 Mcft.) Apart from its own catchments it receives the diverted water from the upper reservoirs in the Anaimalai range through the Sarkarpathy Power House and from thereby a Contour Canal. An irrigation canal is called as Common Canal takes off from the reservoir and it branches into two. (1) 124.800Km long Parambikulam Main Canal and (2) 30.400 Km long Udumalpet Canal.

The parambikulam Main Canal is the biggest and longest irrigation Canal under this Project. A high level canal also takes off from this reservoir to feed an Ayacut of 1003 ha. The total command area fed by the above canals under Four-Zone irrigation pattern is 1,52,718 ha. This reservoir also stabilizes irrigation for the old Ayacut of 1247 ha under Dhali Channal system of Palar.

The total extend under new Ayacut is divided into four zones and each zone gets water once in two years under alternate sluice irrigation system.

COMMAND AREA DETAILS

(a) NEW COMMAND – ZONE WISE

Sl. No.	Name of the Canal	Total in Ha.	ZONES			
			I	II	III	IV
1	Parambikulam Main Canal	128090	32040	31970	32166	31914
2	Udumalpat Canal	23600	5981	5920	5783	5916
3	High Level Canal	1003	246	249	254	254

(b) OLD COMMAND

Sl. No.	Name of the Canal	Total Ayacut in Ha.
1	Dhali Channel System	1247

DISTRICT / TALUK WISE AYACUT :

COIMBATORE DISTRICT (in. Ha)				
Polachi Taluk	Udimalpet Taluk	Palladam Taluk	Tirupur Taluk	Total
26606	45448	11889	20474	104417
ERODE DISTRICT (in Ha)				
Dharapuram Taluk		Kangeyam Taluk		Total
26799		22778		49548
Total				153965

WATER USERS ASSOCIATION – DETAILS

Total Command	:	1,53,965 Ha.
Number of WUAs	:	134 Nos.
Date of Election (Based on TNFMIS Act	:	07.02.2004
Vacancies	:	Nil
TC Members Elected	:	864
Vacancies	:	Nil
Responsibilities Handed over on	:	11.02.2004

HYDROLOGY

- Location of the Basin
 - Latitude : 10⁰15' 00" N to 11⁰ 05' 30" N
 - Longitude : 76⁰ 46' 30" E to 77⁰ 45' 15" E
- Total Basin area : 3462 Sq. Km
- Hilly Area : 1480 Sq. Km
- Districts covered : Coimbatore, Erode
- Taluk : Pollachi,Udumalpet,Palladam
Tirupur
Dharapuram, Kangeyam

- Block : Pollachi North, Pollachi south
Kinathukadavu, Udumalpet
Madathukulam
Gundimangalam
Dharapuram, Palladam
Thiruppur, Pongalur,
Sulthanpet,
Kundadam, Kangeyam,
Vellakovil

- Command area : 153994 Ha
- irrigation season
 - New Command : Ist Season : Ist August to 15th December
: IInd Season : Ist January to 15th May

 - Old Command : Ist Season : Ist August to 31st December
: IInd Season : Ist January to 31st May

Palar Sub Basin

I. Existing Cropping Scenario

PALAR SUB BASIN

Slno	Crop Details	Area under crops in ha				
		With out project			With project	
		Fully	Partially	Rainfed		
1	Coconut (surface alone)	9700	5370		15070	0
	Coconut (Drip)	21450	0	0	21450	21450
	Coconut (Drip with Fert)	0	0	0	0	20370
	Coconut (Inter crop)	0	0	0	0	0
2	Paddy (Aug -dec)	235	0	0	235	235
	Paddy (Jan - May)	100	0	0	100	100
3	Cholam (Aug -Dec)	6400	4486	2389	13475	10091
	Cholam (Jan -May)	550	3075	1220	9795	11240
4	Pulses (Aug - Dec)	6855	3376	1920	12151	7315
	Pulses (Jan - May)	8460	3240	1505	13205	8030
5	Ground nut(Aug - Dec)	3800	786	678	5264	5245
	Ground nut(Dec - May)	5294	576	0	5870	5060
6	Maize (Aug - Dec)	15183	1547	625	17355	21780
	Maize (Jan - May)	13255	1744	681	15680	18000
7	Sunflower (Aug -Dec)	465	234	0	699	2035
	Sunflower (Jan -May)	1440	272	0	1712	2395
8	Tapioca (Aug - Dec)	930	318	0	1248	1260
9	Cotton (Aug - Dec)	1175	0	0	1175	1175
	Cotton (Jan- May)	0	0	0	0	0
10	Tomato (Aug - Dec)	670	0	0	670	745
	Tomato (Jan - May)	610	0	0	610	710
11	Chilly (Aug - Dec)	815	0	0	815	915

	Chilly (Jan - May)	883	0	0	883	980
12	Brinjal (Aug -dec)	115	0	0	115	125
	Brinjal (Jan -May)	100	0	0	100	110
13	Bhendi (Aug - Dec)	210	0	0	210	260
	Bhendi (Jan - May)	175	0	0	175	225
14	Drumstick	725	0	0	725	874
15	Mango	965	0	0	965	1020
16	Amla	315	0	0	315	365
17	Fodder crops	378	0	0	378	1410
18	Sapota	182	0	0	182	280
19	Onion (Aug - dec)	2955	0	0	2955	3825
	Onion (Jan - may)	2512	0	0	2512	4255
20	Beetroot (Aug - Dec)	110	0	0	110	175
	Beetroot (Jan- May)	132	0	0	132	160
21	Spices- Turmeric	65	0	0	65	65
22	Gourds (Aug - Dec)	135	0	0	135	175
	Gourds (Jan- May)	120	0	0	120	180
23	Banana (Aug - Dec)	450	0	0	450	450
24	Sugar cane (Old ayacut)	880	0	0	880	880

Existing marketing scenario

1. Infrastructure:

S.No	Location	Capacity M.T	Utilized for what
	State ware housing corporation		
1	Pollachi	9000	Fertilizer& maize from Karnataka
2	Tripur	18000	Fertilizer& maize from Karnataka
3	Palladam	4000	Fertilizer& maize from Karnataka
4	Udumalpet	6500	Fertilizer& maize from Karnataka

There is no cold storage facility available in this basin area

2. MARKETS: SPECIALISED/GENERAL MARKET

S.NO	Location	PRODUCE DEALT	VOLUME OF QTY. TRANSACTED
	SHANDIES NACHIPALAYAM KINATHUKKADAVU SUNDARPURAM	TOMATO	360 TON

Regulated markets

S.NO	R.M.LOCATION	GODOWNS	DRYING YARD	NOTIFIED CROPS	RECEIPTS&EXPENDITURE(LAKHS)			
					2004-2005		2005-2006	
		M.T	NO.		RECEIPTS	EXPENDITURE	RECEIPTS	EXPENDITURE
1	ANAIMALAI	3350	5	16	12.26	4.78	13.90	5.84
2	POLLACHI	750	1	16	69.19	8.80	74.60	9.75
3	PALLADAM	2000	1	16	12.55	4.58	13.22	4.77
4	SENJERI	1075	2	16	3.80	2.77	6.19	3.40
5	PONGALUR	975	1	16	9.33	3.95	15.57	4.16
6	PETHAPPAMPATTI	1125	2	16	6.18	3.95	15.57	4.16
7	NEGAMAM	375	2	16	3.35	3.68	5.45	4.76
8	KANGEYAM	1350	1	16	11.57	4.83	15.50	5.75
9	VELLAKOIL	1250	2	16	13.49	6.69	26.71	7.53
10	MUTHUR	380	1	16	3.56	2.10	4.50	2.55

AVERAGE MARKET PRICE PREVAILED:

S.NO	COMMODITY	GLUT SEASON PRICE RS/QTL	GLUT MONTH	SCARCITY SEASON PRICE RS/QTL	SCARCITY MONTH
1	PADDY	425	JAN-MAR	600	AUG-SEP
2	MAIZE	540	JAN-MAR	720	JULY-AUG
3	COCONUT	450	JAN-MAR	675	AUG-OCT
4	GROUNDNUT	800	AUG-SEP	1100	MAR-APRIL
5	TOMATO	3100	MAY-JUNE	9200	AUG-SEP
6	SUNFLOWER	1839	JAN-FEB	2021	SEP-OCT

II EXISTING MARKETING SCENARIO

1. INFRASTRUCTURE TYPE AND LOCATION:

There is No cold storage facility in the sub-basin. With regard to drying yard, few farmers are using traditional small size drying yards, and many are using conventional mud floors.

There is no proper drying yard or storage godown in the sub basin except the some available at Regulated markets which are insufficient and inaccessible to the farmers a away from the Regulated Markets. Few drying yards are constructed in the remote villages by Erode Market Committee and handed over to respective village panchayats for usage and maintenance.

2. MARKETS

Regulated Markets are available at the above noted places in the sub-basin area. The regulated markets are functioning under Tamilnadu State Agriculture Marketing (Regulation) Produce Act 1987. The above markets are dealing only notified Agriculture Commodities such as Cotton, Maize, Coconut, Paddy etc. Closed tender system is followed in the Regulated market yard premises.

Further many private mundies are functioning for marketing of all major agricultural produce and the prices are negotiated between trader and farmer according to the market trend based on supply and demand.

For vegetables especially for Tomato at present there are two markets at Nachipalayam and Kinathukkadavu areas though it is not coming with in the basin area.

Apart from this, Uzhavar Sandhais are functioning at Pollachi, Udumalpet, Dharapuram and Coimbatore where farmers can directly sell their produce to the consumers without the intervention of the middlemen. Daily markets are also functioning at Pollachi on commission basis. There is a project in shape for the establishment of terminal market in an area of 100 acres at Coimbatore. This is expected to boost up the marketing activities of commodities like coconut, paddy, groundnut, vegetables, fruits etc. and will play a major role in increasing the status of the sub-basin.

Maize is the mostly grown as a commercial crop around 20,000 ha. In this basin area. The harvest season begins during last week of January with peak period during February. In this tract maize is grown (compared to Karnataka & Maharashtra) as an off-season crop and so the prices are favourable during harvesting season. However the prices are fluctuating throughout the year and during harvesting season the prices will fluctuate between Rs.540-560/qtl. And during off-season harvest is August –September it goes even up to Rs.900/Qtl. So far no contract farming system for maize is available. We can facilitate contract farming system and a legal coverage for this should also be considered. For maize, M/s. Suguna, M/s Pioneer, M/s Shanthi and M/s MBS Hatcheries and other poultry feed manufacturers purchase the entire quantity.

Coconut is the most predominant crop in the Palar basin. The Negamam area is the richest in terms of oil content in the basin area and hence fetches higher price. Most of the coconut is being converted into copra and are sold to the oil major. Hence the threshing floor is most important for drying of copra. M/s. Harish coconut products & M/s. Super coco products are manufacturing M/s desiccated coconut powder and send it to Northern India. Its consumption is miniscule compared to the production in the belt. Copra, mostly sold at Negamam, Avalpoondurai and Kangeyam Regulated Market where major oil producers M/s. Shanthi, M/s. VVD and M/s. Parachute oil companies are

purchasing their raw material. NAFED is also procuring Copra at minimum support price ie Rs. 35.70/kg at present.

Sunflower, the oilseed may be roped up with M/s. Sunrich, M/s.Ruc hi gold, M/s.Gold winner etc oil companies under buy back arrangement. Sun flower, the oilseed is grown mostly in Vellakovil region. In this basin area the harvesting time of Sun flower coincides with off-season in the Karnataka state and also fetches good price. Mostly people are used to go for refined oil and therefore we can explore the possibility with refined oil producers to have a contract farming arrangement with growers.

3. Practices (Pre-harvest and Post harvest)

a. Grading

No scientific method is adopted at present for grading except for cotton where the staple length of the lint determine the quality as well as price of the produce. Vegetables are graded by size, appearance, freshness and maturity. For notified Agriculture produce grading is done at regulated market premises itself. At private mundies grading is done by sieving for grains only. For packed items like ghee, pulses etc. grading and quality checkup are done at the Agmark lab situated at Coimbatore, Palladm and Kang eyam. For sunflower moisture metre is used to test the quality of the produce. After harvest of Onion sorting of the onion is done at the farm by most formers to separate spoiled immature bulbs as well as twins and split bulbs. Commercial grading is done to an extent for cotton,maize,paddy and groundnut.

b. Transportation

With regard to transportation, no specific difficulty is experienced. The producers are managing themselves to transport generally by private vans, lorries and mini auto rickshaws. At present there is no refrigerated trucks available to transport perishable goods to longer distances. When area under

perishable like floriculture increase especially for export purposes such facility will be created.

c. Contract Farming

Contract farming is available in this basin area to a smaller extent for sugarcane with M/s. Bannari Amman Sugar Mill Ltd, Amaravathy Cooperative Sugarmill. With regard to maize M/s. Suguna, Pioneer, Shanthi and other Poultry feed manufacturers are being contacted for MOU. For cotton, Apachi Cotton & Super spinning mill entered in to contract arrangement including the supply & rawmaterial and credit. However there is no legalbinding in the contract farming system to punish the defaulters on either side.

d. Source of market information

Local dailies and other multimedia channels are the source of market information as it is : There is no e-chaupal arrangements except DEMIC at TNAU, Coimbatore. Regulated Markets are equipped with computer system under 'AGMARK NET' to provide market prices about the notified agricultural commodities.

III. Constraints

a. Production : Glut / Shortage

Most of the crop varieties are season bound and there is glut in production which fetches lower prices during peak harvest season. During January – February month ie at the time of harvesting of maize the prices are between Rs. 500-560/qtl and raises to Rs. 800 –900/qtl during August – September month ie off season. In case of Tomato there are two peaks ie. during May – June and November – December month its prices goes upto Rs.15/Kg and during the rest of the month it fell down even upto Rs. 1/Kg. For coconut also its prices were down during February – May when the production is on higher sale. During the past three years due to the attack of 'Eriophyte mite' some of the nuts got reduced in size aswell as the appearance which are the main criteria in

grading. This reduced the price of the nut to a great extent. Further it poses a great difficulty for dehusking.

b. Lack of available market

Though there is market available generally for all crops to an extent, farmers are willing to sell their produce at their farm gate itself. There is no organized marketing except regulated market. Mostly middle men exploit farmers due to adequate market linkage. Traders and intermediaries take advantage of farmers on the weight of the produce, on the comparative quality of the produce and by inaccurately representing the state of market. However markets are available for certain specific produces like vegetables, maize etc.

c. Poor Post - harvest practices

Farmers are doing their post harvest practices at farm itself. They pack their produce in baskets immediately after harvest for certain products like fruits and for other produces, are packed in gunny bags. Absence of cleaning, grading and proper packing among farmers led to the exploitation by traders. A cold storage system is being proposed by the Govt. at Palladam area especially for onion.

Grading and Packing

Grading is done for tomato and brinjal to a lesser extent by means of appearance and size only and are transported to the markets by baskets. For onion, farmers remove split, thick necked, bolted, off – coloured, immature bulbs etc. to improve the quality and thereby its commercial value.

Short term storage is mainly used to provide flexibility in marketing. When the produce is withdrawn from storage point, it has to compete in the market against much fresher produce. For fruits and vegetables agro processing industry may be a solution but the industry will not operate during off season where the availability of the raw material is less.

d. No Collective action – Individual farmers go to market / Whole saler

Individual farmers are willing to sell their produce at their premises itself. Around 20% of the farmers, alone sell their produce through regulated markets except for turmeric where 90% of the farmers sell it at the R.M. It is to be recognized that farmers at large have no collective bargaining power and are individually at the mercy of intermediaries.

e. Lack of Market Information

At present market information is known through local dailies, radio Market committee daily market Report. There is no connected network to provide information at sub basin level. Progressively RM's are being computerized for issue of market informations to the needy farmers and so far 3 R.m.'s out of 10 R.M's have been computerised.

Capacity

Total Production : 14852 mt and 36crore nuts
Total excludes sugarcane, cotton, vegetables, fruits,coconut and fodder
Marketable Surplus : 106632 mt and 34 Crore nuts.

Capacity utilized

Regulated Market : 12630 mt
State warehousing Corporation : 37500 mt
Capacity utilized under the Existing System : 50130 mt

2. Approximate Location of the diversified Crops

The location are decided in consultation with Agriculture / Horticulture departments as per the list enclosed vide Table above.

PALAR SUB BASIN

AGRICULTURE BUSINESS CENTRE

LOCATION - Nelali – Kundadam Block

Crop - Maize.

It is proposed to setup one Agri Business center at Nelali Village of Kundadam Block of Palar Sub basin where Maize are raised with an area of 300 Ha. This Village site is 22km away from Dharapuram Regulated market, which is functioning under rented building and 30 km from Palladam Regulated Market.

The annual production of Maize is expected around 350 M.T. Since the distance from Regulated Market and other Storage structure is more than 20 km, it is proposed to have a farmers federation to have a collective bargaining as far as marketing is concerned. It is also proposed to have a tie up with poultry manufacturers viz M/s Suguna.

AGRI. BUSINESS CENTRE.

Sl. No.	Details	Cost in Lakhs
1	Lab cum Admin.	1.00
2	Grading cum Storage shed 70'x12'	5.00
3	Electricity, Water Supply	1.50
4	Drying Yard	2.20
Equipments		
5	Moister meter weighing scale	0.30
6	Dunnage (Rs.2000 each) 30 Nos.	0.60
7	Trapaulins (Rs. 5000/- each (2.Nos.)	0.10
8	Recurring Expenditure	0.30
	Total Cost	11.00

Challenges thrown up by diversification / Area expansion

1. Identifying New market for new crops .

Fruits and vegetables are perishable in nature and are season bound varieties suitable for year round cultivation may be promoted along with forward marketing linkages, wherever necessary. For Maize, Contract farming may be developed between FA's and M/s. Suguna, M/s. Pioneer and M/s. SKM Poultry Feed manufactures to avoid price crash. For cotton longstaple varieties should be introduced in the sub basin area and contract farming arrangements should be explored with M/s. Appachicotton and M/s.Ssuper spinning mills. Like wise sunflower crop contract Farming arrangements to be facilitated with M/s. Goldwinner, M/s. Saffola Oil Companies.

2. Improving existing market utilization

At present 50,130 Mt of produce can be stored at the existing infrastructure and for improving the market utilization in the interior places, the following infrastructure facilities are suggested.

Construction of 26 Rural godowns 26 drying yards and supply of 2600 numbers of Dunnages 260 numbers of plastic tarpaulins 10 nos of Electronic moisture meter and 30 nos of weighing scale and 4 nos onion specialized rural godowns in the following WUA's are necessary.

3. Providing Multiple Market Information

The existing IT network with TNAU ie. DEMIC need to be strengthened and expanded to cover maximum number of WUAs. Top start with ITKIOSKs along with connectivity with DEMIC is proposed at 4 places.

4. Ensuring Collective Marketing / Bargain

At present it is absent. But a sub group of FA is to be formed for this purpose to improve the access to market by collective transport,sale etc. FIG's already existing also will be utilised and necessary capacity building measures will be taken up.

5. Specialised Storage (Cold storage/ godowns)

For cereals and pulses it can be stored at godowns local level and can be released during off season. This is the temporary mechanism to avert low prices during glut. We can also arrange pledge loans to the FIG's through the proposed rural godowns.

6. Processing / Agro Processing.

With regard to fruits and vegetables, processing industry may be a solution during peak harvest season, but the industry will not operate during off season due to non availability of raw material during off season.

However an interface one day workshop, between sub-basin farmers and entrepreneurs will be arranged in coordination with CII and the demand will be assessed.

7. New Practices – Product handling, Grading, Packing onfarm process and quality control.

Collection centers Cum godowns are suggested through which products like vegetables will be collected, cleaned, graded, packed and transported to wholesale points with plastic crates without causing any physical injury to the produce. The quality control aspect will be taken in to consideration through capacity building exercises to be conducted.

VI. SOLUTIONS AND RECOMMENDATION

1. Consultative process undertaken in the sub-basin

Farmers Association meetings were conducted on and walk through survey on 21.07.2006, 24.07.2006, 27.07.2006, 9.08.2006, 10.08.2006 and 22.08.2006

During the walk through, the cross section of sub-basin has been contacted through walking and the farmers demands were studied. Along with this, the topography of the area, cropping, water availability, transport etc. were also observed. This background facilitated in understanding the stakeholders problems and the solution suggested.

4. Stake holders demand

The stake holders in different parts of the sub-basin requested the following infrastructure.

a. Storage godown :Farmers are of the opinion that storage godowns and threshing floors are necessary for the following reasons.

1. At many places the RM's&other markets are situated 20 -30 Km from the place of production. For eg. Kundadam is situated more than 20 K.M. away from the existing RM.

2 .If the produces are transported and sale has not been effected due to price differences,the produce could not be returned.

3. Pledge loan facility is not available in the villages where godowns are not available.

4. Without storage, the produces are likely to reduce in quality.

Due to the above reasons, the stake holders denanded storage godowns a nd threshing floor at interior villages.

- a. storage godown
- b. Threshing floor / drying yards
- c. Dunnages
- d. Plastic tarpaulins
- e. Weighing Machine
- f. Information KIOSK

5. Marketing intervention Proposed

Software components

- Linkages with traders/manufacturers on contract farming /MOU terms to be explored along with legal coverage.
- FIG"s at WUA level and commodity Groups.
- Capacity building in pre and post harvest techniques -the trining to be conducted among Fas to gain more market access. -Centralised proposal by TNAU.
- Diversification of crop from paddy to coconut,sugercane since paddy is more water required to less water required in order to maximize the water use efficiency

Hard Ware Component

- Demand and price forecasting system to be developed at the S ub Basin level in liason with TNAU DEMIC and NIC to provide necessary market information at the targeted groups to go for controlled planting as well as the marketing of the produce.
- Collection cum Storage Godowns are to be constructed at selective FA's field itself to make provision for collection ,cleaning and Grading of the Produce as well as Packing and storage .As for as grains are concerned besides Godowns ,Tharshing Floors are constructed to minimise the during the post harvest losses.

3. Marketing interventions proposed with reference to identified constraints.

Crop	Constraints challengers	Counter measure
Vegetables & Cereals	Production – Glut / Shortage	Linkages with traders on contract farming and online trading. Off season varieties to be developed by TNAU and cultivated, marketed by FA's .Incase of perishables, agro-processing opportunities to be explored and required facility to be developed.
	Lack of available practice	No such difficulty. For speeding of marketing, formation of marketing sub groups at farmers association and export potential may be tapped.
	Poor post harvest practice	Rural godowns and thrashing floors to be constructed at selected sub groups and tarpaulins to be distributed. On test basis ready to cook vegetables may either be processed by Farmer's Interest Groups be branded or allowing (FIG's) and the same may be passed to self-help group to enter into their venture of value addition. On realizing the potentials the same will be expanded on large scale through big departmental stores or through vegetable depots at cities.
	No collective action	Collective bargaining may be imparted through establishment of FA's / organization empowering them to establish a retail unit in farmers market operated in nearby town.
	Lack of Market Information /Providing multiple market information	Demand and price for casting cell of TNAU Will provide information to the target groups in liaison with personal of Dept of Agrl. Marketing & Agri. Business on demanding markets, time of sale expected price advantage etc. It could facilitate the farmers to take decisions on crop diversifications on either increasing or decreasing the area under crops.

	Transport or collective transport	Need based transport arrangement will be provided by out sourcing
	New practice in quality control	Farmers interest group will be formed and motivated to do grading standardization and branding of farm produce.

Enthusiastic participation by stake holders during the field visits and their support indicates the success of the programme during implementation.

Phasing of Expenditure

The expenditure will be phased out as follows :

Sl. No.		I	II	III	IV	V	Total	Amount In lakhs
1	Storage godowns	5	5	5	5	6	26	130.00
2	Drying yard	5	5	5	5	6	26	57.20
3	Plastic tarpaulins	50	50	50	50	60	260	13.00
4	Dunnages	500	500	500	500	600	2600	52.00
5	Weighing scales	6	6	6	6	6	30	3.00
6	Specialised Storage open shed for onion	1	1	1	1	0	4	20.00
7	Electronic Moisture meter	2	2	2	2	2	10	2.00
8	Agri Business Centre	1	0	0	0	0	1	11.00
	Total							288.20

Locations:

Based on the intensity of cropping and consequent availability of harvested produce based on tank-wise details, the following locations for marketing infrastructure were proposed.

Drying yard /threshing floor:

Sl. NO	Name of the Farmers Association	Sl. No	Name of the Farmers Association
1	Kodingiyam	14	Pappankulam
2.	Nallam palli	15	Poolavadi
3	R. Ponna puram	16	Kongal Nagaram
4	Kanjampatty	17	Kondampatti
5	Kulichetti Palayam	18	Naranapuram
6	Kanialam Palayam	19	Ponnapuram
7	Chettiakkapalayam	20	Dasarpatti
8	Kurichi Kottai	21	Petham patti
9	Kannamma Naickanur	22	Moongiltholuvu
10	Elayamuthur	23	Parancher vazhi
11	Vavipalayam	24	Palayakottai
12	Nandavanampalayam–II (Nandavanampalayam)	25	Senapathy palayam - I
13	Kangeyam (Rettia kadu)	26	Veeracholapuram - II

DOMESTIC ONION STORAGE STRUCTURE :

- 1) Kundadam – I (Kundadam) 2) Suriya Nallur (Kanchi puram)
3) KUMARAPALAYAM 4) SENJERI PUTHUR

agriculture business centre**1. Nelali – Kundadam block**

Agriculture is dependant on monsoonal variation and is supple mented by major river valley projects. Palar basins under PAP Ayacut and its water use efficiency is sub economic and being improved by WRO / PWD.

The cropping pattern is dominated by coconut followed by Maize, Cholam, Pulses, Groundnut and vegetables.

The marketing infrastructure consists of **10** Regulated markets and **5** state warehousing Corporation besides private mundies. The transportation is through private channels. Grading and quality control are limited and three agmark lab is functioning to cater the needs of private packers. Specialised markets storage godwns, cold storage system, need based market information system are absent

As far as Agro based industry is concerned few poultry feed manufactures such as suguna, pioneer and Shanthi and sugarcane mill, no other industry is available in the basin area.

The marketing strategy is based on the following 3 items.

1. Survey of existing cropping/ marketing scenario
2. Stake holders consultation
3. Deciding on suitable marketing components based on gap area cropping and diversification

Thus the following components were decided and included in the projects .

Sl. No	Item	No	Cost in lacs
1.	Storage godowns	26	130.00
2.	Drying yard	26	57.20
3.	Plastic tarpaulins	260	13.00
4.	Dunnages	2600	52.00
5.	Weighing scales	30	3.00
6.	Specialised Storage open shed for onion	4	20.00
7.	Electronic Moisture meter	10	2.00
8	Agri Business Centre	1	11.00
TOTAL			288.20

**ROUGH COST ESTIMATE FOR CONSTRUCTION OF
RURAL GODOWN / ONION STORAGE STRUCTURE**

Size of the building : 15 M x 5 M
Plinth area of the building : 75 sq. M.

ESTIMATE ABSTRACT (RATE FOR THE YEAR 2005 -06)

S. No.	Description	Area	Rate/Sq.m.	Amount in Rs.
1	Load bearing wall foundation	75 sq.m	Rs.1105 / Sq.m.	82875
2	Super Structure cost	75 sq.m	Rs.2755 / Sq.m.	206625
3	Cost of Roof (65% of Super Structure) (Steel Trusses with A.C. Sheet)	75 sq.m	Rs.1790.75 / Sq.m	134306
4	Internal Electrification	75 sq.m	Rs.440 / Sq.m.	33000
5	Fluctuation of Current Rate 5%		L.S.	22840
6	Labour Welfare Fund 0.3%		L.S.	1439
7	Petty Supervision charges 2.5%		L.S.	11991
8	Unforeseen items		L.S.	6924
	Total Amount			500000

NAME OF THE WORK: CONSTRUCTION OF DRYING YARD
ABSTRACT ESTIMATE

Sl. No	Qty.	Description	Rate	per	Amount
1	55.00Cu.M	Earth excavation for foundation in all soils and sub soils except in hard rock requiring blasting but including shoting, shuttering and balling out water wherever necessary, refilling the sides of the foundation with excavated sand/soil etc.,as directed by the departmental officers.	44.22	Cu.M	2432
2	134.00 Cu.M	Supplying and filling in foundation of basement with filling sand in layers of not more than 15cm thick etc., complete	213.00	Cu.M	28542
3	53.00 Cu.M	Cement Concrete 1:5:10(one cement and five sand and ten aggregates)using 40MM Broken jelly for foundation and base concrete for flooring	1079.50	Cu.M	57214
4	33.00 Cu.M	Random Rubble masonry in CM 1:5(One cement and five sand) using best rough stone for foundation and basement with simultaneous pointing including curing etc.,complete	1045.20	Cu.M	34492
5	4.50 Cu.M	Reinforcement concrete 1:2:4(One cement, two sand four HBS jelly) using 20mm gauge HBS jelly for all RCC works.	1979.00	Cu.M	8906
6	45.50 Sq.M	Providing Form work for centering shuttering with all cross bracings including strutting to the required height for plinth beam, column footing, stair case steps etc.,	173.46	Sq.M	7892
7	2.20 Qtt	Supplying fabricating and placing in position of steel rods for reinforcement for RCC works including cost of steel, binding wire and labour charges for straightening, cutting, bending, cranking and tying grills in position etc.,	3201.00	Qtt	7042
8	29.00 Cu.M	Plain Cement concrete 1:2:4:,using 20mm gauge HBS jelly for flooring including curing etc., complete	1760.90	Cu.M	51066
9	55.00 Sq.M	Plastering withCM 1:3,10mm thick for exposed surface of RCC item.	50.60	Sq.M	2783
10	9.00 Sq.M	Supplying and fixing of Mastic pad for expansion joint of flooring etc.	332.30	Sq.M	2991
11	75.00 Sq.M	Colour washing two coats using best shell lme and colouring pigments etc.,complete	7.95	Sq.M	596

12	LS	Provisions for Labour Benefit fund @ 0.30%			<u>203958</u> 600
13	LS	Provisions for Unforeseen items and variation of quantities			5444
14	LS	Provisions for petty supervision charges and contingencies @ 2.5%			5000
15	LS	Provisions for variations of Rates			5000
				Total	220000

**NAME OF THE WORK : MODEL ESTIMATE FOR THE CONSTRUCTION OF
DRYING YARD
DETAILED ESTIMATE**

Sl. No	Description	Nos	L	B	D	Contents
1	Earth work excavation for foundation in all soils and sub soils except in hard rock requiring blasting etc., For Drying Yard Retaining Walls around Add Sundries	1 x 1	78.48	0.80	0.80	50.23 4.77
	Total					55.00
2	Supplying and filling in foundation of basement with filling sand in layers of not more than 15 cm. thick including well rammed and consolidated etc. For Drying Yard Retaining Walls around Add Sundries	1x1	19.54	19.5 4	0.35	133.63 0.37
	Total					134.00
3	Cement Concrete 1:5:10 (One Cement 5 Sand and 10 Aggregates) using 40 mm broken jelly for foundation and base concrete for flooring etc. For Drying Yard retaining wall around For Drying Yard Basement Add Sundries	1x1 1x1	78.48 19.54	0.80 19.5 4	0.23 0.10	14.44 38.18 0.38
	Total					53.00
4	Random rubble masonry in cm 1:5 One cement and five sand using best rough stone for foundation and basement etc. For Drying Yard retaining walls Ist footing IInd footing IIIrd footing Add sundries	1x1 1x1 1x1	78.48 78.48 78.48	0.60 0.45 0.38	0.23 0.23 0.46	10.83 8.12 13.72 0.33
	Total					33.00
5	Reinforcement concrete 1:2:4 (one cement two sand four HBS jelly) using 20 mm gauge HBS jelly for all RCC works For drying Yard Parapet Add Sundries	1x1	79.08	0.23	0.23	4.18 0.32
	Total					4.50

6	Providing Form work for centering shuttering with all cross bracing including for all RCC works etc. For drying yard parapet - inner alround For drying yard parapet - outer alround For expansion joints length wise and width wise Add Sundries	1x1 1x1 1x3 x2	78.16 80.00 19.54	-- -- --	0.23 0.23 0.075	17.98 18.40 8.79 0.33
	Total					46.60
7	supplying fabricating and placing in position of steel rods upto 16mm dia including cost of binding wire and labour charges for straightening, cutting,bending and cranking etc. For Parapet wall 8mm RTS Top&Bottom Add Laps	2x2 1x3 0	79.08 0.32	-- --	--- ---	316.32 9.60
					Total	325.92
	6mm stirrups	1x4 x13 3	0.72	--	--	383.04
	8mm RTS 6mm MS Rods Add Sundries		325.92m x 0.39 kg/m 383.04m x 0.22 kg/m			127.11 84.27 8.62
		Total kgs.				220.00
		Total Qty.			---	2.20
8	supplying and fixing of Mastic pad for expansion joint of flooring etc. For Expansion joints Add Sundries	2x 3	19.5 4	---	0.07 5	8.79 0.21
	Total				Kgs.	9.00
9	plain cement concrete 1:2:4, using 20mm gauge HBS jelly for flooring including curing etc., complete For Drying Yard Basement Add Sundries	1x1	19.5 4	19.54	0.07 5	28.64 0.36
	Total					29.00

10	Finishing the exposed surfaces in CM 1:3 (one cement, three sand) 10mm thick etc., For Drying yard parapet – inner around For Drying Yard parapet – Top around For Drying Yard Parapet – Outer around Add Sundries	1x1 1x1 1x1 8 79.0 8	79.0 8 79.0 8 79.0 8	0.23 0.23 0.23 -- -- --	-- -- -- -- -- --	18.19 18.19 18.19 0.43 -- --
	Total					55.00
11	Colour washing two coats using best shell llme, including cost of gum,kanjee,water colouring plgments etc., Qty as per plastering For DryingYard RR Masonry – Outer around Add Sundries	1x1	80.0 0	--- ---	0.23 ---	55.00 18.40 1.60 --
	Total					75.00
12	Provisions for Labour benefit fund @ 0.30%					LS
13	Provisions for unforeseen items					LS
14	Provisions for petty supervisions charges					LS



AGRICULTURAL
DEPARTMENT

PALAR SUB BASIN – PROJECT PROPOSAL

PREAMBLE

Irrigated Agriculture Modernization and Water Resources Management (IAMWARM) is an integrated, multi-disciplinary approach with a principal objective of improving water use efficiency and increasing the agricultural productivity along with additional benefits to the farming community.

