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NATIONAL AGRICULTURAL DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN TIRUCHIRAPPALLI DISTRICT

**Centre for Agricultural and Rural Development Studies
(CARDS)**

**Tamil Nadu Agricultural University
Coimbatore – 641 003**

2008

NATIONAL AGRICULTURE DEVELOPMENT PROJECT – DISTRICT AGRICULTURE PLAN

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FOREWORD

Date

The National Development Council resolved that Agricultural Development strategies must be reoriented to meet the needs of farmers and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture with a commitment to achieve four per cent annual growth in the agricultural sector during the 11th plan. The council also recommended special Additional Central Assistance Scheme named National Agriculture Development Programme (NADP) be launched. To implement this, formulation of District level action plans is the pre-requisite and thus District Agriculture Plan of various districts in Tamil Nadu has been prepared with the financial assistance of Government of India.

The task of preparing the District Agriculture Plan has been given to Tamil Nadu Agricultural University by Government of Tamil Nadu. Thus 29 Districts level Plans, excluding Chennai and Nilgris, were prepared by the Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University. Several meetings were held at TNAU during the last few months. Steering committee, district planning unit and plan finalizing team were putting their efforts in shaping up the District Agriculture Plans. All the District Collectors representing the 29 districts have actively participated in the sensitizing meeting organized by TNAU and officials of line departments in the respective districts. The plan documents have identified the major thrust areas in agriculture and allied sectors for achieving the envisioned growth in the district and also in Tamil Nadu state. I appreciate the team work of TNAU scientists and the officials from line departments for bringing out the valuable action plans for each district. I am sure that these plans would also lead to more fruitful exercises like formulation of State level plans and project proposals for funding through NADP.

I solicit the cooperation of the line department officials in implementing these action plans and commit to achieve a better growth in agriculture and allied sectors in each and every district of Tamil Nadu during the 11th plan.


(C. RAM AS AMY)

Coimbatore
June 30, 2008



PREFACE

The District Agriculture Plan is brought out based on the details provided by the line department officials of the respective districts. The District Agriculture Plan thus identifies the problems, needed interventions and the financial requirement for the developments in Agriculture and allied sectors of Agriculture viz. Horticulture, Agricultural Engineering, Animal husbandry, Fisheries, Sericulture, Agricultural marketing and Agricultural business and Public Works Department.. The Government sponsored various on-going schemes and programmes in the development of agriculture have also been dovetailed in the preparation of plan. Besides, the plan would also help in formulating the State Agriculture Plan and the project proposals under Stream I and Stream II to be funded by Government of India for the remaining four year plan periods viz. 2008-2012.

My sincere thanks to District Collectors of the respective districts in Tamil Nadu who have been instrumental in providing the felt needs of the farmers and other stakeholders. The help and full cooperation rendered by the line department officials in each district is highly appreciable. Without their assistances, the formulation of the plan will be a mere academic exercise.

My sincere thanks to Shri. Surjit K. Chaudhary I.A.S., Agricultural Production Commissioner and Principal Secretary to Government of Tamil Nadu who is instrumental in integrating the multi-level functionaries and providing valuable guidance in bringing out this plan document.

My sincere thanks to Dr. C. Ramasamy, Vice-Chancellor, Dr. P. Santhana Krishnan, Registrar of Tamil Nadu Agricultural University, for their full administrative and technical support without which the time schedule in preparing the document could not have been adhered to. Special thanks to Dr.S. Natarajan, Director, Soil and Crop Management Studies and Dr. E. Vadivel, Director of Extension Education, for their sustained support in the preparation of the district plans. All the Principal Investigators of the NADP I Phase projects also provided the needed inputs.

I take this opportunity to express my deep sense of gratitude to Commissioner of Agriculture, Commissioner of Horticulture and Plantation crops, Chief Engineer (Agricultural Engineering), Executive Director, Tamil Nadu Watershed Development Agency, Commissioner of Animal Husbandry and Veterinary Services, Commissioner of Fisheries, Commissioner for Milk Production and Dairy Development, Commissioner of Agricultural Marketing and Agri Business, Director of Seed Certification, and Director of Sericulture for providing constructive support and guidance in preparing the document.

I also place on record my sincere thanks to Vice-Chancellor of TANUVAS and his colleagues for providing the action plans for Animal Husbandry and Fisheries in Tamil Nadu.

Sincere thanks to Deans, Heads of Research Stations/KVK's and scientists of TNAU representing different districts and scientists of Directorate of CARDS for helping in collection of data, organising district level workshops and group meetings with stakeholders and preparation of this document.

Date: 30.06.2008

K. Palanisami
Director, CARDS & Nodal Officer (NADP)

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EXECUTIVE SUMMARY

Tiruchirappalli district is an important region in the state and had been a Centre of activities for many historical events from the days of the early Cholas. Rock Fort, Thayumana Swamy, Pillaiyar Temple, Teppakulam, the Nawab's palace, the Nadir Shah Mosque, Sri Rangam Temple, Thiruvanaikaval, Subramanyaswami Temple, Upper Anicut and Grand Anicut are some of the important monuments and temples reflecting the history, culture and traditions of the district. Tiruchirappalli district is located at the Central part of Tamil Nadu surrounded by Perambalur district in the north, Pudukkottai district in the south, Karur and Dindigul districts in the West and Thanjavur district in the east. It lies between 10° 10' and 11° 20' of the Northern latitudes and 78° 10' and 79° 0' of Eastern longitudes in the centre part of the Tamil Nadu. The general slope of the district is towards east. It has a number of detached hills, among which Pachamalai Hill is an important one, which has a peak up to 1015m, located at Sengattupatti Rain Forest. Tiruchirappalli district is one of the important districts in Tamil Nadu and had a population of 25. lakhs as per 2001 census. In terms of urbanisation level, according to the composition of urban and rural population, Tiruchirappalli district ranked 10th among the other districts in Tamil Nadu.

Tiruchirappalli district comprises of eight taluks (Fig.1) viz. Thuraiyur, Lalgudi, Musri, Tiruchirappalli, Thottiyam M.nallur, Srirangam and Manapparai, which included 14 blocks, 408 Village Panchayats and 1590 Villages. This district consists of four municipalities viz., Ponmalai, Srirangam, Thuraiyur and Manapparai. Tiruchirappalli is the only Municipal Corporation which is also the Head Quarters of the District.

Agriculture sector provides the major source of income to the population of the district and the major crops in this district are paddy, cholam, cotton, groundnut, maize etc., In addition, the other allied sectors like dairy, sheep/ goat, sericulture and inland fishing are the major sectors contributing to the district economy as well as act as a major source of providing livelihood for improving the income and standard of living of the people.

SWOT of the District

The major strengths are progressive nature of the farming community, climate and rainfall favourable for cultivation of wide range of commercial value crops such as spices, plantations, flowers, medicinal and aromatic plants, cut flowers etc., high agricultural population, promising allied sectors such as seed industry, dairy / sheep and goat / poultry industry functioning in this district which plays a vital role in the economy.

The major weaknesses are more number of resource poor farmers, fragmentation of holdings, dependence on monsoon rain, low soil productivity and problem soils such as saline and alkaline soils. Majority of the area is under rainfed condition. Low adoption of plant population, optimum seed rate, lack of awareness on latest technologies and lack of awareness among the farmers are the other weaknesses.

The opportunities are immense scope for increasing area under hybrid vegetables (tomato, bhendi, cabbage), medicinal plants, location advantages such as national highway connecting Chennai and Kanyakumari for easy transport of agricultural produce to the markets, development of seed industry, production of milk products and selling of packaged mutton and broiler meat, rearing of back yard poultry and Japanese quails etc.

However, the threats identified are low productivity of crops, higher cost of cultivation, agricultural labour shortage, uncertainty in market price for the produce and finally the gambling nature of agriculture.

Areas / Sectors which need to be Addressed

The agriculture sector and allied sectors such as animal husbandry, fisheries, sericulture, agricultural marketing and agricultural engineering are the major sectors to be improved to enhance production and productivity of the crops and other products to improve the net income of the producers. This in turn would contribute for increasing the agricultural growth to four percent in the XI plan.

On going Programmes in the District

The Department of Agriculture is currently implementing various programmes in terms of crops to increase the productivity of crops viz., rice, cotton, groundnut, gingelly, sunflower, pulses, millets etc. The programmes included crop wise interventions such as Integrated Nutrient Management, IPM, demonstration of new technologies (SRI in paddy), promotion and distribution of bio fertilizers, certified seeds etc. In addition, organizing farmers fields schools and farmers' visits are also included in the on going programmes. The Department of Horticulture is implementing a number of programmes such as Integrated Horticulture Development Programme, Integrated Tribal Development Programme, National Horticulture Mission and Micro Irrigation in Tiruchirappalli district.

The Agricultural Engineering Department is implementing projects on Soil conservation measures like contour Stone wall, check dams etc., in Tribal Hilly regions, Rainwater Harvesting structures (Percolation Ponds, Checkdams, Ooranis, Farm Ponds etc.), Creation of Water Harvesting Structures, Distribution of farm machineries such as Tractors, Power Tillers and implements like rotavator, Micro Irrigation etc., to improve the welfare of the farmers.

District Plan at a Glance

The total budget requirements of proposed plan for agricultural and allied sectors under NADP are given below. The total budget requirement for implementing various programmes for different sectors in the next four years 2008-09 to 2011-2012 is Rs. 21682.15 lakhs in Tiruchirappalli district.

Budget on Various Sectors Proposed under NADP – Tiruchirappalli District

S. No.	Departments	2008-09	2009-10	2010-11	2011-12	Total
1	Agriculture	1184.440	1078.440	1131.840	1143.490	4538.21
2	Horticulture	3208.200	3163.900	1670.100	1676.100	9718.30
3	Animal Husbandry	483.350	180.310	194.910	136.320	994.89
4	Fisheries	354.200	12.000	12.000	5.500	383.70
5	Agricultural Engineering	191.800	229.830	248.150	162.290	832.07
6	Agricultural Marketing	157.750	887.72	874.71	909.26	2829.43
7	Public Works Department	*1901.000	0.000	0.000	0.000	1901.00
8	Special Projects	138.2797	58.2801	70.9566	232.8824	500.39
	Total	7619.02	5610.48	4202.67	4265.84	21697.99

*Year wise split up not furnished

Public Private Partnership in the Proposed Plan

The public private partnership can be encouraged in all sectors wherever possible which involve huge investments in promoting the enterprises. In Tiruchirappalli district, some of the important sectors like setting up of new plants regarding solvent extraction units, cold storage chains, seed industry, value added enterprises etc to meet both the domestic and international demands are proposed.

Expected Outcomes as a Result of Implementation of the Plan

Implementation of NADP funded schemes / projects in Tiruchirappalli district in different sectors, would definitely address the current issues and resolve the problems and fulfill the gaps identified in each sector. In turn, it would reflect on increasing employment, better products, increasing farmers' net income and finally it would improve the standard of living of the farmers and other stakeholders involved in various activities.

CHAPTER - I

INTRODUCTION

Concerned by the slow growth in the Agriculture and allied sectors, the National Development Council (NDC), resolved that a special Additional Central Assistance Scheme, named National Agriculture Development Programme (NADP/RKVY) be launched. The NDC also felt that Agriculture Development strategies must be reoriented to meet the needs of farmers and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture with a commitment to achieve four per cent annual growth in the agricultural sector during the 11th plan. To implement this, formulation of action plans by means of developing District Agriculture Plans (DAP) is recommended. It is of the view that such plans would also reflect the felt needs of the farmers and stakeholders. Such District Agriculture Plans aim at moving towards projecting the requirements for development of Agriculture and allied sectors of the district including animal husbandry and fishery, minor irrigation projects, rural development works, agricultural marketing schemes and schemes for water harvesting and conservation, etc. keeping in view the natural resources and technological possibilities in each district.. These plans thus, present the vision for Agriculture and allied sectors within the overall development perspective of the district apart from the financial requirement and the sources of financing the agriculture development plans in a comprehensive way.

Once the preparation of District level agriculture planning exercise is completed, the operationalization of such plan is essential. This follows the preparation of a comprehensive State Agricultural Plan (SAP) by integrating the above District level agriculture plans. The DAP therefore could integrate multiple programmes that are in operation in the district concerned, include the resources and activities indicated by the state, combine the resources available from the other programmes and finalize the plan. With this in mind, the District Agriculture Plan for each district of Tamil Nadu is prepared.

Methodology Adopted for Preparation of District Agriculture Plan

The preparation of the District Agriculture Plan (DAP) is thus an elaborate, exhaustive and iterative process and therefore every care is taken in ensuring that the DAPs are properly and comprehensively made. The task of preparing such District Agriculture Plan is given to Tamil Nadu Agricultural University, Coimbatore. In Coordination with scientists from TANUVAS and officials from Department of Agriculture, Horticulture, Agricultural Engineering, Marketing, Animal Husbandry and Fisheries, Seed certification PWD etc. the task is fulfilled. In what follows, the procedure adopted to prepare the plan is discussed.

Major Areas of Focus

- (a) Integrated development of major food crops like paddy, coarse cereals, minor millets, pulses, oilseeds;
- (b) Agriculture mechanization;
- (c) Activities related to enhancement of soil health;
- (d) Development of rainfed farming systems in and outside watershed areas, as also Integrated development of watershed areas, wastelands, river valleys;
- (e) Integrated Pest Management schemes;
- (f) Strengthening of Market Infrastructure and marketing development;
- (g) Strengthening of Infrastructure to promote Extension Services;
- (h) Activities relating to enhancement of horticultural production and popularization of micro irrigation systems;
- (i) Animal husbandry and fisheries development activities;
- (j) Study tours of farmers;
- (k) Organic and bio-fertilizers;
- (l) Innovative schemes.

Collection of Data

The preparation of district level plan involved basically collection of base line and bench mark details. So a template is developed to collect these particulars from the different districts (29 districts) of Tamil Nadu. In order to dovetail the ongoing schemes, with the action plans, the current ongoing agriculture programs were listed with their physical and financial performance and finally converged as the plan under National Agriculture Development Programme.

Formulation of District Planning Unit

To facilitate the involvement of local representatives in the preparation of plans, planning units in each district was formulated. The composition of the district planning units is as follows:

- a) Deans of other campuses / Heads of Krishi Vigyan Kendra or Research Station in respective district and one scientist from each campus
- b) Co-ordinating staff from Directorate of Centre for Agricultural and Rural Development Studies to represent each district
- c) Officials of Line Departments from Agriculture, Horticulture, Agricultural Engineering, Marketing, Animal Husbandry and Fisheries, Seed certification, Public Works Department etc. the task are fulfilled.

Sensitization Workshop

A series of Sensitization Workshop was conducted from 4.3.08 to 18.3.08 at TNAU Campus. The TNAU Staff from Krishi Vigyan Kendras and Research Stations, officials from line Departments viz., Agriculture, Horticulture, Agricultural Engineering and Tamilnadu Veterinary and Animal Sciences University attended the workshop. Also several meetings were held in Chennai for the National Agriculture Development Programme under the Chairmanship of Agriculture Production Commissioner and Secretary to Government of Tamil Nadu.

The objectives of National Agriculture Development Programme, preparation of District Agriculture Plans, State Agriculture Plan and Formulation of Project proposals under stream - I and stream - II were discussed in the workshop.

Preparation of Draft Action Plan and Presentation in District Collectors Meeting

Based on the baseline information and proposals, draft action plan was prepared and this was presented in the District Collectors Meeting held on 4.6.2008 under the chairmanship of District Collector, Tiruchirappalli. This meeting was attended by the scientists from TNAU, officials from line departments, the representatives of local bodies and wide coverage was given in the media also.

Finalization

The feedback received in the District Collectors Meeting was incorporated before finalization of the District Agriculture Plan.

CHAPTER - II

GENERAL DESCRIPTION OF THE DISTRICT

2.1 Introduction

Tiruchirappalli district is an important region in the State and had been a Centre of activities for many historical events from the days of the early Cholas. Rock Fort, Thayumana Swamy, Pillaiyar Temple, Teppakulam, the Nawab's palace, the Nadir Shah Mosque, Sri Rangam Temple, Thiruvanaikaval, Subramanyaswami Temple, Upper Anicut and Grand Anicut are some of the important monuments and temples reflecting the history, culture and traditions of the district.