SUB BASIN DETAILS

Parambikulam Aliyar Basin comprises of following three sub -basins:

1. Sholayar sub basin
2. Aliyar sub basin
3. Palar sub basin

In the above, Sholayar sub basin has no direct ayacut and an extent of 20588 Ha. is irrigated from Aliyar Dam in Aliyar Sub basin and 153994 Ha. is irrigated from Thirumoorthy Dam in Palar sub basin. Aliyar and Palar are the two sub basins in the Parambikulam Aliyar Project selected for IAMWARM Project.

PALAR SUB BASIN

Palar is a tributary of Aliyar river. Thriumurthy reservoir is one among the main component of PAP and has been constructed across the river Palar with a storage capacity of 54.76 Mcm (1935 Mcft.) Apart from its own catchments it receives the diverted waters from the upper reservoirs in the Anamalai range through the Sarkarpathy power house and from thereby a contour canal. An irrigation canal is called as common canal takes off from the reservoir and it branches into two (1) 124.800 km. Long Parambikulam Main canal and (2) 30.400 Km. Long Udumalpet canal.

The Parambikulam Main canal is the biggest and longest irrigation canal under the project. A high level canal also takes off from this reservoir to feed an Ayacut of 1003 ha. The total command area fed by the above canals

under Four Zone Irrigation pattern is 152 965 Ha. This reservoir also stabilizes irrigation for the old ayacut of 1301 ha. Under Dhali Channel system of Palar.

The total extent under new Ayacut is divided into four zones and each zone gets water once in two years under alternate sluice irrigation system.

COMMAND AREA DETAILS

a. New Command – Zonewise

Sl. No.	Name of the canal	Total in Ha.	Zones			
			I	II	III	IV
1.	Parambikulam Main canal	128090	32040	31970	32166	31914
2.	Udumalpet canal	23600	5981	5920	5783	5916
3.	High Level canal	1003	246	249	254	254

b. Old Command

Sl. No.	Name of the canal	Total Ayacut in Ha.
1.	Dhali Channel system	1247

DISTRICT / TALUKWISE AYACUT

_COIMBATORE DISTRICT (In Ha.)				
Pollachi Taluk	Udumalpet Taluk	Palladam Taluk	Tirupur Taluk	Total
26606	45448	11889	20474	104417

ERODE DISTRICT

Dharapuram Taluk	Kangayam Taluk	Total
26770	22778	49548
	Total	153965

PALAR SUB BASIN

Districts covered : Coimbatore, Erode

Blocks covered & No. of WUAs :

ERODE

Dharapuram	:	7
Kundadam	:	13
Kangeyam	:	8
Vellakoil	:	13
Total		49

COIMBATORE

Pollachi (North)	:	4
Pollachi (South)	:	4
Kinathukadavu	:	8
Udumalpet	:	18
Madathukulam	:	9
Gudimangalam	:	12
Palladam	:	6
Sulthanpet	:	4
Tirupur	:	5
Pongalur	:	15
Total		85

Irrigation Season :

New command	-	Ist Season	-	Ist August to 15 th December
		IIInd Season	-	Ist January to 15 th May
Old command	-	Ist Season	-	Ist August to 31 st December
		IIInd Season	-	Ist January to 31 st May

LAND HOLDINGS :

The details of farmers based on the land holdings of Palar basin is given below:

Category	Size of holdings	Numbers
Marginal	Below 1.00 Ha.	28601
Small	1.00 – 2.00 Ha.	38385
Medium	2.00 – 4.00 Ha.	20919
Big	4.00 Ha. & above	13083
Total		100988

SOIL CLASSIFICATION :

In Palar basin, due to different stages of weathering of parent materials, the soil types are met with combination of Vertisol, Inceptisol, Alfisol, and Entisol. More prominent types are Vertisol and Inceptisol.

Vertisol	Generally calcareous, very deep black soil with moderate to poor drainage and moderately alkaline	Suitable for crops like Cotton, Bengalgram, Sunflower, Maize, Cholan, Ragi etc.
Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained.	Suited for commonly grown crops
Alfisol and Entisol	The red or brown soils having accumulation of illuviated clay in sub surface horizon and it well drained, poor water and nutrient holding capacity	Annual crops with shallow root system comes up well.

RAINFALL

Rainfall in mm.

SI. No.	Basin Details	South West Monsoon	North East Monsoon	Annual
1.	Hilly area	1829	381	2546
2.	Plain area	923	337	1489
3.	Old ayacut area	854	318	1390
4.	Four zone area	166	278	605
5.	Dharapuram	255	410	665
6.	Kangayam	213	369	582

Policies of Water – Agriculture Department

- a. Maximise multi purpose benefits from surface and ground water , land and other resources.
- b. Evolving a cropping pattern for devising the optimal benefit per unit of water.
- c. Intensification of Agricultural Productivity and income

BASIS FOR INCREASING AGRICULTURAL PRODUCITON

1. Long term growth in Agriculture depends in large part on increasing efficiency of use of water.
2. Involving water users Association and consulting them for any project proposal.
3. Where investment is made for the activity in the farmers field, a portion of investment will be in the form of the contribution by the farmer towards it.
4. Based on the soil type, climatic factors and water availability, promoting agricultural activities for higher yield and income.

Recommended proposals for the Project

1. Crops suggested based on Agro climatic suitability / local needs / market driven / crop adoptability.
2. Adoption of INM and IPM techniques.
3. Transfer of Technology for increased productivity.
 - by Trainings / Farmers Field School
 - by Demonstration
 - by Trials
4. Sustainability of soil health
 - by Vermi composting
 - by coir pith composting
 - by organic farming
5. Sustainability of critical inputs availability.
 - Bio-fertilizers.
 - Micronutrient mixtures.

CROPPING PATTERN**PALAR SUB BASIN**

Sl. No.	Crop Details	Area under crops in ha.				
		Fully	Partially	Rainfed	Total	With project Fully
1	Coconut (surface alone)	9700	5370	0	15070	0
	Coconut (Drip)	21450	0	0	21450	21450
	Coconut (Drip with Fert)	0	0	0	0	20370
	Coconut (Inter crop)	0	0	0	0	0
2	Paddy (Aug-Dec)	235	0	0	235	235
	Paddy (Jan-May)	100	0	0	100	100
3	Cholam (Aug-Dec)	6400	4515	2389	13304	10120
	Cholam (Jan-May)	5500	3075	1220	9795	11240
4	Pulses (Aug-Dec)	6855	3376	1920	12151	7315
	Pulses (Jan-May)	8460	3240	1505	13205	8030
5	Ground-nut (Aug-Dec)	3800	786	678	5264	5245
	Ground-nut (Dec -May)	5294	576	0	5870	5060
6	Maize (Aug-Dec)	15183	1547	625	17355	21780
	Maize (Jan-May)	13255	1744	681	15680	18000
7	Sunflower (Aug-Dec)	465	234	0	699	2035
	Sunflower (Jan-May)	1440	272	0	1712	2395
8	Tapioca (Aug-Dec)	930	318	0	1248	1260
9	Cotton (Aug-Dec)	1175	0	0	1175	1175
	Cotton (Jan-May)	0	0	0	0	0
10	Tomato (Aug-Dec)	670	0	0	670	745
	Tomato (Jan-May)	610	0	0	610	710
11	Chilly (Aug-Dec)	815	0	0	815	915
	Chilly (Jan-May)	883	0	0	883	980
12	Brinjal (Aug-Dec)	115	0	0	115	125
	Brinjal (Jan-May)	100	0	0	100	110
13	Bhendi (Aug-Dec)	210	0	0	210	260
	Bhendi (Jan-May)	175	0	0	175	225
14	Drumstick (Aug-Dec)	725	0	0	725	874
	Drumstick (Jan-May)	175	0	0	175	225
15	Mango	725	0	0	725	874

Sl.No.	Crop Details	Area under crops in ha.				
		Fully	Without project		With project	
			Partially	Rainfed	Fully	Partial
16	Amla	315	0	0	315	365
17	Fodder crops	378	0	0	378	1410
18	Sapota	182	0	0	182	280
19	Onion (Aug -Dec)	2955	0	0	2955	3825
	Onion (Jan - May)	2512	0	0	2512	4255
20	Beetroot (Aug - Dec)	110	0	0	110	175
	Beetroot (jan-Dec)	132	0	0	132	160
21	Spices - Turmeric	65	0	0	65	65
22	Gourds (Aug-Dec)	135	0	0	135	175
	Gourds (Jan - May)	120	0	0	120	180
23	Banana (Aug - Dec_	450	0	0	450	450
24	Sugar cane (Old ayacut)	880	0	0	880	880
	TOTAL	113744	25063	9018	147815	153994

AGRICULTURE IN PALAR SUB BASIN – PRESENT SCENARIO :

About 35% of the total ayacut area is under coconut in Palar sub basin area. Being a commercial crop and due to unavailability of labour, farmers are planned to raise perennial crops like Coconut rather than annual crops like Pulses, Millets and Oilseeds. Water released from this project, will irrigate each of the ayacut once in two years in the four zone pattern. Farmers are mostly rely upon the wells or borewells as a major substitute for irrigation.

Irrigation once in a week or 10 days and fertilizer application / Plant protection measures twice in a year is sufficient for coconut. But for seasonal crops like Millets, Pulses and Oilseeds day to day farm operations are more when compared to coconut.

The second important agricultural crop in this Palar sub basin is Maize. The Maize crop is preferred by the farmers, because with lesser water, and inputs, without pest and disease problem, yield is assured in 120 days crop period. The demand for maize grains is increasing trend because all poultry feed, Cattle feed, glucose, many food supplement have maize as a major portion. The companies which produce above products are having plan to offer competitive prices to farmers for their produce.

With the onset of monsoon, Pulses and Millets are sown in Palar sub basin area and subsequently irrigated by the canal water inturn. Groundnut is sown in the assured water release period. Vegetables, fodder crops and other crops are also raised as a source of day to day income to the farmers.

Balanced Fertilizer application based on soil test results for crops is being followed by most of the farmers. But unavailability of inputs, cost of inputs credit shortage and labour unavailability are the major reasons which reduces the practice of application of recommended fertilizer, Farm Yard Manure and other inputs. Application of major nutrients, Micro nutrients, Bio fertilizers and Farm

yard manure is the only source to recoup the soil to its original character. This decides the Soil health which in turns results in higher yield of crops.

Balanced nutrient application also helps crops to withstand the pest and disease attack.

Pest and Disease Management

Coconut, Maize, Cholan, Pulses, Groundnut and Vegetables are major crops grown in Palar sub basin, which are affected by different pests and diseases.

In Coconut, Eriophyid Mite infestation, Rhinoceros beetle and Redpalm Weevil are the major menance. Maize, Cholan and Pulses are having lesser incidence of pests and diseases. In Groundnut, leaf miner attack and tikka leaf spot appear in vegetative and maturity stages.

To control all these pests and diseases, the immediate practice of plant protection measures like spraying and dusting are to be taken up. Balanced nutrient application to each and every crop will make the crop to resist to pests and diseases. Integrated Pest Management measures are recommended to the farmers to control the pest and diseases by biological methods. Because of the unavailability of inputs, and credit in time, most of the farmers are not taking up plant protection activities in time.

Water Use Efficiency :

As water is a precious input in Palar sub basin, the water is utilized carefully by raising short term, low water requiring crops like Maize, Cholan, Pulses, Groundnut and Vegetables etc. Coconut plantations are irrigated most of the period through drip systems through well water except in irrigation period from dam. The annual crops are mostly sown with the onset of monsoon showers and then it is supplemented with canal or well water.

Crop diversification in this sub basin is not required because major area is under coconut and short duration with less water intensive crops like Millets, Pulses, Groundnut and vegetables are already grown.

Agricultural Implements and Sprayers distribution is under Centrally Sponsored Schemes but not adequate to meet the demand of farmers. Most of the farmers in this sub basin are Small and Marginal farmers and they themselves involved in farming with family labour. Hence smaller cultivation implements are of major use in day to day farm operations.

Soil reclamation is not necessary because problem soil tract not seen in Palar sub basin area. Only replacing the major and micronutrients, bio-fertilizers, Farm yard manure are sufficient to improve soil health. Farmers are supplied with the improved varieties of crops through Department of Agriculture, private seed companies, Seed Corporation, and majority through farmers exchange programme. The crops grown now in this sub basin are the suitable crops to the soil and agro climatic conditions. Vegetables are the commercial crops grown widely in this ayacut area, which fetches day to day income to the farmers in addition to the milch animals.

Soil sampling is done in farmers field and Soil Health Cards are going to be distributed to inform the farmer about the qualities of the soil.

Area & Productivity – Palar Sub basin

Sl. No.	Major Crops	Area (Ha.)		Productivity	
		Without project	With project	Without project	With project
1.	Coconut	36520	41820	75 Nuts / Tree /annum	100 Nuts / Tree /annum
2.	Maize	33035	39780	2500 Kgs/ Ha.	3250 Kgs/ Ha.
3.	Pulses	25356	15345	400 Kgs/ Ha.	500 Kgs/ Ha.
4.	Cholam	23099	21360	1000 Kgs/ Ha.	1500 Kgs/ Ha.
5.	Groundnut	11134	10305	1500 Kgs/ Ha.	2000 Kgs/ Ha.
6.	Sunflower	2411	4430	1100 Kgs/ Ha.	1300 Kgs/ Ha.
7.	Cotton	1175	1175	1500 Kgs/ Ha.	2000 Kgs/ Ha.
8.	Paddy	335	335	5000 Kgs/ Ha.	7000 Kgs/ Ha.

Coconut being a perennial crop, Millets & Pulses being less water intensive crop, is already existing situation. This cropping programme well suits to this semi arid tracts of Palar sub basin area. The local market needs like Coconut, Maize grains for cattlefeed companies, Pulses are food supplement and Groundnut is the commercial food value oilseed crop well suits to this tract.

Department of Agriculture, implementing **INM and IPM Demonstration, Bio fertilizer Distribution and M.N. mixture Distribution schemes** under Centrally Sponsored programmes with subsidy. This is not adequate to meet the demands of all farmers. To have a widespread adoption of these technologies, the proposal in this project for laying demonstrations under INM and IPM are required.

Vermi composting and Coirpith Composting demonstrations are required because to meet the demands of Farm yard manure promoting organic manuring to restore Soil health. This composting demonstrations also acts as a production unit for farmers use in their fields. This units will become a commercial unit slowly to have an additional income to the farmers.

Bio fertilizer application to soil helps to improve Soil Health and to avoid soil pollution due to excess use of inorganic fertilizers.

Input supply : The critical inputs like seeds, biofertilizers, Micro Nutrient mixtures, Plant protection inputs like pheromone traps, Botanical insecticides, Bio control agents are being distributed to the farmers under subsidized cost through Centrally Sponsored Schemes through Department of Agriculture.

Implements and Sprayers Distribution:

Implements and sprayers are distributed to farmers in a very little extent and all the farmers in the area are not covered.

Transfer of Technology:

The demonstrations and farmers trainings are the teaching floor for the farmers of that area with a concept of 'Seeing is believing'. With the guidance and activities of field functionaries of Department of Agriculture, the technical knowhow of crop production technologies will be taken to the farmers by these demonstrations and group approach. This acts as a motivation tool to the nearby farmers also.

**PARAMBIKULAM ALIYAR BASIN- ALIYAR AND PALAR SUB BASIN –
CONSTRAINTS AND COUNTER MEASURES.**

Sl. No.	Constraints and Challenges	Counter measures
1	Problem soil	There is no problem soil area. Hence no reclamation is necessary.
2	Adverse climatic condition/Drought	On perusing the past rainfall record, drought occurs once in 10 years. Drought tolerant varieties, agronomic practices will be introduced.
3	Quality of seeds (Low yielding traditional varieties still prevalent)	High Yielding certified seeds of crops and quality planting materials will be supplied to the farmers through Agrl.Extension Centres, TNAU etc. Low yielding local varieties will be replaced with high yielding varieties during the project period.
4	Limited availability and distribution of certified seed from Government source/private and High cost of hybrid seeds	Certified seeds are stocked and distributed in Agricultural Extension Centres as per the SRR prescribed by the Agriculture Department. The private Hybrid seeds costs more and can be utilized. Supply of seeds by NSC and other private sources will also be arranged.
5	Improper Irrigation practices (Flood Irrigation)	SRI Technique in paddy crop will be popularized by laying demonstration by TNAU. Drip and sprinkler irrigation is going to be introduced by the Agricultural Engineering Department for all the crops.
Sl.No.	Constraints and Challenges	Counter measures

6	Inadequate extension services	Departmental Extension Workers in all levels are limited in the sub basin. Government extension service is main source. Private extension services like TNAU, Agriculture clinics and Kissan call center can be used.
7	Risk aversion	Only a few farmers have known the risk aversion. Many farmers has no idea about this. Farmers will be educated through trainings, and Demonstrations under Centrally Sponsored Schemes Training will impart all improved package of practices to the farmers and demonstrations will act as teaching floor for all farmers.
8	<u>Limited Processing Units.</u>	Based on the necessity and demands of the farmers, required units will be set up through private entrepreneurs.
9	Availability of labour	To overcome the existing labour problem, required from mechanization like Driprn and Fertigation units, can be introduced for cotton sugarcane and all farm implemnts and equipments can be distributed through subsidy schemes to avail labour unavailability during peak season.
10	Adoption of traditional method of cultivation	Introducing new planting method for sugarcane like pit method and paired two method instead of mound planting, Introducing SIR technique for paddy, Bund/inter/mixed cropping for pulses, paired row planting for cotton will be introduced.

**Activities proposed to implement in Palar Sub basin of PAP Area of
Coimbatore District**

Sl. No.	Name of the Activity	Unit	Cost / Unit L.Rs.	No / Cost for 1 st year	No / Cost for 2 nd year	No / Cost for 3 rd year	No / Cost for 4 th year	No / Cost for 5 th year	Total cost for 5 years L.Rs.
1.	<i>Demo on Vermi-compost preparation</i>	Nos.	0.200	45	45	45	45	45	225
		L.Rs.		9.000	9.000	9.000	9.000	9.000	45.000
2.	<i>Demo on Coir pith compost preparation</i>	Nos.	0.020	37	30	30	30	30	157
		L.Rs.		0.740	0.600	0.600	0.600	0.600	3.140
3.	<i>Demo on Integrated Pest management in Coconut</i>	Nos.	0.046	16	12	12	12	12	64
		L.Rs.		0.736	0.552	0.552	0.552	0.552	2.944
4.	<i>Demo on Integrated Nutrient management in Coconut</i>	Nos.	0.070	10	9	9	9	9	46
		L.Rs.		0.700	0.630	0.630	0.630	0.630	3.200
5.	<i>Distn. of MN mixture for coconut</i>	Ha.		860	840	840	840	840	4220
		L.Rs.	Rs.35/kg	52.675	51.45	51.45	51.45	51.45	258.475
6.	<i>Distn. of Bio-fertilizer for coconut</i>	Nos.	Rs.6/No.	1630	1630	1630	1630	1630	8150
		L.Rs.	(2Nos./ Tree)	34.23	34.23	34.23	34.23	34.23	171.150
7	<i>Integrated Nutrient management demo in groundnut</i>	Nos.	0.050 /No.	5	5	-	-	-	-
		LRs		0.250	0.250	-	-	-	-

Sl. No.	Name of the Activity	Unit	Cost / Unit L.Rs.	No / Cost for 1st year	No / Cost for 2nd year	No / Cost for 3rd year	No / Cost for 4th year	No / Cost for 5th year	Total cost for 5 years L.Rs.
8	Micronutrient Distn. To groundnut	Ha.	Rs. 34/kg	358	350	350	350	350	1758
		L.Rs.	(12.5 kg / Ha.)	1.5215	1.4875	1.4875	1.4875	1.4875	7.472
9	Bio fertilizer Distribution to Groundnut	Ha.	Rs. 6 / No.	827	820	820	820	820	4107
		L.Rs.	(20 pkts / Ha.)	0.9924	0.984	0.984	0.984	0.984	4.928
10	Gypsum distribution to Groundnut	Ha.	Rs. 1500 / MT	400	400	400	400	400	2000
		L.Rs.		1.200	1.200	1.200	1.200	1.200	6.000
11	Integrated Nutrient Management Demonstration in Maize	Ha.	Rs. 0.050 / No.	6	6	6	6	6	30
		L.Rs.		0.300	0.300	0.300	0.300	0.300	1.500
12	Micronutrient Distribution to Maize	Ha.	Rs. 33/kg	2900	2750	2750	2750	2750	13900
		L.Rs.	(12.5 kg / Ha.)	11.9625	11.34375	11.34375	11.34375	11.34375	57.338

13	<i>Bio fertilizers Distribution to Maize</i>	<i>Ha.</i>	<i>Rs. 6 / No.</i>	2860	2860	2860	2860	2860	14300
		<i>L.Rs.</i>	<i>(20 Nos./ Ha.)</i>	3.432	3.432	3.432	3.432	3.432	17.160
	TOTAL	<i>L.Rs</i>		117.7394	115.45925	115.20925	115.20925	115.20925	578.827

Activities proposed to implement in Palar Sub basin of PAP Area of Erode District

Sl. No.	Name of the Activity	Nos. for 5 years	Cost / Unit L.Rs.	No / Cost for 1st year	No / Cost for 2nd year	No / Cost for 3rd year	No / Cost for 4th year	No / Cost for 5th year	Total cost for 5 years L.Rs.
1.	Demo on Vermi-compost preparation	205	0.2	41 L.Rs.8.2	41 L.Rs.8.2	41 L.Rs.8.2	41 L.Rs.8.2	41 L.Rs.8.2	205 L.Rs.41.0
2.	Demo on Coir pith compost preparation	205	0.02	41 0.82	41 0.82	41 0.82	41 0.82	41 0.82	205 4.1
3	Distn. Of Soil health cards	2050	0.0001	410 0.041	410 0.041	410 0.041	410 0.041	410 0.041	2050 0.205
4	Pulses Integrated Nutrient mgt	205	0.0174	41 0.7134	41 0.7134	41 0.7134	41 0.7134	41 0.7134	205 3.567
5.	Maize –crop prod. Demo	205	0.0397	41 1.6277	41 1.6277	41 1.6277	41 1.6277	41 1.6277	205 8.139
6.	Coconut - INNT	205	0.070	41 2.87	41 2.87	41 2.87	41 2.87	41 2.87	205 14.35
7.	Distn. Of HOP	490	0.015	98 1.47	98 1.47	98 1.47	98 1.47	98 1.47	490 7.35
8.	Distn. of Power Sprayers	490	0.050	98 4.9	98 4.9	98 4.9	98 4.9	98 4.9	490 24.5
	TOTAL			20.642	20.642	20.642	20.642	20.642	103.210

DETAILED ESTIMATE FOR EACH ACTIVITY

1. Demonstration on Vermi compost preparation

Vermi composting Demonstration is aimed at educating farmers on organic farming and its technology.

Laying these demonstrations in prominent areas will help to take the technology to a wider range and subsequent adoption.

One unit of vermin composting costs 0.200 LRs.

Sl. No.	Required Input	Quantity	Rate (Rs.)	Total Cost of Rs.
1.	To construct shed and beds (Bedsized 6' x 3' x 3')	-	-	9000
2.	To purchase sieve	1	Rs.1000/No.	1000
3.	To purchase pipes	2	Rs.1000/No.	2000
4.	To prepare Farm yard Manure	10 MT	Rs. 300/ MT	3000
5.	To purchase earthworms	25 Kgs.	Rs.200 / kg.	5000
	Total			20000

100% subsidy is proposed in this programme as given in Coconut development board, Cochin 45.000 L. Rs.

2. Demonstration on Coirpith compost preparation

Coir waste is a problem at present for environment and farmers, as it refuses to decay. These demonstrations will educate farmers the know-how of decomposing coir waste and use it as compost for their field.

One unit of coir composting costs 0.020 LRs.

Sl. No.	Required Input	Quantity	Rate (Rs.)	Total Cost of Rs.
1.	Coconut coir waste	5 MT	Rs. 100/ MT	500
2.	Pleurotus fungus	25 Bottles	Rs.20/ Bottle	500
3.	Urea	25 Kgs.	Rs. 5 / Kg.	125
4.	Labour / Transport charges	-	-	875
	Total			2000

100% subsidy is proposed in this programme as given in Coconut development board, Cochin

100% subsidy cost will be 3.140 LR.

3. Demonstration on IPM in Coconut (1 Acre Plot)

Several pests and diseases attack coconut, but Eriophyid Mite infestation is a major problem resulting in reduced yield. To control Eriophyid Mite, balanced nutrition and application of neem cake is recommended which is adopted only by 20% of the farmers due to unawareness. The pheremone trap installation for the control of the regular pests like Rhinoceros beetle and Red palm weevil is also under limited practice. To popularize the plant protection practices IPM Demonstration is the appropriate tool to save crop from pest and diseases and to get more yield and income.

Unit cost for this programme is 0.046 L.Rs.

Demonstration size : 1 Acre (70 trees / acre)

a. Pheremone traps for Red palm weevil	-	1 No.	Rs. 250
b. Pheremone trap for Rhinoceros beetle	-	1 No.	Rs. 250
c. Application of Neem cake @ 5 kgs/ tree @ Rs. 7.70 kg (5 kgs x Rs.7.70 x 70 trees/acre)	-		Rs. 2695
d. Application of Trichodema Viride @ 200 gms. / tree (200gms x Rs.100/kg x 70 trees/acre)	-		Rs. 1400
Total	-		Rs. 4595

100% subsidy is proposed in this programme as given in Coconut development board, Cochin

100% subsidy cost will be 2.944 LR.s.

4. Demonstration on INM in Coconut (I Acre)

Balanced fertilizer application based on the Soil test results for coconut, paddy and other crops is being following by many farm ers. Farm Yard Manure, Biofertilizers and Micronutrient are the major components of Integrated Nutrient Management. The cost of availability of the above inputs and awareness about the benefits of INM practices decides the adoption.

Now a days Farm yard manure availability is scarce due to limited cattle population. INM also leads to soil health which forms the basis for healthy crop which in turn boosting yield. Excessive use of inorganic fertilizers is the present trend, and an awareness is required to avoid the soil, air and water pollution. Balanced fertilizer application also helps coconut trees to withstand the attack of Eriophyid Mite.

Sl. No.	Required Input (For One tree)	Quantity	Rate (Rs.)	Total Cost of Rs.
1.	Micronutrient Mixture	1 kg.	31 kg.	31.00
2.	Azospyrillum	1 pkt	6 / pkt.	6.00
3.	Phosphobacteria	1 pkt	6 / pkt.	6.00
4.	Farm Yard Manure	50 kgs.	0.40 / kg	20.00
5.	Urea	1.2 kgs.	}	27.00
6.	Super phosphate	2.0 kgs.		
7.	Potash	3.50 kgs.		
8.	Application cost	-	-	10.00
	Total			100.00

70 trees / acre x Rs. 100 /- - Rs. 7000 / acre

100% subsidy is proposed in this programme as given in Coconut development board, Cochin

100% subsidy cost will be 3.22 LR.s.

5. Distribution of Micronutrient Mixture for Coconut

Micro nutrient deficiency is the major impediment in raising a good coconut crop and harvesting a profitable yield. Such soil deficiency need correction by application of coconut micro -nutrient which is a dedicated problem solver addressing the need directly.

Recommended dose : 1 kg / tree

No. of trees per Ha. : 175 Nos.

Cost of 1 kg. M.N. Mixture : Rs. 35/-

$$175 \times \text{Rs. } 35 = \text{Rs. } 6125 / \text{Ha.}$$

Total cost 258.475 L.Rs.

6. Distribution of Bio fertilizer for Coconut

Recommended dose : 1 Azospyrillum +
1 Phosphobacteria

No. of bio fertilizer packet : Rs. 6 /-

Cost per Ha. : Rs. 2100/-

Total cost 171.150 L.Rs.

7. Distribution of Bio fertilizer to Maize and Groundnut

Recommended dose per Ha. : 10 Azospyrillum +
10 Phosphobacteria

Cost of 1 bio fertilizer packet : Rs. 6 /-

Cost per Ha. = 20 x Rs. 6 : Rs. 120/-

Total cost 22.088 L.Rs.

8. Distribution of M.N. Mixture for Groundnut

Recommended dose	:	12.50 kgs. / per Ha.
Cost of 1 kg. M.N. Mixture	:	Rs. 34 /-
Cost per Ha. = 12.50 x Rs.34	:	Rs. 425/-

Total cost 7.472 L.Rs.

9. Distribution of M.N. Mixture for Maize

Recommended dose	:	12.50 kgs. / per Ha.
Cost of 1 kg. M.N. Mixture	:	Rs. 33 /-
Cost per Ha. = 12.50 x Rs.33	:	Rs. 412.50/-

Total cost 57.338 L.Rs.

10. Gypsum Distribution to Groundnut

Recommended dose	:	200 kgs. / per Ha.
Cost of Gypsum	:	Rs. 1500/ MT
Cost per Ha. = 0.200 MT x Rs.1500	:	Rs. 300 /-

Total cost 6.000 L.Rs.

11. Demonstration on INM in Maize and Groundnut (1 Ha. Plot)

Sl. No.	Required Inputs	Qty. (per Ha.)	Rate (Rs.)	Total cost (Rs.)
1.	Organic Manure	2 MT	6.50 / kg	1300
2.	Neemcake	250 kgs.	8.00 / kg	2000
3.	Green manure seeds	40 kgs.	20 / kg	800
4.	Micronutrient mixture	12.5 kgs.	40 / kg	500
5.	Gypsum	400 kgs.	1 / kg	400
	Total			5000

Total cost 2.000 L.Rs.

SCHEMES PROPOSALS (ERODE DISTRICT)

1. Issue of Soil health Cards:-

The Soil Samples have been collected from farmers field and sent for analysis after getting the result the farmers will be provided with soil health card at free of cost. This will help the farmers to avoid indis criminate use of fertilizers The Soil test based fertilizers application will increase the yield and net income.

Unit cost / card @ Rs. 10 / card.

For 410 farmers (10 farmers in each wua for 41) = $410 \times 10 = \text{Rs } 4100 /$
year

For 5 years 4100×5 = Rs. 20500 / -

Demonstration:-

1. PULSES:-

i. Distribution of Seed @ 20 kg / acre , @ Rs. 50 / kg	Rs. 1000 /-
ii. Bio-fertilizers 15 packets / acre @ Rs. 6 / packet	Rs. 90 /-
iii. Distribution of M.N. Mixture 5 kg / acre @ Rs. 28 / kg	Rs. 350 /-
iv. D.A.P. Spray- 10 kgs DAP for 2 spray @ Rs. 10 / kg	Rs. 100 /-
v. Spraying Cost for 2 spray @ Rs. 100 / spray	Rs. 200 /-
Total	Rs. 1740 /-
For 41 Demonstration per year 41 x 1740	Rs. 71340
For 5 years Rs. 71340 x 5	Rs. 356700 /-

Farmers are not much aware about this Technology . So its necessary for the increase the awareness of this demonstration.