Tiruchirappalli district is one of the important districts in Tamil Nadu and had a population of 25 lakhs as per 2001 census. In terms of urbanisation level, according to the composition of urban and rural population, Tiruchirappalli district ranked 10th among the other districts in Tamil Nadu.

2.2 Geographical Location

Tiruchirappalli district is located at the Central part of Tamil Nadu surrounded by Perambalur district in the north, Pudukkottai district in the south, Karur and Dindigul districts in the west and Thanjavur district in the east. It lies between 10°10' and 11°20' of the Northern latitudes and 78°10' and 79°0' of Eastern latitudes in the centre part of the Tamil Nadu. The general slope of the district is towards east. It has a number of detached hills, among which Pachamalai Hill is an important one, which has a peak up to 1015m, located at Sengattupatti Rain Forest.

2.3 Administrative Arrangement in the District

Tiruchirappalli district comprised of eight taluks viz. Thuraiyur, Lalgudi, Musri, Tiruchirappalli, Thottiyam M.nallur, Srirangam and Manapparai, which included 14 blocks, 408 Village Panchayats and 1590 Villages. This district consists of four municipalities namely Ponmalai, Srirangam, Thuraiyur and Manapparai. Tiruchirappalli is the only Municipal Corporation which is also the Head Quarters of the District. The talukwise and blockwise map of Tiruchirappalli district are shown in Figure 1 & 2 respectively.

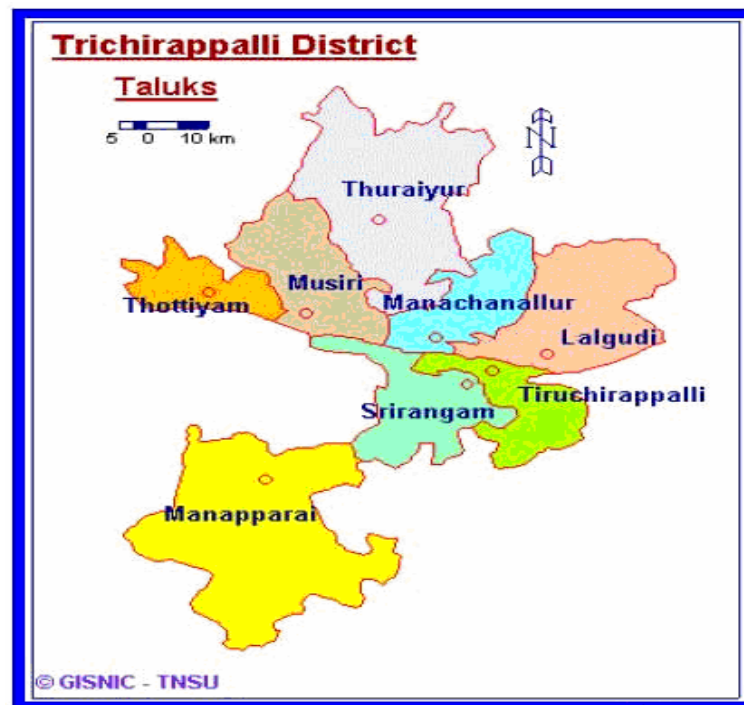


Figure 1. Map showing Taluks of Trichirappalli District

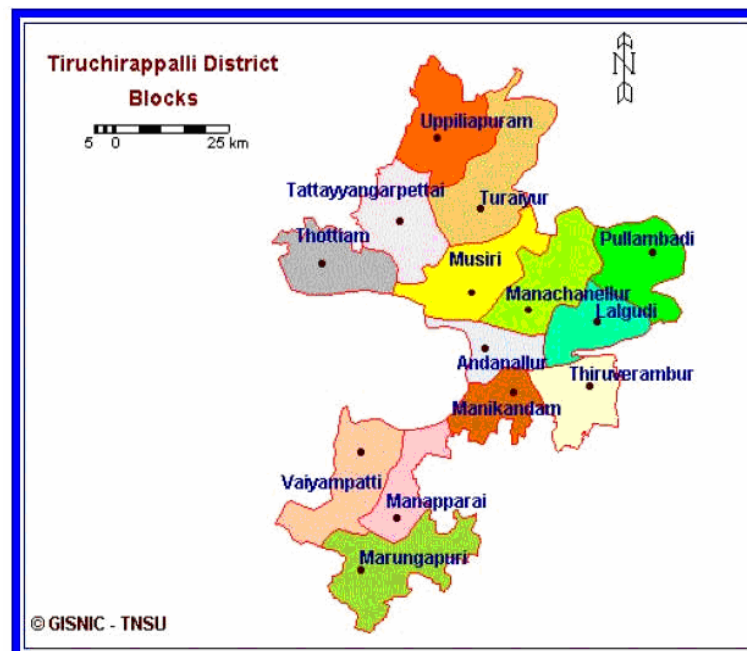


Figure 2. Map showing Blocks of Trichirappalli District

2.4 Meteorological Information

The variation of temperature through out the year exhibits hot and dry climate with high temperature and low degree of humidity.

The region experiences four main seasons:

Cool Months	-	December to February
Hot Months	-	March to May
Windy Months	-	June to August and
Rainy Months	-	September to November

Generally, the region has a long spell of hot climate with a short spell of rainy season and winter.

2.4.1 Temperature

Temperature is low during the month of January with average mean daily temperature of 28°C. The maximum daily temperature recorded during the hot season in the month of May was 42°C.

2.4.2 Rainfall

The district receives seasonal rainfall from September to December. The average annual rainfall during the period from 1991 to 1996 was 880.2 mm, of which major quantity of rain was received during the Northeast Monsoon period i.e. from October to December. Southwest monsoon generally sets in at the beginning of June and blows with great force till the end of August.

2.5 Demographic Details

The population of Tiruchirappalli district which was 10,72,756 in 1951, increased to 24,18,366 persons in 2001. The average decadal growth rate of population was 21.0 per cent between 1951 and 1991. Among the taluks, the maximum population was concentrated in the Tiruchirappalli taluk, which accounted for 45 per cent to the total population of the district.

The trend in death rate and infant mortality rate in the district was recorded as 12.09 and 48.30 per thousand persons in 1951 and this rate had declined to 5.71, and 23.18 per thousand persons respectively in 1991. The birth rate had decreased from 31.82 per thousand persons in 1951 to 17.21 per thousand persons in 1991, which showed improved medical facilities in the district.

Literacy level in the district was 77.9 per cent as per 2001 census, which is less than that of State literacy level. Male literate constituted 55.35 per cent and female literate constituted 44.65 per cent to the total population in the district is shown in Table 2.1.

Table 2.1 Demographic Details of Tiruchirappalli District

(Number)

S.No	Details	Total	Rural	Urban
1	Total population	2418366	1279204	1139162
2	Male Population	1208534	638617	569917
3	Female Population	1209832	640587	569245
4	Sex Ratio (per thousand persons)	1001	1003	999
5	Total Literates	1673478	787843	885635
6	Male Literates	926354	455246	471108
7	Female Literates	747124	332597	414527
8	Literacy Rate (per cent)	77.9	69.87	86.76

Source : Records of Directorate of Economics and Statistics, Chennai-6

2.6 Resources: Land Resources : Land Utilisation

The total geographical area of Tiruchirappalli district is 4,40,383 hectares, of which net sown area occupied 1,78,076 hectares and this accounted for 40 per cent of the total area in the district. Area under not available for cultivation accounted for 21 per cent of the total land in the district, i.e. 93,492 hectares (Table 2.2). Nearly 26 per cent of the area were classified under fallow lands and 6 per cent of the lands was under forest coverage. The remaining lands were classified under groves and orchards category.

Table 2.2. Taluk wise Land Use Pattern in Tiruchirappalli District -2005-06**(in Ha)**

Sl.No	Land Classifictaion	Tiruchirapalli	Srirengam	Manapara	Musiri	Thottiyam	Thurai yur	M.nallur	Lalgudi
1	Forest	234	45	8312	1660	77	23309	1555	1054
2	Barron and Uncutivable Land	1134	673	1424	2468	193	7482	811	1547
3	Land Put to non-agri use	13059	8841	14400	10168	6627	4762	5550	10902
4	Cultivable Waste	1850	1571	1559	3295	295	1348	1377	1465
5	Permanent pasture	54	19	210	147	80	2285	1182	1263
6	Area under not included in cultivable	1174	230	385	248	106	3007	351	620
7	Current Fallows	926	2376	18773	7422	4430	2933	4639	430
8	Other Fallows	5997	7472	16572	13517	972	3990	5181	9152
9	Net cultivable area	9560	14588	37385	27344	15022	31726	16503	33065

Source : Records of Office of Joint Director of Agriculture, Tiruchirapalli

Agriculture and Horticulture

Basically, Tiruchirappalli district is agriculturally rich due to the availability of fertile lands and presence of perennial rivers. Cauvery with numerous tributaries forms the basis of sustained paddy cultivation on an extensive scale throughout the year.

Cereals, Pulses and Oil Seeds are the major crops cultivated in the district (Table 2.3) and majority of the area is used for the production of cereals and pulses. In terms of productivity, paddy had increased from 1,887 kg/ha. in 1981 to 4,133 kg/ha. in 1996, due to better utilisation of seeds, improved methods of cultivation, intensive use of fertilizers and pesticides. The production of paddy had also decreased from 2,70,907 tonnes in 1981 to 236,740 tonnes in 2005-06 (Table 2.4).

**Table 2.3. Normal Area of Selected Crops in Tiruchirappalli District
(in Hectares)**

Sl.No	Crop	Season	Normal Area
1	Paddy	Kuruvai	8500
		Samba/Thaladi	58500
		Navarai	3000
		Total Paddy	70000
2	Millets	Irrigated	3940
		Rainfed	64260
		Total Millets	68200
3	Pulses	Irrigated	3620
		Rainfed	26380
		Total Pulses	30000
5	Cotton	Irrigated	830
		Rainfed	7385
		Total Cotton	8215

Table 2.3 Contd....**(in Hectares)**

Sl.No	Crop	Season	Normal Area
6	Oilseeds		
	Groundnut	Irrigated	7795
		Rainfed	18265
		Total	
	Gingelly	Irrigated	2115
		Rainfed	4420
		Total	6535
	Sunflower	Irrigated	1785
		Rainfed	1855
		Total	3640
	Castor	Irrigated	20
		Rainfed	1235
		Total	1255

Source : Records of Office of Joint Director of Agriculture, Tiruchirappalli

Among the Oil Seeds, coconut is the most important crop followed by groundnut and contributions of pulses are also marked at significant level in the district.

Table 2.4. Area & Production of Principal Crops in Tiruchirappalli District - 2005-06

S.No.	Crops	Area in Ha.	Production in tonnes
1	Paddy	79576	236740
2	Cholam	34475	12439
3	Cumbu	2663	851
4	Maize	9819	12411
5	pulses	5705	1782
6	Sugarcane	7485	648156
7	Cotton	3299	4847
8	Groundnut	17463	31422
9	Gingelly	425	262

Source : Records of Office of Joint Director of Agriculture, Tiruchirappalli

Major Crops and Varieties in the District

i) Crops

Paddy, Banana, Millets and other cereals are the principal crops in Tiruchirappalli district.

Important Food Crops	Paddy, Banaana,Cholam, Cumbu, , Red gram, Green gram, Black gram, Horse gram, Turmeric, Sugarcane, Mango, Tapioca, Groundnut & Gingelly
Important Non-food Crops	Cotton, Castor and Fodder Crops

The major ruling varieties in the principal crops revealed that (Table 2.5) farmers are adopting high yielding varieties such as ADT, IR and ASD in case of paddy followed by groundnut where in TMV and VRI are the promising varieties and in Pulses, TMV and Vamban are the ruling varieties in this district. However, in Cotton and Maize though high yielding varieties are cultivated, hybrids and Bt varieties are extensively adopted in this district.

Table 2.5. Major Crop Varieties in Tiruchirappalli District

Crop	Irrigated		Rainfed	
	HYV	Hybrid	HYV	Hybrid
Paddy	ADT 36, ADT 39, ADT 43, ADT 45, IR20, IWP, ASD-19	.....	.....	.....
Groundnut	.....	.....	TMV- 2, TMV -7, VRI - 2	.....
Maize	NK – 6240, CP – 818, Super – 900 gold, Pinnacle	.....	NK – 6240, CP – 818, Super – 900 gold	NK– 6240, CP – 818, Super– 900 gold, Pinnacle
Cotton	Surabi, MCU - 5	.....	RCH2, Rasi Excell Super	MRC6918, RCH2 – BT Rasi Excel Super
Pulses	.....	.....	TMV -1, VBN -2, VBN -3	

Source: 'G' Return Register, 2006-07, Joint Director of Agriculture, Tiruchirappalli district

2.6.2 Current Input use Level of Major Crops

The usage of seeds was found to be maximum in paddy, maize, cotton and sugarcane and minimum in pulses. The same phenomenon was observed in the case of fertilizers in all the crops under question. However the usage of plant protection chemicals was found to be minimum in all the crops under consideration.

Crop	Seed	Fertilizer	PP.Chemical
Paddy	Maximum	Maximum	Minimum
Maize	Maximum	Maximum	Minimum
Pulses	Minimum	Minimum	Minimum
Cotton	Maximum	Maximum	Minimum
Sugarcane	Maximum	Maximum	Minimum

Source: 'G' Return Register, 2006-07, Joint Director of Agriculture, Tiruchirappalli district

The consumption of chemical fertilizers are high (i.e. 68400 tonnes) as compared to Bio-fertilizers for agriculture production in the district (Table 2.6).

Table 2.6. Consumption of Chemical Fertilizers and Pesticides In Tiruchirappalli District - 2006-07

S.No	Details	Quantity in Tonnes
I	Fertilizers	
1	Nitrogenous	46564.86
2	Phosphatic(P ₂ O ₅)	25174.75
3	Pottasic (K ₂ O)	37454.57
4	Total (NPK)	109194.2
II	Agrochemicals	
1	Dust in M.T	38.183
2	Liquid in Lit	34783

Source : Records of Office of Joint Director of Agriculture, Tiruchirappalli

An analysis of the trend utilisation of fertilizers, pesticides and bio fertilizers suggest that the consumption of fertilizers had shown fluctuations, though not significant, between 1981 and 2005-06. However, use of chemical pesticides registered a continuously declining trend, while that of bio fertilizers is showing an upward trend.

Banana is the major fruit crop and the cultivation of land under plantation extends an area of 10136 hectares. Tapioca and onion covers more than 60per cent of the total area under vegetable crops. Chilies and coriander are the predominant crops under the spices. Nearly, 2358 hectares of lands are used for cultivation of spices in the district.

Soil

In Tiruchirappalli district, majority of the area is under Red Sandy soil and this soil type covers 18 per cent of the total area in the district. Black soil is distributed along the rivers of Cauvery and Ayacuts near big tanks, this soil type cover 14 per cent of the total area in the district. The other soil types like Clay, Red Ferruginous, etc., are occupying the remaining extent of land cover the district.

Out of the total area nearly 93678 hect. of lands are identified as soil problem area with Salinity and Alkalinity, which is 29per cent to total area of the district. More over, nearly 1,31,785 hect of lands are identified to be prone to soil erosion in the district.

The district has been provided with 463 percolation ponds in order to safeguard the agricultural practices in the region. Soil conservation practices have been undertaken in about 13934 hectares.