2. MAIZE :-

i. Distribution of Hybrid Seed @ 20 kg / ha , @ Rs. 100 / kg	Rs. 2000 /-
ii. Seed treatment chemicals 2 gr. Bavistin / kg of seed 40 gr / ha. @ Rs. 60 / - 100 gram	Rs. 24 /-
iii. Bio-fertilizer Distribution 15 packet / ha. @ Rs. 6 / - packet	Rs. 90 /-
iv. Fertilizer and M.N. Mixture Distribution	Rs. 1856 /-
Total	3970 .00 /
For 41 Demonstration per year 41 x 3970	Rs. 162770 /-
For 5 years Rs. 162770 x 5	Rs. 813850 /-

Maize area is increasing every year. Maize becomes a major crop it is necessary to create awareness among farmers to cultivate high yielding hybrids through demonstrations.

3.1. COCONUT:-

Balanced fertilizer application based on the Soil test results for coconut, paddy and other crops is being following by many farmers. Farm yard manure, Bio-fertilizers and Micronutrients are the major components of

Integrated Nutrient Management. The cost of availability of the above inputs and awareness about the benefits of INM practices decides the adoption.

Now a days Farm yard manure availability is scarce due to limited cattle population. INM also leads to Soil Health which forms the basis for healthy crop which in turn boosting yield. Excessive use of inorganic fertilizers is the present trend and an awareness is required to avoid the soil, air and water pollution. Balanced fertilizer application also helps coconut trees to withstand the attack of Eriophyid Mite.

Sl. No.	Required Input (For One tree)	Quantity	Rate (Rs.)	Total Cost of Rs.
1.	Micronutrient Mixture	1 kg./tree	31.00 kg.	31.00
2.	Azospyrillum	1 pkt /tree	6.00 / pkt.	6.00
3.	Phosphobacteria	1 pkt/ tree	6.00 / pkt.	6.00
4.	Farm Yard Manure	50 kgs. /tree	0.40 / kg	20.00
5.	Urea	1.2 kgs.	}	27.00
6.	Super phosphate	2.0 kgs.		
7.	Potash	3.50 kgs.		
8.	Application cost	-	-	10.00
	Total			100.00

70 trees / acre x Rs. 100 /- - Rs. 7000 / acre

100% subsidy is proposed in this programme as given in Coconut development board, Cochin

Total cost 14.35 L.Rs.

3.2. COCONUT –ORGANIC FARMING AND VERMI COMPOST

DEMONSTRATION:-

Vermi composting Demonstration is aimed at educating farmers on organic farming and its technology.

Laying these demonstrations in prominent areas will help to take the technology to a wider range and subsequent adoption.

One unit of vermin composting costs 0.200 LRs.

Sl. No.	Required Input	Quantity	Rate (Rs.)	Total Cost of Rs.
1.	To construct shed and beds (Bedsized 6' x 3' x 3')	-	-	9000
2.	To purchase sieve	1	Rs.1000/No.	1000
3.	To purchase pipes	2	Rs.1000/No.	2000
4.	To prepare Farm yard Manure	10 MT	Rs. 300/ MT	3000
5.	To purchase earthworms	25 Kgs.	Rs.200 / kg.	5000
	Total			20000

100% subsidy is proposed in this programme as given in Coconut development board, Cochin 41.000 L.Rs.

i. The cost of construction of bed 6' x 3' x 1' Dimension 300 kgs of FYM and 100 earthworm per bed	Rs. 20000 /-
Total	Rs. 20000 -/
For 41 Demonstration per year 41 x 20000	Rs. 820000 /-
For 5 years Rs. 820000 x 5	Rs. 4100000 /-

3.3. COCONUT –COIR PITH DEMONSTRATION:-

Coir waste is a problem at present for environment and farmers, as it refuses to decay. These demonstrations will educate farmers the know-how of decomposing coir waste and use it as compost for their field.

One unit of coir composting costs 0.020 LRs.
(detailed estimate for one unit is given below)

Sl. No.	Required Input	Quantity	Rate (Rs.)	Total Cost of Rs.
1.	Coconut coir waste	5 MT	Rs. 100/ MT	500
2.	Pleurotus fungus	25 Bottles	Rs.20/ Bottle	500
3.	Urea	25 Kgs.	Rs. 5 / Kg.	125
4.	Labour / Transport charges	-	-	875
	Total			2000

100% subsidy is proposed in this programme as given in Coconu t development board, Cochin

100% subsidy cost will be 4.100 LRs.

II DISTRIBUTION OF AGRICULTURAL IMPLEMENTS; -

Supply of hand operated sprayer: -

i. Cost of hand operated sprayer	Rs. 1500 /-
Total	Rs. 1500 /-
For 41 WUA per year @ 5 Nos @ 98 x 1500	Rs. 147000 /-
For 5 years Rs. 147000 x 5	Rs. 735000 /-

Supply of powers sprayer: -

i. Cost of powers sprayer	Rs. 5000 /-
Total	Rs. 5000 /-
For 41 WUA per year @ 5 Nos @ 98 x 5000	Rs. 490000 /-
For 5 years Rs. 490000 x 5	Rs. 2450000 /-

BUDGET ESTIMATE :- (Demonstration)

Sl No	Name of the Demonstration	Nos / year	Amount / Unit Rs.	Total Cost Rs.	Nos for 5 years	Cost for 5 years Rs.
1.	Soil samples	410	10	0.041	2050	0.205
2.	Pulses Demonstration	41	1740	0.7134	205	3.567
3.	Maize Demonstration	41	3970	1.6277	205	8.139
4.	Coconut INM Practices	41	7000	2.870	205	14.350
5.	Vermi Compost Demonstration	41	20000	8.200	205	41.000
6.	Coirpith Demonstration	41	2000	0.820	205	4.100
	Total	615	-	14.2721	3075	71.3605

BUDGET ESTIMATE :- (Farm Implement distribution)

Sl No	Name of the Implements	Nos / year	Total Cost Rs.	No.for 5 years	Total cost for 5 years	Farmers contribution (50 %)
1.	Hand operated sprayer	98	1.47	490	7.35	3.675
2.	Power sprayer	98	4.90	490	24.5	12.25
	Total	196	6.37	980	31.85	15.925

Total cost for all the components = Rs. 103.211 Lakhs.

TAMILNADU IAMWARM PROJECT

Sl. No.	Details of Inputs	Ist YEAR						II YEAR					
		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER	
		Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.
1	Construction of shed and beds (Rs. 9000/Nos.)	15 Nos.	1.350	15 Nos.	1.350	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35
2	Purchase of sieves (Rs.1000/No) (1/No)	15 Nos.	0.150	15 Nos.	0.150	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15
3	Purchase of pipes (Rs.1000/No.) (2/No.)	30 Nos.	0.300	30 Nos.	0.300	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30
4	Purchase of Farm Yard Manure (Rs.300/MT) (10MT/No)	150MT.	0.450	150MT.	0.450	150MT.	0.45	150MT.	0.45	150MT.	0.45	150MT.	0.45
5	Purchase of Earthworms (25kgs/Bed) (Rs.200/kg)	375Kgs	0.750	375Kgs	0.750	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75
	TOTAL	15 Demos.	3.000	15 Demos.	3.000	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00

SI. No.	Details of Inputs	III YEAR						IV YEAR					
		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
		Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.
1	Construction of shed and beds (Rs. 9000/No.)	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35
2	Purchase of sieves (Rs.1000/No) (1/No)	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15
3	Purchase of pipes (Rs.1000/No.) (2/No.)	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30
4	Purchase of Farm Yard Manure (Rs.300/MT) (10MT/No)	150MT.	0.45	150MT.	0.45	150MT.	0.45	150MT.	0.45	150MT.	0.45	150MT.	0.45
5	Purchase of Earthworms (25kgs/Bed) (Rs.200/kg)	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75
	TOTAL	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00

SI. No.	Details of Inputs	Vth YEAR						TOTAL	
		JANUARY		FEBRUARY		MARCH		Physi- cal	Lakh Rs.
		Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.		
1	Construction of shed and beds (Rs. 9000/No.)	15 Nos.	1.35	15 Nos.	1.35	15 Nos.	1.35	225 Nos.	20.25
2	Purchase of sieves (Rs.1000/No) (1/No)	15 Nos.	0.15	15 Nos.	0.15	15 Nos.	0.15	225 Nos.	2.25
3	Purchase of pipes (Rs.1000/No.) (2/No.)	30 Nos.	0.30	30 Nos.	0.30	30 Nos.	0.30	450 Nos.	4.50
4	Purchase of Farm Yard Manure (Rs.300/MT) (10MT/No)	150MT.	0.45	150MT.	0.45	150MT.	0.45	2250 MT.	6.75
5	Purchase of Earthworms (25kgs/Bed) (Rs.200/kg)	375Kgs	0.75	375Kgs	0.75	375Kgs	0.75	5625kgs.	11.25
	TOTAL	15 Demos.	3.00	15 Demos.	3.00	15 Demos.	3.00	225Demos.	45.00

INPUT REQUIREMENT -COIRPITH COMPOST DEMONSTRATION

No.	Details of Inputs	I st YEAR						II nd YEAR					
		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		JANUARY	
		Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.
1	Coconut Coir waste (5 MT/Demonstration) (Rs.100/MT)	50 MT	0.050	85 MT	0.085	50 MT	0.050	50 MT	0.050	50 MT	0.050	50 MT	0.050
2	Pleurotus Fungus (25 Bottles/Demonstration) (Rs.20/Bottle)	250 Nos.	0.050	425 Nos	0.085	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050
3	Urea (25 kgs/Demonstration) (Rs.5/kg)	250 kgs.	0.0125	425 kgs	0.02125	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125
4	Labour / Transport charges.	-	0.0875	-	0.14875	-	0.0875	-	0.0875	-	0.0875	-	0.0875
	TOTAL :	10Demn.	0.200	17 Demn	0.340	10 Demn	0.200	10 Demn	0.200	10 Demn	0.200	10 Demn	0.200

No.	Details of Inputs	III YEAR						IV YEAR					
		JUNE		JULY		AUGUST		OCTOBER		NOVEMBER		DECEMBER	
		Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.	Physi- cal	Lakh Rs.
1	Coconut Coir waste (5 MT/Demonstration) (Rs.100/MT)	50 MT	0.050	50 MT	0.050	50 MT	0.050	50 MT	0.050	50 MT	0.050	50 MT	0.050
2	Pleurotus Fungus (25 Bottles/Demonstration) (Rs.20/Bottle)	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050
3	Urea (25 kgs/Demonstration) (Rs.5/kg)	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125
4	Labour / Transport charges.	-	0.0875	-	0.0875	-	0.0875	-	0.0875	-	0.0875	-	0.0875
	TOTAL :	10 Demo.	0.200	10.Demo	0.200	10 Demo.	0.200	10 Demo.	0.200	10 Demo.	0.200	10 Demo.	0.200

No.	Details of Inputs	V YEAR						TOTAL	Lakh Rs.
		JANUARY		FEBRUARY		MARCH			
		Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.		
1	Coconut Coir waste (5 MT/Demonstration) (Rs.100/MT)	50 MT	0.050	50 MT	0.050	50 MT	0.050	785 MT	0.785
2	Pleurotus Fungus (25 Bottles/Demonstration) (Rs.20/Bottle)	250 Nos.	0.050	250 Nos.	0.050	250 Nos.	0.050	3925 Nos.	0.785
3	Urea (25 kgs/Demonstration) (Rs.5/kg)	250kgs.	0.0125	250kgs.	0.0125	250kgs.	0.0125	3925 Kgs.	0.19625
4	Labour / Transport charges.	-	0.0875	-	0.0875	-	0.0875	-	1.37375
	TOTAL :	10 Demo.	0.200	10 Demo.	0.200	10 Demo.	0.200	157Demo	3.140

TAMIL NADU IAMWARM PROJECT
PAB BASIN - PALAR SUB BASIN : INPUT REQUIREMENT
DEMONSTRATION ON IPM - COCONUT (1 Acre plot)

No	Details of Inputs	I YEAR					
		APRIL		MAY		JUNE	
		Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.
1	Pheremone trap for Red Palm Weevil (1No/Plot)(Rs.250/No.)	5 Nos.	0.0125	5 Nos.	0.0125	6 Nos.	0.015
2	Peremone trap for Rhinoceros Beeble (1 No./Plot) (Rs.250/No.)	5 Nos.	0.0125	5 Nos.	0.0125	6 Nos.	0.015
3	Neem Cake (5kgs./Tree) (Rs.7.70/kg.)	1750 kgs.	0.13475	1750kgs.	0.13475	2100 kgs	0.16170
4	Trichoderma Viride (200 gms/Tree) (rs. 100/kg.)	70 kgs.	0.070	70 kgs.	0.070	84 kgs.	0.084
	TOTAL	5 Demos.	0.22975	5 Demos.	0.22975	6 Demos.	0.27570

Sl. No	Details of Inputs	II YEAR						III rd YEAR					
		AUGUST		SEPTEMBER		OCTOBER		OCTOBER		NOVEMBER		DECEMBER	
		Physical	Lakh Rs.	Physical	Lakh Rs.	Physical	Lakh Rs.	Physical	Lakh Rs.	Physical	Lakh Rs.	Physical	Lakh Rs.
1	Pheremone trap for Red Palm Weevil (1No/Plot)(Rs.250/No.)	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010
2	Peremone trap for Rhinoceros Beeble (1 No./Plot) (Rs.250/No.)	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010
3	Neem Cake (5kgs./Tree) (Rs.7.70/kg.)	1400 kgs.	0.1078	1400 kgs.	0.1078	1400 kgs.	0.1078	1400 kgs.	0.1078	1400 kgs.	0.1078	1400 kgs.	0.1078
4	Trichoderma Viride (200 gms/Tree) (rs. 100/kg.)	56 kgs.	0.056	56 kgs.	0.056	56 kgs.	0.056	56 kgs.	0.056	56 kgs.	0.056	56 kgs.	0.056
TOTAL		4 Demos.	0.1838	4 Demos.	0.1838	4 Demos.	0.1838	4 Demos.	0.1838	4 Demos.	0.1838	4 Demos.	0.1838

Sl.		IV YEAR					
No	Details of Inputs	JULY		AUGUST		SEPTEMBER	
		Physical	Lakh Rs.	Physical	Lakh Rs.	Physical	Lakh Rs.
1	Pheremone trap for Red Palm Weevil (1No/Plot)(Rs.250/No.)	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010
2	Peremone trap for Rhinoceros Beeble (1 No./Plot) (Rs.250/No.)	4 Nos.	0.010	4 Nos.	0.010	4 Nos.	0.010
3	Neem Cake (5kgs./Tree) (Rs.7.70/kg.)	1400 kgs.	0.1078	1400 kgs.	0.1078	1400 kgs.	0.1078
4	Trichoderma Viride (200 gms/Tree) (rs. 100/kg.)	56 kgs.	0.056	56 kgs.	0.056	56 kgs.	0.056
	TOTAL	4 Demos.	0.1838	4 Demos.	0.1838	4 Demos.	0.1838

**TAMILNADU IAMWARM PROJECT
PAP BASIN - PALAR SUB BASIN - INPUT REQUIREMENT
DEMONSTRATION ON INM IN COCONUT - 1 ACRE PLOT**

Sl. No.	Details of inputs	Ist YEAR				IInd YEAR			
		JUNE		JULY		AUGUST		SEPTEMBER	
		Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.
1	Coconut - MN Mixture (1 kg/tree) (Rs.31/kg.)	350 kgs	0.1085	350 kgs	0.1085	350kgs	0.1085	280 kgs	0.0868
2	Azospirillum + Phosphobacteria (1+1/tree) (Rs.6/pkt.)	700 Nos.	0.042	700 Nos.	0.042	700 Nos.	0.042	560 Nos.	0.0336
3	Farm yard Manure (50 kgs/tree) (Rs.0.40/kg)	17500 kgs	0.070	17500 kgs	0.070	17500 kgs	0.070	14000 kgs	0.056
4	Urea (1.2 kg/tree)	420 kgs	} 0.0945	420 kgs	} 0.0945	420 kgs	} 0.0945	336 kgs	} 0.756
5	Superphosphate (2.0 kg/tree)	700 kgs		700 kgs		700 kgs		560 kgs	
6	Mureate of Potash (3.5 kg/tree)	1225 kgs		1225 kgs		1225 kgs		980 kgs	
7)	Application cost (Rs.10/tree)	-	0.035	-	0.035	-	0.035	-	0.028
TOTAL :		5 Demos.	0.350	5 Demos.	0.350	5 Demos.	0.350	4 Demos	0.280

Sl. No.	Details of inputs	IIIrd YEAR				IVth YEAR			
		OCTOBER		NOVEMBER		DECEMBER		JANUARY	
		Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.
1	Coconut - MN Mixture (1 kg/tree) (Rs.31/kg.)	280kgs	0.0868	350 kgs.	0.1085	350kgs.	0.1085	280 kgs.	0.0868
2	Azospirillum + Phosphobacteria (1+1/tree) (Rs.6/pkt.)	560 Nos.	0.0336	700 Nos.	0.042	700 Nos.	0.042	560kgs.	0.0336
3	Farm yard Manure (50 kgs/tree) (Rs.0.40/kg)	14000Nos.	0.056	17500kgs.	0.070	17500kgs.	0.070	14000 kgs.	0.056
4	Urea (1.2 kg/tree)	336 kgs.	} 0.0756 |	420 kgs.	} 0.0945 |	420 kgs.	} 0.0945	336 kgs	} 0.0756
5	Superphosphate (2.0 kg/tree)	560 kgs.		700kgs.		700 kgs.		560 kgs.	
6	Mureate of Potash (3.5 kg/tree)	980 kgs.		1225kgs.		1225 kgs		980kgs	
7)	Application cost (Rs.10/tree)	--	0.028	--	0.035	--	0.035	---	0.028
	TOTAL :	4 Demos.	0.280	5 Demos.	0.350	5Demos.	0.350	4 Demos	0.280

Sl. No.	Details of inputs	Vth YEAR				TOTAL	
		FEBRUARY		MARCH		Phy-sical	Lakh Rs.
		Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.
1	Coconut - MN Mixture (1 kg/tree) (Rs.31/kg.)	280 kgs	0.0868	350 kgs.	0.1085	3220kgs.	0.9982
2	Azospirillum + Phosphobacteria (1+1/tree) (Rs.6/pkt.)	560 kgs.	0,0336	700 Nos.	0.042	6440 kgs.	0.3864
3	Farm yard Manure (50 kgs/tree) (Rs.0.40/kg)	14000 kgs.	0.056	17500kgs	0.070	161000Kgs.	0.644
4	Urea (1.2 kg/tree)	336 kgs.	} 0.0756 }	420 kgs.	} 0.0945 }	3864 kg	} 0.8694 }
5	Superphosphate (2.0 kg/tree)	560kgs.		700kgs.		6440 kgs.	
6	Mureate of Potash (3.5 kg/tree)	980 kgs		1225kgs		11270kgs	
7	Application cost (Rs.10/tree)	--	0.028	--	0.035	--	0.322
	TOTAL :	4Demos	0.280	5Demos.	0.350	46 Demos.	3.220

TAMILNADU IAMWARM PROJECT
PAP BASIN - PALAR SUB BASIN - INPUT REQUIREMENT
DISTRIBUTION OF MICRONUTRIENT FOR COCONUT

Sl. No.	Year	April		May		June		July		August		September		October		November	
		Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.
1	I Year	-	-	100 Ha. 17.5 MT.	6.125	100 Ha. 17.5 MT.	6.125	100 Ha. 17.5 MT.	6.125	200 Ha. 35.0 MT	12.25	200 Ha. 35.0 MT	12.25	160 Ha. 28 MT	9.80	-	-
2	II Year	-	-	200 Ha. 35.0 MT.	12.25	140 Ha. 24.5 MT.	8.575	100 Ha. 17.5 MT.	6.125	200 Ha. 35.0 MT	12.25	200 Ha. 35.0 MT	12.25	-	-	-	-
3	III Year	-	-	..	..	..	..	140 Ha. 24.5 MT.	8.575	200 Ha. 35.0 MT	12.25	200 Ha. 35.0 MT	12.25	100 Ha. 17.5 MT	6.125	200 Ha. 35.0 MT	12.25
4	IV Year	..	..	..	..	..	..	..	..	200 Ha. 35.0 MT	12.25	140 Ha. 24.5 MT	8.575	200 Ha. 35.0 MT	12.25	200 Ha. 35.0 MT	12.25
5	V Year	..	..	100 Ha. 17.5 MT.	6.125	140 Ha. 24.50 MT.	8.575	200 Ha. 35.0 MT	12.25	200 Ha. 35.0 MT	12.25	200 Ha. 35.0 MT	12.25	-	-	-	-
	TOTAL	..	..	70 MT	24.50	66.5 MT	23.275	94.5 MT	33.075	175 MT	61.250	164.50	57.575	80.5 MT	28.175	70.0 MT	24.50

Sl. No.	Year	December		January		February		March		Total	
		Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.
1	I Year	-	..	-	..	..	..	..	..	860 Ha. 150.5 MT.	52.675
2	II Year	-	..	-	..	..	..	..	..	840 Ha. 147 MT.	51.450
3	III Year			-	..	..	..	..	..	840 Ha. 147 MT.	51.450
4	IV Year	100 Ha. 17.5 MT	6.125	..	..	..	..	..	..	840 Ha. 147 MT.	51.450
5	V Year	..	..	-	..	..	..	..	..	840 Ha. 147 MT.	51.450
	TOTAL	17.5 MT	6.125	-	..	..	..	..	..	738.5 MT.	258.475

TN IAMWARM PROJECT
PAP BASIN - PALAR- SUB BASIN - INPUT REQUIREMENT
DISTRIBUTION OF BIO FERTILIZER FOR COCONUT

Sl. No.	Year	April		May		June		July		August		September	
		Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.
1	I Year	-	-	500 Ha. 1.750	10.50	500 Ha. 1.75	10.50	500 Ha. 1.750	10.50	130 Ha 0.455	2.73	..	..
2	II Year	-	-			500 Ha. 1.75	10.50	500 Ha. 1.750	10.50	500 Ha. 1.75	10.5	130 Ha. 0.455	2.73
3	III Year	-	-	..	..	500 Ha. 1.75	10.50	500 Ha. 1.750	10.50	130 Ha. 0.455	2.73	500 Ha. 1.75	10.50
4	IV Year	..	..	..	..	..				..	..	500 Ha. 1.75	10.50
5	V Year	..	..			500 Ha. 1.75	10.50	500 Ha. 1.750	10.50	130 Ha. 0.455	2.73	500 Ha. 1.75	10.50
	TOTAL	..	..	1.750 L.Nos.	10.50	7.00 L.Nos.	42.00	7.00 L.Nos.	42.00	3.115 L.Nos.	18.690	5.705 L.Nos.	34.23

Sl. No.	Year	October		November		December		January		February		March		Total	
		Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.
1	I Year	..	..	..	..	-	..	-	..	..	..	..	..	1630 Ha. 5.705	34.23
2	II Year	..	..	..	..	-	..	-	..	..	..	..	..	1630 Ha. 5.705	34.23
3	III Year							-	..	..	..	..	..	1630 Ha. 5.705	34.23
4	IV Year	500 Ha. 1.75	10.50	500 Ha. 1.75	10.50	130 Ha. 0.455	2.73	..	..	..	..	..	..	1630 Ha. 5.705	34.23
5	V Year					..	..	-	..	..	..	..	..	1630 Ha. 5.705	34.23
	TOTAL	1.75	10.5	1.75	10.50	0.455	2.73	-	..	..	..	..	..	28.525	171.2
		L.Nos.		L.Nos.		L.Nos.								L.Nos.	

TN IAMWARM PROJECT
PAP BASIN - PALAR SUB BASIN - INPUT REQUIREMENT
DEMONSTRATION ON INM IN GROUNDNUT (1 Ha./PLOT)

Sl. No.	Details of Inputs	Ist Year				IInd Year				TOTAL	
		JUNE		JUNE		AUGUST		SEPTEMBER		Phy.	L.Rs.
		Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.	Phy.	L.Rs.		
1	Organic Manure (2 MT/Ha.) (Rs.6.50 / kg.)	4 MT.	0.026	6 MT.	0.039	4 MT.	0.026	6 MT.	0.039	20 MT.	0.130
2	Neemcake (250 kgs./Ha.) (Rs.8/ kg.)	500 kgs.	0.040	750 kgs	0.060	500 kgs.	0.040	750 kgs.	0.060	2500 kgs	0.200
3	Green manure seeds (40 kgs/Ha.) (Rs.20/kg.)	80 kgs.	0.016	120 kgs.	0.024	80 kgs.	0.016	120 kgs.	0.024	400 kgs	0.080
4	Micronutrient Mixture (12.50 kgs./Ha.) (Rs. 40/ kg)	25 kgs.	0.010	37.50 kgs.	0.015	25 kgs.	0.010	37.50 kgs.	0.015	125 kgs	0.050
5	Gypsum (400 kgs/Ha.) (Rs.1/ kg.)	800 kgs.	0.008	1200 kgs.	0.012	800kgs.	0.008	1200 kgs.	0.012	4000 kgs.	0.040
	TOTAL	2 Demons.	0.100	3 Demon.	0.150	2 Demn.	0.100	3 Demos.	0.150	10 Dems.	0.500

IN IAMWARM PROJECT
PAP BASIN - PALAR SUBSBASIN
IN PUT REGQUIREMENT

DISTRIBUTION OF BIO FERTILIZER FOR GROUNDNUT (Unit Lakh Nos)

Sl. No.	Year	April		May		June		July		August		September	
		Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.	Phy-sical	Lakh Rs.
1	I year	200 ha 0.040	0.240	200 ha 0.040	0.240	200 ha 0.040	0.240						
2	II year	200 ha 0.040	0.240	200 ha 0.040	0.240	200 ha 0.040	0.240						
3	III year	200 ha 0.040	0.240	200 ha 0.040	0.240	200 ha 0.040	0.240						
4	IV year	200 ha 0.040	0.240	200 ha 0.040	0.240	200 ha 0.040	0.240						
5	V year	200 ha 0.040	0.240	200 ha 0.040	0.240	200 ha 0.040	0.240						
	Total	0.200 L. Nos	1.200	0.200 L. Nos	1.200	0.200 L. Nos	1.200	..	..	..	..	..	..

Sl. No.	Year	October		November		December		January		February		March		Total	
		Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.
1	I year					222 Ha 0.0454	0.2724							827 Ha 0.1654	0.9924
2	II year					220 Ha 0.044	0.264							820 Ha 0.164	0.984
3	III year					220 Ha 0.044	0.264							820 Ha 0.164	0.984
4	IV year					220 Ha 0.044	0.264							820 Ha 0.164	0.984
5	V year					220 Ha 0.044	0.264							820 Ha 0.164	0.984
	Total					0.2214 L. Nos	1.3284							4107 Ha 0.8214 2 Nos	4.9284

IN IAMWARM PROJECT
PAP BASIN - PALAR SUBSBASIN
IN PUT REGQUIREMENT
GYPSUM DISTRIBUTION TO GROUNDNUT

Sl.		April		May		June		July		August		September	
No.	Year	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.
1	I year	-	-	-		100 Ha 20 M.T	0.300			100 Ha 20 M.T	0.300	100 Ha 20 M.T	0.300
2	II year					100 Ha 20 M.T	0.300			100 Ha 20 M.T	0.300	100 Ha 20 M.T	0.300
3	III year					100 Ha 20 M.T	0.300			100 Ha 20 M.T	0.300	100 Ha 20 M.T	0.300
4	IV year					100 Ha 20 M.T	0.300			100 Ha 20 M.T	0.300	100 Ha 20 M.T	0.300
5	V year					100 Ha 20 M.T	0.300			100 Ha 20 M.T	0.300	100 Ha 20 M.T	0.300
	Total					100 M.T	1.500			100 M.T	1.500	100 M.T	1.500

Sl.		October		November		December		January		February		March		Total	
No.	Year	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.	Phy- sical	Lakh Rs.
1	I year	-	-	-				100 Ha 20 M.T	0.300					400Ha 80 M.T	1.200
2	II year							100 Ha 20 M.T	0.300					400Ha 80 M.T	1.200
3	III year							100 Ha 20 M.T	0.300					400Ha 80 M.T	1.200
4	IV year							100 Ha 20 M.T	0.300					400Ha 80 M.T	1.200
5	V year							100 Ha 20 M.T	0.300					400Ha 80 M.T	1.200
	Total							100 M.T	1.500					2000 Ha 400 M.T	6.000

DEMONSTRATION OF INM IN MAIZE (1 Ha. Plot)

Sl. No.	Details of Inputs	Ist YEAR		IInd YEAR		III rd YEAR		IV. YEAR		V YEAR		TOTAL	
		MAY		JUNE		JULY		AUGUST		SEPTEMBER		Physi-cal	Lakh Rs.
		Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.
1	Organic Manure (2 MT/Ha) (Rs.0.65/kg.)	12M.T	0.078	12M.T	0.078	12M.T	0.078	12M.T	0.078	12M.T	0.078	60 MT	0.39
	Neemcake (250 kg/Ha.) (Rs.8/kg.)	1500	0.12	1500	0.12	1500	0.12	1500	0.12	1500	0.12	75 KG	0.6
3	Green Manure seeds (40 kgs/Ha.) (Rs.20kg.)	240 kgs	0.048	240 kgs	0.048	240 kgs	0.048	240 kgs	0.048	240 kgs	0.048	1200 KGS	0.24
4	Micronutrient Mixture (12.5 kgs/Ha.) (Rs.40/kg.) TOTAL :	75 kgs	0.030	75 kgs	0.030	75 kgs	0.030	75 kgs	0.030	75 kgs	0.030	375 KGS	0.15
5	Gypsum (400 kgs/Ha.) (Rs.1/kg.)	2400 kgs	0.024	2400 kgs	0.024	2400 kgs	0.024	2400 kgs	0.024	2400 kgs	0.024	120 KGS.	0.120
	TOTAL :	6 Demos	0.30	6 Demos	0.30	6 Demos	0.30	6 Demos	0.30	6 Demos	0.30	30.000	1.500

**TAMIL NADU IAMWARM PROJECT
PAP BASIN - PALAR SUB-ASIN - INPUT REQUIREMENT
DEMONSTRATION OF INM IN MAIZE (1 Ha. Plot)**

SI No	Details of inputs	Ist YEAR		II Year		III year		IV th year		Vth year		TOTAL	Lakh Rs.
		MAY		JUNE		JULY		AUGUST		SEPTEMBER			
		Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.	Physi-cal	Lakh Rs.		
1	Organic Manure (2MT/Ha) (Rs.0.65/kg.)	12MT	0.078	12MT	0.078	12MT	0.078	12MT	0.078	12MT	0.078	60 MT	0.390
2	Neem Cake (250kg/Ha)(Rs.8/kg)	1500kgs	0.120	1500kgs	0.120	1500kgs	0.120	1500kgs	0.120	1500kgs	0.120	7500 kgs.	0.600
3	Green Manure Seeds (40 kgs/Ha.)(Rs.20/kg)	240kgs.	0.048	240kgs.	0.048	240kgs.	0.048	240kgs.	0.048	240kgs.	0.048	1200 kgs.	0.240
4	Micronutrient Mixture (112.5kg/Ha) (Rs.40/kg)	75kgs.	0.030	75kgs.	0.030	75kgs.	0.030	75kgs.	0.030	75kgs.	0.030	375kgs.	0.150
5	Gypsum (400kgs/Ha)(Re.1/kg)	2400kgs.	0.024	2400kgs.	0.024	2400kgs.	0.024	2400kgs.	0.024	2400kgs.	0.024	12000kgs.	0.120
	TOTAL	6Demos.	0.300	6Demos.	0.300	6Demos.	0.300	6Demos.	0.300	6Demos.	0.300	30 Demo.	1.500