Forest Resources

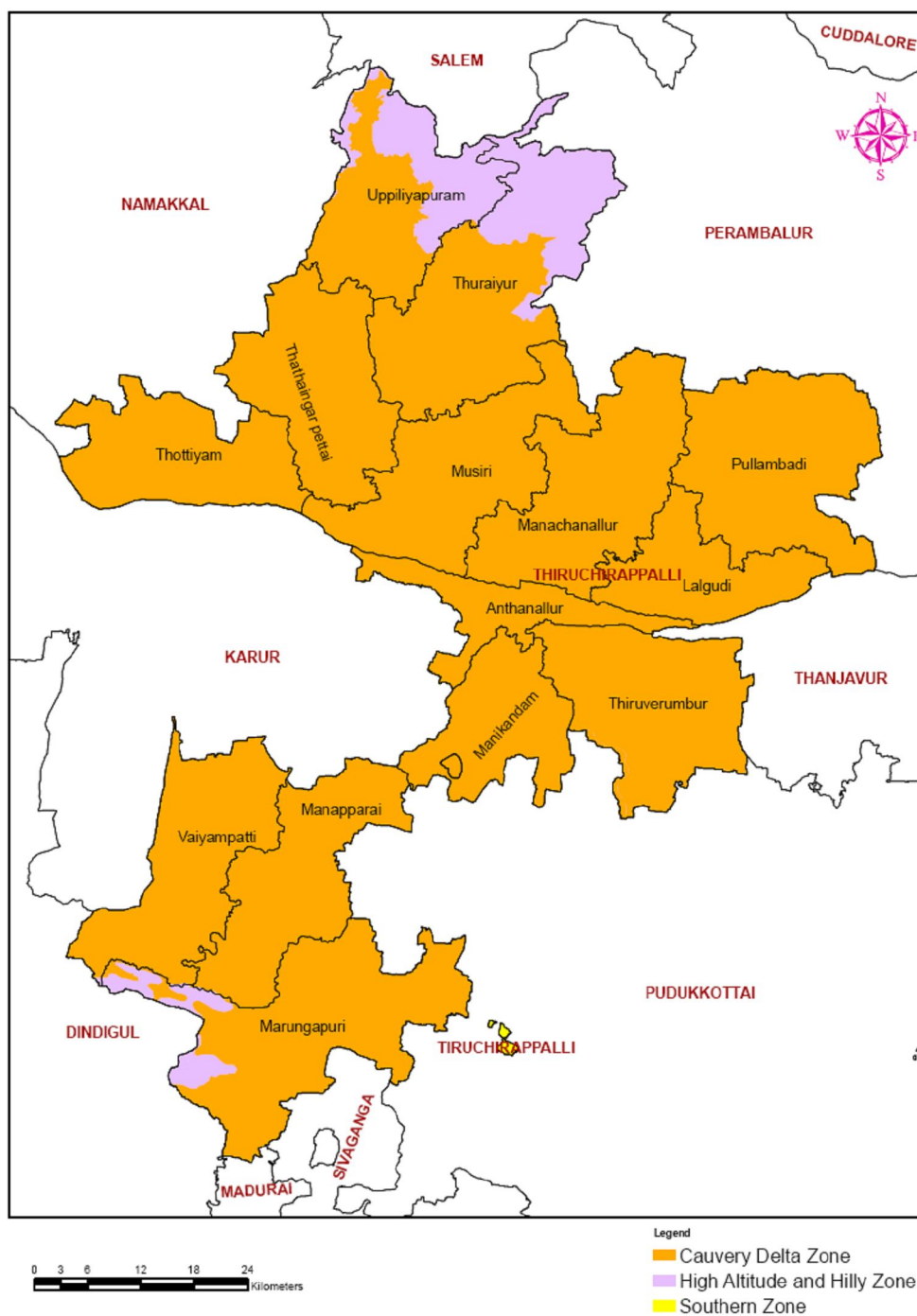
Tiruchirappalli district has a forest coverage area of 27254 hect. which is 6per cent to the total area of the district and the forest areas are classified under Reserve Forest Category. However, the Green cover classification, for the composite Tiruchirappalli district comprising the undivided Tiruchirappalli and Pudukkottai districts indicate that only 25.505 of the forest area are either under dense or sparse forest cover and nearly 35 per cent of the recorded forests are under plantations.

Distribution of Soil Types in Tiruchirapalli

Soil Description	Area (ha)
Deep, fine, mixed, Alfisols	42605.13
Moderately shallow, fine, mixed, Inceptisols	25527.65
Very deep, fine loamy, mixed, Inceptisols	24597.94
Very deep, fine loamy, mixed, Alfisols	24532.33
Deep, fine, montmorillonitic, Vertisols	23872.10
Deep, coarse loamy, mixed, Inceptisols	17591.93
Moderately shallow, fine, mixed, Alfisols	17290.74
Moderately shallow, clayey skeletal, mixed, Inceptisols	17119.17
Moderately deep, fine loamy, mixed, Alfisols	16442.03
Deep, fine, mixed, Inceptisols	14934.67
Moderately shallow, fine loamy, mixed, Alfisols	14560.06
Very deep, fine, montmorillonitic, Inceptisols	14307.61
Moderately deep, fine, mixed, Alfisols	13795.37
Moderately deep, fine, montmorillonitic, Inceptisols	13335.45
Moderately deep, fine loamy, mixed, Inceptisols	9549.42
Deep, fine loamy, mixed, Inceptisols	9367.91
Very deep, clayey skeletal, kaolinitic, Alfisols	8532.97
Shallow, clayey skeletal, mixed, Alfisols	8177.58
Deep, loamy skeletal, mixed, Inceptisols	7054.61
Deep, fine loamy, mixed, Alfisols	6959.15
Shallow, loamy, mixed, Inceptisols	6554.44
Moderately shallow, loamy skeletal, mixed, Inceptisols	6390.36
Shallow, clayey skeletal, mixed, Inceptisols	6137.05
Moderately deep, fine, mixed, Inceptisols	5591.75
Moderately deep, loamy skeletal, mixed, Alfisols	4970.60
Very shallow, loamy, mixed, Entisols	4599.63
Shallow, loamy, mixed, Alfisols	4446.20
Moderately shallow, loamy skeletal, mixed, Entisols	4443.13
Deep, fine loamy, mixed, Entisols	4431.68

Soil Description	Area (ha)
Very deep, fine, montmorillonitic, Vertisols	4358.14
Moderately shallow, fine loamy, mixed, Entisols	4259.16
Very deep, very fine, montmorillonitic, Vertisols	3380.94
Very deep, fine loamy, mixed, Ultisols	3344.29
Moderately shallow, fine, montmorillonitic, Inceptisols	2308.00
Shallow, clayey, mixed, Alfisols	2270.77
Deep, clayey skeletal, mixed, Alfisols	2189.55
Deep, fine, montmorillonitic, Inceptisols	2149.24
Moderately shallow, fine loamy, mixed, Inceptisols	1759.99
Deep, coarse loamy, mixed, Alfisols	1566.41
Shallow, loamy skeletal, mixed, Alfisols	1564.72
Shallow, loamy skeletal, mixed, Inceptisols	1367.65
Moderately deep, clayey skeletal, mixed, Alfisols	1314.50
Deep, very fine, montmorillonitic, Vertisols	1146.98
Very deep, fine, mixed, Inceptisols	1012.20
Very deep, fine, mixed, Alfisols	925.94
Deep, coarse loamy, mixed, Ultisols	851.71
Moderately deep, loamy skeletal, mixed, Inceptisols	792.61
Moderately shallow, clayey skeletal, mixed, Alfisols	591.33
Moderately deep, very fine, montmorillonitic, Vertisols	480.07
Very deep, fine, kaolinitic, Alfisols	326.16
Deep, fine, montmorillonitic, Entisols	262.06
Very deep, coarse loamy, mixed, Entisols	235.29
Moderately deep, coarse loamy, mixed, Inceptisols	148.75
Deep, fine, mixed, Mollisols	119.35
Moderately deep, fine loamy, mixed, Entisols	100.99
Very deep, fine silty, mixed, Entisols	79.06
Deep, sandy, mixed, Entisols	60.97
Shallow, clayey, mixed, Entisols	49.84
Very shallow, loamy skeletal, mixed, Inceptisols	24.79

AGROCLIMATIC ZONES OF THIRUCHIRAPPALLI DISTRICT



NORTH EASTERN ZONE

Districts of Thiruvallur, Vellore, Chinglepattu, Thiruvannamalai, Viluppuram, Cuddalore (excluding Chidambaram and Kattumannarkoil taluks), some parts of Perambalur including Ariyalur taluk and also Chennai.

NORTH WESTERN ZONE

Dharmapuri district (excluding hilly areas), Salem, Namakkal district (excluding Tiruchengode taluk) and Perambalur taluk of Perambalur district.

WESTERN ZONE

Erode, Coimbatore, Dindugal, Theni districts, Tiruchengode taluk of Namakkal district, Karur taluk of Karur district and some western part of Madurai district.

CAUVERY DELTA ZONE

Thanjavur, Thiruvarur, Nagapattinam districts and Musiri, Tiruchirappalli, Lalgudi, Thuraiyur and Kulithalai taluks of Tiruchirappalli district, Aranthangi taluk of Pudukkottai district and Chidambaram and Kattumannarkoil taluks of Cuddalore district.

SOUTHERN ZONE

Sivagangai, Ramanathapuram, Virudunagar, Tuticorin and Tirunelveli districts and Natham and Dindigul taluks of Dindigul district, Melur, Tirumangalam, Madurai South and Madurai North taluks of Madurai district and Pudukkottai district excluding Aranthangi taluk.

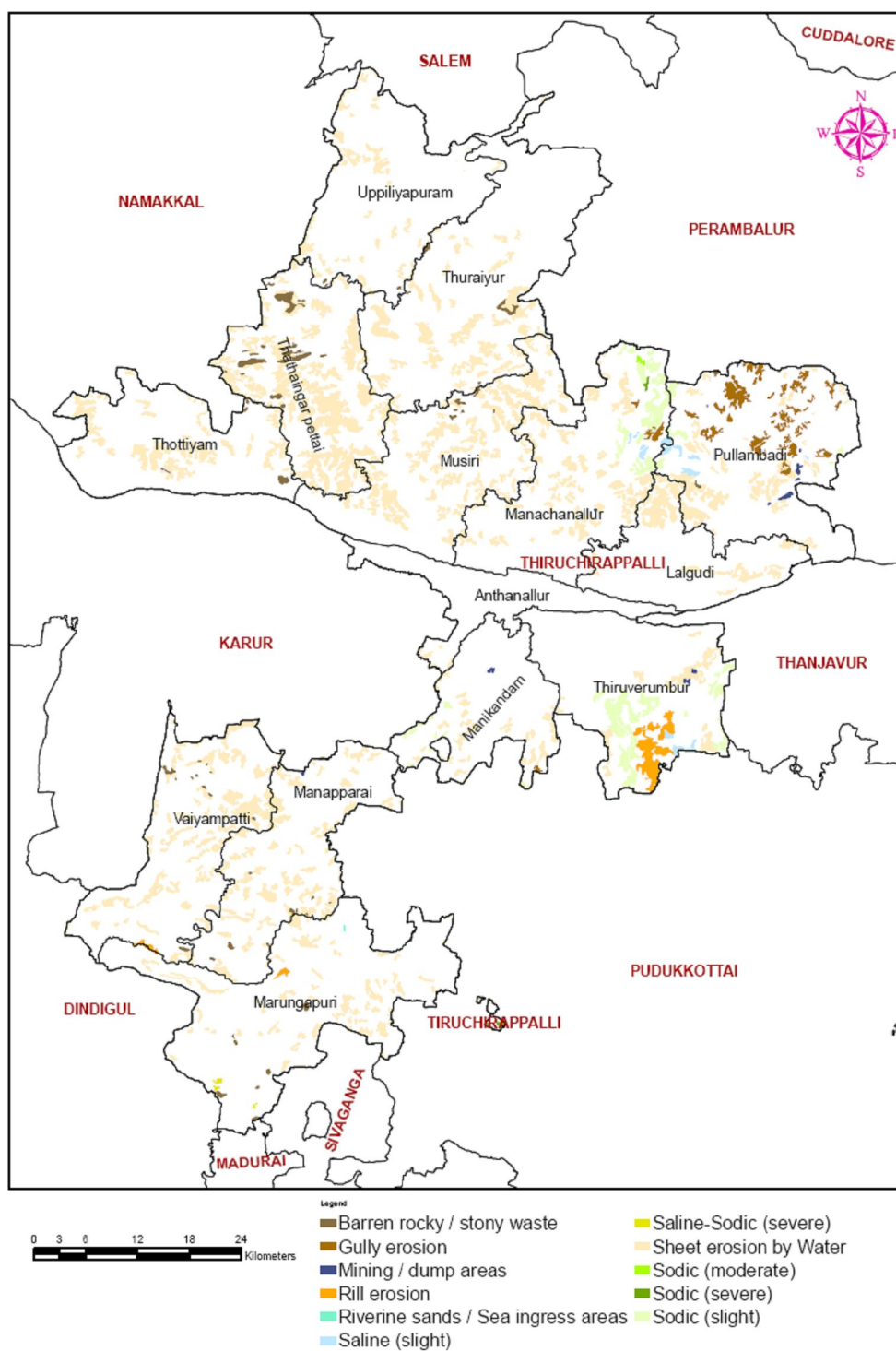
HIGH RAINFALL ZONE

Kanayakumari district.

HIGH ALTITUDE AND HILLY ZONE

Hilly regions, namely the Nilgiris, Shevroys, Elagiri-Javvadhu, Kollimalai, Patchaimalai, Anamalais, Palanis and Podhigaimalais.

LAND DEGRADATION MAP OF THIRUCHIRAPPALLI DISTRICT



EXPLANATION OF DIFFERENT LAND DEGRADATION CATEGORIES

Land degradation, in general, implies temporary or permanent recession from a higher to a lower status of productivity through deterioration of physical, chemical and biological aspects. The physical processes, which contribute to land degradation, are mainly water and wind erosion, compaction, crusting and water logging. The chemical processes include salinization, alkalization, acidification, pollution and nutrient depletion. The biological processes, on the other hand are related to the reduction of organic matter content in the soil, degradation of vegetation and impairment of activities of micro-flora and fauna.

Water Erosion

Water erosion is the most widespread form of degradation and occurs widely in all agro-climatic zones. The displacement of soil material by water can result in either loss of top soil or terrain deformation or both. This category includes processes such as splash erosion, sheet erosion, rill and gully erosion. The soil erosion is initiated when raindrops fall onto the bare soil surface. The impact of raindrops breaks up the surface soil aggregates and splashes particles into the air. On sloping land relatively more of the detached material will fall down slope resulting in runoff. This subsequently lead to different types of water erosion depending on the gravity of the problem, susceptibility of land and continuity of the process.

1. Sheet erosion

It is a common problem resulting from loss of topsoil. The loss of topsoil is often preceded by compaction and/or crusting, resulting in a decrease of infiltration capacity of the soil. The soil particles are removed from the whole soil surface on a fairly uniform basis in the form of thin layers. The severity of the problem is often difficult to visualize with naked eyes in the field.



2. Rills

When the surface runoff goes in the form a concentric flow, a tiny water channels are formed in the field. These are small rivulets of such a size that they can be worked over with farm machinery. Rills are generally associated with the cultivated lands and are visible in the ploughed soil after first heavy showers. One important feature of rills is that they do not occur at the same place repeatedly. This is a temporary concentric flow of runoff, which could vanish after ploughing the land.



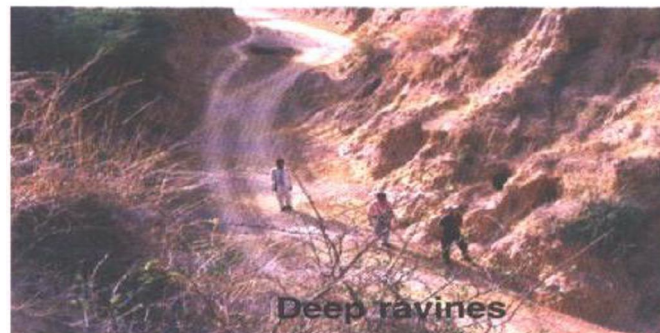
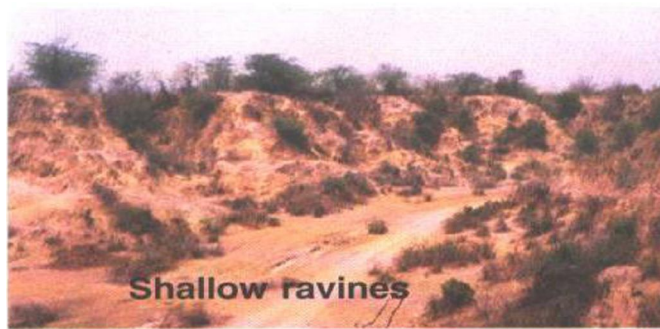
3. Gullies

Gullies are formed as a result of localized surface run-off affecting the unconsolidated material resulting in the formation of perceptible channels causing undulating terrain. If rills are neglected and the erosion continues for a long time, it develops in to gullies. They are commonly found in sloping lands, developed as a result of concentrated run-off over fairly long time. They are mostly associated with stream courses, sloping grounds with good rainfall regions and foot hill regions. These are the first stage of excessive land dissection followed by their networking which leads to the development of ravenous land.