TAMIL NADU IAMWARM PROJECT
PAP - BASI - PALAR SUB BASIN
INPUT REQUIREMENT

INPUT REQUIREMENT		DISTRIBUTION OF MICRO NUTRIENT TO MAIZE							
Sl. No.	Year	RIL Physi-cal	Lakh Rs.	MAY Physi-cal	Lakh Rs.	JUNE Physi-cal	Lakh Rs.	JULY Physi-cal	Lakh Rs.
1	I Year	--	--	400 Ha. 5.00 MT	1.650	--	--	600 Ha. 7.50 MT	2.475
2	II Year	--	--	--	--	400 Ha 5.00 MT	1.650	350 Ha. 4.375 MT	1.444
3	III Year	--	--	400 Ha 5.00 MT	1.650	350 Ha. 4.375 MT	1.444	500 Ha. 6.250 MT	2.0625
4	IV Year	--	--	--	--	350 Ha 4.375 MT	1.444	400 Ha. 5.00 MT	1.650
5	V Year	--	--	--	--	400 Ha 5.00 MT	1.650	350 Ha. 4.375 MT	1.444
	TOTAL	--	--	800 Ha. 10.000 MT	3.30	1500 Ha 18.750 MT	6.188	2200 Ha. 27.500 MT	9.075

Sl. No.	Year	AUGUST	Lakh Rs.	SEPTEMBER	Lakh Rs.	OCTOBER	Lakh Rs.	NOVEMBER	Lakh Rs.
		Physi-cal		Physi-cal		Physi-cal		Physi-cal	
1	I Year	600 Ha. 7.50 MT	2.475	400 Ha 5.00 MT	1.650	400 Ha 5.00 MT	1.650	--	--
2	II Year	500 Ha 6.250 MT	2.0625	500 Ha 6.250 MT	2.0625	500 Ha. 6.250 MT	2.0625	--	--
3	III Year	500 Ha 6.250 MT	2.0625	500Ha. 6.250 MT	2.0625	500 Ha. 6.250 MT	2.0625	--	--
4	IV Year	500 Ha. 6.250 MT	2.0625	500 Ha 6.250 MT	2.0625	500a. 6.250 MT	2.0625	--	--
5	V Year	500 Ha 6.250 MT	2.0625	500 Ha 6.250 MT	2.0625	500 Ha 6.250 MT	2.0625	--	--
	TOTAL	2600 Ha. 32.500MT	10.725	2400 Ha. 30,000MT	9.90	2400Ha. 30.00 MT	9.90	--	--

Sl. No.	Year	DECEMBER Physi- cal	Lakh Rs.	JANUARY Physi- cal	Lakh Rs.	FEBRUARY Physi- cal	Lakh Rs.	MARCH Physi- cal	Lakh Rs.	TOTAL Physi- cal	Lakh Rs.
1	I Year	500 Ha 6.250 MT	2.0625	-- --	--	--	--	--	--	2900Ha. 36.250MT	11.9625
2	II Year	500 Ha 6.250MT	2.0625	--	--	--	--	--	--	2750 Ha. 34.375 MT	11.3438
3	III Year	--	--	--	--	--	--	--	--	2750 Ha. 34.375 MT	11.3438
4	IV Year	500 Ha 6.250 MT	2.0625	--	--	--	--	--	--	2750 Ha 34.375 MT	11.3437
5	V Year	500 Ha 6.250 MT	2.625	--	--	--	--	--	--	2750 Ha 34.375MT	11.33437
	TOTAL	2000 Ha. 25.00 MT	8.250	--	--	--	--	--	--	13900 Ha 173.75 MT	57.3375

**TAMIL NADU IAMWARM PROJECT
PAP BASIN - PALAR SUB BASIN
INPUT REQUIREMENT
DISTRIBUTION OF BIO FERTILIZERS FOR MAIZE [UNIT: LAKHS / NOS]**

Sl. No	Year	April		May		June		July		August		Sept.	
		Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs
1	I Year	-	.-	400Ha 0.080	0.480	460Ha 0.092	0.552	500Ha. 0.100	0.600	500Ha. 0.100	0.600	500Ha. 0.100	0.600
2	II Year	0	0	0	0	0	0	0	0	400Ha 0.080	0.480	460Ha 0.092	0.552
3	III Year	-	.-	400Ha 0.080	0.480	460Ha 0.092	0.552	500Ha. 0.100	0.600	500Ha. 0.100	0.600	500Ha. 0.100	0.600
4	IV Year	-	.-	400Ha 0.080	0.480	460Ha 0.092	0.552	500Ha. 0.100	0.600	500Ha. 0.100	0.600	500Ha. 0.100	0.600
5	V Year	-	.-	0	0	400Ha. 0.080	0.480	460Ha. 0.092	0.552	500Ha. 0.100	0.600	500Ha. 0.100	0.600
	Total	-	-	1200 Ha 0.240	1.44	1780Ha. 0.356	2.136	1960 ha 0.392	2.352	2400Ha. 0.480	2.880	2460Ha 0.492	2.952

Sl. No	Year	October		November		December		January		February		March		TOTAL	
		Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs	Phy.	L.Rs
1	I Year	500Ha. 0.100	0.600	0.000	0	0	0.000	0	0.000	0	0.000	0	0.000	2860Ha. 0.572	3.432
2	II Year	500Ha. 0.100	0.600	500Ha.	0.600	500Ha.	0.600	500Ha.	0.600	0	0.000	0	0.000	2860Ha. 0.572	3.432
				0.100		0.100		0.100							
3	III Year	500Ha. 0.100	0.600	0	0.000	0	0.000	0	0.000	0	0.000	0	0	2860Ha. 0.572	3.432
4	IV Year	500Ha. 0.100	0.600	0	0.000	0	0.000	0	0.000	0	0.000	0	0	2860Ha. 0.572	3.432
5	V Year	500Ha. 0.100	0.600	500Ha.	0.600	0	0.000	0	0.000	0	0.000	0		2860Ha. 0.572	3.432
				0.100											
Total		2500Ha. 0.500	3.000	1000Ha 0.200	1.200	500Ha. 0.100	0.600	500Ha. 0.100	0.600	0	0	0	0	14300Ha. 2.860	17.160

PALAR SUB BASIN – CROPWISE PRODUCTION AND INCOME INCREASE

S. No	Crops	Area (Ha)			Productivity (MT/Ha)			Production (MT)			Income (Lakhs)		
		Wop	Wp	IN CRS	Wop	Wp	IN CRS	Wop	Wp	IN CRS	Wop	Wp	IN CRS
1	Coconut	36520	41820	(+) 5300	13125	17500	4375	4.79	5.49	(+) 0.70	23.95	27.45	(+) 3.50
2	Paddy	335	335	-	5	6	1	1675	2010	(+) 335	100.50	100.60	(-) 20.10
3	Cholam (Fodder)	23099	21360	(-) 1739	25	30	5	577475	640800	(+) 63325	1.73	1.9	(+) 0.19
4	Pulses	25356	15345	(-) 10011	0.50	0.60	0.1	12678	7673	(-) 5005	3.80	2.30	(-) 1.50
5	Groundnut	11134	10305	(-)829	1.50	2.00	0.50	16701	20610	(+) 3909	3.34	4.12	(_) 0.78
6	Maize	33035	39780	(+) 6745	2.50	3.25	0.75	82588	129285	(+) 46697	4.13	6.46	(+) 2.33

7	Sunflower	2411	4430	(+) 2019	1.10	1.30	0.20	2652	5759	(+)3107	2.12	2.49	(+) 0.37
8	Cotton	1175	1175	-	1.80	2.00	0.20	2115	2350	(+) 235	528.75	587.50	(+) 58.75
9	Sugarcane	880	880	-	10	120	20	88000	105600	(+) 17600	8.80	10.56	(+) 1.76
10	Vegetables	11580	15039	(+) 3459									
11	Fruits	1912	2115	(+) 203									
12	Fodder	378	1410	(+) 1032									
	TOTAL	147815	153994	(+) 6179									

PALAR SUB BASIN COIMBATORE DISTRICT

FIRKA LEVEL PROGRAMME FOR PROPOSED DEMONSTRATIONS

Sl. No.	Developmental / Components / Activites	Total Nos/Ha.	BLOCK						
			POLLACHI (NORTH)				POLLACHI (South)		Total
			Pollachi (North)	Ramapattinam	Negamam	Total	Pollachi (South)	Kolarpatty	
1.	Demonstration of vermin compost production	225 Nos	40	-	20	60	12	12	24
2.	Demonstration on coirpith compost production	157 Nos	30	-	10	40	12	12	24
3.	Demonstration on Integrated pest management in coconut	64Nos	8	..	4	12	4	4	8
4.	Demonstration of integrated nutrient management in coconut	46 Nos	9	-	5	14	4	4	8
5.	Distribution of kicro nutrient mixture to coconut	4220 Ha	90	-	24	114	24	24	48
6.	Distribution of Bio Fertilizers to coconut	8150 Ha	-	-	-	-	-	-	-
7.	Integrated Nutirent Management demonstration in groundnut	10 Nos	-	-	-	-	-	-	-

Sl. No.	Developmental / Components / Activites	Total Nos/Ha.	BLOCK					
			POLLACHI (NORTH)			POLLACHI (South)		Total
			Pollachi (North)	Negamam	Total	Pollachi (South)	Kolarpatty	
7.	Integrated Nutrient Management Demonstration in Grandnut	-	-	-	-	-	-	-
8.	Micronutrient Distribution to Grandnut	-	-	-	-	-	-	-
9.	Bio fertilizers distribution to Groundnut	-	325	125	450	225	225	450
10.	Gypsum distribution to Grandnut	-	-	-	-	-	-	-
11.	Integrated Nutrient Management Demonstration in Maize	-	-	-	-	-	-	-
12.	Micronutrient Distribution to Maize	-	-	-	-	-	-	-
13.	Bio-fertilizers distribution to Maize.	-	-	-	-	-	-	-

Sl. No.	Developmental / Components / Activites	Total Nos/Ha.	BLOCK						
			POLLACHI (NORTH)				POLLACHI (South)		Total
			Pollachi (North)	Negamam	K.Kadavu	Total	Pollachi (South)	Kolarpatty	
1.	Demonstration of vermin compost production	9	20	12	32	12	6	18	2
2.	Demonstration on coirpith compost production	-	2	3	5	2	3	5	2
3.	Demonstration on Integrated pest management in coconut	-	12	8	20	7	3	10	-
4.	Demonstration of integrated nutrient management in coconut	-	-	-	-	-	-	-	-
5.	Distribution of kicro nutrient mixtureto coconut	300	-	-	-	-	-	-	100
6.	Distribution of Bio Fertilizers to coconut	793	-	-	-	-	-	-	500
7.	Integrated Nutirent Management demonstration in groundnut	-	-	-	--	-	-	-	-

PONGALUR

Sl. No.	Developmental Components/ Activities	Pongalur	South Avinashipalayam	Total
1.	Demonstration of Vermi compost production	2	6	8
2.	Demonstration on coirpith compost production	2	6	8
3.	Demonstration on Integrated pest management in coconut	-	-	-
4.	Demonstration of Integrated nutrient management in coconut	-	-	-
5.	Distribution of micro nutrient mixture to coconut	200	415	615
6.	Distribution of bio Fertilizers to coconut	800	1557	2357
7.	Integrated Nutrient Management demonstration in groundnut	-	-	-

Sl No.	Development Components/ Activities	Madathukulam	Palladam	Sultanpet	Tirupur Tirupur (South)	Pongalur		Total
						Pongalur	South Avinashipalayam	
7.	Integrated Nutrient Management Demonstration in Grandnut	-	-	-	-	-	-	-
8.	Micronutrient Distribution to Grandnut	678	-	-	-	-	-	
9.	Bio fertilizers distribution to Grandnut	900	20	80	-	-	-	-
10.	Gypsum distribution to Grandnut	800	-	-	-	-	-	-
11.	Integrated Nutrient Management Demonstration in Maize	-	10	20	-	-	-	-
12.	Micronutrient Distribution to Maize	2400	-	-	500	750	1750	2500
13.	Bio fertilizers distribution to Maize	2400	-	-	500	750	1750	2500

Sl. No.	Development Components/ Activities	Kinathukadavu				Udumalpet				Pethappanpattu		
		Kinathu Kadavu	Kovil Palayam	Vadacittur	Total	Udumalpet	Periya Valavadi	Kurichikottai	Total			
8.	Micronutrient Distribution to Grandnut.	-	-	-	300	250	800	120	160	280	160	280
9.	Bio fertilizers distribution to Groundnut	107	400	300	807	460	300	300	1060	160	180	340
10.	Gypsum distribution to Grandnut	-	-	-	-	3--	3--	3--	900	140	160	300
11.	Integrated Nutrient Management Demonstration in Maize	-	-	-	-	-	-	-	-	-	-	-
12.	Micronutrient Distribution to Maize	-	-	-	-	1500	1500	1000	4000	2500	2000	4500
13.	Bio fertilizers distribution to Maize.	-	-	-	-	1600	1600	1000	4200	2600	2100	4700

Firka level Programme for proposed demonstrations

Sl. No.	Developmental components of activities	Units/ Nos.	Dharapuram	Kundadam				Kangarpam	Nithia kadaiyur	Total	V.Koil
			Ponnapuram	Kundadam	Sarkarandam palayam	Uthiyur	Total				
1.	Demonstration of Vermi compost preparation	205	25	63	8	5	76	33	17	50	54
2.	Demonstration of Coir pithy compost preparation	205	25	63	8	5	76	33	17	50	54
3.	Distribution of soil health cares	2050	250	630	80	50	760	330	170	500	540
4.	Pulses 1 NM	205	25	63	8	5	76	33	17	50	54
5.	Maize Crop production demonstration	205	25	63	8	5	76	33	17	50	54
6.	Coconut 1 NM	205	25	63	8	5	76	33	17	50	54
7.	Distribution of Hand operated sprayers	490	60	150	20	10`	180	80	40	120	130
8.	Distribution of Power Sprayers	490	60	150	20	10	180	80	40	120	130



ANIMAL HUSBANDRY
DEPARTMENT

IAMWARM PROJECT – ANIMAL HUSBANDRY

1. INTRODUCTION

1.1 Our State being an agricultural based economy with more than 60% of the people engaged in animal husbandry, agriculture and allied activities, it forms the backbone of the rural economy. Animal husbandry contributes significantly in supplementing the income of small, marginal farmers and landless labourers many of whom are women who play a major role in the care and management of livestock. Livestock is not only an important source of income to the rural poor but also helps them sustain their livelihood in times of drought and famine. Livestock provide a diverse range of output varying from draught power and organic manure for agriculture, self employment throughout the year especially for women as well as direct production of milk, meat and eggs for human food.

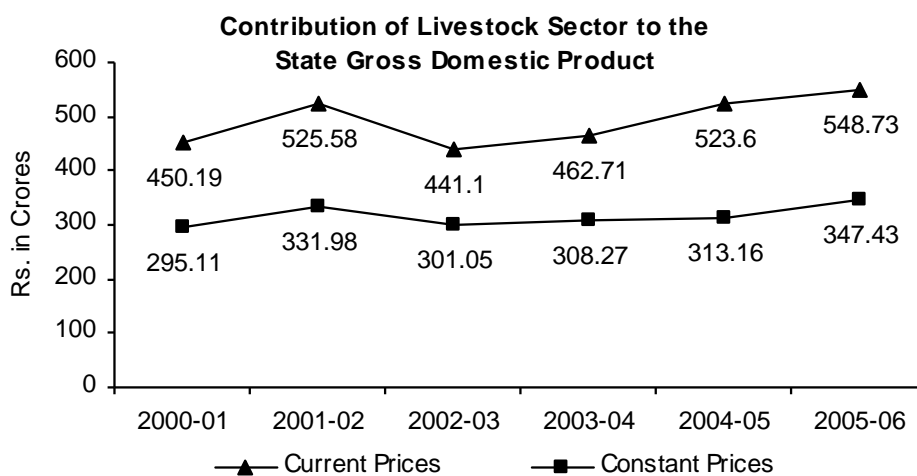
1.2 The contribution of livestock sector to the food basket in the form of milk, eggs and meat to the State has been impressive in fulfilling the animal protein requirement of ever growing human population. The estimated milk production which was 37.91 lakh MT during 1995-96 has increased to 54.74 lakh MT during 2005-06. Similarly the egg production during the same period has increased from 3,048 million numbers to 6,223 million numbers. During the same period, the per capita availability of milk per day went up from 185 gms to 234 grms and eggs per annum from 54 numbers to 97 numbers respectively. The average growth rate of milk and egg during the last decade is 4.4% and 10.4% respectively. According to advance estimates (provisional), the contribution of livestock sector to the Gross State Domestic Product has increased from Rs.523.60 crores during 2004-05 to Rs.548.73 crores during 2005-06, an increase of 4.8%.

Year	Current Prices (In crores)						Constant Prices (In crores)					
	Gross State Domestic Product	GSDP for Agriculture & Allied Activities	GSDP for Livestock Sector	%age Share of Agriculture & Allied Activities to GSDP	%age Share of Livestock Sector to GSDP	%age Share of Livestock Sector to Agriculture	Gross State Domestic Product	GSDP for Agriculture & Allied Activities	GSDP for Livestock Sector	%age Share of Agriculture & Allied Activities to GSDP	%age Share of Livestock Sector to GSDP	%age Share of Livestock Sector to Agriculture
2000-01	14109.98	2042.56	450.19	14.48	3.19	22.04	9101.07	1457.73	295.11	16.02	3.24	20.24
2001-02	14355.54	2056.09	525.58	14.32	3.66	25.56	8901.06	1457.22	331.98	16.37	3.73	22.78
2002-03	15509.93	1646.51	441.10	10.62	2.84	26.79	9170.32	1111.75	301.05	12.12	3.28	27.08
2003-04	16845.72	1700.21	462.71	10.09	2.75	27.21	9495.10	1081.96	308.27	11.39	3.25	28.49
2004-05	18892.11	2025.73	523.60	10.72	2.77	25.85	10324.84	1252.74	313.16	12.13	3.03	25.00
2005-06	20750.28	2097.25	548.73	10.11	2.64	26.16	11198.15	1305.98	347.43	11.66	3.10	26.60

2003-04 : Quick estimates

2004-05 : Advance estimates

2005-06 : Advance estimates(provisional)



1.3 Animal husbandry having a high potential for growth, its hidden potential needs to be explored as this can provide the much needed gainful employment opportunities to the weaker sections of the society and can contribute significantly in regeneration of the rural economy. Animal husbandry can ensure a better quality of life for the rural farmer by not only providing sustainable employment at their location itself but can also act as assets or rural currencies. Animal husbandry thus can act as a powerful instrument for the comprehensive socio-economic transformation of the rural people and can act as an engine for growth and trigger the economy by its multiplying effects.

2. PRESENT STATE SCENARIO

2.1 Tamil Nadu is home to 91.41 lakhs head of cattle, 16.58 lakhs buffaloes, 55.93 lakhs sheep, 81.77 lakhs goats besides 3.21 lakhs pigs and 865.91 lakhs poultry as per the 17th livestock and poultry census. The livestock ownership is more evenly distributed among landless labourers, small and marginal farmers and livestock production systems are based on low cost agro-by-products as nutritional inputs.

2.2 Veterinary assistance, health cover and breeding support to the livestock and poultry in the State is provided by 1,323 Government graduate veterinary institutions. The National Commission on Agriculture has suggested one veterinarian for every 5000 cattle units by the year 2000 A.D. whereas the present scenario is one veterinarian for every 10,000 cattle units. In addition 1,799 subcentres provide first aid and breeding support. Feed and fodder are the major limiting factors in enhancing farm animal productivity. But in the State a huge gap of around 47% exists between the requirement and availability of green fodder. Though farmers are well aware of the artificial insemination programme, their awareness level on best and latest animal husbandry practices, know-how on emerging new diseases and their control are not up to the expected level. More over with changing global scenario, the knowledge level of the veterinarians and para-veterinarians needs to be updated frequently to take the technology instantaneously to the end users- the farmers.

2.3 Though the State is endowed with large livestock population, the breedable age females covered through artificial insemination is only 30-35%. The conception rate under field conditions ranges from 35-40%. This is due to a mixture of various factors like low nutritional status, improper time of insemination and stress due to walking the animals for long distances to the institutions for artificial insemination, shortage of feed and fodder, prevalence of endemic livestock diseases. In the State, the per day average productivity of a non-descript and crossbred cattle is 2.73 kgs. and 6.27 kgs. respectively and that of a buffalo is 4.16 kgs. which is much below the expected yield. The productivity can be enhanced by adopting good management practices, feeding practices, bio security measures, effective disease prevention measures, etc.

3. SCENARIO IN THE PALAR SUB BASIN

Livestock Population

Cattle	Buffalo	Sheep	Goat	Poultry
169583	35540	190905	135331	4954357

Breedable age Female Population

Crossbred Cattle	Non Descriptive cattle	Buffalo	Total
60998	15925	19405	96328

Infrastructure and Man power in Government Veterinary Institutions

No. of Veterinary Institutions		Veterinary institutions filled up	
Graduate Institutions	Subcentres	Graduate Institutions	Subcentres
33	30	32	19

Average Per Day Milk Yield per animal

Crossbred Cattle	Non Descriptive cattle	Buffalo
7.162	3.12	4.16

Milk Procurement

Milk cooperative societies	Present milk procurement (LLPD)	Milk procured by Aavin (LLPD)
360	345000	148000

4. Constraints, Challenges and Counter measures proposed:

S. No.	Constraints & Challenges	Countermeasures Proposed
1.	Remote villages and villages situated far away from the Government Veterinary Institutions are not getting sufficient veterinary services like veterinary health cover and artificial insemination facilities	The establishment of sub basin veterinary unit will ensure delivery of veterinary services at the farmer's door steps or nearest to the farmer's in remote villages and unserved villages of the sub basin area. Provision of veterinary health cover and artificial insemination are the main works at the farmer's door steps. The unemployed veterinary graduate will be given an entrepreneurship training to establish a Sub basin veterinary unit (details enclosed vide para 6.1 of page 6) in the sub basin area and disseminate best animal husbandry practices for his earnings and to upgrade animal husbandry practices of farmers in the sub basin area.
2.	Lack of upgraded infrastructure at the Government Institutions leading to constraints in delivery of quality veterinary services.	The Government Veterinary Institutions in the sub basin will be provided with additional essential equipments (details enclosed vide para 6.2.a. of page 12 & 6.2.b. of page 13) to deliver quality veterinary services in the sub basin. In addition one veterinary dispensary (details enclosed vide para 6.2.c. of page 13) will be upgraded as referral institution for quick and accurate diagnosis of diseases and help in timely treatment thereby preventing economic loss to the farmers.
3.	There is a wide gap between the requirement and availability of green fodder needed for the livestock in the sub basin.	To reduce the gap between the requirement and availability of green fodder in the sub basin, it is proposed to cultivate CO3 and Kolukattai fodder in 2025 hectares of private lands, (details enclosed vide para 6.3.(d). of page 14) as a part of cropping plan.

S. No.	Constraints & Challenges	Countermeasures Proposed
4.	Main problem affecting the fertility in cross bred cattle is infertility leading to loss of milk production days, ultimately leading to loss to the farmers.	To overcome the infertility problems, infertility cum total health cover camps (details enclosed vide para 6.4.(b) of page 16) are proposed. The animals having infertility problems will be identified and treated. In addition, mineral mixture supplement (details enclosed vide para 6.4.(c) of page 16) will be given to rectify the defects.
5.	Lack of adequate know-how about the livestock management practices like feeding, breeding, health care and deworming activities.	The farmers in the sub basin will be given training (details enclosed vide para 6.5.a. of page 18) on best livestock management practices in livestock breeding activities like signs of oestrus, correct time of artificial insemination, deworming, feeding schedule and other health care measures. In addition, IEC materials will be distributed to farmers in the sub basin. More over hoardings and wall paintings depicting signs of commonly affecting diseases will be erected in places where people congregate in large numbers. Apart from this, quarterly night meetings will be conducted to disseminate information to the farmers in the sub basin. (details enclosed vide para 6.4.(d) of page 17)
6.	Lack of update knowledge and skills of the veterinarians and para-veterinarians in the project area.	Veterinarians in the project area will be given trainers training (details enclosed vide para 6.5.(d) of page 19) at Veterinary Colleges to update and refresh their skills and knowledge. They will inturn train the para-veterinarians.

5. OBJECTIVES OF THE PROJECT

5.1 With this background, the main objective of the Animal Husbandry Department will be to intervene in all possible ways utilising the resources to the maximum to improve the production potentialities of the livestock in the sub basin through multi disciplinary approach.

The main interventions will be:

- Productivity enhancement by improving delivery of veterinary services in the project area at the Government and private level.
- Increasing availability of green fodder and other fodder for sustenance.
- Conducting various out reach programmes to enhance productivity.
- Enhancing the knowledge level of human resource in the project area.

5.2 With the above interventions, not only the crossbred population in the sub basin is expected to rise but also the disease outbreaks will be kept under control. Moreover systematic and periodical deworming will lead to a 10% increase in weight gain, thereby increasing the total meat yield per animal. Moreover the various out reach programmes and enhancing the knowledge level in the sub basin area will lead to better animal husbandry practices. Thus ultimately, [the per animal milk yield is expected to increase from 7.162 lts to 10 litres in crossbred, from 3.12 lts to 3.8 litres in indigenous and from 4.16 lts to 5 litres](#) in buffaloes, leading to increased total farm income.

6. Productivity enhancement by improving delivery of veterinary services in the project area at the Government and private level.

6.1 Establishment of Sub basin Veterinary Units.

6.1.(a) Though there are [33](#) graduate veterinary institutions and [30](#) subcentres operating in the project area, there is still large live stock populations uncovered which is mainly due to the geographical terrain and distance these villages are located from the institutions. In this project, the main aim will be to provide effective veterinary cover and breeding support to these villages at their door steps by establishing Sub basin Veterinary Unit. The main criteria for establishing the unit will be livestock population in the unserved area. Hence to provide effective services in these unserved areas, it is planned to establish [5](#) Sub basin Veterinary Units in the Project area.

6.1.(b)The details of Sub basin Veterinary Unit to be established, their coverage villages with distance and nearest Government Veterinary institution is furnished below.

Total number of units in the Palar sub basin :			5	
Name of the Sub basin Veterinary Unit :			1.Pachapalayam (Kangeyam Un.)	
Sl. No.	Name of Villages to be Covered	Distance from the Unit (In Kms)	Nearest Govt. Institution	Distance from the village to Govt. inst. (In Kms)
1	Pachapalayam (Kangeyam Un.)	0	Kangeyam VH	10
2	Pappini	2	Kangeyam VH	8
3	Uthampalayam	3	Kangeyam VH	9
4	Malapalayam	1	Kangeyam VH	7
5	Madavilagam	2	Kangeyam VH	7
6	Kariyakattuvalasu	3	Kangeyam VH	6
7	Meenakshivalasu	5	Kangeyam VH	7
8	Balagamudraputhur	5	Kangeyam VH	9
9	Kulathupalayam	5	Kangeyam VH	9
10	Alagaiyagoundampudur	4	Kangeyam VH	9
11	Varathappampalayam	4	Kangeyam VH	7
12	Chathraivalasu	3.5	Kangeyam VH	5
13	Moolakadai	4	Kangeyam VH	7
14	Kamatchivalasu	4	Kangeyam VH	6
15	Bagavathipalayam	5	Kangeyam VH	7
16	Muthunagar	5	Kangeyam VH	6
17	Kanjarpalayam	6	Kangeyam VH	7
18	Maranapalayam	6	Kangeyam VH	8

Villages 1 to 6	Mondays & Thursdays
Villages 7 to 12	Tuesdays & Fridays
Villages 13 to 18	Wednesdays & Saturdays
Sundays will be a reserve day in which IEC campaigns will be conducted. In addition if any villages are left out during the week, it will be covered on the reserve day.	

Pachapalayam village is about 10 kms from the nearest Veterinary institution namely Veterinary Hospital, Kangeyam. There are about 18 villages situated in and around **Pachapalayam** that are not covered by the Government Veterinary Institution. Further the breedable female population in and around **Pachapalayam** that is untapped by the Government veterinary institution is around 3,808. Hence **Pachapalayam** village is fixed as the headquarters of the Sub basin Veterinary Unit.

Name of the Sub basin Veterinary Unit :			2. Semmandakoundanpudur (Pongalur Union)	
Sl. No.	Name of Villages to be Covered	Distance from the Unit (In Kms)	Nearest Govt. Institution	Distance from the village to Govt. inst. (In Kms)
1	Semmandakoundanpudur (Pongalur Union)	0	Koduvai VD	5
2	Kosavampalayam	2	Koduvai VD	7
3	Chellapillapalayam	2	Koduvai VD	6
4	Ayyampalayam	2	Koduvai VD	6
5	Vattamalaipalayam	5	Koduvai VD	7
6	Chemalaikoundanpalayam	8	Koduvai VD	9
7	Thayampalayam	7	Koduvai VD	8
8	Nagalingapuram	4	Koduvai VD	3
9	Avinasipalayam	6	Koduvai VD	4
10	Alagumalaia	10	Koduvai VD	8
11	Ellapalayampudur	6	Koduvai VD	7
12	Ellapalayam	7	Koduvai VD	8
13	Karunaipalayam	8	Koduvai VD	7
14	Kattupalayam	6	Koduvai VD	6
15	Kangeyampalayam	6	Koduvai VD	6
16	Valupurammankoil	7	Koduvai VD	9
17	Ganapathipalayam	8	Koduvai VD	10
18	Kovilpalayamputhur	10	Koduvai VD	6
19	Kovilpalayam	11	Koduvai VD	7
20	Chettipalayam	12	Koduvai VD	7

Villages 1 to 7	Mondays & Thursdays
Villages 8 to 14	Tuesdays & Fridays
Villages 15 to 20	Wednesdays & Saturdays
Sundays will be a reserve day in which IEC campaigns will be conducted. In addition if any villages are left out during the week, it will be covered on the reserve day.	

Semmandankoundanpudur village is about 5 kms from the nearest Veterinary institution namely Veterinary Dispensary, Koduvai. There are about 20 villages situated in and around **Semmandankoundanpudur** that are not covered by the Government Veterinary Institution. Further the breedable female population in and around **Semmandankoundanpudur** that is untapped by the Government veterinary institution is around 3,332. Hence **Semmandankoundanpudur** village is fixed as the headquarters of the Sub basin Veterinary Unit.

Name of the Sub basin Veterinary Unit :			3. MYVADI (Madathukulam Union)	
Sl. No.	Name of Villages to be Covered	Distance from the Unit (In Kms)	Nearest Govt. Institution	Distance from the village to Govt. inst. (In Kms)
1	Myvadi	0	Madathukulam VD	7
2	Jothampatti	6	Madathukulam VD	7
3	Vadapatti	7	Madathukulam VD	2
4	Myvadi Pirivu	2	Madathukulam VD	7
5	Rajavur	5	Madathukulam VD	13
6	Solamadevi	12	Madathukulam VD	4
7	Kadathur	10	Madathukulam VD	8
8	Thanthoni	8	Madathukulam VD	8
9	Narasingapuram	6	Madathukulam VD	4
10	Palappampatti	6	Madathukulam VD	9
11	Chinnappanpudur	13	Madathukulam VD	8
12	K.G.Pudur	2	Madathukulam VD	7
13	Padaiyachipudur	1	Madathukulam VD	10
14	Karuppasampudur	5	Madathukulam VD	7
15	Bolarpatti	5	Madathukulam VD	12
16	Sengadipudur	5	Madathukulam VD	6

Villages 1 to 6	Mondays & Thursdays
Villages 7 to 12	Tuesdays & Fridays
Villages 13 to 16	Wednesdays & Saturdays
Sundays will be a reserve day in which IEC campaigns will be conducted. In addition if any villages are left out during the week, it will be covered on the reserve day.	

Myvadi village is about 7 kms from the nearest Veterinary institution namely Veterinary Dispensary, Madathukulam. There are about 16 villages situated in and around **Myvadi** that are not covered by the Government Veterinary Institution. Further the breedable female population in and around **Myvadi** that is untapped by the Government veterinary institution is around 2,905. Hence **Myvadi** village is fixed as the headquarters of the Sub basin Veterinary Unit.