4. Ravines

The word ravine is usually associated not with an isolated gully but an intricate network of gullies formed generally in deep alluvium and entering a nearby river, flowing much lower than the surrounding tablelands. Ravines are basically extensive systems of gullies developed along river courses. Further classification of this category is possible based on the depth, width, bed slope, frequency and morphology of bed material of the ravines. Based on the depth of the ravines, which has a characteristic manifestation on the satellite image, two subcategories are possible for delineation viz., shallow ravinous and deep ravenous lands.



Wind Erosion

It implies uniform displacement of topsoil by wind action. It can result in loss of topsoil and the deposition of the eroded material elsewhere leads to formation dune complexes. The risk of wind erosion is severe in the arid and semi-arid areas. It includes both the removal and deposition of soil particles by wind action and the abrasive effects of moving particles as they are transported. Not only can the wind remove topsoil from good farmland; it can result in additional damage by burying land, buildings, machinery, etc. with unwanted soil. It occurs when soil is left devoid of vegetation either because of poor rainfall to support any vegetal cover or loss of vegetation due to overgrazing. In the sand deposited areas with rainfall the sand gets stabilized partially or fully depending on vegetal cover it establishes.

During high winds the finer, and commonly more fertile, particles are swept high in the air and are sometimes carried for great distances as dust storms; while coarser particles are rolled or swept along on or very near the soil surface to be piled into depressions. The process is highly dynamic and requires careful evaluation of the site and process.

5. Sheet Erosion

It implies uniform displacement of topsoil by wind action as thin layers / sheets. During wind storms, the dry finer soil particles which could be suspended into air will be transported longer distances, while the heavier particles creeps on the surface and generally will be transported to a shorter distances. It may seriously influence the infrastructures (roads. railway lines. buildings. waterways, etc.). The uneven displacement of soil material by wind action leads to deflation hollows and dunes. The lifted medium to coarse soil particles may reduce the productivity of adjacent fertile land when they are deposited in the form of sand castings.



6. Stabilized Dunes / Partially stabilized Dunes

Depending on the rainfall and protection available from grazing, the bare sand dunes gradually establishes vegetal cover thus making them to get stabilized. In partially stabilized dunes, the erosion / deposition will be still active to some extent. When they established a good vegetal cover either in the form of grasses, shrubs and scrubs, they get stabilized and the erosion / deposition activity will be at minimal. By virtue of vegetal cover and physiography, they are discernible on satellite imagery.



Stabilized sandune



Partially stabilized sanddune

7. Un-stabilized dunes

Due to their inherent vulnerability because of lack of vegetal cover, these are quite active during summer season. The sand starts moving and engulfing the adjoining agricultural lands, engineering structures and demands immediate attention for their stabilization. The unstabilized sand dunes changes their location and shape from season to season and hence they are often called shifting dunes.



Water logging

Water logging is considered as physical deterioration of land. It is the affected by excessive ponding / logging of water for quite some period and affects the productivity of land or reduces the choice of taking crops.

8. Surface Ponding

This category addresses the water logging caused by flooding of river water, submergence by rainwater and human intervention in natural drainage systems that adversely affect the natural drainage, where the water stagnates for quite a long time. Depending the number of crops it affects it has been sub-divided into two severity classes, slight- affecting one crop and moderate – affecting more than one crop. Flooding of paddy fields is not included as it is a unique cultural practice rather than degradation of soil.

Waterlogging may be seasonal or permanent. Seasonally waterlogged areas are those low lying or depression areas that get saturated due to heavy rains and are normal in post-monsoon season. Permanent waterlogged areas are those areas where there is continuous surface ponding of water or soil profile is saturated for one or more seasons.

9. Sub-surface Water logging

If the water table is within 2 m from the surface it adversely affects crop by virtue of saturating the root zone due to capillary rise. These areas are potential threat to get surface ponded in due course of time, if the water accumulation continues. The sub-surface waterlogged areas can be reclaimed with little ease.

10. Salinization / Alkalization

Salinization can result from improper management of canal irrigation water resulting in the rise of water table and consequent accumulation of salts in the root zone in arid, semi-arid and sub humid (dry) conditions and ingress of sea water in coastal regions and/or use of high-salt containing ground water. They also become saline when soils have developed on salt-containing parent materials or have saline ground water. The soils with EC more than 2ds/m in vertisols and $>4\text{ds/m}$ in non-vertisols was considered as saline in the present project. Increase in soil pH beyond 8.5 results in sodicity or alkalization that result in increase of exchangeable sodium percentage in soils (> 15). Based on the type of problem, it has been divided into saline, sodic and salinesodic.



Salinity



Sodic

11. Acidification

pH is one of the most-important soil property that affects the nutrient uptake by plants and there by influencing the crop productivity. Any soil processes or management practices which lead to buildup of hydrogen cations (also called protons) in the soil will result in soil acidification. It also occurs when base cations such as Calcium, Magnesium, Potassium and Sodium are lost from the soil leading to high hydrogen ion concentration. This results in decrease of soil pH below 6.5. It occurs in laterite regions, coastal regions upon drainage or oxidation of pyrite containing soils.

If the pH is 4.5 to 5.5 then they are called *moderate* and if the pH is < 4.5 , then they are mapped under *severe* category. The soils respond to lime application, which results in improvement of crop productivity.



Glacial

These are the areas under perpetual snow covered areas confined to Himalayan region. The type of degradation includes frost heaving and snow covered areas.

12. Frost Heaving

Frost heaving is defined as a process in glacial and periglacial environment where intense frost action and freezing of water evolves peculiar forms of rock, regolith and soil. The water crystallizes to ice below the surface horizon leading to micro-relief variations on the surface. This process affects the germination and root growth of several crops there by limiting the productivity of land.

13. Snow covered areas

The area covered with permanent snow cover will limit any vegetation to come up in these areas leading to a desert like conditions. These areas are generally associated with very high mountainous regions. The glacier regions are also included in this category.

Degradation due to anthropogenic factors

Human economic activities like mining, industries etc., have also contributed to decreased biological productivity, diversity and resilience of the land. Mining, brick kiln activities and industrial effluent affected areas are included under this type of degradation.

14. Industrial effluent affected areas

These are areas where the human activity is observed in the form of industry along with other supporting establishments of maintenance. Heavy metallurgical industry, thermal, cement, leather, petrochemical, engineering plants etc., are included under this. These are the lands which have been deteriorated due to large scale industrial effluent discharge. These areas are seen around urban areas and other areas where industrial activity is prominent.

15. Mining and dump areas

These are the areas subjected to removal of different earth material (both surfacial and sub-surfacial) by manual and mechanized operations. Large scale quarrying and

mechanizations results in mining and mine dumps. It includes surface rocks and stone quarries, sand and gravel pits, brick kilns, etc. Mine dumps are those areas where waste debris is accumulated after extraction of required minerals. Generally these lands are confined to the surroundings of the mining area.



16. Brick kiln areas

These areas are associated with human activity and are generally seen in the vicinity of urban activity. The areas include brick kiln per se and area dugged for making bricks.



Others

Some of the degraded lands, which could not be included in the above type of land degradation, are included here. They are mass movement/ mass wastage, barren rocky / stony waste areas.

17. Mass movement/ Mass wastage

Landslide areas are mostly included under mass movement/ mass wastage type of land degradation. On sloping land when soil is saturated, the weight of the soil may exceed the forces holding the soil in place. Under such circumstances mass movement in the form of landslides or mudflows may occur. On steep slopes this mass movement may be very rapid, involving the movement of large volumes of soil, usually on an isolated event and localized basis. In geologically recent and unstable mountain areas, such as the Himalayas, and areas prone to seismic and volcanic activity, landslides may be natural phenomena. This class also includes the areas with mass wastage in terms of foothill depositions like scree and bazada zones, where the coarse material like sand and pebbles gets deposited because of erosion in upper catchment area. However, their frequency and severity may greatly increase following destruction of the natural vegetative cover by logging and/or clearing for cultivation

18. Barren rocky / stony areas

Barren / rocky / stony areas are the rock exposures of varying lithology often barren and devoid of soil and vegetal cover. They occur in hill forests as openings or as isolated exposures on plateau and plains. These can be easily delineated from other type of degraded land because of their severe nature of degradation and typical spectral signature.



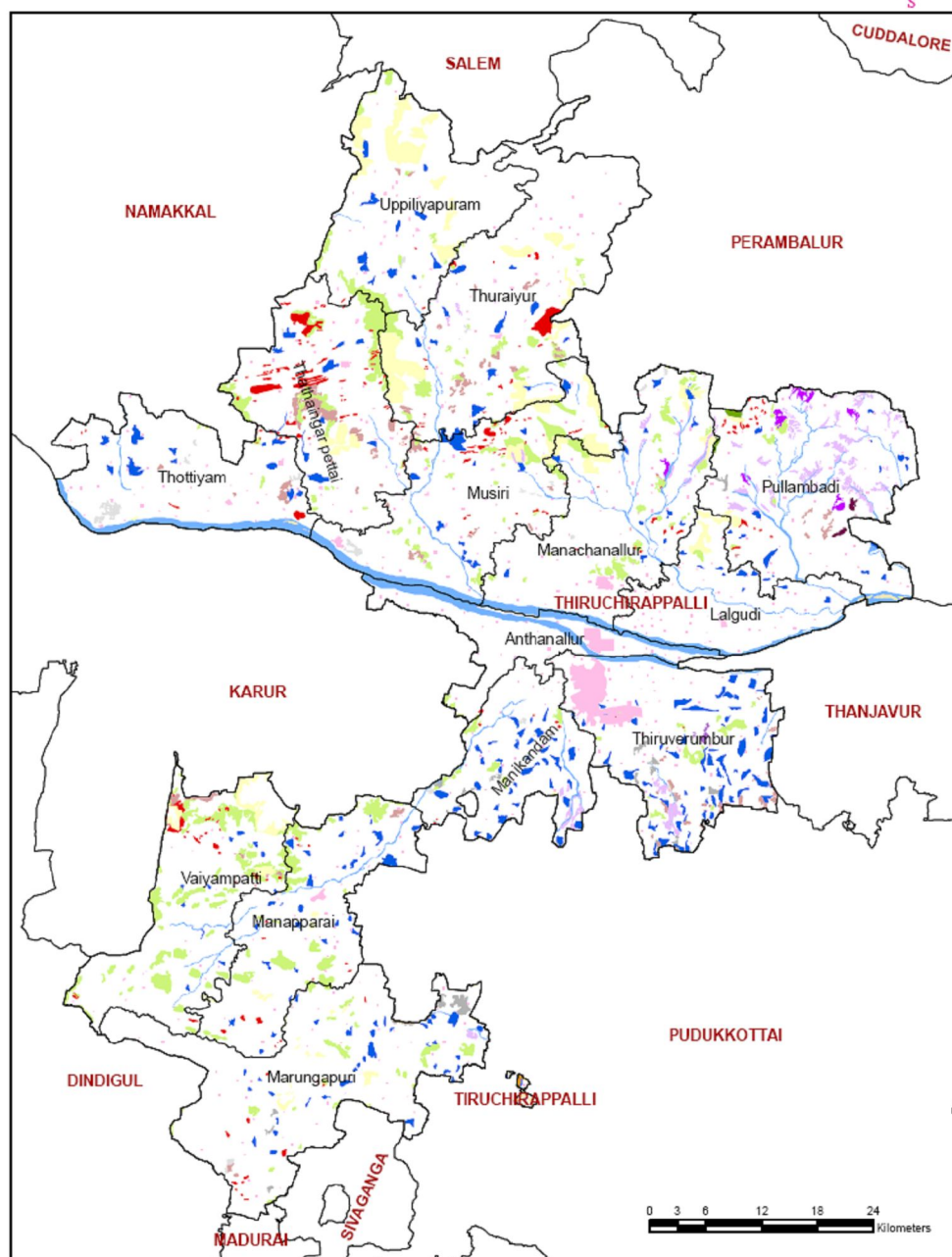
19. Miscellaneous

This includes riverine sand areas, sea ingress areas mainly with sand deposition excluding the sandy areas of desert region.



Sea Ingress areas

WASTELAND MAP OF THIRUCHIRAPPALLI DISTRICT



Legend

- | | | |
|---|-----------------------------|--|
| ■ Agriculture Land inside Notified Forest | ■ Land Without Scrub | ■ Sands (tank/river bed) |
| ■ Barren Rocky/Stony waste area | ■ Land with Scrub | ■ Sands -Flood Plain |
| ■ Degraded Forest -Scrub Domin. | ■ Mining wastelands | ■ Settlement |
| ■ Gullied and/or ravinous -Medium | ■ River | ■ Steep sloping area |
| ■ Gullied and/or ravinous -Shallow | ■ Saline/Alkaline -Moderate | ■ Water bodies (Ponds/Tank/ Reservoir) |
| ■ Industrial wastelands | ■ Saline/Alkaline -Slight | ■ Waterlogged and marshy -Permanent |



Generated at
Remote Sensing and GIS Centre, Tamil Nadu Agricultural University, Coimbatore - 641003.

WASTELAND CLASSIFICATION

Culturable Wastelands

Land which is capable or has the potential for the development of vegetative cover and is not being used due to different constraints of varying degrees is termed as culturable wastelands. Culturable wastelands comprise the following categories.

- i. Agricultural Land inside notified forest:** Lands put under cultivation within the restricted forest areas.
- ii. *Degraded forest – Scrub domination:*** Lands as noticed under the Forest Act and those lands with various types of forest cover, in which vegetative cover is less than 20% are classified as degraded forest land. Among the vegetative types scrubs and thorny bushes are dominated species.
- iii. *Degraded land under plantation crops:*** This includes degraded lands containing plantations inside and outside of the notified forest area.
- iv. *Degraded pastures / grazing land:*** All those grazing land in non-forest areas, whether or not they are permanent pastures or meadows, which have become degraded due to lack of proper soil conservation and drainage measures fall under this category.
- v. *Gullied / ravenous land:*** The gullies are formed as a result of localised surface run off affecting the friable unconsolidated material resulting in the formation of perceptible channels resulting in undulating terrain. The gullies are the first stage of excessive land dissection followed by their networking which leads to the development of ravenous land. The word 'ravine' is usually associated not with an isolated gully but a network of gullies formed generally in deep alluvium and entering nearby river flowing much lower than the surrounding table lands. The ravines then are extensive systems of gullies developed along river courses.

- vi. ***Land with or without scrub:*** This is the land which is generally prone to degradation and may or may not have scrub over. Such land occupies topographically high locations in the respective systems. This excludes hilly and mountainous terrain.
- vii. ***Water-logged and marsh:*** Surface water-logged land is that land where the water is near the surface and water stands for most of the year. Marsh is a land which permanently or periodically inundated by water and is characterised by vegetation which includes grasses and reeds.
- viii. ***Salt Affected Lands (Saline / Alkaline):*** The salt affected land is generally characterised as the land that has adverse effects on the growth of most of the plants due to the action or presence of excess soluble salts or excess exchangeable sodium. The saline soils have more of soluble salts with electrical conductivity of more than 4 dSm-1. Alkali land has an exchangeable sodium percentage (ESP) of above 15 which is generally considered as the limit between normal and alkali soils. The predominant salts are carbonates and bicarbonates of sodium.
- ix. ***Sands :*** Sandy areas are those areas which have stabilized accumulation of sand, in situ or transported, in tank / river bed, coastal, riverine or inland areas.
- x. ***Mining / industrial Waste lands:*** These are lands where large-scale mining operations bring about the degradation of land and resultant mine dumps.

Unculturable Wastelands

Lands which cannot be developed for vegetative cover are defined as unculturable wastelands. Unculturable wastelands are divided into:

- i. Barren rocky / stony wastes / sheet rock area.
- ii. Steep sloping area – Land with very steep slopes (greater than 35 degrees); Prone to erosion and mass wasting (Landslides).

2.7.1 Forest Type

The following types of forest are predominantly identified in the Tiruchirappalli district 1. Tropical Dry Deciduous forest and 2. Tropical Thorn forest.

The tropical dry deciduous forests had an area of 14,190 hectares and occupied the forest blocks starting from the altitudes of 350 m. above MSL, especially in the Reserve Forests of Thuraiyur and Manapparai taluks, and also in the slopes of Veeramalai area. The tropical thorn forest extended over an area of 13,055 ha. ones and were basically seen in the forest areas of Manapparai and Thuraiyur taluks.

2.7.2 Flora and Fauna

The common varieties of animals identified in the district were Indian Cobra and Vipers, which were mainly found in the forest area of Veeramalai and Semmalai R.F in Manapparai area. The species were classified under rare animals (Reptiles) and vulnerable category. Indian civet and Pangolin were identified in all the R.F in Thuraiyur and Manapparai taluks. Indian Gaur (Bison), Panther, Slender Lories were categorised under endangered animals and mostly found in all the R.F area of Tiruchirappalli district.

With regard to flora, no prominent varieties were observed in the district. One species under rare category and one under Endangered category have been identified in the district. Tamarind and bamboo were the chief trees of the district and found in all reserve forest areas of the district.

2.8 Water Resource

The Cauvery river is the most important river in the district and the tributaries of Cauvery, i.e. Coleroon river, Koraiyar river, Ariyar, Malattar channel, Uyyakondan channel also drain in this district.

i) The Cauvery and Coleroon River

Cauvery is one of the major rivers in South India and Tamil Nadu, which flows towards east. The Cauvery Basin extends over an area of 81155 Sq.km, which spread across the States of Kerala, Karnataka and Tamil Nadu.

In Tiruchirappalli district, the river splits into two branches, the northern branch being called the Coleroon (Kolidam) and the southern branch is called river Cauvery. The total length of the river in this district is about 125 Kms, and the area of river basin extends about 17,200 hectares of land. Ponnaniar, Uppamodai and Siddhayalli reservoir are mainly used for irrigation purpose.

ii) Koraiyar River

Koraiyar River rises from Karuppur Reddiarpatti hill R.F at an elevation of about 500m. The river carries water from catchment areas of Puttanattam, Viralimalai, Malaikudippatti, Tennalur, Illupur, Kalluppatti, Arur, Kulakkattai gudi, Keeranur and Thuvrankurichi. The catchment area of river is 632 sq.km and the length is 75 km. The entire catchment of the river is covered by a large number of tanks.

iii) Ariyar River

Ariyar River rises in Manapparai area from Pallivelli Mukku at an elevation of about 700m. The river carries water from Kadavur and Semmalai reserved forests, Vairampattai, Kulattur and Manapparai areas. The catchment area of the river is about 832 Sq.km.

iv) Upper Anicut

A dam known as upper Anicut was constructed in 1836 at a place where the Cauvery branches off into two at the west end of Srirangam, to regulate the flow of water in the Cauvery and Coleroon rivers. In its original form, the upper Anicut consisted of a simple masonry dam of 230 meters in length divided into three parts.

Below the Grand Anicut, the Cauvery further splits into two, one being called the Cauvery and the other, the Vennar River. These channels are utilised as the main canals for irrigation.

v) Grand Anicut

Karikala Cholan, an early Chola King, constructed the grand Anicut. It is situated on the northern bank of Cauvery about 16 km east of Tiruchirappalli town and mainly used for irrigation purpose. With regard to water spread area, 75 system tanks and 99 seasonal/ rainfed tanks were found to exist and then covered 5751.14 ha. and 9164.16 ha. respectively in the district.

In Tiruchirappalli District 1,86,778 ha. (42.41 per cent to the total geographical area) of land are under irrigated area .The major source of irrigation is through wells and Canals (Table 2.7).

Table 2.7. Details of Sources of Irrigation in Tiruchirappalli District

Sl.No	Details	Length / No	Area Irrigated (in hectares)	
			Net	Gross
1	Major rivers-Canals (Delta)	440/98	51012	60940
2	Small rivers-Canals	54/37	3025	3883
3	Lakes & Tanks	1767	20422	21144
4	Open wells	63177	45013	51668
5	Tube-wells	2329	4294	4891
6	Bore-wells	45	102	117
7	Filter points	605	511	746
	Subsidiary Irrigation Sources			
1	Tube-wells	132	613	863
2	Filter points	1144	1362	1570
3	Open wells	5440	1886	3184

The presence of canal irrigation is found in all blocks of Tiruchirappalli with the exception of Thuraiyur, Marungapuri, and Thathaiyangarenpet blocks. There is no incidence of drought and cyclone registered in district with the exception of flood in 1989 – 90 to 1992-93 and in 1996.

2.9 Biological Resources

Tiruchirappalli district is located in the inland area of Tamil Nadu. Therefore, the significance of marine fisheries are completely absent in the district. The scope for fish production in this district fully depends on inland fisheries and the same extended to an area of 117.35 hectares. The total quantity of fish production was 7,088 tonnes in the year 1993, which had decreased to 3,190 tonnes in the year 1996, mainly due to exhaustion of resources in inland water bodies. It is seen that inland fish production and fish fingerlings production had shown considerable fluctuations.

2.10 Energy Resources

No power plant is located in Tiruchirappalli district. The Mettur Hydro Electric power meets the electricity needs of the district. The power distribution in the district is made through the electricity sub-stations at Tiruchirappalli.

The consumption of electricity was the highest in the case of Domestic sector, which accounted for 55 per cent to the total consumption and Agriculture was the next important category registering 16 per cent of power consumption and 17 per cent of the electricity were utilised by industrial and commercial purposes. Streetlights and other purposes consumed 12 per cent of electricity in the district. According to the electricity department sources, all the villages in the district were electrified. Data on non-conventional energy sources were not available.

2.11 Infrastructure : Urbanisation

Urbanisation in Tiruchirappalli district registered an increasing trend. As per 2001 census, the district had an urban population of 11.39 lakhs which accounted for nearly 40 per cent total population and distributed in Tiruchirappalli Corporation, four municipalities and 14 Town panchayats in the district. The growth of urban population had gradually increased from 38.64 per cent in 1981 to 40.38 per cent in 2001. Tiruchirappalli Corporation is the largest urban centre followed by Srirangam.

The density of population in Tiruchirappalli district had increased in both rural and urban areas. The over all density of population in the district had increased from 432 persons /sq.km in 1981 to 535 persons/sq.km in 1996. Similarly the density of urban population had also increased from 2,779 persons/sq.km in 1981 to 3,601 persons/sq.km in 1996. The rural population density also increased from 432 persons/sq.km in 1981 to 535 persons/sq.km in 1996. This shows the widespread population distribution in both rural and urban areas.

2.12 Infrastructure Services and Environmental Status

The protected water supply system from ground water covered 75 per cent of the population in the urban areas. The present supply system is 100 LPCD in Tiruchirappalli Corporation, 70 LPCD in Municipalities and 65 LPCD in Town Panchayats. There is no problems identified with supply of drinking water in the district.

The estimated sewerage generation was around 75 MLD and it is being disposed into the water body and land without any treatment, though part of Tiruchirappalli corporation was provided with under ground sewerage and a open treatment facility in oxidation ponds, such systems were lacking in other Municipal town and other Town Panchayats. Solid waste generation in the district was 660 tonnes/day of which nearly 80 per cent of the waste was being collected and nearly 1,961 workers were engaged in the existing solid waste collection system either directly or indirectly. Existing garbage collection workers ratio was estimated around 2.8-persons/1000 population in corporation and 2.2-persons/1000 population in municipalities and 1.1 persons/1000 population in town panchayats.

Water pollution was a major public health hazard in the Tiruchirappalli district. A major portion of the trade effluents and sewage were discharged into open drains leading to Cauvery river through several irrigation channels were polluting the groundwater in the urban areas. Apart from this, a large number of commercial establishments,

multistoried shopping complexes, Cinema theatres, hotels and hospitals, discharge the effluents without any treatment into nearby water bodies and open land areas thereby creating unhealthy situation.

In Tiruchirappalli district, there were no villages identified under coverage of problem with respect to drinking Water supply due to presence of ground water availability . With regard to occupied residential houses, about 7,79,543 houses were registered in the year 1981, which had increase to 9,62,076 in the year 1991. Data pertaining to the Water supply system and toilet installation were not available and 1,15,443 families were identified below the poverty line.

2.13 Transportation

Tiruchirappalli district is well connected with major cities in Tamil Nadu by rail and road network. By virtue of very central location, Tiruchirappalli City has become the meeting place of transportation lines (both road and rail) from north to south and east to west while travelling across the State.

Tiruchirappalli, Srirangam and Goldenrock are part of Tiruchirappalli urban agglomeration and also developing as regional metropolis, extending its influence over the entire Tiruchirappalli and Thanjavur districts. The influence of Tiruchirappalli extends upto Cuddalore, Villupuram, Vellore, Tiruchirappalli , Erode, Dindigul and Pudukottai Districts.

Tiruchirappalli City is one of the progressive industrial areas of the state. Tiruchirappalli, Manapparai, Srirangam (part of Tiruchirappalli), Thuraiyur and Ponmalai (part of Tiruchirappalli) are the important urban centres in the district and are well connected by roads. The important roads traversing in the region are as follows.

- The National Highway No.5 (Chennai – Dindigul N.H.)
- The Madurai road (S.H)

- The Pudukottai road (S.H)
- The Thanjavur road (S.H)
- The Tiruchirappalli road (S.H)
- The Chennai road (S.H)
- The Karur road and
- The Dindigul road.

The other important roads are the bye-pass roads, which connect Chennai and Madurai road along the eastern side of the city boundary and Kumbakonam road along the banks of the river Cauvery.

Tiruchirappalli district has a well-developed system of communication network, nearly 105.4Kms of National Highways and 172.03Kms of state highways were being maintained by highways department. The Local bodies maintain 2816.92Kms. of roads under the classification of major and other district roads. There were 100 major bridges, 336 minor bridges and 4310 culverts as on 1996 in this district.

The vehicle population growth in the district indicated that the number of vehicle had increased from 23,276 in 1981 to 28,533 in 1996. Among the vehicles, two wheeler alone accounted for 63 per cent of the total number of vehicles in the district.

2.13.1 Railways

Tiruchirappalli is an important railway junction and is also a divisional head quarters of the Southern Railways. There are four metre gauge lines radiating from Tiruchirappalli junction Via Main line, a broad gauge line to Chennai, Madurai and Rameswaram and a broad gauge line linking Erode, Coimbatore and Bangalore. Tiruchirappalli junction is the main station for passenger as well as goods movement.

2.13.2 Airways

Tiruchirappalli has airport facility and located on the Pudukottai road at a distance of 6 km from Tiruchirappalli railway junction. Airline services are being operated to Chennai, Madurai, Thiruvananthapuram and Sri Lanka sectors.

2.14 Industrial Development and Environmental Status

Sugar Factory, Distillery, Tannery, Engineering Units, Cement Industries and Automobile Service units are the predominant industries in the district. SIDCO had established three industrial estates and SIPCOT had established one industrial complex in the district. In terms of discharge of Industrial effluents by the industries, Tamil Nadu Pollution Control Board has identified three major industries in red category, viz.,

1. Tiruchirappalli Distilleries and Chemicals.
2. Cauvery sugars and Chemicals.
3. M/s.Adams Chennai manufacturing company.

CHAPTER - III

SWOT ANALYSIS OF THE DISTRICT

Introduction

The Tiruchirappalli district has its own merits and demerits in terms of resources availability and also the constraints. The detailed analysis of the district in terms of Strength, Weaknesses, Opportunities and Threats are given for the better understanding and to improve the district in future. The information collected through primary and secondary sources was subjected to SWOT Analysis by the District Core Team, Scientists, Anbil Dharmalingam Agricultural College, Tiruchirappalli and Centre for Agricultural and Rural Development studies, Tamil Nadu agricultural University Coimbatore. The outcome of the SWOT analysis has been tabulated under specific heads like Management of:

1. Natural Resources
2. Social Economy
3. Infrastructure
4. Farming Systems
5. Agricultural Production System
6. Horticultural production System
7. Animal Husbandry and
8. Plantations and they are furnished in Table 3.1 through Table 3.9.

Table 3.1 Management of Natural Resources

S. No	Particulars (NRM, INM, and IPM)	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Rich Bio-diversity	Y	Y	Y	Y
2	Rich fertile soils available with option to grow variety of crops and plants	Y	Y	Y	-
3	Climate and soil highly suitable for growing quality fruits(mango, gauava, banana etc.)	Y	Y	-	—
4	Easy availability of ground water	Y	Y	-	-
5	Adequate rainfall	Y	Y	-	-
II	Weaknesses				
6	Degradation of soil fertility due to continuous cropping without adequate soil health management practices.	Y	Y	Y	Y
7	Obstruction of natural drainage system	Y	-	-	-
8	Incidence of flash floods	-	-	-	-
9	Infestation of weeds especially- <i>Phalaris minor</i> and <i>Parthinium spp.</i>	Y	Y	Y	Y
10	Spurious and adulterated marketing of agricultural inputs.	Y	Y	Y	Y
11	Water logging	Y	-	-	-
III	Opportunities				
12	Unexplored bio-diversity with respect to vegetables and pulses.	-	Y	Y	-
IV	Threats				
13	Injudicious use of agricultural chemicals, polluting ground aquifers.	Y	Y	-	-

Table 3.2 Management of Socio-Economy

S. No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Cheap and skilled labour force locally available.	-	-	Y	Y
2	Large number of women SHG's	Y	Y	Y	Y
3	NGO network available for almost all the areas of farmer's interest.	-	-	Y	Y
II	Weaknesses				
4	Large number of small and marginal land holdings.	Y	Y	Y	Y
5	Land consolidation not yet initiated seriously in the district.	Y	Y	Y	Y
6	Large number of absentee landowners	Y	-	Y	-
7	Low literacy in rural areas.	Y	Y	Y	Y
8	Exploitation by rural moneylenders	Y	Y	Y	Y
9	Alcoholism most common in rural areas.	Y	Y	Y	Y
10	High migration rate of local labour force.	-	-	Y	Y
11	Deep imprint of class conflicts on rural psyche against development.	Y	Y	Y	Y
III	Opportunities				
12	Knowledgeable farming community and willingness to go for diversification for better and sustainable income.	Y	Y	-	-
13	Immense scope for opening Agri-Clinics in light of unemployment agricultural and allied graduates and demand for their services in rural areas.	Y	Y	-	Y
14	Skilled and educated work force available.	Y	Y	-	-
15	Tiruchirappalli being the District Headquarters has large pool of technical manpower.	Y	Y	Y	Y
IV	Threats				
16	Non availability of labour force at peak agricultural season.	Y	Y	-	-
17	Immense biotic pressure, urbanization, unplanned infrastructure, development interfering with natural resource management.	Y	Y		
18	Large-scale migration of rural work force.	Y	Y	Y	Y

Table 3.3 Management of Infrastructure

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Well connected to most parts of the country by Rail/ Road	Y	Y	Y	Y
2	Strong R and D network present for Human Resource Development.	Y	Y	Y	Y
3	All season connectivity to district headquarters.	Y	Y	Y	Y
II	Weaknesses				
4	Poor maintenance of rural road network.	Y	Y	Y	Y
5	Absence of assured power supply in rural areas.	-	Y	Y	Y
6	Inadequate network of State Agril. Marketing Board to show presence among farmers.	Y	Y	Y	Y
7	Poor agro-processing facilities.	Y	Y	Y	Y
8	Poor storage facilities.	Y	Y	Y	Y
9	Unorganized market structure for some commodities.	Y	Y	Y	Y
III	Opportunities				
12	Great scope for developing marketing infrastructure	Y	Y	-	-
13	Agro-processing can be promoted in a big way.	Y	Y	-	-
IV	Threats				
16	People are generally unaware about sustainability of infrastructure and its maintenance	Y	Y	Y	Y

Table 3.4 Management of Farming System

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Successful introduction of apiary, pisciculture, floriculture and mushroom cultivation.	-	Y	-	-
2	Breed upgradation facility available for animals, poultry, etc.	Y	Y	Y	Y
3	Revitalizing fish production system.	Y	-	-	-
II	Weaknesses				
4	Considerable yield gap due to technological gap in management.	Y	Y	Y	Y
5	Monocropping and monoculture.	Y	Y	-	-
6	Poor post-harvest technology.	Y	Y	Y	Y
7	Predominantly Banana and Rice based cropping system with poor off-take after harvest leading to low-price recovery.	-	-	Y	Y
III	Opportunities				
8	District technically sound with a galaxy of Research and Training institutions.	Y	Y	Y	Y
IV	Threats				
9	Lack of interest in agriculture among farmers	Y	Y	Y	Y
10	Highly fragmented land holding due to absence of land consolidation.	Y	Y	Y	Y

Table 3.5 Management of Agricultural Crops

S. No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	All basic factors needed for successful cultivation of major cereals like rice, and maize available in the district.	Y	Y	-	-
2	Expertise of farming communities and willingness to tryout new innovations in rice cultivation.	-	Y	-	-
3	Predominantly rice eating population.	Y	Y	Y	Y
	Availability of traditional pulse and vegetable varieties.	Y	Y	-	-
	Availability of aquatic flora and fauna in soil to augment natural decomposition of plant residue.	Y	Y	Y	-
II	Weaknesses				
4	Critical technological gap in seed treatment, application of balanced fertilizers including micro nutrients, and pest and disease management.	Y	Y	Y	Y
5	No alternative marketing system available for sugarcane	Y	Y	-	-
6	Non-availability of quality seeds of recommended varieties.	Y	Y	Y	Y
7	Partial gap in adoption of modern cultural practices in crop production	-	-	Y	Y
8	Non-use of bio-fertilizers and green manuring practices.	Y	Y	Y	Y
9	Lack of organized marketing institutions.	Y	Y	-	-
10	Distress sale of paddy, vegetables and pulses.	Y	Y	Y	Y
11	Invasion of spurious inputs in open markets.	Y	Y	Y	Y
12	Non-popularisation of agricultural implements and farm machinery	Y	Y	Y	Y
13	Lack of modern processing facilities for agricultural products.	Y	Y	Y	Y
14	Application of imbalanced chemical fertilizers without understanding the soil fertility status	Y	Y	Y	Y

Table 3.5 Contd.....