Name of the Sub basin Veterinary Unit :			4.Naranapuram (Palladam Union)	
Sl. No.	Name of Villages to be Covered	Distance from the Unit (In Kms)	Nearest Govt. Institution	Distance from the village to Govt. inst. (In Kms)
1	Naranapuram	0	Palladam V.D.	7
2	Sedapalayam	3	Palladam V.D.	5
3	Ammapalayam	2	Palladam V.D.	3
4	Kallampalayam	2	Palladam V.D.	3
5	Karaipudur	4	Palladam V.D.	6
6	Rasakoundanpalayam	4	Palladam V.D.	7
7	Thergupalayam	5	Palladam V.D.	6
8	Koundapalayam	5	Palladam V.D.	6
9	Manickapuram	5	Palladam V.D.	7
10	Madhampudur	4	Palladam V.D.	7
11	Segampalayam	4	Palladam V.D.	5
12	Arivolinagar	5	Palladam V.D.	8
13	Chinnakarai	5	Palladam V.D.	8
14	Rayapalayam	3	Palladam V.D.	3

Villages 1 to 5	Mondays & Thursdays
Villages 6 to 10	Tuesdays & Fridays
Villages 11 to 14	Wednesdays & Saturdays
Sundays will be a reserve day in which IEC campaigns will be conducted. In addition if any villages are left out during the week, it will be covered on the reserve day.	

Naranapuram village is about 7 kms from the nearest Veterinary institution namely Veterinary Dispensary, Palladam. There are about 14 villages situated in and around Naranapuram that are not covered by the Government Veterinary Institution. Further the breedable female population in and around Naranapuram that is untapped by the Government veterinary institution is around 2,554. Hence Naranapuram village is fixed as the headquarters of the Sub basin Veterinary Unit.

Name of the Sub basin Veterinary Unit :			5. Kullakapalayam (Pollachi North Union)	
Sl. No.	Name of Villages to be Covered	Distance from the Unit (In Kms.)	Nearest Govt. Institution	Distance from the village to Govt. inst. (In Kms)
1	Kullakapalayam	0	Negamam V.D.	10
2	Sadayakoundanur	5	Negamam V.D.	8
3	Panikampatti	5	Negamam V.D.	10
4	Kurumpapalayam	4	Negamam V.D.	9
5	Pothanur	5	Negamam V.D.	10
6	Thoppampatti	4	Negamam V.D.	7
7	Kulathupalayam	6	Negamam V.D.	9
8	Achipatti	7	Negamam V.D.	13
9	Nanjekoundanpalayam	8	Negamam V.D.	11
10	Okkilipalayam	8	Negamam V.D.	12
11	Kottampatti	4	Negamam V.D.	14
12	Alampalayam	5	Negamam V.D.	10
13	Puliampatti	4	Negamam V.D.	12
14	Thoppampattipudur	5	Negamam V.D.	8
15	Sandekoundampalayam	9	Negamam V.D.	13

Villages 1 to 6	Mondays & Thursdays
Villages 7 to 12	Tuesdays & Fridays
Villages 13 to 15	Wednesdays & Saturdays
Sundays will be a reserve day in which IEC campaigns will be conducted. In addition if any villages are left out during the week, it will be covered on the reserve day.	

Kullakkapalayam village is about 10 kms from the nearest Veterinary institution namely Veterinary Dispensary, Negamam. There are about 15 villages situated in and around **Kullakkapalayam** that are not covered by the Government Veterinary Institution. Further the breedable female population in and around **Kullakkapalayam** that is untapped by the Government veterinary institution is around 3,768. Hence **Kullakkapalayam** village is fixed as the headquarters of the Sub basin Veterinary Unit.

6.1.(c) An unemployed Veterinary Graduate who will be designated as Sub basin Veterinary Extension Officer will man each Unit. He will be given one month entrepreneurship training at renowned national institutions like IRMA / NDDDB. On completion of this training, the Animal Husbandry Department will give him 5 days orientation training in the nearest veterinary institution. The orientation training will be an over view of the departmental organisation and structure, duties and role of officers, disease endemicity and farmers know-how in the area.

6.1.(d) On completion of training, the unemployed veterinary graduate selected will be given a two wheeler. The two wheeler vehicle will be the property of the Water Users Association. He will be located in the Water Users Association building, which will be his headquarters. He will prepare a weekly route map in consultation with Animal Husbandry Department, Water Users Association and local village panchayats for providing veterinary services. He will visit the villages as per the scheduled programme and provide veterinary services like vaccination, deworming, castration and treatment and breeding support like artificial insemination and pregnancy diagnosis. The route will be reviewed and assessed for intake of the veterinary services by the end users once in 3 months and suitable alterations if necessary will be made. Flexibility will be given to change the tour programme based on need. The unit will be under the technical control of the Animal Husbandry Department. The sub basin veterinary extension officer will computerize all records regarding artificial insemination like date of artificial insemination done, straw used, sire yield, date of follow up for conception, etc.

6.1.(e) To provide breeding support by artificial insemination necessary inputs like LN2 containers (a 35 lit. and 3 lit.), artificial insemination guns, thawing flasks and straw cutters (one set) will be provided. The funds for the above inputs (LN2 containers, artificial insemination guns, thawing flasks and straw cutters) will be sourced from Tamilnadu Livestock Development Agency (TNLDA). The unit will also be provided with other equipments like microscope, centrifuge, etc. for carrying out preliminary disease diagnosis. Other inputs for breeding like LN2 and frozen semen straws will also be provided for carrying out services at the farmers door step. The unit will also be provided with dewormers, essential surgical items like cotton, guage, catguts, intra-uterine infusions, etc., which will be procured from Tamilnadu Medical Services

Corporation (TNMSC) for providing veterinary services. In addition a one time revolving fund of Rs.10,000/- will be provided to the Water Users Association. The above fund will be utilised for stocking of medicines and injectables as per the requirement of the Sub basin Veterinary extension officer. The fund for the above will be sourced from the project. The Animal Husbandry Department will ensure supply of vaccines like Hemorrhagic septicemia, Black quarter, Anthrax, Enterotoxaemia and Sheep pox free of cost for carrying out vaccination in the unit's service area. The Regional Joint Director of Animal Husbandry will be the facilitator for purchase of the above items from TNMSC and will also ensure prompt supply of vaccines.

6.1.(f) The veterinarian will be allowed to collect fees for the artificial insemination and he will remit Rs.25/- per insemination to the Water Users Association and keep the remaining for himself as service charges. In addition, he can collect a nominal fee of Rs.50/- for minor treatments and Rs.100/- for major treatments as professional charges for himself. The cost of medicines utilised for treatment will be borne by the farmer. However if the farmer prefers, the sub basin veterinary extension officer can utilise the medicines and injectables available with the Water Users Association and collect additional charges for medicines utilised which will be remitted to the Water Users Association. The above amount remitted will be used as revolving fund for purchase of medicines. To ensure a wider coverage with increased conception rate, a performance linked incentive for every calf born out of inseminations done by the Unit will be factored, wherein a sum of Rs.25/- will be given during first year and there after a decrease of Rs.5/- per year. The amount remitted by the unit to the Water Users Association will be kept as seed money for sourcing inputs for sustainably running the unit after withdrawal of funds by the lending agency for the project.

6.1.(g) Each unit will be established at a total cost of Rs.5.73 lakhs for 5 years in which Rs.0.99 lakhs will be non-recurring and Rs.4.74 lakhs will be recurring cost. Totally 5 units will be established in the river basin at a total cost of Rs.28.64 lakhs. The financial details and number of units to be established in each river basin is furnished below

**FINANCIAL COST FOR ESTABLISHMENT OF ONE SUB BASIN VETERINARY UNIT
(In Rs.)**

	NON-RECURRING EXPENDITURE/UNIT	1st yr. Rs.					
1	Cost of one 35 lts and 3 lts LN2 container Rs.18,000/- (will be sourced from TNLDA)	0					
2	Cost of A.I. Gun, thawing flask and straw cutter Rs.1000/- (will be sourced from TNLDA)	0					
3	Purchase of two wheeler and accessories	50000					
4	Cost of other equipments like centrifuge, castrator, etc.	14000					
5	Binocular Microscope	15000					
6	Purchase of furniture, stc	10000					
7	One time revolving fund for purchase of medicines	10000					
	Total	99000					

	RECURRING EXPENDITURE/UNIT	I Year	II Year	III Year	IV Year	V Year	Total cost (In Rs.)
1	Cost of straws @ Rs.15/straw at the rate of 2400/1st yr, 2700/2nd yr, 3000/3rd yr, 3360/4th yr & 3840/5th yr.	36000	40500	45000	50400	57600	229500
2	LN2 @ 250 Lit/year @ Rs.26/lit for I year and there after an increase of Rs.1/- per year	6500	6750	7000	7250	7500	35000
3	Cost of basic medicines, infusions and surgical items @ Rs.20,000/annum	20000	20000	20000	20000	20000	100000
4	Incentive for the veterinarian for each calf born @ Rs.25/- yr and there after an decrease of Rs.5/- per year	4000	19600	16500	12240	6880	59220
5	Miscellaneous Charges for chemicals, glasswares, etc.	10000	10000	10000	10000	10000	50000
	Total	76500	96850	98500	99890	101980	473720
	Recurring Expenditure for 5 years						473720
	Total (Recurring + Non-recurring)						572720

6.1.(g) The above endeavor will ensure that areas hitherto unserved are covered qualitatively by increased breeding cover via artificial insemination coverage, health cover by timely vaccination, deworming and treatment. This will ensure proper disease control and livestock with better genetic potentialities which will lead to increased productivity per animal thereby ultimately leading to better profits between farmers in the project area.

6.2 Improving the essential infrastructure in the Government institutions in the project area.

6.2. (a).1 Graduate Institutions: A good and well-equipped infrastructure is the key to an all round growth and development. There are 33 graduate veterinary institutions and 30 sub centres functioning under the Government fold in the project area. The infrastructure in the graduate veterinary institutions are being strengthened at a cost of Rs.33,000/- per Graduate Institution. The infrastructure that are to be added in each Graduate Institution are Mouth Gag, dentist autoclave, mastitis detector, etc. The 33 institutions will be strengthened at a cost of Rs. 10.89 Lakhs.

6.2.(a).2 Mouth gag will help in better diagnosis, dentist autoclave will be handy which can be carried to field for sterilization of equipments, instruments used in routine Veterinary practice while mastitis detector will be useful for detection of sub clinical and clinical mastitis – a disease that causes reduction in milk yield, loss of productive days and prolonged recovery time. The animal does not achieve the peak productivity after Mastitis, the early detection of which will prevent huge economic losses to the farmers. All these measures will help in effective delivery of Veterinary services and early diagnosis and facilitate quality and timely treatment of ailments for the livestock in the sub basin area.

6.2.(b) Sub-centres: The infrastructure presently available to subcentres was provided 30 years back are old and needs replacement. It is proposed to provide essential equipments like castrators (large and small), dressing tray, scissors, forceps, wash basin, etc. to each sub centre in the project area at a cost of Rs.20,000/ - per sub centre. Totally 30 subcentres in the project area will be provided with essential equipments at a total cost of Rs.6.00 lakhs.

6.2.(c) Strengthening Diagnostic Facilities in Sub-basin Referral Institution:

Strengthening the diagnostic facilities in the sub basin by providing special diagnostic tools to two sub basin veterinary institutions at a cost of Rs.3.00 lakhs each, is also a part of the project. The institutions will be designated as Referral Institutions for the sub basin. [The Veterinary Hospitals at Pongalur and Dharapuram will be upgraded as referral institutions for the sub basin.](#) In the identified referral institutions, semi auto analyzer and accessories will be provided for ensuring complete timely blood analysis. Totally Rs.6.00 lakhs will be required for this component of work.

6.2.(d) Infrastructure improvement in the project area will enhance the quality of delivery in veterinary services and diagnostic facilities contributing to reduction in the incidences of animal diseases, thereby increasing the overall productivity, which can contribute significantly in increasing the farm income of the farmers.

6.3. Increasing availability of green fodder .

6.3.(a) Feed and fodder are the major limiting factors in enhancing farm animal productivity. In our country, fodder production is still deemed ancillary to agricultural production. The green fodder resources for livestock are mainly derived from grazing in grasslands and pastures, fodder crops from cropped lands, weeds, bund grasses, tree leaves and mixed forages. Crop residues mainly sorghum and paddy straws which are poor in nutritive value constitute the major fodder for livestock. The economic viability of livestock husbandry depends on sources of feed and fodder, as feeding cost constitutes 65-70% of the total cost of livestock farming. The availability of green fodder is restricted to selected areas and seasons. Green fodder should be fed throughout the year not only to maintain milk production but also for improving the conception rate. Moreover adequate availability of green fodder will reduce the dependence of farmers on concentrates.

6.3.(b) Generally small ruminants like sheep and goats are not stall-fed. They are allowed for grazing. Hence for calculation of green fodder, only the bovines are taken into account. In the project area a considerable gap exists between requirement and availability of green fodder.

6.3.(c) The requirement, availability and shortage of green fodder for the bovine population in the project area is furnished below.

	Sub basin	Bovine Population	Requirement (In MT)	Availability (In MT)	Shortage (In MT)	%age of Shortage
1	Palar	205123	634522	412875	221647	35%

Hence to reduce the green fodder shortage, about 2025 hectares of additional land will be brought under fodder cultivation in the sub basin area.

6.3.(d) Around 2025 hectares of land earmarked for fodder cultivation in the private lands in the project area will be taken up for cultivation of Co3. The farmers will be supplied inputs like seeds and slips. The cost of cultivation will be borne by the farmer. The Animal Husbandry Department will ensure supply of quality slips. The yield rate and cost of inputs is furnished below.

Sl. No.	Name of fodder	Avg. Yield per ha per year (In tonnes)	Cost of inputs Per Hectare (In Rs.)
1.	Co3	250	6,000
2.	Kolukattai	30	3,000

Blockwise fodder cultivation area proposed (In Hac.)

1.Pollachi South (Coimbatore Dist.)	130
2.Pollachi North (Coimbatore Dist.)	130
3.Kinathukadavu (Coimbatore Dist.)	90
4.Udumalpet. (Coimbatore Dist.)	275
5.Madathukulam (Coimbatore Dist.)	100
6.Gudimangalam (Coimbatore Dist.)	275
7.Sultanpettai (Coimbatore Dist.)	65
8.Palladam (Coimbatore Dist.)	100
9.Pongalur (Coimbatore Dist.)	200
10.Thiruppur (Coimbatore Dist.)	50
11.Dharapuram (Erode Dist.)	65
12.Kundadam (Erode Dist.)	250
13.Kangeyam (Erode Dist.)	200
14.Vellakoil (Erode Dist.)	170

6.3.(e) The new area to be brought under fodder cultivation and the status of green fodder in the sub basin after implementation of the project is as follows.

Present Fodder Status :

(in MT)

Maize @ yield rate of 50 tonnes/ha for 1680 ha	Fodder Cholam @ yield rate of 45 tonnes/ha for 5225 ha	Co3 fodder @yield rate of 300 tonnes/ha for 375 ha	Total yield
84000	235125	93750	412875

Note: Out of the total 10450 hectares undertaken for cholam cultivation, 50% area or 5225 hac is taken as cultivation of fodder. Similarly, out of 16820 hactares under maize cultivation, 10% area or 1680 hac is taken as cultivation of fodder cholam.

Fodder Availability Status after the end of project:

Year	Yield to be added (in MT)				
	Co3 fodder @ yield rate of 250 tonnes/ha for 1025 ha @ 25 ha for 1st yr, 400 ha for 2yr, 500 ha for 3rd yr, 75 ha for 4th yr and 25 ha for 5th yr	Kolukattai grass @ yield rate of 30 tonnes/ha for 1000 ha @ 50 ha for 1st yr, 400 ha for 2nd & 3rd yr, 100 ha for 4th yr and 50 ha for 5th yr.	Total Proposed Yield to be added	Total fodder available during the end of the year	shortage of fodder (In MT)
I Year	6250	1500	7750	276500	358022
II Year	100000	12000	112000	388500	246022
III Year	125000	12000	137000	525500	109022
IV Year	18750	3000	21750	547250	87272
V Year	6250	1500	7750	555000	79522

Year	Cost of Inputs (in Rs.)		
	Co3 fodder@ Rs.6000/ha	Kolukattai grass @ Rs.3000/ha	Total Cost (In Rs.)
I Year	150000	150000	150000
II Year	2400000	1200000	2400000
III Year	3000000	1200000	3000000
IV Year	450000	300000	450000
V Year	150000	150000	150000

6.3.(f) By the above cropping pattern in the sub basin, the green fodder availability will be increased from 412875 MT to 555000 MT which includes 268750 MT of green fodder through cultivation of maize and cholam. (though the area under cultivation of maize and cholam has been reduced in the project, 50% of cholam and 10% of maize (268750 MT) will be available for fodder) Ultimately the shortage will be 79522 M.T. The above shortage will be met by allowing the animals to graze in the grazing lands, tank bunds, Common Property Resources, etc.

6.4 Improving the knowledge level of the farmers by various out reach programmes.

6.4.(a) The success of the project depends on effective dissemination of information to the field in improving the knowledge level of the farmers on best and latest animal husbandry practices, emerging new diseases and their control and optimum utilisation of fodder resources by various out reach programmes.

The out reach programmes planned in the project area are:

- 1) Infertility cum Total Veterinary Health Care camps.
- 2) Distribution of mineral mixture
- 3) Information, education and communications campaigns.

6.4.(b) *Infertility cum Total Veterinary Health Care camps.*

6.4.(b).1. Under this programme, infertility cum total health cover both preventive and curative will be provided to all livestock and poultry by conducting special camps in each sub-basin Veterinary Unit service area at the rate of one camp per unit per month for 5 years. In these camps, various activities like health care, disease prevention vaccination against endemic diseases, deworming, castration, artificial insemination, pregnancy verification, infertility treatment, etc. will be carried out free of cost. An exhibition depicting various livestock diseases and preventive measures, fodder development measures, calf rally along with demonstration will also be conducted for creating awareness among the farmers.

6.4.(b).2. Prior wide publicity will be given regarding the village where the camp is to be conducted in the village and near by villages. In addition, the day and place where the camp is to be conducted will be displayed in the Water Users Association building. The services of the veterinarians and para-veterinarians working in the Animal Husbandry Department in the sub basin area will be utilised for conducting the camps. A calf rally will be organised in the camp and best calf / calves will be given prizes which will act as motivation for other farmers. During the camps, pamphlets and leaflets on best and latest animal husbandry practices, emerging new diseases and their control and optimum utilisation of fodder will be distributed.

6.4.(b).3. Each camp will be conducted at a cost of Rs.6,000/ -.

Sl. No.	Component	Cost in Rs.
1.	Medicines	3,500
2.	Cost of 50 straws for artificial insemination	750
3.	Publicity and Propaganda	500
4.	Distribution of prizes in calf rally	500
5.	Miscellaneous charges like erection of shamina, etc., for conducting the camp	750
	Total	6,000

6.4.(b).4. Apart from total health cover the camp is expected to achieve, it will help in identifying animals affected by infertility due to mineral deficiency. The total financial cost for this component for 5 years is Rs. 18.00 lakhs.

6.4.(c). *Distribution of mineral mixture.*

6.4.(c).1. One of the major problems affecting conception is infertility. The major causative factor for infertility in the field is mineral deficiency. Hence to correct this deficiency, which is the vital factor affecting conception and calving, it is proposed to distribute mineral mixtures to needy animals in the project area.

6.4.(c).2. The sub basin veterinary extension officer visiting the villages on the scheduled programme will select the eligible animals during the visit. In addition animals will also be identified during the infertility cum total health cover camps. The eligible

animals will be given mineral mixture @ 25 gms per day for 365 days. The sub basin veterinary extension officer will maintain the data of eligible animals covered under this programme and ensure examining the animals regularly for growth parameters. The sub basin wise cost required for distribution of 25 gms. of mineral mixture for 365 days to 100 animals at a cost of Rs.40/- kg per sub basin veterinary extension officer for 5 years is 1.825 lakhs. For 5 units, 9.13 lakhs would be required for this component.

6.4.(c).3. By this the animals will come to estrum early and lead to better conception and calving rates. Moreover this will lead to reduction in inter -calving period there by increasing the productive life of the animal.

6.4.(d). Information, education and communications campaigns

6.4.(d).1. *Printing of Pamphlets and leaflets.*

Pamphlets and leaflets on best practices in animal husbandry, biosecurity measures to be taken to prevent diseases, economic diseases affecting livestock and their prevention and control measures, optimum utilisation of fodder resources with emphasis on inclusion level of non conventional feeds, etc. will be printed in Tamil for distribution to the farmers in the project area.

6.4.(d).2. *Erection of hoardings and wall paintings in the project area.*

Posters, hoardings and banners carrying the activities undertaken in the project area will be displayed in all Sub basin Veterinary Units. The same will also be displayed in all Government institutions functioning in the project area. In addition wall paintings depicting signs of commonly affecting diseases will be painted on walls where people congregate in large numbers

6.4.(d).3. *Conducting Night meetings*

6.4.(d).1.a. Night meetings will be conducted involving the Water User s Association, Animal Husbandry Department and Sub basin veterinary Extension Officer at a common

place in the sub basin on a suitable day in each Sub basin Veterinary Unit and Graduate institution area at the rate of one per quarter. The meeting not only enables participation of all the farmers in the sub basin but also acts as a source of information to other farmers.

6.4.(d).1.b. During the night meetings, village people will be enlightened on benefits of rearing livestock and will be motivated to take up livestock rearing. Pamphlets and leaflets will be distributed to the farmers. A small exhibition and method demonstration will be organised for the benefit of the farmers. The services of link agencies like Tamilnadu Veterinary and Animal Sciences University and Tamilnadu Milk Producers Cooperatives Union will be utilised where ever necessary. In the night meetings successful animal husbandry entrepreneurs in the village and neighboring villages will be requested to share their views on their methodology followed for their success.

6.4.(d).4. All the above Information, education and communications campaigns will be conducted in the sub basin at a total cost of [Rs.20.90 lakhs](#).

6.5. Enhancing the knowledge level of human resource in the project area.

Continuing education is the touchstone of success. The project envisages capacity building at all levels like farmer, veterinarian, para -veterinarian operating in the sub basin to achieve the desired results of increased sustainable productivity at the end of the project.

6.5.(a). *Training of Farmers*

6.5.(a).1. Farmers generally have a traditional knowledge of breeding and management of livestock. The existing awareness, knowledge level and skill in profitable rearing of livestock with latest animal husbandry techniques among majority of farmers are minimum in the project area. Hence it is essential to impart training to upgrade the skills and knowledge level for profitable animal husbandry rearing.

6.5.(a).2. Under this programme, elite farmers interested in animal husbandry activities will be selected and given training on best practices in livestock rearing. They will also be enlightened on importance of feeding and cultivation of fodder crops. Emphasis will be given to enlighten the farmers on feeding of unconventional feeds and their inclusion level. Moreover they will be briefed about the diseases generally affecting the livestock in the basin and their symptoms and control measures. In addition they will be enlightened on the importance of deworming, vaccination and clean milk production. The farmers trained will be utilised for dissemination of the above information to their counterparts in the villages.

6.5.(a).3. For the above purpose, progressive farmers @ 400 per year interested in animal husbandry activities in the sub basin will be selected for 3 day training. They will be divided into batches of 25 per batch. Training will be provided in the nearest veterinary institution. They will be given a training incentive of Rs.100/day as they will have to attend the training programme foregoing their normal daily earning. During the training, each trainee will be given study material worth Rs.50/- . To motivate the trainer, a trainer honorarium of Rs.250/- per day will be provided. In addition miscellaneous charges of Rs.500/- will be provided for each batch. A total cost of Rs.10,000/- will be required for training each batch. During the project period of 5 years, a total of 2000 farmers (80 batches of 25 farmers per batch) in the sub basin will be trained at a cost of Rs.8.00 lakhs.

6.5.(b). *Entrepreneurship Training to unemployed Veterinary Graduates*

6 Unemployed Veterinary Graduates are to be trained for the Palar Sub basin. 5 River basin veterinary units are proposed in the sub basin area. One unemployed Veterinary graduate is trained additionally for the future in case there is any drop out. The entrepreneurship training is given to the unemployed veterinary graduate for sustainable animal husbandry activities.

6.5.(c). Orientation Training for Rural Veterinary Extension Officers

6.5.(c).1. Though the sub basin veterinary extension officers are basically veterinarians who may possess a sound theoretical knowledge on animal husbandry and veterinary treatment, their field experiences and exposure may be minimum. To attain the desired field results in a short term, it is essential to know the terrain and problems faced by the farmers in the basin. Hence 5 days orientation training is proposed for the sub basin veterinary extension officer selected to work in the Sub basin Veterinary Unit.

6.5.(c).2. Training will be provided to each Sub basin Veterinary Extension Officer in the nearest veterinary institution in the sub basin which will be identified by the Regional Joint Director and Assistant Director of Animal Husbandry of the concerned jurisdiction. They will be given a training incentive of Rs.150/day. During the training, each will be given study material worth Rs.100/-. To motivate the trainer, a trainer honorarium of Rs.500/- will be provided. A total cost of Rs.1,350/- will be required for training each Sub basin Veterinary Extension Officer. Thus in the project area to train **5 Sub basin Veterinary Extension Officers, Rs.0.07 lakhs** would be required.

6.5.(d). In-service Training for 33 Veterinarians

6.5.(d).1. Veterinarians have an overall knowledge of 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 management, breeding, diagnosis and treatment. Hence it is essential to update the knowledge and skills of the veterinarians in Government institutions in the project area.

6.5.(d).2. The **33** veterinarians working in the Government institutions in the sub-basin will be given a trainers training at Madras Veterinary College / Namakkal Veterinary College at a cost of Rs.2000/- per individual. The total cost for training the **33** veterinarians in the sub-basin would be Rs.**66000/-**

7. Ensuring marketing tie up for the products.

With the rapid urbanisation, changing life styles and increasing purchasing power of the people, the demand for livestock and livestock products is expected to rise steadily. Hence marketing the livestock and livestock products in the sub basin will not be a major problem.

PALAR SUB BASIN

The breedable age female population in the Palar Sub Basin is 96328 which include 60998 crossbred, 15925 indigenous cattle and 19405 buffaloes.

ASSUMPTIONS:

- 1) Available breedable female population in the basin after reducing for mortality, sterility etc., at the rate of 15% in crossbred, 5 % in indigenous and 5 % in buffaloes, there will be 51848 crossbred, 15129 indigenous and 18435 buffaloes.
- 2) At present there are 33 Graduate Veterinary Institutions and 30 Sub centres functioning under Government fold doing artificial insemination work of which one graduate institution and 11 subcentres are vacant.
- 3) The above Government Institutions have carried out an average artificial insemination of 89085 in crossbred, 17818 in indigenous and 20362 in buffaloes.
- 4) Assuming 2.8 (35%) inseminations are required for consumption in cattle and 3.3 (30%) inseminations are required for conception in buffaloes, the actual animals covered is 31816 crossbred, 6364 indigenous and 6170 buffaloes.
- 5) Thus the breedable age female population unserved by the Government institutions is 20032 crossbred, 8765 indigenous and 12265 buffaloes.
- 6) For of the above animals unserved, five sub basin veterinary units will be established in the sub basin covering around 14 to 20 villages.
- 7) During the first year 2700, second year 3000, third year 3300, 4th year 3600, 5th year 4080 and from then on 4080 artificial inseminations will be done by each sub basin veterinary unit.

- 8) It is assumed that since the basin has a high crossbred population 90% crossbred (3,360), 5% indigenous (960) and 5% (480) buffaloes will be targeted by each of the above five units during the first year.

Yearwise Number of animals targeted

Year	AI done by the unit (90% crossbred, 5% Indigenous, 5% buffalo)		
	Crossbred	Indigenous	Buffalo
I Year	10800	600	600
II Year	12150	675	675
III Year	13500	750	750
IV Year	15120	840	840
V Year	17280	960	960

- 9) The conception rate for the Sub basin veterinary unit is as follows:

Year	Conception Rate in Cow	Conception Rate in Buffalo
1st year	35% (2.8)	30% (3.3)
2nd year	40% (2.5)	35% (2.8)
3rd year	45% (2.2)	40% (2.5)
4th year	50% (2.0)	45% (2.2)
5th year	50% (2.0)	50% (2.0)

- 10) Taking a conception rate of 35% for cattle and 30% for buffalo during the first year, the actual animals covered by the unit will be 3857 crossbred, 214 indigenous and 182 buffaloes.

Year	Yearwise Number of animals covered		
	Crossbred	Indigenous	Buffalo
I Year	3857	214	182
II Year	4860	270	241
III Year	6136	341	300
IV Year	7560	420	382
V Year	8640	480	480

11) By the work done by these 5 units during the first year, out of the total 4071 cattle (3857 crossbred, 214 indigenous) conceived, 50% (2036) heifer calves will be born. Similarly out of 182 buffaloes, 91 buffalo heifer calves will be born.

Year	Yearwise Number of heifer calves born	
	Crossbred	Buffalo
I Year	2036	91
II Year	2565	121
III Year	3239	150
IV Year	3990	191
V Year	4560	240

12) Now calf mortality is taken as 5% for crossbred and 10% for buffaloes. Therefore out of the 2036 crossbred heifer calves, 102 will be lost. Similarly out of 91 buffalo calves, 9 will be lost during the first year.

Year	Yearwise Number of heifer calves lost	
	Crossbred	Buffalo
I Year	102	9
II Year	128	12
III Year	162	15
IV Year	200	19
V Year	228	24

13) The actual crossbred animal in milk created in the sub basin by intervention by these units during first year will be 4071 (3857 Crossbred plus 214 Indigenous cattle). Similarly 182 buffaloes will be in the milk.

Year	Yearwise Number of animals in milk		
	Crossbred	Indigenous	Buffalo
I Year	3857	214	182
II Year	4860	270	241
III Year	6136	341	300
IV Year	7560	420	382
V Year	8640	480	480

14) The average milk yield in the project area will be increased to 8 litres in crossbred, 800 ml or maximum of 3.8 litres in indigenous and 5 litres for buffaloes.

15) During the first year, the total milk yield in the sub basin by intervention by these units will be 82.85 lakh litres by crossbred (assuming 7.16 lts. is the average yield), 1.87 lakh litres (assuming 3.12 lts. is the average yield) by indigenous and 2.27 lakh litres (assuming 4.16 lts. is the average yield) by buffalo.

Year	Average Milk Yield/day (In Lts.)			Total Milk Yield/ lactation (In lakh Lts.)		
	Crossbred	Indigenous	Buffalo	Crossbred (300 days lactation)	Indigenous (280 days lactation)	Buffalo (300 days lactation)
I Year	7.16	3.12	4.16	82.85	1.87	2.27
II Year	7.4	3.3	4.3	107.89	2.49	3.11
III Year	7.6	3.5	4.5	139.90	3.34	4.05
IV Year	7.8	3.7	4.7	176.90	4.35	5.39
V Year	8.0	3.8	5.0	207.36	5.11	7.20

16) Thus the value of milk in the sub basin will be Rs.786 lakhs (cost of cow milk is Rs.9/- and buffalo milk is Rs.10/-).

Year	Value of Milk (In lakh Rs.)			
	Crossbred	Indigenous	Buffalo	Total
I Year	746	17	23	786
II Year	971	22	31	1024
III Year	1259	30	41	1330
IV Year	1592	39	54	1685
V Year	1866	46	72	1984

17) Thus economic return at the end of the project by way of milk will be Rs.1984 lakhs, an increase of Rs.1198 lakhs.

18) The cattle heifer calves born during the first year is brought into breeding stock during the 3rd year. Similarly in buffalo 1st year heifer calves is brought into 4th year breeding stock.

Year	Yearwise Female Breeding stock created		
	Crossbred	Indigenous	Buffalo
I Year	20032	8765	12265
II Year	20032	8765	12265
III Year	21966	8765	12265
IV Year	24403	8765	12347
V Year	27480	8765	12456

19) The main advantages of the programme

- ☞ Provides service at the farmer's doorstep or nearest to the farmer's doorstep.
- ☞ Increased coverage
- ☞ Better conception rate
- ☞ Reduced stress to the animals
- ☞ Timely treatment
- ☞ Reduced recovery time from illness
- ☞ Ensuring coverage of animals with vaccination and deworming
- ☞ Saving the man hours of the farmers
- ☞ Genetic potential improvement (crossbred)
- ☞ Timely artificial insemination, thereby not only increasing conception and calving rate, but also reducing the inter-calving period.
- ☞ Timely artificial insemination and calving, leads to more production days during the productive life cycle of the animal.
- ☞ Reducing scrub bulls born out of natural service.
- ☞ Avoiding diseases like Trichomonosis, brucellosis, etc., affecting the uro-genital tract of females, leading to abortion, sterility, etc., when the animals are put into natural service.
- ☞ For natural service, the chance of the same bull serving the mother and dam is higher which may lead to inbreeding, but if frozen semen is used, the semen can be rotated nullifying the chances of inbreeding.
- ☞ Increasing the per animal milk production potential, leading to a substantial increase in milk production
- ☞ Increasing the farmers income through animal husbandry.