S. No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
15	Non-adoption of INM technology including micronutrients.	Y	Y	Y	Y
16	Non-adoption of IPM technology particularly bio-pesticides, bio-agents and eco-friendly pesticides.	Y	Y	Y	Y
17	Excess/indiscriminate use of pesticides in vegetables.	Y	Y	Y	Y
III	Opportunities				
18	Immense scope for growing very fine rice varieties of rice, for its milling, packaging and value addition.	Y	Y	Y	Y
19	Proximity to AD&ACRI Tiruchirappalli and its research network has scope for undertaking on-farm research trails.	Y	Y	Y	Y
20	Scope for preventing distress sale of paddy by opening more purchase outlets of FCI & PACS at block level to procure paddy.	Y	Y	-	Y
21	Promoting small entrepreneurship ventures for setting processing, packaging and marketing for sugarcane, paddy, oilseeds and other crops.	Y	Y	Y	Y
22	Scope for introduction and intensification of quality protein maize (QPM) and sweet corn ensuring better nutrition and price to the growers.	-	Y	Y	-
23	Immense scope for establishing maize based industries for cattle/ poultry feed.	-	Y	Y	-
IV	Threats				
24	Deterioration of soil health due to indiscriminate use of chemical fertilizer with minimum use of organic or bio-fertilizers.	Y	Y	Y	Y
25	Lack of storage and processing facilities at local level force farmers to deliberately go for low harvest	Y	Y	Y	Y
26	Few weeds pose health hazard (<i>Parthenium spp</i>).	Y	Y	Y	Y

Table 3.6 Management of Horticultural Production System (Fruits)

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Agro climate and fertile soils ideally suited for banana, guava, mango, citrus, papaya, coconut crops.	Y	Y	Y	-
2	Availability of promising traditional races of Banana papaya, guava, jackfruit, Jamun etc.	Y	Y	-	-
II	Weaknesses				
3	Lack of processing, packaging, preservation and export infrastructure.	Y	Y	Y	-
4	Shortage of reliable nurseries to supply good quality planting material.	Y	Y	-	-
5	Full potential of orchards not exploited by following agri-horti-agrostology-apiculture.	Y	Y	Y	Y
6	Non-adoption of INM and IPM measures.	Y	Y	Y	Y
7	Lack of scientific inputs and farm management practices.	Y	Y	Y	Y
III	Opportunities				
8	Immense scope for value addition and export of fruit crops.	Y	Y	Y	Y
9	Scope for integrating agri-horti-apiary for augmenting farm income.	Y	Y	Y	Y
10	Scope for promoting multi-purpose trees for fuel, fodder, timber and fruits	Y	Y	-	Y
IV	Threats				
11	Access to better and leading markets for better prices not possible in absence of cooling chambers and refrigerated transportation facilities.	Y	Y	Y	Y

**Table 3.7 Management of Horticultural Production System
(Vegetables and Flowers)**

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Expertise of traditional vegetable growers available.	Y	Y	Y	-
2	Soil ,climate, ground water conducive to grow vegetables, spices and flowers.	Y	Y	Y	-
3	Ready market for all vegetables and flowers produced with potential for export to neighbouring states and countries.	Y	Y	Y	-
4	Quality seed material for vegetables, spices, floriculture available in lose proximity of the neighbouring district-Dindugal	Y	Y	Y	-
5	Success stories available for vegetables, mushroom and floriculture	Y	Y	Y	-
6	Short duration, low gestation of the enterprise.	Y	Y	Y	Y
II	Weaknesses				
7	Lack of proper regulated markets for vegetables, flowers and mushroom.	Y	Y	Y	Y
8	No processing facility available for value addition.	Y	Y	Y	Y
9	Excessive use of chemicals and pesticides.	Y	Y	Y	Y
10	Unorganized growers	Y	Y	Y	Y
11	High involvement of middle men	Y	Y	Y	Y

Table 3.7 Contd.....

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
III	Opportunities				
12	Great scope for production of non-traditional vegetables with ready market.	Y	Y	Y	Y
13	Scope for intensification of floriculture.	Y	Y	Y	Y
14	High demand and remuneration for vegetable seed production.	Y	Y	Y	-
15	With highly dense urban population and limited scope for open gardens, demand for house plants and decorative plants very high.	Y	Y	Y	Y
IV	Threats				
16	Lack of planned marketing strategies combined with higher productivity in vegetables and floriculture may adversely affect the entrepreneurs.	Y	Y	Y	Y
17	Indiscriminate use of pesticides in vegetable crops.	Y	Y	Y	Y

Table 3.8 Management of Animal Husbandry Production System

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Presence of a viable milk cooperative societies in the district facilities facilitating breed up gradation through Artificial insemination, purchase of milk etc.	Y	Y	Y	Y
2	Traditional expertise in cattle rearing.	Y	Y	Y	-
3	Every house hold possesses milch animals in varying numbers.	Y	Y	Y	-
4	Goat rearing a popular enterprise for assured income among landless and marginal farmers.	Y	Y	Y	-
5	Poultry enterprise for income generation is a way of life.	Y	Y	Y	-
II	Weaknesses				
6	Non-cultivation of fodder crops (legumes) due to non-conviction about their profitability.	Y	Y	Y	Y
7	Seeds for fodder crop not available.	Y	Y	Y	Y
8	Defunct infrastructure of goat A.I. centres.	Y	Y	Y	Y
9	Lack of awareness on scientific management processes in dairy, poultry and small ruminants.	Y	Y	Y	Y
10	Stall-feeding is only option for commercial cattle rearing.	Y	Y	Y	Y
11	Non-practice of resource conservation technology.	Y	Y	Y	Y

Table 3.8 Contd.....

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
III	Opportunities				
12	Stall feeding has attracted higher sections of society towards non-traditional cattle rearing on commercial basis.	Y	Y	Y	Y
13	A variety of fodder can be taken	Y	Y	Y	Y
14	Scope for low cost cattle feed supplement with local resources available	Y	Y	Y	-
15	Scope for commercial poultry farming by unemployed youth/ landless communities exists with assured market demand.	Y	Y	Y	Y
16	Processing and value addition of surplus milk can augment income.				
IV	Threats				
17	High population pressure on land leads to less fodder production.	Y	Y	Y	Y
18	Unscientific and unplanned A.I. poorly trained Para Vets leads to non-sustainable pregnancy and diseases.	Y	Y	Y	Y

Table 3.9 Management of Plantation / Multi-purpose Trees

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Strengths				
1	Technology for plantation / multi-purpose tree available.	Y	Y	Y	Y
2	Absentee farmers interested in plantation / multi-purpose trees.	Y	Y	Y	-
II	Weaknesses				
3	Farmers unaware of technology.	Y	Y	Y	Y
4	Planting material not easily available to the farmers.	Y	Y	Y	Y
III	Opportunities				
5	Variety of material and technology available with the TNAU	Y	Y	Y	Y
IV	Threats				
6	Fencing of big area difficult and uneconomical.	Y	Y	Y	Y
7	Fear of grazing by stray animals.	Y	Y	Y	Y

3.2 Composite Index of Agricultural Development of Tiruchirappalli District

Agricultural Development of a district is a comprehensive multidimensional process involving large number of related indicators. Hence, it can be well represented by composite indices which are used as yardsticks not only to gauge the development of each district but also to compare its performance in relation to other districts. These indices help to classify the sub-regions based on a set of large multivariate data. The information contained in the large set is transformed into a small set of indices which would provide a convenient method for classification. There are many methods of classification based on multivariate data. Among them, one method which is statistically sound is that developed by Iyengar and Sudarshan (1982). This method is simple and

easy to apply and it helps to classify the districts into various stages of development, viz., ‘highly developed’, ‘developed’, ‘developing’, ‘backward’ and ‘very backward’. In this method for each district a ‘composite index’ is constructed. The index lies between 0 and 1 with 1 representing 100per cent development and 0 representing no development at all.

It is assumed that there are n districts and m development indicators and that X_{id} is the observed value of i^{th} development indicator for the d^{th} district ($i = 1, 2, 3 \dots m$, $d = 1, 2, 3 \dots n$). First these values of development indicators for each district is to be standardized. When the observed values are related positively to the development(as in the case of cropping intensity), the standardization is achieved by employing the formula

$$y_{id} = (X_{id} - \text{Min } X_{id}) / (\text{Max } X_{id} - \text{Min } X_{id})$$

where $\text{Min } X_{id}$ and $\text{Max } X_{id}$ are the minimum and maximum of $(X_{i1}, X_{i2}, \dots, X_{in})$ respectively. When the values of X_{id} are negatively related to the development (as in the case of area under wastelands, problem soils etc.), the standardized values will be computed by the formula

$$y_{id} = (\text{Max } X_{id} - X_{id}) / (\text{Max } X_{id} - \text{Min } X_{id})$$

Obviously the standardized indices lie between 0 and 1. These indices are then used to determine the weights of individual variable and then they are subjected to further statistical analysis by fitting suitable probability distribution to determine the cut-off points for classification of the districts into five categories as mentioned above. The detailed methodology can be found in Iyengar and Sudarshan (1982).

The data base for the current study on Tiruchirappalli district is taken from various government publications like Season and Crops Report and Economic Appraisal of Tamil Nadu for the four periods viz., 1990-91, 1995-96, 2000-01 and 2005-06. In all,

25 indicators of agricultural development as given in Table 3.10 were used for estimating the composite index of development for the district. The 25 indicators were grouped into six different ‘components’: i) Crop-Area-Variables (10) ii) Irrigation (7) iii) Livestock (3) iv) Fisheries (1) v) Fertilizer (3) and vi) Cultivators and Labourers (2).

The analysis showed that Tiruchirappalli district which was classified as very backward in agricultural development during 1991 was classified as backward in 1995-1996 was highly development in agriculture during 2000-2001 and 2005-2006. In terms of overall development its rank among the 29 districts of Tamil Nadu varied from 4 to 25 during 1990-1991 to 2005-2006. As far as the individual components of agriculture development are concerned its rank in the above periods are summarized in Table 3.11. The tables shows that performance in the first two periods is not satisfactory and in the recent two periods its performance is good. For example, in crop-area variables and livestock its ranks are from 6 to 24 and 8-17 in all the four periods respectively.

Table 3.10. Selected Indicators of Agricultural Development for Thiruchirappalli District

Component	Indicators	No. of Indicators
Crop-Area-Variables	Cropping Intensity	10
	Per cent of Gross Cropped Area to Total geographical area	
	Per cent Share of foodgrains to Gross Cropped Area	
	Per cent Share of foodcrops to Gross Cropped Area	
	Per cent Share non foodcrops to Gross Cropped Area	
	Per cent Share of cultivable waste to total geographical area	
	Per cent Area under High Yielding Variety-Paddy	
	Per cent Area under High Yielding Variety-Cholam	
	Per cent Area under High Yielding Variety-Cumbu	
	Per cent Area under High Yielding Variety-Ragi	

Table 3.10 Contd.....

Component	Indicators	No. of Indicators
Irrigation	Irrigation Intensity	7
	Per cent of Gross Irrigated Area to Gross Cropped Area	
	Per cent of Net Irrigated Area to net area sown	
	Per cent Area under Canal Irrigation to Gross Irrigated Area	
	Per cent Area under Tank Irrigation to Gross Irrigated Area	
	Per cent Area under Well Irrigation to Gross Irrigated Area	
	Per cent Area under other sources Irrigation to Gross Irrigated Area	
Livestock	Milk production (lakh tons)	2
	Egg production (lakhs)	
Fisheries	Inland + Marine fish production in tons	1
Fertilizer	Consumption of Nitrogen per hectare of Gross Cropped Area (tonnes)	3
	Consumption of Phosphorus per hectare of Gross Cropped Area (tonnes)	
	Consumption of Potassium per hectare of Gross Cropped Area (tonnes)	
Cultivators-Labourers	Per cent of Cultivators to total population	2
	Per cent of Agri.labourers to total workers	
	Total	25

Table 3.11. Rank of Thiruchirappalli District in terms of Agricultural Development among other Districts of Tamil Nadu during 1990-91 to 2005-06

Component of Composite Index		Crop-Area-Variables	Irrigation	Livestock-	Fisheries	Fertilizer	Cultivators-Labourers	Overall
Period	1990-91	24	25	17	-	-	8	25
	1995-96	23	21	15	20	15	16	21
	2000-01	15	17	10	18	1	18	5
	2005-06	6	14	8	22	1	20	4

CHAPTER - IV

DEVELOPMENT OF AGRICULTURAL SECTOR

In Tiruchirappalli district for the past ten years the deceleration in growth agriculture was noticed. However, it is not uniform and there are regions that still hold promise for stimulating the growth. Studies confirmed that the sharp erosion of **total factor productivity** in agriculture in Tiruchirappalli district was on account of multiple factor relating to technology fatigue, soil fatigue, declining fertilizer response rate, depleting capital stock and agro-climatic aberrations.

On the technology front, the core issues related to **seeds**. About 85 per cent of farmers use farm-saved seeds that loose its vigour to enhance the productivity over a period. **Low seed replacement rate**, uncertified seeds of doubtful quality sourced from diverse seed supply chain and poor quality of farm saved seeds were the important reasons for low productivity. There are yield gaps between the varieties available for different regions.

There is a decline in the role of public **sector in seeds and its management**. The State Seeds Corporations were reportedly not functioning efficiently and several seed farms were either defunct or being disposed off.

Seed production chain from breeder seed to certified seed have **serious gaps**. Breeder seed is not multiplied into foundation and certified seed by the seed producing agencies like State Seeds Corporation and States' Department of Agriculture.

One of the important causes for decline in crop production response to the application of inputs and technology is the **gradual degradation of soil**, the key factor for sustaining agriculture. The land and water taken together constituted the soil and there are problems associated to both these soil components. On the available land there is a serious concern on degradation of soil in the major food basket regions. The **imbalanced fertilizer consumption**, without taking into account the soil needs and soil health was not proving counter productive. Therefore, soil analysis has to be taken on priority basis to find the status of micronutrient and the requirement of fertilizers to supplement these deficiencies. The details of the soil types along with their extend are furnished below.