OUTCOMES EXPECTED

Sl. No.	Project Year	I Year	II Year	III Year	IV Year	V Year	Total
1	Artificial Insemination Done (In Nos.)	12000	13500	15000	16800	19200	76500
2	Calves Born (In Nos.)	4254	5372	6778	8362	9600	34366
3	Heifer calves born (In Nos.)	2127	2686	3389	4181	4800	17183
4	Milk Yield (In lakh Lts.)	86.99	113.49	147.29	186.64	219.67	754.08
5	Value of Milk (In Lakh Rs.)	786	1024	1330	1685	1984	6809

Note: Out the total value of milk, around 70 - 75% will be cost of inputs like feed, fodder, health care, etc.

**ESTIMATE FOR ANIMAL HUSBANDRY COMPONENT TO BE INCLUDED IN IAMWARM
PROJECT REPORT**

PALAR SUB BASIN

	Components	Physical	Financial (In Lakhs)
1	Productivity enhancement by improving delivery of veterinary services		
	<i>a. Establishment of Sub basin Veterinary Units (SBVU) @ Rs.5,72,720/- per unit</i>	5	28.64
	<i>b. Improving the essential infrastructure in the Government institutions (graduate institutions) @ Rs.33,000/-unit</i>	33	10.89
	<i>c. Improving the essential infrastructure in the Government institutions(subcentres) @ Rs.20,000/-unit</i>	30	6.00
	<i>d. Strengthening the diagnostic facilities in the sub basin by providing special diagnostic tools to sub basin referral institutions @ Rs.3,00,000/- per unit</i>	2	6.00
2	Increasing availability of green fodder in private lands (in ha.) - Co3 - 1025 ha. - Kollukattai Grass - 300 ha.		91.50
3	Out reach programmes.		
	<i>a. Infertility cum Total Veterinary Health Care camps @ Rs.6,000 per camp per month for each SBVU</i>	300	18.00
	<i>b. Distribution of mineral mixture @ Rs.1,82,500 per SBVU</i>	5	9.13
	<i>c. Information, education and communications campaigns</i>	38	20.90
4	Enhancing the knowledge level of human resource		
	<i>a. Training of Farmers</i>	2000	8.00
	<i>b. Enterpruneship training to6 unemployed veterinary graduates to be placed as Sub basin Veterinary Extension Officer @ Rs.50,000/- per person</i>	6	3.00
	<i>c.. Orientation Training for Sub basin Veterinary Extension Officers @ Rs.1,350/- trainee</i>	5	0.07
	<i>d. In-service Training for Veterinarians @ Rs.2,000/- per person</i>	33	0.66
			202.79



TAMILNADU
AGRICULTURAL
UNIVERSITY



Irrigated Agriculture Modernization and Water Resource Management
(IAMWARM)
TNAU component – Palar Sub Basin

Introduction

A. About the station

- ❖ Agricultural research station started in 1963 in west ern zone of Tamilnadu
- ❖ This centre released three groundnut varieties and one coconut variety ALR CN1
- ❖ Coconut research was started during 1988 andf ARS was renamed as Coconut Research Station in2002.
- ❖ This station also produces quality coconut seedlings (Tall varieties WCT and ALR CN1) which are preferred by the farmers.
- ❖ These seedlings are preferred by the farmers.
- ❖ The farmers from different parts of the state do visit the station for consulting on coconut cultivation.

B. Basic information about the sub bas in

Palar is a tributary of Aliyar river. Thirumoorthy reservoir is one among the main component of PAP and has been constructed across the river Palar with a cross storage capacity of 54.76 MCM (1935 Mcft). Apart from its own catchments it receives the diverted waters from the upper reservoirs in the Anaimalai range through the Sarkarpathy Power House and from thereby a Contour Canal. An irrigation canal is called as Common Canal takes off from the reservoir and it branches into two. (1) 124.800 Km long P arambikulam Main Canal and (2) 30.400 Km long Udumalpet Canal.

The Parambikulam Main Canal is the biggest and longest Irrigation Canal under this project. A high level canal also takes off from this reservoir to feed an Ayacut of 1003 ha. The total comma nd area fed by the above canals under Four - Zone Irrigation pattern is 1,52,693 ha. This reservoir also stabilizes irrigation for the old Ayacut of 1301 ha under Dhali Cannel system of Palar.

The total extend under new Ayacut is divided into four zones and each zone gets water once in two years under alternate sluice irrigation system.

Command area details

(a) New command – zone wise

Sl. No.	Name of the Canal	Total in Ha.	Zones			
			I	II	III	IV
1	Parambikulam Main Canal	1,28,090	32,040	31,970	32,166	31,914
2	Udumalpet Canal	23,600	5,981	5,920	5,783	5,916
3	High Level Canal	1,003	246	249	254	254

b) Old command

Sl.No.	Name of the Canal	Total Ayacut in Ha.
1	Dhali Channel System	1247

District / Taluk Wise Ayacut:

COIMBATORE DISTRICT (in Ha)				
Pollachi Taluk	Udumalpet Taluk	Palladam Taluk	Tirupur Taluk	TOTAL
26,606	45,448	11,889	20,474	1,04,417
ERODE DISTRICT (in Ha)				
Dharapuram Taluk	Kangayam Taluk		TOTAL	
26,770	22,778		49,548	
	TOTAL		153965	

Soil

In this sub basin, due to different stages of weathering of parent materials, the soil types are met with combination of vertisol, Inceptisol, Alfisol and Entisol. More prominent type are vertisol and Inceptisol.

Vertisol	Generally calcareous, very deep Black soils with moderate to poor drainage and moderately alkaline	Suitable for crops like Cotton, Bengalgrams, Sunflower, Maize, Cholan, Ragi etc.,
Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained.	Suited for commonly grown crops with exceptions

Alfisol & Entisol	The red or brown soils having accumulation of illuviated clay in sub surface horizon and it well drained, poor water and nutrient holding capacity.	Annual crops with shallow roots systems comes up well
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Rain Fall

The 50% and 75% dependable rainfall in mm for hilly area, plain area and Ayacut area of this basin are given below:

Sl. No.	Basin Details	50% Dependable			75% Dependable		
		SW	NE	Annual	SW	NE	Annual
1	Hilly Area	1,829	381	2,546	1,413	271	2,166
2	Plain Area	923	337	1,489	777	214	1,195
3	Old Ayacut area	854	318	1,390	732	219	1,142
4	Four Zone area	166	278	605	117	48	488

Climate

For the measurement of Hydro meteorological parameters in the basin area, there are three weather stations viz., 1. Sundakampalayam maintained by Ground Water Wing of public Works Department, 2. Coimbatore Airport maintained by IMD and 3. Aliyarnagar. Since the Weather Station at Coimbatore is full pledged one, its data is taken for the study.

Sl. No.	Climatological Parameters	South West	North West	Winter	Summer
1	Temperature max/Min in C-deg	24.2/24.7	24.5/22.1	25.9/23.7	29.9/23.1
2	Avg. Temperature in C-deg	25.95	23.23	24.80	26.83
3	Avg. Relative humidity in %	74.50	85.70	87.50	75.00
4	Avg. Wind velocity Km/hr	2.28	0.69	0.95	1.02
5	Avg. Pan Evaporation	140 mm per month			
6	Avg. Sunshine hours/day	5.63	4.20	7.85	8.97

CROPPING PATTERN OF PALAR RESORVOIR

S.No.	Crop details	With out project Ha			With project Ha	
		Fully Irrigated	Partly irrigated	Rainfed	Fully Irrigated	Partly irrigated
1.	Coconut(surface alone)	9700	5370	0	15070	0
	Coconut (With drip)	21450	0	0	21450	21450
	Coconut (drip with fertigation)	0	0	0	20370	20370
	Coconut (intercrops)	0	0	0	0	0
2.	Paddy (Aug-Dec)	235	0	0	235	235
	Paddy(Jan-May)	100	0	0	100	100
3.	Cholam(Aug-Dec)	6600	4484	2389	13475	10091
	Cholam(Jan-May)	7000	3075	1220	11295	11240
4.	Pulses(Aug-Dec)	6855	3376	1920	12151	7315
	Pulses(Jan-May)	8460	3240	1505	13205	8030
5.	Ground nut (Aug- Dec)	3600	786	678	5064	5245
	Ground nut (Dec- May)	3794	576	0	4370	5060
6.	Maize(Aug-Dec)	15183	1547	625	17355	21780
	Maize(Jan-May)	13255	1744	681	15680	18000
7.	Sunflower(Aug- Dec)	465	234	0	699	2035
	Sunflower(Jan- May)	1440	272	0	1712	2395

8.	Tapioca (Aug – Dec)	930	318	0	1248	1260
9.	Cotton(Aug –Dec)	1175	0	0	1175	1175
	Cotton(Jan-May)	-	0	0	0	0
10.	Tomato (Aug – Dec)	670	0	0	670	745
	Tomato (Jan-May)	610	0	0	610	710
11.	Chilly(Aug –Dec)	815	0	0	815	915
	Chilly(Jan-May)	883	0	0	883	980
12.	Brinjal(Aug –Dec)	115	0	0	115	125
	Brinjal(Jan-May)	100	0	0	100	110
13.	Bhendi(Aug –Dec)	210	0	0	210	260
	Bhendi(Jan-May)	175	0	0	210	260
14.	Drumstick(Aug – Dec)	725	0	0	175	225
15.	Mango	965	0	0	965	1020
16.	Amla	315	0	0	315	365
17.	Foddercrops (Aug –Dec)	378	0	0	378	1410
18.	Sapota	182	0	0	182	280
19.	Onion(Aug –Dec)	2955	0	0	2955	3825
	Onion (Jan-May)	2512	0	0	2512	4255
20.	Beetroot(Aug – Dec)	110	0	0	110	175
	Beetroot(Jan-May)	132	0	0	160	28
21.	Spices - Turmeric	65	0	0	65	65
22.	Gourds(Aug – Dec)	135	0	0	135	175

	Gourds(Jan-May)	120	0	0	120	180
23.	Banana(Aug – Dec)	450	0	0	450	450
24	Sugarcane (Old ayacut)	880	0	0	880	880
	Total	113744	25024	9018	147815	153965

C. Objectives

- ◆ To promote water saving technologies (Drip) in agriculture and horticultural crops for large scale adoption
- ◆ To enhance the crop and water productivity
- ◆ To increase the cropped area by crop diversification
- ◆ To converge with WRO and other line departments in overall improvement in total farm income

2. Issues/Constraints

- Improper Irrigation practices
- Non availability of labour in time
- Non-adoption of pre and post harvest technologies

3. Counter measures proposed

- ❖ **Drip fertigation in sugarcane, coconut and vegetables**
- ❖ **Improved production technologies for maize and sunflower**

I. Project Mode Activités

Precision farming in Vegetables

To enhance the productivity of vegetables chilli and tomato in palar sub basin this demonstration is included in 100 ha. This cost include cost of drip system, seeds, fertilizers and chemicals. The model adopted in precision farming in government project will be followed this demonstration.

Technology	Total area (hectares)	Unit cost (Rs.)	Location
Precision farming in Vegetables	100	67100	As specified in activity chart

Justification for the unit cost on vegetables

Sl.No	Particulars	Amount in (Rs.)
	Drip system cost	58000
	Cost of seeds	4000
	Cost of fertilizers	2100
	Cost of pesticides and other bio fertilizer	3000
		67100

b. Improved production technologies in maize

Under Palar sub basin nearly 17000 ha will be brought under maize cultivation in the post project period by the agricultural department. TNAU included its transfer of technology in maize, which helps in the large scale adoption. The technologies are seed drill sowing, improved varieties (CO 1) /hybrids (COH M4), balanced nutrition and scientific water management. Under this the cost of critical inputs like seeds, seed drill and nutrients are included. The cost on field days and publications showing the success of the technology are to be included. Five seed drills will be purchased and supplied to the Water User Association (Udumalpet, Madathukulam, Kudimangalam, Sultanpet and Palladam)

Linkages:

The yield influencing technology will be demonstrated by TNAU.

Technology	Total area (hectares)	Unit cost (Rs.)	Location
Improved Production technologies in Maize	150	6000	As specified in activity chart

Justification for the unit cost

Sl.No	Particulars		Amount in (Rs.)
1	Hybrid Seed cost with seed treating chemicals (20kg/ha) @ Rs. 80 /kg	:	1800.00
2	Cost of fertilizers (150:75:75 kg NPK / ha)	:	
	Urea - 330 kg @ Rs. 5 / kg	:	1650.00
	Super Phosphate - 469kg @ Rs. 4 /kg	:	1876.00
	Muriate of Potash - 125kg @ Rs.4.75/ kg	:	594.00
	Cost of Bio fertilizer	:	
	Azospirillum and Phospho bacteria @ 10 pockets each	:	120.00
	Total cost		6040.00

c. Increase in Sunflower area with emphasis on Udumalpet block

In the Palar sub basin, it has been proposed to include sunflower due to its high remuneration, less water requirement and short duration. By demonstration, the success of the sunflower helps to increase the income of farmers besides it conserves the total irrigation water. TNAU is included its transfer of technology in sunflower, which helps in the large scale adoption. The technologies are improved varieties (CO.4) /hybrids (Modern), balanced nutrition and scientific management for seed setting by placing bee hives. Under this the cost of critical inputs like seeds, and nutrients are included.

Technology	Total area (hectares)	Unit cost (Rs.)	Location
Improved Production technologies in Sunflower	100	5000	As specified in activity chart

Model village -

<u>Particulars</u>	Amount (Rs. in lakhs)
<u>Production of quality coconut (Tall) seedlings 3 lakh seedling (1500 ha)</u>	15.00
<u>Demonstration of Integrated Farming System in Gudimangalam WUA</u>	1.00

On farm demonstration and skill development

Details	No. of persons/ batch	Cost per batch (in Lakhs)	Total no. of batches	Total cost (in lakhs)
1. Drip Fertigation technologies in Sugarcane and vegetables with special emphasis on onion production	50	0.20	1	0.20
2. Integrated Farming System	50	0.20	2	0.40
3. Improved Production technologies in Maize	50	0.20	1	0.20
4. Improved Production technologies in Sunflower and Groundnut	50	0.20	2	0.40
5. Fertigation technology for existing and new drip irrigated coconut gardens	50	0.20	5	1.00
Total	300		11	2.20

II. Mission Mode Activities**Drip Fertigation in Coconut****Drip and Fertigation System**

Drip and fertigation system of the project ensured water economy, precise application of water-soluble fertilizers to root zone and keeping ideal moisture regime of 60 per cent. In conventional system, immediately after irrigation, the air gradient of soil becomes zero and moisture gradient becomes 100 per cent. Before irrigation the gradients are reversed thus exerting stress over the root zone. In fields of fertigation, the moisture regime was 60 per cent and air gradient was 40 per cent which facilitates faster growth and early bearing.

Technology for delivery

Gain of proposed system over the existing system

Existing System	Fertigation
Water requirement – Flood and surface irrigation	Drip Irrigation
Nutrient application – Blanket and surface	As per crop requirement and fertigation
Fertilizers to field	Fertilizers to plant
Delayed operations	Timely operations
Labour intensive	Minimal labour
No farm documentation	Farm documentation
Marketing – growers	Marketing – Consumers
Production led	Market led
No empowerment	Empowerment
Individual effort	Collective effort

Expected output

<i>Technological output</i>	<i>Socio-economic output</i>
Yield enhancement	Increased income for the farmers
Increased water productivity	Employment generation with additional mandays
Maintenance of soil fertility	Reduction in water usage for agriculture and more available for human consumption
Increased fertilizer use efficiency	Additional infrastructure for marketing
Effective utilization of available resources	Avoidance of middle man and brokerage
Preventing pest, disease and weeds	Producer-marketer relations
Sustainable production	

Area proposed for coverage : 1500 Ha
Location : As specified in activity chart
Period : 2007-2012

S. No.	Particulars	Amount (Rupees in lakhs)
A. Coconut new area – 1500 ha		
1.	Drip fertigation for coconut @ 28900/ha	433.5

Justification for unit cost

SI.No	<i>Particulars</i>	Area (ha)	Amount in (Rs.)
1	Cost of seedlings (6000) per hectare		90.00
2	Drip and fertigation for coconut cost per ha 22,900/ha	1500	343.50

EXPECTED OUT PUT

Sl.No	Activity	Demonstration/implementation	Area spread for adoption (ha)	Additional productivity (tons/ha)
1	Precision farming in v egetables	100	500	20 qtl
2	Improved Production technologies in Maize	150	1000	1000
3	Improved Production technologies in Sunflower	100	500	250
4	Drip Fertigation in Coconut	1500	1500	2000 nuts/ha

IV. YEAR WISE ACTIVITY (HA)

Sl.No	Activity	I	II	III	IV	V
1	Precision farming in vegetables	20	42	38	-	-
2	Improved Production technologies in Maize	30	35	50	35	-
3	Improved Production technologies in Sunflower	20	44	36	-	-
4	Drip Fertigation in Coconut	300	500	400	300	-
5	Production of quality coconut (Tall) seedlings 3 lakh seedling (1 500 ha) @ 17% seedling Prod cost	5000	75000	75000	50000	50000
6	Integrated Farming System	20 ha	-	-	-	-
7	OFD and skill development	11	-	-	-	-

Finance (Rs.Laksh)

Sl.No	Particulars	I	II	III	IV	V
Activities						
1	Precision farming in vegetables	13.42	28.18	25.50	-	-
2	Improved Production technologies in Maize	1.8	2.10	2.00	2.10	-
3	Improved Production technologies in Sunflower	1.00	2.20	1.80	-	-
4	Drip Fertigation in Coconut	92.25	153.75	123.00	92.25	-
5	Production of quality coconut (Tall) seedlings 3 lakh seedling (1500 ha) @ 17% seedling Production cost	8.5	12.75	12.75	8.5	8.5
6	Integrated Farming System	1.0	-	-	-	-
7	OFD and skill development	3.2	-	-	-	-
II	Out Sourcing	28.8	28.8	28.8	6.0	6.0
III	Contingencies	1.50	1.50	1.50	1.50	1.50

TOTAL BUDGET FOR PALAR (PAP)

Sl.No	Particulars	Physical	Financial (in lakhs)
I	Activities		
	Precision farming in vegetables	100 ha	67.1
3	Improved production technology for Maize + 3 field days	150 ha	9.30
4	Improved production technology for Sunflower + 3 field days	100 ha	5.30
5	Drip fertigation – Coconut	1500 ha	433.50
6	Quality coconut seedling production	3 lakhs Nos.	15.0
7	Demonstration of organic farming and IFS modal in Model villages	20 ha	1.00
8	OFD and skill development	-	2.20
		Sub Total	533.4
II	Out Sourcing for technical assistance		
1	24 nos for first 3 years, 5 nos for 4th and 5th year	9000 Salary + 1000 FTA per Month	98.4
		Sub Total	98.4
III	Contingencies		
	a. Vehicle hire charge for Scientists @ Rs.60000/yr		3.00
	b. Documentation and Reporting		2.00
	c. Stationeries and publicity		2.50
		Sub Total	7.50
		Total	639.30
	Incentive 1% of the total cost		6.40
	Total		645.7
	Institutional charges @ 7.5 %		48.43
	Grand Total		694.13

* 50 % of the drip cost for coconut 171.75 lakhs

50 % of the drip cost for vegetable 24 lakhs

Impact

- ❖ **Crop:** Coconut
- ❖ **Technology:** Drip fertigation
- ❖ **Area under demonstration:** 1500 ha
- ❖ **Area under adoption :** 1500 ha

- ❖ **Crop:** Maize
- ❖ **Technology:** Production technology
- ❖ **Area under demonstration:** 150 ha
- ❖ **Area under adoption :** 1000 ha

- ❖ **Crop:** Sunflower
- ❖ **Technology:** Production technology
- ❖ **Area under demonstration:** 100 ha
- ❖ **Area under adoption :** 250 ha

- ❖ **Crop:** vegetable
- ❖ **Technology:** Precision farming
- ❖ **Area under demonstration:** 100 ha
- ❖ **Area under adoption :** 00 ha

Activity chart

Locations in WUA area for each year

1. Improved Production technologies (Project mode) in sugarcane, Vegetables and Maize

SI. No	Block	Name of the WUA	Com mand Area In Hecta res	SUGARCANE 25 ha YEAR						VEGETABLES 100 ha YEAR						MAIZE 150 ha YEAR					
				1	2	3	4	5	Tot al	1	2	3	4	5	Tot al	1	2	3	4	5	Tot al
				1	Udumalpet	High Level Canal	295.13							1	1				2		
2	Udumalpet	High Level Canal	707.72									1			1						1
3	Udumalpet	Parambikulam Main Canal Valavadi Village	1212.78								1				1			1			3
4	Udumalpet	Udumalpet Canal Kuruchikkottai Water Users Association	1552.210							1	1	1			3			2	1		4
5	Udumalpet	Udumalpet Canal Kannamanaickanur Water Users Association	1808.325							1	1				2		1	2	1		5
6	Udumalpet	Udumalpet Canal Andiyagoundanur Water Users Association	632.340									1			1		1				1
7	Udumalpet	Udumalpet Canal ElayamuthurWater Users Association	704.700									1			1		1				1
8	Udumalpet Madathukulam	Udumalpet Canal Kiluvangadu Water Users Association	980.245									1			1		1	1			2

91	Kangayam	Sivanmalai	500.10												0						
92	Tiruppur Pongalur	Nachipalayam	930.76							3					3		1		1		1
93	Pongalur Kangayam	Peruntholuvu I	607.28												0						
94	Palladam Pongalur Tiruppur	Karaipudur 'A'	586.23												0		1				1
95	Tiruppur Palladam	Muthanampalayam 'A'	1152.2 2												0		1		1		1
96	Tiruppur	Muthanampalayam	595.14								1				1		1		1		1
97	Pollachi North Gudimangala m	Anikkadavu	1455.7 1												0		1	1			2
98	Pollachi North Gudimangala m	Vagatholuvu	1152.5 7												0		1				1
99	Gudimangala m Sultanpet	J.Krishanapuram	2142.6 4								1	1			2				2	1	4
100	Sultanpet Gudimangala m	Periyapatti	914.00												0				1		1
101	Gudimangala m Sultanpet	Moongiltholovu	1104.5												0				1		1
102	Gudimangala m Sultanpet	Amanthakadavu	1133.8 9												0	1			1		1
103	Sultanpet Sultanpet	Kumarapalayam	1545.4 1												0	1			1		2

135	Udumalaipet	Dhali system	1301.000							20	42	38	00	00	100							
	Total		153994							11					20	35	0	35	0	35	0	150

Production technologies (project mode) in Sunflower and Integrated farming system

Sl. No	Block	Name of the WUA	Comm and Area In Hectares	SUNFLOWER 100 ha YEAR																			
				1	2	3	4	5	Total														
				1	Udumalpet	High Level Canal	295.13						0										
2	Udumalpet	High Level Canal	707.72						0														
3	Udumalpet	Parambikulam Main Canal, Valavadi Village	1212.78						0														
4	Udumalpet	Udumalpet Canal Kuruchikkottai Water Users Association	1552.210						0														
5	Udumalpet	Udumalpet Canal Kannamanaickanur Water Users Association	1808.325						0														
6	Udumalpet	Udumalpet Canal Andiyagoundanur Water Users Association	632.340						0														0
7	Udumalpet	Udumalpet Canal Elayamuthur Water Users Association	704.700						0														0
8	Udumalpet Madathukulam	Udumalpet Canal Kiluvangadu Water Users Association	980.245						0														0
9	Udumalpet Madathukulam Udumalpet	Udumalpet Canal Pappankulam Water Users Association	805.765						0														0

10	Udumalpet Madathukulam	Udumalpet Canal Marulpatty Water Users Association	1131.52 5							0							0
11	Udumalpet Madathukulam	Udumalpet Canal Narasingapuram Water Users Association	611.500							0							0
12	Udumalpet Gudimangala m Madathukulam	Udumalpet Canal Myvadi Water Users Association	2045.18 0							0							0
13	Udumalpet Gudimangala m	Udumalpet Canal Chinnaveerampatty Water Users Association	446.965							0		1					1
14	Madathukulam Gudimangala m Udumalpet	Udumalpet Canal Ponneri Water Users Associaton	1580.16							0							0
15	Madathukulam Gudimangala m	Udumalpet Canal Kottamangalam Water Users Association	1652.22 5							0							0
16	Madathukulam	Udumalpet Canal Thungavi Water Users Association	814.000							0							0
17	Madathukulam	Udumalpet Canal Metrathy Water Users Association	624.858							0							0
18	Gudimangala m	Udumalpet Canal Poolavadi Water Users Association	1446.74 5							0							0
19	Gudimangalam	Udumalpet Canal Athukinathupatty Water Users Association	906.477							0							0
20	Gudimangalam	Udumalpet Canal Gudimangalam Water	1617.60 2							0							0

		Users Association													
21	Dharapuram	Udumalpet Canal Naranapuram Water Users Association	518.21						0						0
22	Dharapuram	Udumalpet Canal Pethampatty Water Users Association	591.585						0						0
23	Dharapuram	Udumalpet Canal Ponnapuram Water Users Association	498.52						0						0
24	Dharapuram	Udumalpet Canal Puthur Water Users Association	642.77						0						0
25	Dharapuram	Udumalpet Canal Mundu Valampatti Water Users Association	803.890						0		1				1
26	Dharapuram	Udumalpet Canal Daserpatti Water Users Association	1184.205						0						0
27	Udumalpet	Poolankinar Branch Canal R.Velur Water Users Association	1603.300						0						0
28	Udumalpet Gudimangalam	Poolankinar Branch Canal Poolankinar Water Users Association	1548.180						0						0
29	Udumalpet Gudimangalam	Poolankinar Branch Canal Mukkootujallipatty Water Users Association	1013.470						0						0
30	Gudimangalam	Poolankinar Branch Canal Pukkulam Water Users Association	1034.670						0						0

31	Gudimangalam	Poolankinar Branch Canal Vadugapalayam Water Users Association	1898.560							0						0
32	Pollachi South Udumalpet Gudimangalam	Poolankinar Branch Canal Gomangalam Water Users Association	1017.000							0						0
33	Pollachi North Gudimangalam	Pudhupalayam Branch Canal A.Nagore Water Users Association	837.465							0						0
34	Gudimangalam	Pudhupalayam Branch Canal Virugalpatty Water Users Association	1052.930							0						
35	Gudimangalam	Pudhupalayam Branch Canal Kongalnagaram Water Users Association	1326.850							0						0
36	Gudimangalam	Pudhupalayam Branch Canal Somavarapatty Water Users Association	1254.230							0						0
37	Gudimangalam	Pudhupalayam Branch Canal Kondampatty Water Users Association	1410.670							0						0
38	Udumalpet	Kodingiyam village	1660							0						0
39	Udumalpet Pollachi South	Arthanaripalayam	1432.71.0							0						0
40	Udumalpet Pollachi South	Udukkampalayam	2235.91							0						0

41	Udumalpet Pollachi South Anaimalai	Nallur	1776							0						0
42	Pollachi South Anaimalai	Thondamuthur	918.68							0						0
43	Pollachi South	Kanjampatty	2531.9							0						0
44	Pollachi South	Nallampally	2370.72							0						0
45	Pollachi North	Avalappampatty	1215							0						0
46	Pollachi North Kinathukadavu	Varathanur	760.61							0						0
47	Pollachi North Kinathukadavu	Cholanur	1023.93							0		1				1
48	Pollachi North	Kulichettyalayam	584.39							0						0
49	Pollachi South	Solapalayam	791.17							0						0
50	Pollachi North	Puliampatty	603.11							0						0
51	Pollachi South	Kallipalayam	556.27							0						0
52	Pollachi North	Devambadivalasu	1159.26							0						0
53	Pollachi North	R. Ponnapuram	1314.22							0						0
54	Pollachi North Kinathukadavu	Kappalangerai	1197.66							0						0

55	Kinathukadavu Pollachi North	Devanampalayam	1536.31						0						0
56	Kinathukadavu	Kaniyalampalayam	843.22						0						0
57	Kinathukadavu	Andipalayam	912.27						0						0
58	Kinathukadavu Pollachi North	Chettiyakkapalayam	1990.02						0						0
59	Kinathukadavu	Vadachithur	1198.5						0						0
60	Kundadam	Periya Kumarapalayam	1879.00		1	1			2						0
61	Kundadam	Bellampatty (Manur Palayam)	1058.65						0						0
62	Kundadam	Eragampatty (Bellampatty)	997.23						0						0
63	Kundadam Pongalur	Nandavanampalayam	1065.48						0						0
64	Kundadam	Sadayapalayam II (Govindapuram)	607.08						0						0
65	Pongalur	Nandavanampalayam II (Muthugoundanpalaya m)	1102.89		1	1			2						0
66	Kundadam	Nandavanampalayam III (Muthugoundanpalaya m	1242.00		1	1			2						0
67	Kundadam Kundadam	Kokkampalayam	605.12						0		1				1
68	Kundadam	Kundadam I (Kundadam	1933.37	1	1	1			3						0
69	Kundadam	Nelali	1192.42		1				1						0
70	Kundadam	Suriyanallur I (Edayankinar	472.86		1				1						0
71	Kundadam	Suriyanallur II (Kanchipuram)	239.20						0						0

72	Kundadam	Kundadam IV (Suriyanallur)	223.00						0						0
73	Kundadam	Kundadam II (New Kundadam)	817.74		1				1						0
74	Kundadam	Kundadam III (Devarajapattinam)	1508.32		1	1			2						0
75	Kundadam	Sadayapalayam IV (Sadayapalayam)	981.17		1				1						0
76	Kundadam	Sadayapalayam III (Eragamapatty)	771.89		1	1			2						0
77	Pongalur Kundadam Kundadam	Kokkampalayam	1920.94						0						0
78	Pongalur	Kattur Village	990.28						0						0
79	Pongalur Kundadam	South Avinashipalayam I	2255.87						0						0
80	Pongalur	Alagumalai	543.32						0						0
81	Pongalur Palladam Tiruppur	Ganapathipalayam	1236.43						0						0
82	Palladam Pongalur Tiruppur	Karaipudur	1947.77						0						0
83	Pongalur Tiruppur	Peruntholuvu II	2353.11		1				1						0
84	Pongalur	Thonguttipalayam	1773.68		1				1	1					1
85	Pongalur Kundadam	South Avinashipalayam II	1605.66						0						0
86	Pongalur Kundadam Kangayam	Kandiyankovil 'A'	1627.53		1				1						0
87	Pongalur Kundadam Kangayam	Vadasinnaripalayam	1677.73		1				1						0

88	Pongalur Kundadam Kangayam	Kandiyankovil	2251.01		1					1							0
89	Kangayam Kundadam	Kadaiyur	915.79		1					1							0
90	Kangayam	Kangeyam	1325.10		1					1							0
91	Kangayam	Sivanmalai	500.10							0							0
92	Tiruppur Pongalur	Nachipalayam	930.76							0							0
93	Pongalur Kangayam	Peruntholuvu I	607.28							0							0
94	Palladam Pongalur Tiruppur	Karaipudur 'A'	586.23							0							0
95	Tiruppur Palladam	Muthanampalayam 'A'	1152.22		1					1							0
96	Tiruppur	Muthanampalayam	595.14							0							0
97	Pollachi North Gudimangalam	Anikkadavu	1455.71	1	1	2				4							0
98	Pollachi North Gudimangalam	Vagatholuvu	1152.57		1	1				2							0
99	Gudimangalam Sultanpet	J.Krishanapuram	2142.64		1	1				2							0
100	Sultanpet Gudimangalam	Periyapatti	914.00	1						1							0
101	Gudimangalam Sultanpet	Moongiltholovu	1104.5	1		1				2							0

102	Gudimangalam Sultanpet	Amanthakadavu	1133.89	1						1							0
103	Sultanpet Sultanpet	Kumarapalayam	1545.41	1	1	1				3							0
104	Sultanpet Kundadam	Senjeriputhur	1583		1	1				2							0
105	Palladam Sultanpet Kundadam	Kasilingampalayam	CBE - 846.70	1	1	1				3							0
			ERD- 1016.55								0						
106	Pongalur	Vadamalaipalayam	415.00							0							0
107	Pongalur Kundadam	Vavipalayam	CBE - 556.71							0							0
			ERD- 263.52								0						
108	Palladam	Naranapuram 1(Naranapuram)	568.12		1					1							0
109	Palladam Tiruppur	Naranapuram 2(Karaipudur)	439.51							0							0
110	Tiruppur Palladam	Veerapandi	867.02		1					1							0
111	Palladam Tiruppur	Mangalam	1187.27		1					1							0
112	Palladam	Poomalur	857.85							0							0
113	Palladam Tiruppur	Samalapuram	1436.72		1					1		1					1
114	Kangeyam	Sivanmalai Village -1	306.080		1					1							0
115	Kangeyam	Sivanmalai Village -2 .	1171.06 0	1	1	1				3							0
116	Kangeyam	Kangayam Village .	630.770	1		1				2							0
117	Kangeyam	Paranjervali Village .	1316.96 0	1		1				2							0
118	Kangeyam	Veeranampalayam Village .	806.23	1		1				2							0