The problems faced on irrigation front had culminated into stress on water resources, falling water use efficiency, timely availability of water and increasing cost of irrigation. These factors were the consequences of falling investment in agriculture and depreciation of capital stock in irrigation, besides the lack of awareness in farming communities to the aspects of conservation of natural resources and sustainable agriculture.

There are institutional issues linked to deceleration in agricultural growth and the foremost of these issues was the slackness in the delivery of technology to the farmers.

The mission approach adopted for **oilseeds and pulses** had not yielded desired results.

These missions should have greater flexibility and adoptability to different regions and crops.

There have been concerns on availability of not only the quality seeds but the quality inputs also. There are reports that nearly 75 per cent of pesticides used by farmers were of poor quality and were spurious. As a result, the crop losses due to pests were high, and the farming is becoming a risky, costly and less remunerative proposition.

4.1 Identification of Critical Issues, Problems and Opportunities

The critical issues, problems and opportunities have been identified on the basis of primary and secondary data and SWOT analysis exercise with a view to evolving need-based strategy for organizing extension and research activities. For the sake of convenience in planning, the above information have been categorised under five groups namely:

- I - Management of Natural resources (Table 4.1)
- II - Socio Economic Improvement (Table 4.2)
- III - Management of Agricultural Production System (Table 4.3)
- IV - Management of Horticultural Production System (Table 4.4) and
- V - Management of Animal Production System (Table 4.5) and the details are furnished in Table 4.1 through 4.5.

Table 4.1 Management of Natural Resources

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Degradation of soil fertility				
1	Application of imbalanced fertilizer.	Y	Y	Y	Y
2	Non-application of organic manure in the soil.	Y	Y	Y	-
3	Unawareness to micronutrient application	Y	Y	Y	-
4	Intensive cropping	Y	Y	Y	-
5	Non-inclusion of legumes in crop rotation.	Y	Y	Y	Y
6	Seeds of green manuring crops unavailable.	Y	Y	Y	Y
II	Non-judicious use of agro-chemicals.				
7	Unaware about INM and IPM practices.	Y	Y	Y	Y
8	Excessive use of pesticides in vegetable crops.	Y	Y	Y	Y
9	Availability of spurious agro-chemicals.	Y	Y	Y	Y
10	Large dependence of farmers on input dealers for crop protection.	Y	Y	Y	Y

Table 4.1 Contd....

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
III	Bio-diversity				
12	No scientific selection and improvement about seed and germplasm conservation done for vegetable cultivation.	-	Y	Y	Y
I	Opportunities				
I	Soil fertility and sustainability				
1	Awareness and promotion of soil testing and AES / crop wise recommendation of fertilizers. and issues of soil health cards all the farmers in the district in a phased manner	Y	Y	Y	Y
2	Strict regulation and checking the supply of spurious agro-chemical.	Y	Y	Y	Y
3	Inclusion of micronutrients.	Y	Y	Y	Y
II	Judicious use of agro-chemicals.				
4	IPM practices awareness needed	Y	Y	Y	Y
5	Harmful effects of excessive pesticide use to be brought to the knowledge of farmers along with its economics.	Y	Y	Y	Y
III	Afforestation, Agro-Forestry and Farm Forestry				
6	Plantation on field bunds by leguminous trees.	-	Y	Y	Y
7	Multi-purpose trees on awareness for fodder and fuel	-	Y	Y	Y

Table 4.2 Socio Economic Issues and Problems

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Socio-economic improvement				
1	Strengthening farmers for access to credit, market, and bargaining power to escape from the grips of moneylenders and middlemen	Y	Y	Y	Y
2	Increasing entrepreneurship and adopting measures to curb migration of rural labour.	Y	Y	Y	-
3	Social capital building through capacity building measures like group dynamics and exposure visits	Y	Y	Y	-
4	Enabling farmers through Farmer Organizations for problem solving skills.	Y	Y	Y	-
II	Opportunities				
	Availability of large trained technical manpower to set up own Agri-clinics having potential demand.	Y	Y	Y	Y

Table 4.3 Agricultural Production System

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Considerable yield gaps in different crops due to				
1	Non-availability of quality seed material.	Y	Y	Y	Y
2	Non-practice of INM and IPM.	Y	Y	Y	Y
3	Skill gap in general cultural practices.	Y	Y	Y	Y
4	Non-adoption of soil test based fertilizer application.	Y	Y	Y	Y
	Non-availability of situation specific pulses and vegetable varieties.	Y	Y	Y	Y
II	Low profitability from agricultural enterprises.				
	Due to rise in cost of production as a result of costlier inputs.	Y	Y	Y	Y
	Distress sale of produce due to unorganised and farmers non-responsive marketing infrastructure.	Y	Y	Y	Y
	Labour scarcity at produce due to unorganised markets.	Y	Y	Y	Y
	Non-adoption of risk minimizing and low cost technologies.	Y	Y	Y	Y
	Non-availability of situation specific pulse and vegetable varieties.	Y	Y	Y	Y
	Lack of post harvest, storage and processing facilities.	Y	Y	Y	Y
	Limited knowledge of crop insurance and other governmental schemes.	Y	Y	Y	Y
III	Opportunities				
	Scope for sunflower as an alternate oilseed crop.	-	Y	Y	Y
	Crop diversification possibilities to remunerative medicinal and aromatic plants along with floriculture.	-	Y	Y	Y

Table 4.4 Horticulture Production System

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Significant yield gap in fruit and vegetable crops due to				
1	Knowledge and skill gap in scientific production.	Y	Y	Y	Y
2	Non-availability of quality seed material.	Y	Y	Y	Y
3	Non-adoption of INM and IPM practices.	Y	Y	Y	Y
4	Poor acceptance of F1 hybrids in vegetables.	Y	Y	Y	Y
II	Distress sale of fruits and vegetables reducing profitability due to				
5	Unorganised growers.	Y	Y	Y	Y
6	Ineffective cooling and storage facilities.	Y	Y	Y	Y
7	Lack of value addition.	Y	Y	Y	Y
8	Lack of post-harvest and handling techniques,	Y	Y	Y	Y
9	Nexus between middle men harming farmers interest.	Y	Y	Y	Y
III	Opportunity				
	Scope for value addition and export.	Y	Y	Y	Y
10	Scope for utilizing interspaces of orchards for apiary and horti-pasture.	-	Y	Y	Y
11	Export potential for local Banana ,Medicinal plants and Mango through Exploring export markets.	Y	Y	Y	Y

Table 4.4 Contd...

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
12	Innovations tried out in non-conventional fruit crops like strawberry needs replication.	Y	Y	Y	Y
13	Prevalence of ADAC&RI and other nursery growers in and around Tiruchirappalli for planting material.	Y	Y	Y	Y
14	Immense scope of using trained people as para-horts.	Y	Y	Y	Y
15	Conducive agro-climate and demand for multipurpose trees to supplement fodder, timber and fuel wood.	Y	Y	Y	Y
16	Scope for exotic vegetables in urban markets.	Y	Y	Y	Y
17	Scope for intensification of floriculture ,spices and floriculture through traditionally skilled farmers.	Y	Y	Y	Y
18	Scope for supplying planting materials to urban customers for terrace gardens	Y	Y	Y	Y
19	Ready market and growing demand for mushroom throughout the year.	Y	Y	Y	Y
20	Conducive agro-climate, non-remunerative traditional crops and monetary support from the Government for medicinal and aromatic plants may bring capital investment to this sector.	Y	Y	Y	Y

Table 4.5 Animal Production System

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
I	Slow rate of cross breeding and AI programme due to				
1	Inactive extension and support services	Y	Y	Y	Y
2	Malnutrition of indigenous cows and buffaloes.	Y	Y	Y	Y
3	Constraints in supply of liquid nitrogen and frozen semen.	Y	Y	Y	Y
4	Inadequate mobility and supervision.	Y	Y	Y	Y
5	Inadequate livestock assistants for door service.	Y	Y	Y	Y
6	Lack of proper health care to animals.	Y	Y	Y	Y
7	Unawareness of government schemes.	Y	Y	Y	Y
II	Low productivity of dairy animals due to	Y	Y	Y	Y
8	Want of green fodder.	Y	Y	Y	Y
9	Poor sanitation and housing	Y	Y	Y	Y
10	Improper health measure.	Y	Y	Y	Y
11	Unorganised marketing in rural areas.	Y	Y	Y	Y
12	Non-availability of medicines.	Y	Y	Y	Y
13	Serious scientific knowledge gap and skill gap	Y	Y	Y	Y
14	Limited knowledge about insurance.	Y	Y	Y	Y

Table 4.5 Contd...

S.No	Particulars	Relevance to			
		Irrigated	Garden land	Rainfed	Problem soils
III	Low productivity of poultry birds due to	Y	Y	Y	Y
15	Serious techno-management practices.	Y	Y	Y	Y
16	Non-availability of poultry feed at reasonable price.	Y	Y	Y	Y
17	Knowledge gap for backyard poultry of promising breeds..	Y	Y	Y	Y
18	Limited financial back up and insurance.	Y	Y	Y	Y
19	Unorganised market forcing distress selling.	Y	Y	Y	Y
	Opportunity	Y	Y	Y	Y
20	Scope for green fodder cultivation and multi purpose trees.	Y	Y	Y	Y
21	Market demand for dairy.	Y	Y	Y	Y
22	Stall feeding can attract new entrepreneurs towards Goat rearing dairy , piggery and poultry if incentive is provided by the government.	Y	Y	Y	Y
23	Scope for low cost cattle feed production from locally available resources.	Y	Y	Y	Y
24	Scope for commercial poultry production.	Y	Y	Y	Y

4.2 Special Projects / Programmes on going in the District

The ongoing programmes with reference to Agricultural department are given below.

4.2.1 State Government Sponsored Programmes

1. Procurement and Distribution of Paddy and Millet Seeds (General) / (SCP)

Under Seed Multiplication Scheme quality and viable Paddy seeds to cover 17 per cent of the area and Millets to cover 7 per cent of the area to the quantity of 700 tonnes of paddy and 24 tonnes of Millets Certified Seeds are produced and distributed to the farming community at reasonable price in time. The provision made is towards the cost of seeds, gunnies, transport, seed certification charges, fumigation etc., These seeds are distributed through Agricultural Extension Centres located throughout Trichy district. For this Rs.90.21 lakhs are allocated for the financial year 2007-2008.

2. Procurement and Distribution of Pulses seeds

Under this scheme Pulses Certified Seed Multiplication and distribution of 53.27 Tonnes are produced, processed, certified and distributed to the farmers through the Agricultural Extension Centres. For this 21.57 lakhs are made towards the cost of seeds, gunnies, transport, and fumigation etc.

3. Increasing the Production of Oilseeds (IPOS- General) / (SCP)

The object of the scheme is to procure and supply quality oilseeds (137 tonnes) to the required quantity as per the SRR and also providing latest technologies to increase the productivity. The main activity is multiplication of certified seeds of groundnut, gingelly, sunflower, castor and soyabean by enforcing the seed certification standards and distributed to oilseeds growers through the Agricultural Extension Centres. For this 23.75 lakhs are made towards the cost of seeds, gunnies, transport, and fumigation etc.

4. Procurement and Distribution of Green Manure Seeds

To build up the soil health, micro organism and water holding capacity, the Green Manure Seeds are produced and distributed (12 tonnes) at 25 per cent subsidy. . It also fixes atmospheric nitrogen in the soil through root nodules For this 0.60 lakhs are made towards the cost of seeds, gunnies, transport, and fumigation etc., These seeds are distributed through Agricultural Extension Centres located throughout Trichy district.

5. Production and Distribution of Blue Green Algae

To enrich the soil with more organic matter, the application of Blue Green Algae is being popularized through the scheme. The Blue Green Algae a self- supporting biological Nitrogen fixing source will absorb and fixes atmospheric nitrogen in the soil. The Blue Green Algae is produced (20 tonnes) in State Seed Farms and distribution to the ryots through Agricultural Extension Centres. For this 0.28 lakhs are made towards the cost of seeds, gunnies, transport, and fumigation etc.

6. Vermi Composting of Agricultural Waste

To popularise the technology of vermi composting 12 demonstrations are being laid in the Trichy district. For this 0.28 lakhs are made.

7. Production and Distribution of TXD Coconut Seedlings

Under this scheme, quality tall and tall x dwarf hybrid coconut seed nuts will be procured from the selected mother palms and crossed tall palms respectively and seedlings are raised in the Government coconut nurseries and distributed them to the coconut growers through Agricultural Extension Centres at a reasonable price so as to bring more area under coconut plantation. The cost of tall seedling is Rs.12 and tall x dwarf, Rs20. For this 0.28 lakhs are made under this scheme is towards cost of seed nuts, transport charges, etc.

8. Crop and Plant Protection (General)/ (SCP)

As per G.O.Ms.No.150, Agriculture (TNADP)/ Department dated 9.3.1993 the Department of Agriculture is not dealing the trade in pesticides throughout the State except when the natural calamities including mass pest infestation occurs. The trade of pesticides will be dealt through co-operatives like TANFED and Primary Agricultural Co-operative Societies. The provision available for rupees 3.97 lacs under this scheme is used for purchase and supply of bio pesticides like neem extract, pheromone trap, lures etc., which are recommended under Integrated Pest Management concept and to implement the Government of India schemes.

9. Release of Parasite in Sugarcane

The yield of Sugarcane is greatly reduced when it is affected by Internode Borer. The pest is controlled effectively by the release of a parasite named Trichogramma. The parasites are multiplied in 21 Parasites Breeding Centres functioning near sugar mills area. Annually, 950 ha. are covered under this scheme. Rupees 0.34 lakhs made is towards recurring cost of production of parasites.

10. Preparation and Distribution of Micronutrient Mixture

In Tamil Nadu, 14 Micronutrient Mixture grades are notified. These grades of Micronutrient Mixtures are applied to Paddy, Sugarcane, Cotton, Citrus, Groundnut, Vegetables, Banana, Chillies and Coconut etc. The Micro Nutrient Mixtures are produced by the Department at Kudumianmalai in Pudukkottai district and distributed by extension functionaries through Agricultural Extension Centres. Annually 246.2 TONNESs of Micronutrient Mixtures are distributed with financial assistance of Rupees 44.16 lakhs.

11. Farmers Training

The objective of the scheme is to train the farmers on latest Crop Production Technologies for adoption in field there by increasing crop production. Farmers Training Centres functioning in Lalgudi in trichy district. Farmers Training centres are imparting two days village based trainings to farmers, farm women and farmers discussion group

conveners and 1 one day peripatetic training cum demonstration at field level. The Budget provision of 0.47 lakhs is allocated towards organising trainings, farmers tour, farmers day celebrations and staff cost of farmers training centre.

4.2.2 State and Central Sponsored Programmes

1. Oilseed Production Programme

The Oilseed Production Programme is operated in all the districts of Tamil Nadu except Kanniyakumari and The Nilgiris. The main objective of this scheme is to achieve self sufficiency in production of Oilseeds. The scheme is taken up under the Technology Mission Mode approach with the expenditure being shared on 75:25 basis by Government of India and the State Government. This scheme encourages the oilseed growers to adopt latest production technologies by providing essential inputs at subsidised cost. The provision available for rupees 25.05 laks under this scheme.

2. Oilpalm Development Programme

Oilpalm cultivation is promoted through a centrally sponsored scheme and the expenditure is shared between Government of India and State Government on 75:25 basis. The area expansion under this scheme will be implemented in 8 districts during 2004-05 viz., Tiruchirappalli, Thanjavur, Tiruvarur, Nagapattinam, Karur, Perambalur, Cuddalore and Villupuram to encourage the farmers to take up cultivation of oilpalm so as to bridge the gap in edible oil demand and supply. The total subsidy made available for taking up oilpalm planting is Rs.15,500/- per Ha. for 4 years. The extraction and refining activities are regulated under the Oilpalm Act. The provision available for rupees 121.23 laks under this scheme.