119	Kangeyam	Pappini Village -1 .	1476.37 0	1	1	2			4						0
120	Kangeyam Vellakoil	Palayakottai Village .	1271.83 0	1	1	2			4						0
121	Kangeyam Vellakoil	Pappini Village -2 .	1165.21 0		1	1			2						0
122	Kangeyam Vellakoil	Veeracholapuram Village -1 .	940.970		1	1			2						0
123	Vellakoil	Pachapalayam Village -1	636.930		1				1						0
124	Vellakoil	Pachapalayam Village -2	1275.54 0	1	1	2			4						0
125	Vellakoil	Pachapalayam Village -3.	436.780		1	1			2						0
126	Vellakoil	Veeracholapuram Village	408.640	1	1				2						0
127	Vellakoil	Pachapalayam Village -4	543.41	1		1			2						0
128	Vellakoil	Vellakoil Village - 1 .	1287.48 0			1			1						0
129	Vellakoil	Vellakoil Village - 2 .	766.640		1				1						0
130	Vellakoil	Vellakoil Village - 3 .	846.530	1	1	1			3						0
131	Vellakoil	Mettupalayam Village - 1	1073.29 0	1	1	1			3		1				1
132	Vellakoil	Mettupalayam Village - 2	565.390		1	1			2	1					1
133	Vellakoil	Senapathipalayam Village -1	1367.99 0	1	1	2			4						0
134	Vellakoil	Senapathipalayam Village -2	1294.56 0	1	1	2			4						0
135	Udumalaipet	Dhali system	1301.00 0						0						0
	Total		153994	20	44	36			100	2	4	4			10

Drip fertigation in Coconut (Mission mode)

Sl. No	Block	Name of the WUA	Command Area In Hectares	1	2	3	4	5	Total
1	Udumalpet	High Level Canal	295.13	1	1	1	1		3
2	Udumalpet	High Level Canal	707.72	1	3	2	2		7
3	Udumalpet	Parambikulam Main Canal Valavadi Village	1212.78	2	3	3	3		9
4	Udumalpet	Udumalpet Canal Kuruchikkottai Water Users Association	1552.210	2	4	4	3		11
5	Udumalpet	Udumalpet Canal Kannamanaickanur Water Users Association	1808.325	2	4	4	4		12
6	Udumalpet	Udumalpet Canal Andiyagoundanur Water Users Association	632.340	1	3	2	1		6
7	Udumalpet	Udumalpet Canal Elayamuthur Water Users Association	704.700	1	3	2	2		7
8	Udumalpet Madathukulam	Udumalpet Canal Kiluvangadu Water Users Association	980.245	2	3	3	2		8
9	Udumalpet Madathukulam Udumalpet	Udumalpet Canal Pappankulam Water Users Association	805.765	1	4	2	2		8
10	Udumalpet Madathukulam	Udumalpet Canal Marulpatty Water Users Association	1131.525	2	3	3	2		8
11	Udumalpet Madathukulam	Udumalpet Canal Narasingapuram Water Users Association	611.500	1	3	2	1		6
12	Udumalpet Gudimangalam Madathukulam	Udumalpet Canal Myvadi Water Users Association	2045.180	4	5	5	5		15
13	Udumalpet Gudimangalam	Udumalpet Canal Chinnaveerampatty Water Users Association	446.965	1	2	1	1		4
14	Madathukulam Gudimangalam Udumalpet	Udumalpet Canal Ponneri Water Users Associaton	1580.16	2	4	4	3		11
15	Madathukulam Gudimangalam	Udumalpet Canal Kottamangalam Water Users Association	1652.225	2	4	4	3		11
16	Madathukulam	Udumalpet Canal Thungavi Water Users Association	814.000	1	4	2	2		8
17	Madathukulam	Udumalpet Canal Metrathy Water Users Association	624.858	1	5	2	1		8
18	Gudimangalam	Udumalpet Canal Poolavadi Water Users Association	1446.745	2	4	3	3		10

19	Gudimangalam	Udumalpet Canal Athukinathupatty Water Users Association	906.477	1	4	3	2		9
20	Gudimangalam	Udumalpet Canal Gudimangalam Water Users Association	1617.602	2	4	5	2		11
21	Dharapuram	Udumalpet Canal Naranapuram Water Users Association	518.21	2	5	1	1		7
22	Dharapuram	Udumalpet Canal Pethampatty Water Users Association	591.585	2	5	2	1		8
23	Dharapuram	Udumalpet Canal Ponnapuram Water Users Association	498.52	1	2	2	1		5
24	Dharapuram	Udumalpet Canal Puthur Water Users Association	642.77	1	5	2	1		8
25	Dharapuram	Udumalpet Canal Mundu Valampatti Water Users Association	803.890	2	4	2	2		8
26	Dharapuram	Udumalpet Canal Daserpatti Water Users Association	1184.205	2	5	3	2		10
27	Udumalpet	Poolankinar Branch Canal R.Velur Water Users Association	1603.300	2	4	4	3		11
28	Udumalpet Gudimangalam Udumalpet	Poolankinar Branch Canal Poolankinar Water Users Association	1548.180	2	4	4	3		11
29	Udumalpet Gudimangalam	Poolankinar Branch Canal Mukkootujallipatty Water Users Association	1013.470	2	5	3	2		10
30	Gudimangalam	Poolankinar Branch Canal Pukkulam Water Users Association	1034.670	2	5	3	2		10
31	Gudimangalam	Poolankinar Branch Canal Vadugapalayam Water Users Association	1898.560	2	4	5	4		13
32	Pollachi South Udumalpet Gudimangalam	Poolankinar Branch Canal Gomangalam Water Users Association	1017.000	2	5	3	2		10
33	Pollachi North Gudimangalam	Pudhupalayam Branch Canal A.Nagore Water Users Association	837.465	2	4	2	2		8
34	Gudimangalam	Pudhupalayam Branch Canal Virugalpatty Water Users Association	1052.930	2	5	3	2		10
35	Gudimangalam	Pudhupalayam Branch Canal Kongalnagaram Water Users Association	1326.850	2	5	3	3		11

36	Gudimangalam	Pudhupalayam Branch Canal Somavarapatty Water Users Association	1254.230	2	5	3	2	10
37	Gudimangalam	Pudhupalayam Branch Canal Kondampatty Water Users Association	1410.670	2	4	4	3	11
38	Udumalpet	Kodingiyam village	1660	2	4	4	4	12
39	Udumalpet Pollachi South	Arthanaripalayam	1432.71.0	2	4	4	3	11
40	Udumalpet Pollachi South	Udukkampalayam	2235.91	4	5	5	4	14
41	Udumalpet Pollachi South Anaimalai	Nallur	1776	3	4	5	4	13
42	Pollachi South Anaimalai	Thondamuthur	918.68	2	5	4	2	11
43	Pollachi South	Kanjampatty	2531.9	5	6	7	6	19
44	Pollachi South	Nallampally	2370.72	3	4	9	5	18
45	Pollachi North	Avalappampatty	1215	3	5	4	3	12
46	Pollachi North Kinathukadavu	Varathanur	760.61	2	5	3	1	9
47	Pollachi North Kinathukadavu	Cholanur	1023.93	2	5	4	2	11
48	Pollachi North	Kullichettyalayam	584.39	2	5	2	1	8
49	Pollachi South	Solapalayam	791.17	2	2	2	2	6
50	Pollachi North	Puliampatty	603.11	2	5	2	1	8
51	Pollachi South	Kallipalayam	556.27	2	5	2	1	8
52	Pollachi North	Devambadivalasu	1159.26	3	5	4	2	11
53	Pollachi North	R. Ponnapuram	1314.22	3	5	5	3	13
54	Pollachi North Kinathukadavu	Kappalangerai	1197.66	3	5	5	3	13
55	Kinathukadavu Pollachi North	Devanampalayam	1536.31	4	4	5	3	12
56	Kinathukadavu	Kaniyalampalayam	843.22	2	4	2	2	8
57	Kinathukadavu	Andipalayam	912.27	2	4	3	2	9
58	Kinathukadavu Pollachi North	Chettiyakkapalayam	1990.02	5	5	7	5	17
59	Kinathukadavu	Vadachithur	1198.5	3	5	3	3	11
60	Kundadam	Periya Kumarapalayam	1879.00	3	4	5	4	13
61	Kundadam	Bellampatty (Manur Palayam)	1058.65	1	5	3	2	10
62	Kundadam	Eragampatty (Bellampatty)	997.23	1	5	3	2	10
63	Kundadam Pongalur	Nandavanampalayam	1065.48	1	5	3	2	10
64	Kundadam	Sadayapalayam II (Govindapuram)	607.08	1	5	2	1	8
65	Pongalur	Nandavanampalayam II (Muthugoundanpalayam)	1102.89	2	5	3	3	11

66	Kundadam	Nandavanampalayam III (Muthugoundanpalayam)	1242.00	3	5	3	3		11
67	Kundadam Kundadam	Kokkampalayam	605.12	2	5	2	1		8
68	Kundadam	Kundadam I (Kundadam)	1933.37	4	4	4	5		13
69	Kundadam	Nelali	1192.42	3	5	3	3		11
70	Kundadam	Suriyanallur I (Edayankinar	472.86	2	2	2	1		5
71	Kundadam	Suriyanallur II (Kanchipuram)	239.20	2	1	1	0		2
72	Kundadam	Kundadam IV (Suriyanallur)	223.00	2	1	1	0		2
73	Kundadam	Kundadam II (New Kundadam)	817.74	2	4	2	2		8
74	Kundadam	Kundadam III (Devarajapattinam)	1508.32	2	4	4	4		12
75	Kundadam	Sadayapalayam IV (Sadayapalayam)	981.17	2	5	3	2		10
76	Kundadam	Sadayapalayam III (Eragamapatty)	771.89	2	2	2	2		6
77	Pongalur Kundadam Kundadam	Kokkampalayam	1920.94	2	2	5	5		12
78	Pongalur	Kattur Village	990.28	2	5	3	2		10
79	Pongalur Kundadam	South Avinashipalayam I	2255.87	3	5	3	5		13
80	Pongalur	Alagumalai	543.32	2	5	1	1		7
81	Pongalur Palladam Tiruppur	Ganapathipalayam	1236.43	3	5	3	3		11
82	Palladam Pongalur Tiruppur	Karaipudur	1947.77	3	2	3	2		7
83	Pongalur Tiruppur	Peruntholuvu II	2353.11	4	5	4	2		11
84	Pongalur	Thonguttipalayam	1773.68	3	2	4	2		8
85	Pongalur Kundadam	South Avinashipalayam II	1605.66	3	2	4	2		8
86	Pongalur Kundadam Kangayam	Kandiyankovil 'A'	1627.53	3	2	3	2		7
87	Pongalur Kundadam Kangayam	Vadasinnaripalayam	1677.73	3	2	3	2		7
88	Pongalur Kundadam Kangayam	Kandiyankovil	2251.01	3	2	6	2		10
89	Kangayam Kundadam	Kadaiyur	915.79	1	2	3	2		7
90	Kangayam	Kangeyam	1325.10	3	5	3	3		11
91	Kangayam	Sivanmalai	500.10	1	2	2	1		5

92	Tiruppur Pongalur	Nachipalayam	930.76	1	2	2	2		6
93	Pongalur Kangayam	Peruntholuvu I	607.28	1	5	2	1		8
94	Palladam Pongalur Tiruppur	Karaipudur 'A'	586.23	1	5	2	1		8
95	Tiruppur Palladam	Muthanampalayam 'A'	1152.22	3	5	2	2		9
96	Tiruppur	Muthanampalayam	595.14	1	3	2	1		6
97	Pollachi North Gudimangalam	Anikkadavu	1455.71	3	2	3	3		8
98	Pollachi North Gudimangalam	Vagatholuvu	1152.57	3	5	2	2		9
99	Gudimangalam Sultanpet	J.Krishanapuram	2142.64	3	2	4	2		8
100	Sultanpet Gudimangalam	Periyapatti	914.00	2	2	3	2		7
101	Gudimangalam Sultanpet	Moongiltholovu	1104.5	2	2	2	2		6
102	Gudimangalam Sultanpet	Amanthakadavu	1133.89	3	5	2	2		9
103	Sultanpet Sultanpet	Kumarapalayam	1545.41	3	2	4	3		9
104	Sultanpet Kundadam	Senjeriputhur	1583	3	2	2	2		6
105	Palladam Sultanpet Kundadam	Kasilingampalayam	CBE - 846.70	2	2	2	2		6
			ERD- 1016.55	2	5	3	2		10
106	Pongalur	Vadamalaipalayam	415.00	2	2	1	1		4
107	Pongalur Kundadam	Vavipalayam	CBE - 556.71	2	5	1	1		7
			ERD- 263.52	2	1	1	1		3
108	Palladam	Naranapuram 1(Naranapuram)	568.12	2	5	2	1		8
109	Palladam Tiruppur	Naranapuram 2(Karaipudur)	439.51	2	5	1	0		6
110	Tiruppur Palladam	Veerapandi	867.02	2	2	2	2		6
111	Palladam Tiruppur	Mangalam	1187.27	2	3	2	2		7
112	Palladam	Poomalur	857.85	2	2	2	2		6
113	Palladam Tiruppur	Samalapuram	1436.72	3	3	3	3		9
114	Kangayam	Sivanmalai Village -1	306.080	2	1	1	1		3
115	Kangayam	Sivanmalai Village -2 .	1171.060	3	3	4	2		9
116	Kangayam	Kangayam Village .	630.770	2	3	4	1		8
117	Kangayam	Paranjervali Village .	1316.960	3	3	3	2		8

118	Kangeyam	Veeranampalayam Village	806.23	2	3	2	2		7
119	Kangeyam	Pappini Village -1 .	1476.370	3	3	3	2		8
120	Kangeyam Vellakoil	Palayakottai Village .	1271.830	2	5	2	2		9
121	Kangeyam Vellakoil	Pappini Village -2 .	1165.210	2	3	2	2		7
122	Kangeyam Vellakoil	Veeracholapuram Village - 1 .	940.970	2	2	2	2		6
123	Vellakoil	Pachapalayam Village -1	636.930	2	3	2	2		7
124	Vellakoil	Pachapalayam Village -2	1275.540	2	3	3	3		9
125	Vellakoil	Pachapalayam Village -3.	436.780	2	2	2	1		5
126	Vellakoil	Veeracholapuram Village	408.640	2	2	2	1		5
127	Vellakoil	Pachapalayam Village -4	543.41	2	3	1	2		6
128	Vellakoil	Vellakoil Village - 1 .	1287.480	2	3	2	2		7
129	Vellakoil	Vellakoil Village - 2 .	766.640	2	3	3	2		8
130	Vellakoil	Vellakoil Village - 3 .	846.530	2	3	3	2		8
131	Vellakoil	Mettupalayam Village - 1	1073.290	2	2	3	2		7
132	Vellakoil	Mettupalayam Village - 2	565.390	1	3	2	2		7
133	Vellakoil	Senapathipalayam Village -1	1367.990	3	2	3	2		7
134	Vellakoil	Senapathipalayam Village -2	1294.560	3	3	3	3		9
135	Udumalaipet	Dhali system	1301.000	3	3	3	2		8
	Total		153994	300	500	400	300	0	1500



HORTICULTURAL
DEPARTMENT

HORTICULTURE
WORLD BANK MULTI DISCIPLINARY IRRIGATED AGRICULTURE
MODERNIZATION AND WATER RESOURCES MANAGEMENT PROJECT

I AM – WARM

Sub basin : PALAR
 District : COIMBATORE & ERODE
 WRO Region : COIMBATORE
 Blocks Covered : POLLACHI (N), POLLACHI (S), UDUMALPET,
 PALLADAM, PONGALUR, TIRUPPUR, SULTANPET,
 GUDIMANGALAM, DHARAPURAM AND
 KANGAEYAM.

I. Existing Horticulture Crop Scenario

The following horticulture crops are grown in the sub basin.

Sl. No.	Crop	Area in Ha			Productivity in MT.	Production in MT.	
		Varieties	Fully irrigated	Partially Irrigated			Total
1	Onion	Nasik red & rose	2085	-	2085	14.150	29417.850
2	Tomato	Lakshmi 5005	545	-	545	11.910	6467.130
3	Chillies	k1, mandhari	785	-	785	0.510	400.350
4	Brinjal	varikai mahyco	95	-	95	11.180	1050.920
5	Bhendi	mahyco 10	135	-	135	8.560	1138.480
6	Drum Stick	PKM - 1	350	-	350	50.000	16850.000
7	Beet Root	Indo American hybrid	250	-	250	25.000	6275.000
8	Gourds (Pandal Vegetables)	Mahyco-Hybirds Nunhems	215	-	215	12.000	2592.000
9	Mango	Alphonso, Neelam, Senthuram	965	-	965	2.890	2785.960
10	Amla	NA-7 BSR-1 Krishna Kanchan	320	-	320	14.000	4438.000
11	Sapota	PKM-1	180	-	180	25.000	4425.000

12	Banana	Poovan Nentram	450	-	450	29.280	13146.720
13	Tapioca	Salem Local	450	152	602	30.990	16685.940
14	Turmeric	Erode Local	65	-	65	4.450	289.250
	Total		6890	152	7042		

II. Existing Horticulture Practices:

Existing cropping pattern and Season :

1. Tomato, Moringa - Through out the year
2. Bhendi - Through out the year
3. Banana - Through out the year
4. Gourds - June, July, January – February.

Proposed Generic Cropping Pattern:

1. Banana - January – December.
2. Gourds - January – February.
3. Tomato - Through out the year
4. Chillies - Jan, Feb, Oct, Nov, June-July
5. Onion - April, May – June – July

Existing Irrigation Potential:

Out of the registered Ayacut area of 1,53,198 Ha. The present irrigation potential is

Fully Irrigated	3141 Ha
Rainfed area	4448 Ha
Pre Project Gap area	7589 HA
Area proposed for	10616 HA
crop Diversification	-----
Total	14019 HA

Proposed Irrigation Facilities:

Out of 7042 Ha. Under Horticulture Crops, an area of 9275 Ha. is proposed to cover micro irrigation with Fertigation 6400 ha under sprinkler by the Agricultural Engineering Department (vide page number -)

INM & IPM :

None of the farmers adopting INM but few farmers are adopting IPM in pre project.

It is proposed to adopt INM in 200 Ha. under fruits and 2750 Ha. vegetables.

1. Inputs:**a. Seeds:**

Certified seeds and seeds of traditional varieties of vegetables are used by farmers at present. Many farmers use their own seeds and also exchange seeds among themselves. Few innovative farmers get the required seeds from the near by Tamil Nadu agricultural University research stations, Krishi Vigyan Kendras and private sources also.

It is proposed to procure Planting materials from the Government farms, Horticulture Research station. The Hybrid Seeds are available from the private sources and it will be procured and supplied to the farmers and under Tender acts.

b. Soil :

In Palar sub-basin mostly the soil is red loam, sandy loam, Black cotton soil black loam, reddish gravel, black clayey soils and black soils with PH - ranging from 7 to 8.9. Soil is tested by soil testing laboratory at Coimbatore. Few farmers are practicing the STL recommendation and mobile soil laboratory at Coimbatore. The climate is mainly tropical in nature with the temperature ranges from 20 to 39 °c and relative humidity ranging from 28⁰ to 80%. Due to dry wind prevailing most of the block are left dry.

In view of the large number of soils samples proposed to be covered in the proposed intensive cropping pattern, private sources like Agri - Clinic, Spic, MFL services etc also will be utilized for testing.

c. Prevalence of Organic farming :

Organic farming is practiced by few farmers, less than 10 Ha.

It is proposed to cover 200 Ha. under Organic farming in Chillies.

d. Actual extension service available for TOT - Government / Private.

Available extension officers - Horticulture Officer, Palar - 3 No

Assistant Agriculture Officer

1) Pollachi North block	-	1no
2) Pollachi South block	-	1no
3) Udumalpet	-	1no
4) Palladam	-	1no
5) Pongalur	-	1 no
6) Tiruppur	-	1 no
7) Sultanpet	-	1 no
8) Gudimangalam	-	1 no
9) Dharapuram	-	1no
10) Kangaeyam	-	1 no
		<hr/>
		11 no
		<hr/>

Available extension officers and extension service to the farmers are inadequate. Apart from this no NGOs providing extension service to the farmers.

For transfer of latest farming techniques, many extension methods are being adopted. Besides distribution of inputs, required technical advice essential for the increased productivity are also given to the farmers. As per the Training and Visit program norms, there must be one Village Extension Worker (VEW) for every 800 to 1000 farm families. But such norms are not followed in reality due to vacancies at all levels of extension staff.

In view of the above, it is proposed to out source Technical Input Provider for 84 man months for 5 years according to the existing policy..

2. Practices - Ground realities :

a. Irrigation :

Irrigation is by open well and borewell. Mostly farmers are using ridges and furrow irrigation system. Only 20% of the farmers are using drip irrigation.

b. Micro irrigation :

There is lot of scope for developing Orchards in this sub-basin area by introducing Micro irrigation system.

Drip and sprinkler irrigation are proposed during the current year.

Out of 7042 Ha. Under Horticulture Crops, an area of 9275 Ha. Is proposed to cover micro irrigation with fertigation by the Agricultural Engineering Department (vide page number -)

S.No.	Crop	Area Proposed to Cover Under Drip Irrigation	Grand Total
A.	Fruits plants		
1	Mango	180	
2	Amla	20	
3	Sapota	30	
4	Banana	220	
	Total		580
C	Vegetables crops		
1	Tomato	750	
2	Pandal Vegetables	700	
3	Drumstick	280	
4	Turmeric	65	
5	Tapiaco	500	
	Total		2295
D	Sprinkler		
	Chillies	1100	
	onion	4450	
	Brinjal	200	
	Bhendi	400	
	Beet root	250	
	Total		6400
	<u>Grand Total</u>		9275

c. Fertigation :

Farmers apply fertilizers directly. Awareness on Fertigation among the farmers is inadequate.

It is proposed to adopt INM in 145 Ha. under fruits

d. Contract farming :

Contract farming is not practiced in command area. Farmers are reluctant to adopt contract-farming practice due to fluctuation in produce prices and for want of legal guarantee. However steps are being taken to convince to the farmers to take up contract farming atleast for commercial crops, to start with.

e. Pre & Post harvest practices adopted :

No Specific pre and post harvest practices are adopted in the basin.

f. Labour issues :

Availability of labour is very scarce. Labour availability is a problem due to migration of labours to urban area to get more wages by doing non agricultural works. Spinning mill, Ginning factories, Hosiery factories, Fireworks industries are more popular in this district. Hence labour availability is a problem for farm work. Many farmers use family labours in addition to hired labours by paying over wages. Skilled labours are more scarce than the un skilled labours.

3. Agri - Processing - Factories, Capacity, etc.

No Agri Processing factories are located in the sub basin.

The major production of TC Banana (about 10000 MT) would be marketed in Kerala besides at terminal market proposed at Tiruppur, Coimbatore. The production of Vegetables and flowers (2,800⁰ MT) would be marketed at the terminal market proposed during this project. Staggered planting methods are recommended to the farmers to maintain price fall in Vegetables especially during peak period of harvest.

III. Constraints :

1. Constraints in Existing Scenario :

a. Soil :

1) Soil P^H is slightly moderate.

2) Less humus content

To overcome the problem soil, addition of organic matter has to be done based on soil test reports. Green manuring composting and application of Farm Yard Manure have to be increased.

b. Adverse climatic condition :

These blocks are drought prone.

Rainfall is not distributed uniformly through out the year. Maximum rainfall is received during North east monsoon. So drought resistant fruit and vegetable crops are suggested in this sub-basin.

c. Inferior quality of seed and planting material :

Farmers are using local and poor quality seeds. Truthful seeds are used by very few farmers.

Quality planting materials are supplied through Department of Horticulture. There are two State Horticulture farms at ANAIKATTY and KANNAMPALAYAM.

S. No.	Crop	Production Capacity		Total Production	Total Requirement for the sub basin
1	Amla	30,000	20,000	50,000	13,750
2	Mango	12,000	-	12,000	10,000
3	Sapota	16,000	2,000	18,000	16,000

Nutmeg plants can be procured from state Horticulture farm Kallar and Purliyar which produces 10,000 nos annually in which only 2400 nos are required for this sub basin.

The Hybrid seeds are available from the private sources and it will be procured and supply to the farmers under Tender acts.

d. Limited planting material available from government sources :

Required quantity of seeds is not available with department of Horticulture.

Seeds are supplied to the farmers by department after procuring the Hybrid Seeds through tender system.

e. Improper varieties :

Traditional varieties of vegetables are adopted by majority of the farmers. In some cases varieties of fruit plants were not true to type, hence purchased from vendors of unknown sources.

f. Improper irrigation practices(Ridges and Furrows, Basin irrigation)

Ridges and Furrows system is followed for Vegetables and Basin irrigation is followed for Fruits. Drip irrigation is going to be introduced by the Agriculture Engineering Department for 2875 Ha. Sprinkler for 6400 ha

g. Inadequate extension service :

Available extension officers to provide extension service to the farmers are inadequate. More extension personnel are required.

Only 3 Horticultural Officers for Pollachi, Palladam and Kangaeyam Taluk and 1) Assistant Agriculture Officers are available in three Blocks. They are not sufficient even for the ongoing schemes of the Horticulture Department.

Hence to cater the need of Technical Input Providers for the ten Blocks. It is proposed to hire TIP for 360 man months for 5 years.

h. Low price for produce :

There is price fluctuation for fruits and vegetables due to unorganized marketing and inadequate storage facilities, Middlemen are taking the major portion of the profit of the farmers. Farmers are cultivating same vegetables in a particular season year after year. So produce arrival to the market is heavy during particular season every year leading to low price.

The staggered planting methods recommended to the farmers will maintain price fall in Vegetables especially during peak period of harvest. It is recommended to plant early and late season varieties.

i. Poor adoption of Pre & Post harvest technologies :

Farmers are not following pre and post harvest technologies, this needs more attention.

1. Banana

- The farmers are not following pre harvest technologies to overcome the problem of seeds in Poovan variety.
- Bunch covering
- Removal of male flowers
- Fruit ripening
- Grading

2. Chillies

- To prevent fruit drop spraying of NNA
- Conventional sun drying
- Inadequate storage facilities
- Lack of processing unit

1. All fruits and vegetables

- Grading
- Processing
- Packing
- Refrigerated vans for transport

Awareness should be created among the farmers in pre and post harvest techniques by giving training to the farmers.

j. Limited availability of Credit facilities :

Credit facilities are available through primary Agriculture Cooperative Banks and Nationalized banks. However to avail these facilities many formalities has to be gone through. Hence simplification of procedure and single window system is essential.

k. Risk aversion

Few farmers have the knowledge of Risk aversion. However many farmers have poor knowledge on this, due to non visit to Horticulture depots and Departmental officers often. Due to lack training, lack of capacity building, etc awareness of the new technologies in cultivation of crops and price trend of the produces at various levels are low.

l. Limited processing units :

No Processing units are available in the sub-basin. Required type of processing unit for the required crop is not available.

m. Availability of labour

Labour availability is in decreasing trend for agriculture works, due to availability of non agricultural works which pays more wages to the labours.

IV. Diversification / Future vision proposed :

S.No.	Components	Physical target in Hectares						Production MT	Productivity MT	
		I Year	II Year	III Year	IV Year	V Year	Total		EXIST ING	PR OP OSE D
I.	AREA EXPANSION									
A.	Fruits plants									
1	Amla	-	25	25	-	-	50	1250	20	25
2	Mango	-	25	25	-	-	50	600	8	12
3	Sapota	-	30	50	20	-	100	2400	20	24
	Total		80	100	20		200			
B	<u>Vegetables</u>									
1	Hyb tomato	-	40	40	70	-	150	9000	25	60
2	Onion	100	300	800	800	-	2000	40000	12	20
3	Bhendi	-	25	25	50	-	100	2000	15	20
4	Beetroot	-	50	50	-	-	100	4000	20	40
5	Moringa	-	20	30	50	-	100	4000	20	40
6	Brinjal	-	15	-	-	-	15	600	20	40
7	Pandal Veg	20	20	20	25	-	85	1700	15	20
	Total	120	470	965	995		2550			
C.	Spices									
1	Chillies	50	50	50	50	-	200	300	1	1.5
	Total	50	50	50	50		200			
	Grand Total	170	600	1115	1065		2950			

Palar sub-basin, Coimbatore.

Places of Diversification of crops are furnished as follows

Sl.No.	Crops	Proposed area	Place in which going to executed
1	Onion	2000	Kangayam, Vellokovil,
2	Tomato	150	Pollachi (N) and (S) Kinadhukadavu, Udumalpet, Madathukulam, Sulthanpet, Palladam, Pongalur, Kundarapuram
3	Chillies	200	Kinadhukadavu, Udumalpet, Madathukulam, Sulthanpet, Palladam, Pongalur, Kundarapuram
4	Brinjal	15	Pongalur, Sulthanpet
5	Bhendi	100	Madathukulam, Gudimangalam, Palladam, Sulthanpet, Pongalur, Dharampuram
6	Drum Stick	100	Madathukulam, Gudimangalam, Palladam, Sulthanpet, Pongalur, Dharampuram
7	Beet Root	100	Madathukulam, Gudimangalam, Udumalpet, Sulthanpet, Palladam, Pongalur, Kundarapuram
8	Gourds (Pandal Vegetables)	85	Pollachi (N) and (S) Madathukulam, Palladam, Pongalur,
9	Mango	50	Kangayam, Vellokovil,
10	Amla	50	Kangayam, Vellokovil,
11	Sapota	100	Pollachi (N) and (S) Kinadhukadavu, Udumalpet, Madathukulam, Sulthanpet, Palladam, Pongalur, Kundarapuram Kangayam, Vellokovil
	Total	2950	

V. Challenges thrown up by diversification /area expansion :

1. Judicious Utilization of water.

WRO should ensure quality and required quantum of irrigation water especially during the sowing season and the peak period of water requirement for each crop till harvest. Water can be judiciously utilized by adopting micro irrigation and mulching techniques.

2. Identification of suitable crops/ varieties.

The crops, cropping pattern proposed in this project are suggested based on the micro climatic suitability market trend, soil type and based on the choice of the farmers(WUA) / FA.

3. Production of quality / quantity planting materials.

Timely supply of good quality and required quantity of pedigree planting materials that will be made available from the State Horticulture Farms and quality Hybrid seeds should be made available through the horticulture depots.

4. Farmers acceptability for new crops.

On farm training at the successful / progressive farmers fields, training, meetings, motivation campaigns, should be conducted. Publicity and propaganda to be taken up.

5. Lack of transfer of technology

Transfer of latest farming techniques, distribution of inputs, technical advice should be given to the farmers through the extension personnel. Now the existing extension personal is inadequate. Hence out sourcing technical input provider is the only solution.

6. Strengthening of Horticulture information centers

Information Education and communication facilities should be strengthened. Required training should be given to the extension personal and field level workers. The infra structure facilities should be strengthened at sub basin level as well as project cell.

VI. Solutions and Recommendations

1. Soil reclamation :

- i) Soil reclamation will be made as per the recommendations STL.
- ii) Mulching, addition of organic manure.

2. TIP (Technical Input Provider) - Agri clinic :

- i) Extension service should be provided to the farmers at 100 ha/TIP.
- ii) The problem of inadequate TOT due to insufficient extension personnel can be overcome by employing TIP. Outsourcing of TIP for 360 man months for 5 years period is proposed in this project.

	I YEAR	II YEAR	III YEAR	IV YEAR	V YEAR	TOTAL
TARGET /YEAR(HA)	170	600	1115	1065	-	2950
Number of TIP	2	6	11	11	-	30

LOCATION	POLLACHI (N), POLLACHI (S), UDUMALPET, PALLADAM, PONGALUR, TIRUPPUR, SUL TANPET, GUDIMANGALAM, DHARAPURAM AND KANGAEYAM					
MANMONTHS PER YEAR	24	72	132	132	-	360

3. Staggered Planting :

Farmers can be advised on phased planting and long and short duration varieties and off season planting.

4. Mulching, Micro - irrigation :

Efficient water usage by adoption of micro irrigation and mulching.

5. Consultative process undertaken in the sub basin :

The walk through survey was conducted. Discussion was held with farmers and their requirement was heard. Then after discussion among the officers the decision taken up, accordingly the cropping pattern revised and updated.

6. Stakeholders demands (List)

Instead of local variety farmers demanded hybrid variety of vegetables and quality seeds.

- i. Demand for micro irrigation.
- ii. Latest technology transfer - production technology and post harvest technology.
- iii. Inputs for organic farming.
- iv. Credit facilities
- v. Processing unit for preserving vegetables and fruits.
- vi. Need technical advise,
- vii. Need market information centre.

8. Marketing intervention proposed with reference to identified constraints :

CONSTRAINTS AND CHALLENGES	COUNTER MEASURES
1) Identifying suitable crop / varieties according to agro climatic suit abilities and market limitations	Tissue Culture Banana is a new introduction for the sub-basin with fertigation which has a potential yield and income to the farmers
2) Increased requirement / production of planting material	Monopoly in supply of Tissue Culture plants is from Spic Bio-Tech which is 50 km. from the basin. Plants can also be obtained from M/s. Sunglow Bio-Tech which subsidized through rehabilitation of Tissue Culture Lab under National Horticulture Mission.
3) Cost of Tissue Culture plantlets are quite high Much can should be given in the early stage till establishment	Increased income of 60% uniformity in bearing Earliness in crop duration Disease free plantlets are produced Responds well to fertigation
4) Timely supply of seeds	Seeds will be procured from private agencies and supplied in time by the Department of Horticulture. The Kishi Vigyan Kendra attached to Tamil Nadu Agricultural University will also ensure supply of good quality seeds.
5) Improving the water the efficacy to cater to the needs of the additional area.	Drip irrigation can be followed for fruit crops and vegetable crops. Micro sprinklers can be used for onion.
6) Educating farmers on Good Agricultural Practices	<ul style="list-style-type: none"> • The water user Association can have linkage with the Government officials and Tamil Nadu Agricultural University. • Trainings can be organized for the farmers.

	<ul style="list-style-type: none"> • Handouts, folders and Booklet can be printed for the benefit of the farmers. • Promotion of INM/IPM concept by distributing organic manner bio pesticides and Bio fertilizers. It is also implemented under National Horticulture Mission scheme.
7) Labour demand	<ul style="list-style-type: none"> • Family labour can be utilized.
8) Credit facilities	Water users Association can be linked to Co-operative banks and Nationalised banks
9) Additional manpower	For effective implementation and proper monitoring and evaluation a Technical input provider can be appointed for every 200 Ha. Of the extended area.
10) Protected cultivation – Training to the farmers	New introduction to the basin for increase income.

PROJECT ON DEVELOPMENT OF HORTICULTURE CROPS IN PAL AR SUB-BASIN

S. No.	Compo-nents	Fin in Rs.			Physical target in Hectares					
		Unit cost	Assistance 75%	25% Share by farmers	I Year	II Year	III Year	IV Year	V Year	Total
I.	AREA EXPANSION									
A.	Fruits plants									
1	Amla	30,000	22,500	7,500	-	25	25	-	-	50
2	Mango	30,000	22,500	7,500	-	25	25	-	-	50
3	Sapota	30,000	22,500	7,500	-	30	50	20	-	100
	Total					80	100	20		200
B	<u>Vegetables</u>									
1	Hyb tomato	30,000	22,500	7,500	-	40	40	70	-	150
2	Onion	30,000	22,500	7,500	100	300	800	800	-	2000
3	Bhendi	30,000	22,500	7,500	-	25	25	50	-	100
4	Beetroot	30,000	22,500	7,500	-	50	50	-	-	100
5	Moringa	30,000	22,500	7,500	-	20	30	50	-	100
6	Brinjal	30,000	22,500	7,500	-	15	-	-	-	15
7	Pandal Veg	50,000	35,000	15,000	20	20	20	25	-	85
	<u>Total</u>				120	470	965	995		2550
C.	Spices									
1	Chillies	15,000	11,250	37,500	50	50	50	50	-	200
	Total				50	50	50	50		200
	Grand Total				170	600	1115	1065		2950

PROJECT ON DRIP IRRIGATION FOR HORTICULTURE CROPS

S.No.	Crop	Area Proposed to Cover Under Drip Irrigation	Grand Total
A.	Fruits plants		
1	Mango	180	
2	Amla	20	
3	Sapota	30	
4	Banana	220	
	Total		580
C	Vegetables crops		
1	Tomato	750	
2	Pandal Vegetables	700	
3	Drumstick	280	
4	Turmeric	65	
5	Tapiaco	500	
	Total		2295
D	Sprinkler		
	Chillies	1100	
	onion	4450	
	Brinjal	200	
	Bhendi	400	
	Beet root	250	
	Total		6400
	<u>Grand Total</u>		9275

PROJECT ON INM / IPM

S.No.	Components	Physical target in Hectares						Fin in Rs.	
		I Year	II Year	III Year	IV Year	V Year	Total	Unit cost	Assi stanc e 100%
I.	AREA EXPANSION								
A.	Fruits plants								
1	Amla	-	25	25	-	-	50	1000	1000
2	Mango	-	25	25	-	-	50		
3	Sapota	-	30	50	20	-	100		
	Total		80	100	20		200		
B	<u>Vegetables</u>								
1	Hyb tomato	-	40	40	70	-	150	1000	1000
2	Onion	100	300	800	800	-	2000		
3	Bhendi	-	25	25	50	-	100		
4	Beetroot	-	50	50	-	-	100		
5	Moringa	-	20	30	50	-	100		
6	Brinjal	-	15	-	-	-	15		
7	Pandal Veg	20	20	20	25	-	85		
	<u>Total</u>	120	470	965	995		2550		
C.	Spices								
1	Chillies	50	50	50	50	-	200	1000	1000
	Total	50	50	50	50		200		
	Grand Total	170	600	1115	1065		2950		

PROJECT ON ORGANIC FARMING

S.No	Components	Fin in Rs.	Physical target in Hectares					Total
		Financial proposal already given in area expansion programme	I Year	II Year	III Year	IV Year	V Year	
	Spices							
1.	Chillies		50	50	50	50		200

PROJECT ON DEVELOPMENT OF HORTICULTURE CROPS

S.No	Component s	Estimated cost	Physical target in Hectares					
			I Year	II Year	III Year	IV Year	V Year	Total
I.	AREA EXPANSION							
A.	Fruits plants							
1	Amla	0.300	-	7.50	7.50	-	-	15.00
2	Mango	0.300	-	7.50	7.50	-	-	15.00
3	Sapota	0.300	-	9.00	15.00	6.00	-	30.00
	Total			25.00	30.00	6.00		60.00
B	<u>Vegetables</u>							
1	Hyb tomato	0.300	-	12.00	12.00	21.00	-	45.00
2	Onion	0.300	30.00	90.00	240.00	240.00	-	600.00
3	Bhendi	0.300	-	7.50	7.50	15.00	-	30.00
4	Beetroot	0.300	-	15.00	15.00	-	-	30.00
5	Moringa	0.300	-	6.00	9.00	15.00	-	30.00
6	Brinjal	0.300	-	4.50	-	-	-	4.50
7	Pandal Veg	0.500	10.00	10.00	10.00	12.50	-	42.50
	Total		40.00	145.00	293.50	303.50		782.00
C.	Spices							
1	Chillies	0.150	7.50	7.50	7.50	7.50	-	30.00
	Total		7.50	7.50	7.50	7.50	-	30.00
	Over all Total		47.50	176.5	331.00	317.00		872.00
II - 1	Extension Support @ Rs 8000/- month (360 man month for 5 years)	0.96/ year	1.92	5.76	10.56	10.56	-	28.8

3	Hiring computers	0.50	0.5	0.50.	0.5	0.5	0.5	2.50
	Total		2.66	6.50	11.30	11.30	0.74	32.50
III	Organic farming	Amount already proposed in area expansion programmes.						
IV	INM /IPM	1000	1.20	4.70	9.65	9.95	-	25.5
V	Micro Irrigation	Implemented by Agriculture Engineering Department.						
	Grand Total		51.36	187.70	351.95	338.25	0.74	930.00

Palar sub-basin , Coimbatore.

Technologies Proposed under Horticulture.

S. No	Technology / Practices	Existing output tons/ha	Area proposed in ha	Proposed output tons/ha	Percentage of increase	Budget out lay Rs. in lakhs.
I	Varietal Diversification, micro irrigation, INM in fruits.					
1.	Fruits	8-20	200	22-24	50	60.00
II.	Varietal Diversification, micro irrigation, and IPM in Vegetables					
1.	Vegetables	10-20	2465	15-40	50	739.5
2.	Pandfal vegetables	15	85	20	33	42.50
III.	Varietal Diversification, micro irrigation, Organic farming in Spices					
1.	Chillies	1	200	1.5	50	30.00
III	Protected cultivation					40.330
	Total		2950		75	215.530

Palar sub-basin , Coimbatore, Erode

REQUIREMENTS OF INPUTS

SIno	Components	Varieties	Area in Ha	Seeds and plants requirement/ ha	Total Requirement	Source of planting material
	AREA EXPANSION					
	Fruits plants					
	Amla	Na 7 BSR 1	50	275	13750	SHF Anikatti Kannpalyam
	Mango	Alphonso Sendhuram	50	200	10000	- do -
	Sapota	PKM 1	100	160	16000	- do -
	Total		200			
	Vegetables					
	Hyb tomato	Laskhmi 5005	150	0.150	22.50kg	Private Tender
	Onion	Nasik red rose	2000	1000kg	20,00,000kg	- do -
	Bhendi	Mahyco 10	100	4	400	- do -
	Beetroot	Indo american	100	6	600	- do -
	Moringa	PKM 1	100	0.5	50	- do -
	Brinjal	Varikai	15	0.150	2.25	- do -
	Pandal Veg	Mahyco	85	1.5	127.5	- do -
	Total		2550			
	Spices					
	Chillies	Nunhems	200	0.15	30	- do -
	Total		200			
	Grand Total		2950			

OUTCOME OF THE PROJECT

SL.NO	DETAILS	WITHOUT PROJECT	WITH PROJECT	% INCREASE
1	Area in Horticulture crops(Ha)	7042	2950	41
2	Introduction of IPM/INM(Ha)	0	2750	2750
3	Introduction of Organic Farming(Ha)	0	200	200
4	Average Increase in Production (MT)	51	85	60



FISHERIES
DEPARTMENT

FISHERIES DEPARTMENT

Palar sub basin has one reservoir (Thirumoorthy) and nine System Tanks. Aquaculture is been done by the Tamil Nadu Fisheries Development Corporation in the Thirumoorthy reservoir. Stock, manage and capture is the technology adopted with the Indian Major carp seeds b een the stocked fish species. There is a good productive reservoir in terms of fish production. The fishery constitute mostly the Indian major carps. Tank fishery exists in the 9 tanks and which comprises of the stocked and unstocked natural fishery.

One seed farm is functioning at Thirumoorthy Dam run by the TNFDC. It is functioning effectively and is able to meet the fish seed demand of the basin. There are no private seed farm in this basin. The quality of water in the basin is suitable for aquaculture .

There is effective marketing chain with the TNFDC for marketing the fresh water fishes produced in this sub basin. Fishes are mostly marketed fresh and also proper icing to prevent spoilage.

Considering the above fishery status the following propos als are made under IAM WARM project.

AQUACULTURE IN FARM PONDS :

Farm ponds are been proposed to be excavated in the sub -basin by the Agriculture Engineering departments, primarily as rain water harvesting and storage tanks in the farmers field with a water spread area of 1000 m². aquaculture will be promoted in these farm ponds as an integrated component. Some alteration shall be made in the pond by providing a layer of clay on the pond bottom to prolong the retention of water at least for 4 months.

Interaction were made with the members of WUA, the water manager / Engineers of WRO and also with the Engineers of Agriculture Engineering

Department regarding the period of retention / availability of water in the farm ponds. It is inferred that though the AED (Agricultural Engineering Development) is proposing more than 1000 farm ponds, more than 90% of the ponds may not get water for a reasonable period of time, facilitating aquaculture.

However to promote and also considering the interest of some agriculture farmer who optimum for aquaculture, few farm ponds with bore well or open well facilities will be identified for aquaculture and fish culture shall be promoted. After excavation of farm pond by AED, aquaculture inputs shall be given to 50 farm ponds and the estimated cost is Rs. 16,500 per pond.

Stocking density of 1 stock size fish of 50 kg per 1 m² of WSA is proposed and production 600 kg of fish per pond is envisaged. In terms of revenue the farmer shall get an additional revenue of about Rs. 10,000/- per pond. This shall be an additional income for the agriculture farmer without interfering in agricultural activity.

ORNAMENTAL FISH CULTURE

The Water Quality of the Sub Basin is suitable for ornamental fish rearing. Marketing potential is also available. Hence to promote commercial ornamental fish culture two units shall be established in this basin on pilot basis.

Like cash crop of Agriculture ornamental fish culture is a fast growing business venture in the field of fisheries. Aquarium keeping is a healthy hobby recommended by doctors to avoid stress and to have peace of mind.

In Aliyar Dam the TNFDC is running successfully an aquarium for public and a culture unit attached to it. The Climatic condition and water quality are suitable for aquarium fish rearing.

The pilot unit proposed shall have 4 nos of rearing ponds (4000 Sq.mt) each. The pond is an earthen one apart from rain water harvesting , to support continuous maintenance of water level a 6 “ dia borewell with motor will be provided.

Young ones of ornamental fishes (1 - 2 cm) will be purchased from TNFDC farmers and grown upto marketable size of about 6 -10 cm depending on the species.

An investment of 1.27 lacs per unit and an operational cost of 0.93 lacs per 3 cycles is proposed. Net return of about 1 lac per year is envisaged.

TRAINING AND CAPACITY BUILDING

IAMWARM projects target groups are primarily WUA whose members are agriculture farmers with little knowledge on aquaculture .Hence training and capacity building on fresh water aquaculture and ornamental fish culture etc., is highly essential. The IAMWARM project training component shall lay emphasis on planning the aquaculture training.

- For monitoring the aquaculture activities vehicle hire charges of 1.20 lakhs and documentation charges of 0.30 lakhs are provided.

OUTCOME EXPECTED/ ANNUALS

S/no	Description	Fish fingerings (nos in Lakhs)	Fish production (Tonnes)	Net Revenue (Rs. In lakhs)
1	Aquaculture in Farm ponds (50 Nos)	Nil	30.00	5.00
2	Ornamental Fish culture (2 units)	0.84	Nil	2.34

ABSTRACT

1.	Input cost for 50 farm ponds (50 X 16,500)	=	8.25Lakhs
2.	Ornamental fish culture (2x 2.20)	=	4.40 Lakhs
3.	Vehicle hire charges	=	1 .20 Lakhs
4.	Documentation	=	0.30 Lakhs
	TOTAL	=	14.15Lakhs

DETAILS FOR ONE UNIT - FARM POND.

A. Fixed Cost

1. Pond (available)	-	NIL
2. Improvement to pond by providing clayey layer	-	5,000.00

B. Operational Cost (in Rs.)

1. Lime	-	250.00
2. Manure	-	750.00
3. Stock size fish seed @ Rs. 3/- per seed	-	3,000.00
4. Feed (Rs. 4/- per kg of RB 6000 kg Rs.12/- per kg of Goc 300 kg)	-	6,000.00
5. Harvesting and Miscellaneous	-	1,500.00

TOTAL		11,500.00

C. Returns

By Sale of 600 kg of fish @ Rs. 35/- per kg	-21,000.00
(Gross Profit) – (C-B)	- 9,500.00

Ornamental Fish Culture					
Water Spread Area	Sq.m	1600			
Culture Period	months	60 to 70 days per cycle. Totally 3 cycles			
Depth of Water	meter	1.0 meter			
With Project					
			Financial	Financial	Economic
		Quantity	Unit	Value	Value
	<u>Units</u>	-	<u>Price (Rs)</u>	<u>(Rs/Pond)</u>	<u>(Rs/Pond)</u>
INPUTS, Fixed costs					
Excavation of four ponds	LS	40000	1	40000	36000
Bore well (6" diameter and 200' depth)	LS	20000	1	20000	18000
3 HP Motor cost and wiring	LS	15000	1	15000	13500
Equipments-Oxygen cylinder/Nets/Velon/screen/Feed trays	LS	7000	1	7000	6300
Electricity Service Connection (3 phase) with accessories	LS	30000	1	30000	27000
Shed for store cum packing (1500 sq.ft)	LS	15000	1	15000	13500
				127000	114300
INPUTS, Recurrent costs					
Cowdung	Ton	1.0	1000	1000	900
Fish fry	Lakh No	0.6	75000	45000	40500
Electricity	LS	10000	1	10000	9000
Pellet feed	Kg	240	60	14400	12960
Transport charges	LS	2000	1	2000	1800
Prophylactic measures	LS	3000	1	3000	2700
Labour	LS	120	100	12000	10800
Packing material and oxygen	LS	3000	1	3000	2700
Miscellaneous	LS	2000	1	2000	1800
Sub Total	Rs			92400	83160
OUTPUT					
Percentage of recovery					
Fish, above 7.5 cm each	%	70%			
Fish production					
Fish, above 7.5 cm each	Lakh No	0.42	500000	210000	189000
Gross Income	Rs			210000	189000
Net Income	Rs			117600	105840
INCREMENTAL NET INCOME	Rs			117600	105840



ENVIRONMENTAL CELL

REPORT TO ACCOMPANY THE ESTIMATE FOR THE ENVIRONMENTAL COMPONENTS FOR PALAR SUB BASIN UNDER-IAMWARM PROJECT

The PAP command area is located in parts of Pollachi , Udumalpet, Palladam and Triuppur taluks in Coimbatore district. A little part of the areas extends into Kangeyam and Dharapuram taluks of Periyar district. The area falls between coordinates 76°24' 30" to 11°02' 00" N Latitude. This is a multi purpose project located in the Anaimalai hill range with the highest elevation of 8251 ft. and caters to the irrigation, power generation and drinking water requirements. The total catchment area of PAP is 841 sq.km. The normal annual rainfall of PAP ranges from 330cm in Aliyar sub basin to 90cm in Palar sub basin. Aliyar sub basin is a part of PAP basin.

I.ENVIRONMENTAL AND SOCIAL ISSUES

Agriculture is the predominant occupation of the basin and the Environmental and Social issues in this basin are furnished be low:

Sl.No	Environmental & Social Issues	Remedial Measures
1	Scarcity of Water	<ul style="list-style-type: none"> • Promoting do nothing farming in coconut gardens. • Promoting drip, sprinkler along with mulching, and introducing earthworms in field. • Promoting Less water intensive crops and creating a market for those produces. • More Environmental awareness on natural temperate climate foods rather than fast food culture and Tie up with urban people. • Rain water-harvesting systems in the basin. • Reuse of domestic wastewater by proper treatment.
2	Shortage of labour	<ul style="list-style-type: none"> • Mechanization and introduction of less labour intensive cultivation practices. • Weight to Rural development

		<p>schemes to stop migration from rural area.</p> <ul style="list-style-type: none"> • Promoting rural based agro industries like preparation of vermi composting, panchakavya and Bio repellent liquids etc. • Special incentives to agricultural laborers.
3	Ground water depletion	<ul style="list-style-type: none"> • Rain water-harvesting structures based on water shed area including promotion of tree saplings plantations. • Motivation for conjunctive use of ground water and surface water. • Speedy Enact of ground water regulation law. • Change of the existing cultivation practices and promoting the farmers to go for the crops based on the availability of water as like at Ralegan Sidhhi in Maharashtra.
4	Water Pollution due to domestic wastewater in Udumalpet Kundadam, palladam, Pongalur, Kangeyam towns.	<ul style="list-style-type: none"> • Motivating the local bodies for effective wastewater management and implementation of treatment plants based on the experience of the WRCP-I schemes. • Reuse of the wastewater after proper treatment. •
5	Water pollution due to dumping of solid wastes like municipal wastes, construction debris's and coir wastes in Udumalpet, Kundadam, palladam, Pongalur, Kangeyam towns.	<ul style="list-style-type: none"> • Motivating the local bodies and public for effective solid waste management and promoting bio compost. • Motivating the public, institutions, Construction industries and industries to implement waste management systems. • Promoting Bio composting schemes for effective integrated approach.
6	Soil pollution and increase of health problems due to Inorganic farming and usage of Chemical fertilizers and pesticides.	<ul style="list-style-type: none"> • Motivating the farmers to adopt chemical free farming. • Creating Environmental awareness on the need of maintaining the agro ecosystems. • Promoting more families for preparation of bio compost, panchakavya and vermicompost

		<p>industries.</p> <ul style="list-style-type: none"> • Conducting health camps in the basins.
7	Issues due to Tourism at Thirumurthy.	<ul style="list-style-type: none"> • Conserving the water bodies by. Promoting Eco tourism. • Arresting the existing pollution from solid wastes and liquid wastes. • Promoting Herbal Gardens to create awareness on the importance of herbal plants and conservation of environment.
8	Encroachments in water bodies and irrigation canals.	<ul style="list-style-type: none"> • Eviction of all kind of encroachments. • Creating some kind of forum to stop further encroachments of water bodies.
9	Monoculture crops.	<ul style="list-style-type: none"> • Motivating the farmers to improve the agriculture ecology by introducing Bio diversity cultivation. • Crop promotion as per the soil nature and water availability.
10	Natural Resources degradation and pollution	<ul style="list-style-type: none"> • More Environmental awareness meetings, seminars, Workshop/ Training and exhibition for public.
11	Water weeds in seven tanks area (Udumalpet) and irrigation canals	<ul style="list-style-type: none"> • Implementing scientific weed management schemes.
12	Increase in soil erosion.	<ul style="list-style-type: none"> • Implementing water shed management programme.
13	Lack of data on environmental Conservation in new projects.	<ul style="list-style-type: none"> • More Environmental awareness meetings, seminars, Workshop/ Training and exhibition
14	Deforestation	<ul style="list-style-type: none"> • Promoting afforestation programmes
15	Water Quality Problems (excess fluoride and Nitrite)	<ul style="list-style-type: none"> • General awareness programmes to reduce the pollutants at the source itself and identifying the source.

II. ENVIRONMENTAL ACTIVITIES SO FAR CONDUCTED

The following works were carried out in the previous years

- (i) Periodical water sampling is carried out at 30 points in the basin.
- (ii) Training on Organic Farming to farmers.
- (iii) Environmental training & Field visit to students.
- (iv) Seminars in colleges, Schools and SHG.
- (v) Solid waste Management in Anaimalai and Aliyar towns.

III. ENVIRONMENTAL ACTIVITIES PROPOSED

The following activities are proposed under the IAMWARM Project. The details of the activities are given below:

(i) Environmental Monitoring of River Basins

The water samples will be collected from the prefixed points periodically and will be analysed and documented to assess the impacts. Soil samples will be collected from the farmers field and waste lands.

(ii) Seminars / Trainings

It is proposed to conduct the seminars and workshops to the students, farmers, department officials and public to create awareness about the importance of environment and the threats due to pollution and the remedial measures.

a. For College and school Students

It is proposed to conduct one-day awareness seminar in the institution premises itself with eminent resource persons delivering lectures and participating in interactive sessions with the students.

This will help the students understand the importance of environment and the necessity to safeguard the environment. Further it will motivate them to undertake and implement projects in their campuses that will protect the environment and lead them to form **Eco-clubs**.

b. For Farmers

It is proposed to conduct one day seminar to farmers on safe guarding the environment from farmers perspective. The seminar will focus on the issues relating to optimal use of fertilizers and pesticides for agriculture and motivating and prepare them to practice chemical free farming.

It is proposed to conduct one seminar for every 4 WUAs with a maximum of 25no of participants from each WUA totaling 100.

This program will be conducted in consultation and coordinatin with the line departments and TNAU.

c. For Department officials and Local Bodies

The Proposed one day seminar will highlight the latest issues and developments in the matters related to environment. The objective is to keep the officials informed and updated in tune with the current scenario, which in turn will help them in addressing the issues falling in their domain more effectively.

III) Exposure Visits

a. For Farmers

The field visits will be conducted in sequel to the seminar. The farmers who are willing to adapt the methods / technologies will be taken to the fields in the near by locality which are adopting them.

This will give them a chance to have first hand information and interact with the farmers already adopting them, clear their suspicions and will motivate to implement those practices in their own field.

b. For Department Officials and local bodies.

The field visits will be conducted in sequel to the seminar. The department officials will be taken to the places where cleaner technologies were successfully implemented.

This will help them understand the difficulties in day to day operation and prepare them for effective implementation in their own area.

(IV) Environmental Projects

It is proposed to implement the following small scale environmental related projects.

a. Formation of Eco Gardens in Public Places, schools / College s etc

It is proposed to put display boards emphasizing the importance and necessity to preserve the environment on the following topics

- Solid Waste Management
- Conservation of energy
- Protection of water bodies, forest and animals.
- Bio diversity
- Planting native species of plants

This program will be implemented in the existing parks and public places in the towns.

b. Promoting Eco Tourism

Thirumurthy dam is an important tourist spot in the sub basin frequented by large no of tourists every day. Undoubtedly tourism plays a big role in developing the local economy, but if not managed properly it also poses a whole lot of new problems such as Solid and liquid waste management, traffic etc.

Especially solid waste management requires special attention in the above said areas as they are in close proximity to reserved forest areas. The proper collection and disposal of non degradable material such as plastic brought by the tourist assumes significance and hence it is proposed to

- Place separate garbage bins at important places in coordination with local bodies.

- To put up hoardings highlighting the importance to protect the environment.
 - Distribution of notices and hand bills
 - Organizing rallies to highlight the environmental issues.
- **Motivating Educational Institutions to adopt cleaner technologies in their campuses.**

This program will be carried out in sequel to the seminars conducted in institutions. It is proposed to help the educational institutions in implementing the programs that will help protect the environments. For this one time help like providing bins for segregating wastes at the source or for forming biocompost or vermin composting yards etc in their own premises

(iv) Lab facilities

The EC division has its own water quality-testing laboratory for testing 16 parameters. The lab has to be strengthened for conducting all necessary parameters for which a lump sum amount has been provided in this estimate.

(v) Capacity building

The officials from various line departments and farmers has to be continuously informed and educated about the environmental protection, economical benefits and social uplift while carrying out the IAMWARM Project, for which purchase of journals and publication of news letter and books has been included in this estimate.

(vi) Documentation

The entire activities carried during the project have to be documented for reference and information to future planning and so necessary provision has been made in this estimate.

(vii) Conclusion

The above-proposed activities are based on Sustainable development concept. These proposed environmental Components are essential to safe Guard the water resources, Soil, human health and other natural resources.

The estimate is based on the current schedule of rates and the estimate value works out to Rupees Forty Lakhs Only.

ABSTRACT ESTIMATE

Sl. No.	Description of Component	No	Months / Years	Qty	Unit Rate	Amount	
1	Periodical water samples & soil samples collection, preparation , testing and analysis and other Environmental & social parameters data collection.						Total
a.	Water samples -(25 Points- 4 times a Year for 5 years)	25	20	500	750	375,000	
b.	Soil sample in polluted fields and waterbodies (10 samples per year- for 4 Years)	10	4	40	1000	40,000	
c.	Outsourcing mazdoor cat 2/computer operator for assisting the field officers in collection ,testing, of water soil and other social and environmental related data's.(2 Nos for 40 Months)	2	40	80	3000	240,000	
d.	Outsourcing driver for the Government jeep for assisting the field officers in collection ,testing, of water soil and other social and environmental related data's.(1No for 40 Months)	1	40	40	3500	140,000	
e.	Outsourcing Technical Assistant/JRF for assisting the field officers in collection ,testing, analysing and report writing (2 No for 40 Months)	2	40	80	5000	400,000	
f.	Conveyance and transportation charges				10000	10000	
							1,205,000
2	Conducting Environmental & social Awareness meeting , training, exhibition & work shop for conserving the natural resources and environment including video & photoGraph, training material and Documentation works etc.,						
a.	Meeting/ Seminar.						
	1. For college students-One day seminar on Environmental Issues	10	50	50	17000	850000	

	2. For Farmers- One day seminar on Importance and necessity of Environmental friendly farming practices (For 4 WUAs Combined)	35	35	35	19000	665000	
	3. For Local bodies-On Solid waste management and department Officials on Environmental Issues	2	10	10	14000	140000	
							1655000
b.	Field Visits						
	1. Exposure visits to members of WUA on eco friendly farming and modern farming techniques (For 4 WUAs combined)	35	35	35	14000	490000	
	2. Exposure visits on eco friendly practices to officials of WRO and line departments & Local Bodies for waste management	2	5	10	14000	140000	
							630000
c.	Exhibition/Demonstration/ Health camp						
	1. For participating in the important exhibitions like AGRI EXPO, BUILD EXPO and putting up stalls to highlight the environmental problems	1	5	5	20000	100000	
							100000
3	Implementing Environmental Projects such as to improve the soil ecology, water conservation, Prevention of water pollution, solid waste management, Eco-tourism in parks and Increasing Bio -diversity plants in command area.						
a.	Formation of Eco Gardens in Public places , Government Office Premises and parks.	1	5	5	10000	50000	
b.	Promoting eco tourism in the existing tourists spots to protect the water resource from all kind of pollution	1	1	1	50000	50000	
c.	Motivating the Educational institutions and Schools to implement the alternative technology for the Environmental pollution in their campus.	1	5	5	20000	100000	
							200000

4	Institutional Strengthening and Capacity building to the Engineers,Officers and farmers for effective implementation of IAMWARM PROJECT.						
a.	Purchase of Environmental related journals, Bulletins , and Books to improve the existing library.			1	10000	20,000	
b.	Publication of books,phamplets,posters and News letters.			1	10000	15,000	
c.	Procuring electronic machines like LCD projector ,GPS,PEN DRIVE and improving the computer facilities in office					50000	
d.	Provision for upgrading existing waste water testing laboratory of EC Division, Coimbatore					50000	135,000
5	Documentation of the entire activities and preparation of annual reports for line departments of the out come of this project.					50,000	
6	Unforeseen items if any.					25,000	
							4000000



PROJECT COST

**TN IAM WARM PROJECT
PARAMBIKULAM ALIYAR BASIN
PALAR SUB BASIN
PROJECT COST ESTIMATION
GENERAL ABSTRACT**

Sl. No.	Name of the Line Department	Estimate Amount in Lakhs	Remarks
1	Water Resources Organisation	12834.00	
2	Agricultural Engineering Department	7155.80	
3	Agricultural Marketing and Agri. Business	288.20	
4	Agricultural Department	682.037	
5	Animal Husbandry Department	202.79	
6	Tamil Nadu Agriculture University	694.13	
7	Horticultural Department	930.00	
8	Fisheries Department	14.15	
9	Environmental Cell	40.00	
	Total	22841.107	

(or) 2284.11 Millions

ANNEXURE I – MAPS

1. Palar Sub Basin Index Map
2. PAP Schematic Layout of Reserviors
3. Drainage Map
4. Administrative Map
5. Categorization Map
6. Command Area Map
7. Soil Map
8. Land Use Map
9. Geomorphology Map
10. Geology Map



ANNEXURE II – PHOTOS

1. Stack Folders Meeting
2. Line Department Meeting
3. Water Users Association Meeting
4. Joint Walk Through Survey
5. Damaged Canal Lining
6. World Bank Consultant Visit
7. Project Director Discussion with WUA
8. Field Visit by Project Director
9. Project Director Discussion with Line Department
Officials
10. Madyapradesh Field Visit
11. Village Shandy
12. Crops

ANNEXURE III – WUA Representation

1. R. Ponnapuram Village Water Users Association
Representation.
2. Devampadivalasu Village Water Users Association
Representation.
3. Poomaloor Village Water Users Association
Representation.
4. Kasilingampalayam Village Water Users Association
Representation.
5. Kokkampalayam Village Water Users Association
Representation.
6. Pacharpalayam Village - 3 Water Users Association
Representation.



ANNEXTURE IV

MAPS SHOWING THE LINE DEPARTMENT

ACTIVITIES

- Agriculture Department.
- Agriculture marketing and Agri Business
- Tamilnadu Agricultural university
- Animal Husbandry Department.