3. Accelerated Maize Development Programme

In the recent years, the demand for maize is increasing due to large scale use of maize in the poultry industry as feed and as processed product for human consumption. The farmers could realize better returns from maize cultivation and hence a scheme is under implementation with the objective of increasing the production and productivity of

maize crop in Trichy district. The expenditure under this scheme is met by the Government of India and the State Government on 75:25 basis. Apart from this, the seed minikits are distributed to the farmers and 100 per cent expenditure on this is borne by the Government of India. Rupees 3.93 laks allocated under this scheme.

4. Intensive Cotton Development Programme under Mini Mission II (ICDP)

The ICDP under Technology Mission on Cotton aims to increase the production of cotton by providing key inputs at subsidised cost and technologies more specifically the Integrated Pest Management Practices. The expenditure under this scheme is shared on 75:25 basis by the Government of India and the State Government. Rupees 21.08 laks allocated under this scheme.

5 . Macro Management Mode Schemes : Cereals Development Programme

The Cereals Development Programme under the Macro Management Mode is implemented in areas where the rice based cropping system is dominant in the State. Under this scheme, the inputs, which are essential for enhancing productivity of paddy and millets, are distributed at subsidized cost. Rupees 34.90 laks allocated under this scheme.

4.2.3 100 per cent Central Sponsored Schemes

1. Integrated Farming in Coconut Holding for Productivity Improvement

This is a centrally sponsored scheme and the entire expenditure is borne by Government of India, through the Coconut Development Board. Removal of senile and diseased trees lay out of demonstration plots and organic manure pit will be taken up under this programme in order to improve the productivity of coconut. Rupees 7.83 laks allocated under this scheme.

4.2.4 Interventions

For realizing the agricultural growth objectives of Tiruchirappalli district, particularly from the crop husbandry segment, the inputs have to play the most crucial

role. The factor productivity of capital as well as labour has been diminishing. Besides, the cost of inputs has been increasing. This is seriously impacting the profitability in agriculture. It is not surprising that the Situation Assessment Survey conducted by the National Sample Survey Organisation (59th Round) revealed that 27 per cent of farmers found agriculture a non-profitable activity and as many as 40 per cent farmers opined that given an alternative, they would like to quit farming as a profession. To address these critical issues, the input management would require focused attention on five core areas *viz.* **seeds, nutritional management, water management, chemicals and management of energy.**

i) Seeds

1. Need for refocusing on quality seed development and production to close the gap between production and requirement and to **raise seed replacement rate** to 25 per cent, 33 per cent and 100 per cent for self-pollinated crops, cross pollinated crops and hybrids respectively. National Level Seeds Corporations, State Seeds Corporations, seed farms of State Governments and Universities will have to undertake large scale seed production to meet the gap in demand and supply of seeds.
2. In addition to the supply of good quality and cost effective seeds, it would also be necessary to ensure proper practices to be adopted by the farmers prescribed for particular varieties. The assurance of quality of seeds assumes greater significance in view of predominant seed supply from private sources. This would also necessitate proper and effective regulatory mechanism. Aforesaid discussion on seed development and its availability to farmers does not undermine the role of **farmers as seed producer**. There are success stories in farm produce seeds also. The integration of farmers and farmers groups in seed multiplication programme needs promotion.

ii) Nutritional Management

1. The declining factor productivity is partly attributed to the **soil de-gradation**, the main cause of that has been the accumulating nutritional deficiency over the years. One of the main factors for disturbed nutritional status of soil is the imbalance in the use of NPK fertilizers. As mentioned earlier, against the generalized recommended proportion of 4:2:1 of NPK, the aggregate national averages 7:2:1. There is a tendency of higher use of Nitrogen (urea) by the farmers and in several instances, the phosphate and potash is not at all used. The imbalanced use of fertilizers by the farmers may not be solely attributed to the lack of his awareness on the aspect of soil health and its nutrition balance. There is distorting role of policy and management of fertilizers. The price and availability of Nitrogenous, Phosphates and Potash is also playing its role in disinclination of the farmers to use them in a balanced manner. The subsidized pricing of Nitrogenous fertilizers and reported deficit in the production capability of Phosphatic and Potash fertilisers are also instrumental in disturbing the nutrition balance of the soil over the decades.
2. The balanced use of fertilizers, however, can not be generalized to the entire agrarian space. It would depend upon the soil health and extent of imbalance to supplement proper nutrient ingredient through fertilizers use. Further, the nutrients have complementary and supplementary role in the production and vegetative growth, since use of one nutrient depends on the other as well as other inputs and practices of use. The farmers, when used to apply fertilizers in dry form may not be conscious to adopt soluble practices prescribed in some imported fertilizers. Besides these nutrients, other mineral deficiency such as Gypsum and Carbon content in the soil, also affect the fertilizer use efficiency. **Therefore, the nutritional management should be one of the thrust areas.** For this purpose **soil testing, distribution of soil health cards to all the farmers and creating awareness about on farm nutrition management may need to taken in**

mission mode and efforts should be made to accomplish this in the very first year of the Plan so that its gains accrue in the subsequent plan period. This should also be made integral element of all the extension activities.

iii) Water

1. Water is the basic input for agricultural operations. The crop cycle depends upon weather cycle of rainfall along with that of temperature in different parts of the country. Though, the crop production in India is primarily rain dependent in terms of its acreage, the main production supply is from the irrigated areas. The irrigation is the single largest consecutive user of water attributing to 80 per cent of total water utilized. However, there are serious issues associated with water use efficiency in agriculture. Since water is becoming a scarce input. The greater entrepreneurship of farmers, supported by subsidized electricity for agriculture makes ground water exploitation a more convenient option for irrigation. This phenomenon had already become evident in recent years. Given this scenario, the judicious use of water for water resources for agriculture and other competing demand is the need of the hour. The subdued rainfall precipitation over the years and indiscriminate exploitation of water is reflecting on depleting ground water resources in many parts of the country. For production of one Kg. of rice, 3000 litres of water is required. For sustained agricultural production, it is necessary to evolve a well coordinated strategy to manage the use of water resources such that (i) both surface and ground water supplies are maintained at desired level, and (ii) the quality of land and water resources does not deteriorate with time. With very low water use efficiency, the scarcity of water resources is also increasing its cost of extraction. **Therefore, water budgeting and water use efficiency has to be given extra attention in the district plans.**
2. As minor irrigation schemes play a significant role in rainfed areas, priority may be given for better utilization of potential created through improved

management systems (reduction in correspondence losses, micro irrigation and crop diversification).

3. Crop diversification (i.e., changes in cropping pattern) with more balanced and sustainable cropping systems should be taken up to overcome problems of soil fatigue, vulnerability reduction in rainfed agriculture.

iv) Chemicals

1. Like the use of micro-nutrients and water in agriculture, the chemicals are also used indiscriminately and un-judiciously. The use of un-prescribed pesticides in inappropriate doses is not only disturbing the soil conditions but is also destroying the healthy pool of bio-control agents that normally co-exist with the vegetation. These Biocontrol agents are the friends of agriculture and hence need to be nurtured, cared and developed by reducing the reliance on chemical's use in agriculture. The importance of bio-fertilisers in sustainable agriculture/organic farming in particular, is well known along with the need for promotion of the cheaper and eco friendly plant nutrient supplements.
2. Considering the global concern of ill-effects of chemical pesticides, Integrated Pest Management (IPM), *inter alia*, aims at employment of alternate methods of pest control like cultural, mechanical and biological control in a compatible manner. The chemical control is resorted to when other control methods fail to provide desired results. It is ecologically safe and economical. It is noted that implantation of IPM itself is disintegrated as IPM component in different Plan schemes. Considering the importance of IPM, these fragmented elements need to be coordinated.

v) Management of Energy

1. One of the ways to enhance energy use efficiency is through farm mechanization. The farm mechanization is essential not only to save the energy but to transfer the energy efficiently for crop production. The substantial technological know-how is supposed to be available with different institutions dedicated to farm mechanization as well as with the agricultural universities and crop research institutions. There should not be constraint to have region and crop specific machinery of proven performance for their wide scale adoptability in the farming sector.
2. Absence of quality manufacturing of improved design of farm equipment in different parts of the state is proving to be an impediment in growth of farm mechanization. **Promotion of quality manufacturing in different parts of the state needs to be promoted.** State Agriculture Department also needs to be sensitized for extension of new technologies to farmers and also for obtaining feedback on new technologies required. These dimensions have to be given a special attention in the Plan.

Specific Interventions

I. Agriculture

1. Rice

- One time grant to TANWABE / FIG to take certified seed production and distribution @ Rs.50000/- per group (30 TONNES / Annum)
- Incentive for seed production to Self Help Groups @ Rs.3 / kg. - TABWAVE Groups
- Seed distribution subsidy for the seeds produced by Self Help Groups @ Rs.5 / kg.
- Supply of Quality Certified seeds at nominal cost to enhance the SRR @ Rs.5/- per kg. (Public and Private seeds)
- Seed Minikit of new HYV @ Rs.100/- minikit

- Hybrid rice seed production subsidy @ Rs.20/- per kg. FIG / TANWABE groups @ 10 Ac / group (4 TONNESs.)
- Hybrid Rice seed distribution subsidy – 75 per cent cost or Rs.100/- whichever is less
- Distribution of Green Manure seeds at 75 per cent subsidy of Rs.15/kg.
- Distribution of Soil Health Card @ Rs.100/- per card (Soil + Water testing)
- Assistance to start vermicompost production unit @ Rs.10000 per unit (Self Help Group women farmers)
- Distribution of Micro Nutrient Mixture @ Rs.500 / Ha.or 50 per cent subsidy
- Gypsum 500 kg/ ha @ Rs.500/Ha. or 50 per cent subsidy
- Farmers Field School @17000/ No.
- Massive Rat control campaign in village @ Rs.5000/village
- Publicity & Training @ Rs.50000/- per district
- Promotion of SRI Distribution of Marker, Conoweeder and other items @ Rs.3000 / Ha.
- Transplanter to TANWABE / FIG / farmers @ Rs.75000 each or 50per cent subsidy
- Power Tiller @ Rs.65000/- each or 50 per cent subsidy
- Power Thrasher @ Rs.50000/- per No.or 50 per cent subsidy
- Demonstration on SRI / Hybrid Rice Rs.3000/demo (to be organised in cluster of 10 Ha.)
- Village campaigns - Kharif / Rabi @ Rs.1000/- per campaign
- Production of short film on New technologies each Rs.2.5 lakhs
- Tarpaulin @ Rs.5000/- Nos. or 50per cent subsidy
- Biofertiliser @ 50 per cent subsidy @ Rs.3 per No.
- Publicity / POL & Hireing of Vehicle @ Rs.50000/- per district
- Community Thrashing floor @ Rs.2 lakhs/- per No. (20'x20')

2. Millets

- HYV Seed distribution @ 50 per cent Subsidy limited to Rs.8/Kg
- Technology Demonstration including minor millets Subsidy @ Rs.2000/Ha
- Distribution of Bio fertilizer @ 50 per cent subsidy limited to Rs.3/pocket

3. Maize (rainfed)

- Hybrid seed distribution @50 per cent subsidy limited to Rs.75/Kg

4. Pulses

- Seed production Subsidy @ Rs.10/Kg
- Seed production through FIG/ TANWABE one time grant @ Rs.50000/group (10 Tonnes/group/year)
- Seed production Subsidy @ Rs.10/Kg shared by seed producing groups / grower @25:75 basis
- Seed Distribution Subsidy @ Rs.12/Kg through Dept./Private/TANWABE and FIG
- Pipes carrying water from source to field @ 50 per cent subsidy limited to Rs.15000/- max of 800 tonness.
- Precision farming by sprinkler @ 90 per cent subsidy limited to Rs.15000/ha
- Distribution of Rain Gun @ 50 per cent subsidy limited to Rs.15000/unit
- Distribution of Bio fertilizer @ 50 per cent subsidy Rs.3/No.
- Foliar Nutrient application subsidy @ 50 per cent cost limited to Rs.200/Ha
- Farmers Training 50 farmers for 2 days / Rs.15000/ Training
- Integrated Nutrient Management (INM) @ Rs.1250/Ha.
- Integrated Pest Management (INM) @ Rs.750/Ha.

5. Groundnut (Irrigated)

- Purchase and distribution of Breeder seeds @ Rs.50/Kg.
- Seed Production subsidy @ Rs.10/Kg.
- Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.
- Pipes carrying water from source to field @ 50per cent subsidy
- Bio-fertiliser distribution @ Rs.3/Nos.
- Distribution of Gypsum subsidy @ 50 per cent cost + TC limited to Rs.750/Ha.
- MN Mixture distribution @ 50 per cent cost limited to Rs.500/Ha.
- Farmers field school @ Rs.22680/No.

- Distribution of Tarpaulin subsidy @ Rs.5000/No.
- Farmers Training @ Rs.20000/Training 2 days for 50 farmers
- Publicity /POL/Hiring of Vehicle @ Rs.100000/year/District
- Precision farming (Drip fertigation) 10 ha cluster subsidy @ 90 per cent subsidy limited to Rs.8 Lakhs/Cluster
- Strengthening of Rural godowns and Marketing Centre to stock and distribute seeds and other inputs for TANWABE/FIG @ Rs.10 Lakhs/each
- Seed Village Scheme- Seed distribution @ 50per cent cost limited to Rs.20/Kg.

6. Groundnut (Rainfed)

- Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.
- Distribution of Gypsum subsidy @ 50 per cent cost + TC limited to Rs.750/Ha.
- MN Mixture distribution @ 50 per cent cost limited to Rs.500/Ha.

7. Gingelly

- Seed Production subsidy @ Rs.10/Kg.
- Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.
- MN SO4 distribution @ 50 per cent cost limited to Rs.100/Ha.

8. Sunflower

- Hybrid seed distribution @ 50 per cent subsidy limited to Rs.150/Kg.
- Crop production technology demonstration @ 50 per cent subsidy limited to Rs.5000/ha.
- Hybrid Seed Minikit @ free of cost 1 Kg kit (Rs.400/Kit)

9. Cotton (Irrigated)

- Seed distribution subsidy for Bt. Cotton @ 50 per cent limited to Rs.375/pocket of 450 gram
- FFS to TANWABE/ FIG Rs.17000/ FFS
- Distribution of MN Mixture @ 50 per cent subsidy limited to Rs.500/ha

10. Cotton (Rainfed)

- Seed distribution subsidy @ Rs.20/Kg

11. Extension Activities

- Strengthening of District Information Centre, Providing Lap Top ,Printer, LCD, Scanner, Digital Camera, Copier etc
- Formation of FIG @ Rs.12500/ group for trainig and office automation, ID card, District level meetings etc
- Establishment of Agriclinic.& Agri Business by unemployed agri graduates 25per cent subsidy @ Rs.2.5 lakh each
- Exposure visit Inter state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh)
- Exposure visit Inter state @ 50 farmers/Tour, 5 days @ Rs.300/day/farmer (Rs.0.75 lakhs each)
- District level exhibition/ kissan mela @ Rs.2.0 Lakh/ District
- Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, Radio & other mass media @Rs.2.0 Lakh / district
- Video Conferencing facilities to District HQ @Rs.10.0 Lakh/ District & State HQ @Rs.15 Lakh
- Farmers Training through FTC @ 40 training (2 Days) / year @ 50 farmers / training . Rs.20000/ training
- Strengthening of FTC with Laptop, Printer, Scanner, LCD, Copier, Digital Camera etc for 23 Centres @ Rs.2.5 Lakh each. Including Neyveli Centre
- Exposure visit to Technical Officers to other states 300 officers / year (10 Batches) for 10 days @ Rs.3.0 Lakh / batch

CHAPTER - V

ALLIED SECTOR

5.1 Horticulture

5.1.1 Interventions Required

- Precision Farming
- Net House structure
- Pandal for vegetable production
- Package for plant protection
- Plastics Crates for Vegetable handling and transport
- Farm waste shredder / vegetable waste Shredder
- Cashew high density planting
- Borewell with casing pipe
- Banana Bunch cover
- Humic acid / Effective E Microbes
- Erection of net for production of disease free planting material of Tapioca
- Grapes bird net
- Tractor mounted steam boiler
- Support system for crops
- Banana
- Gloriosa
- Banana Corm injector
- Mango harvester
- Sales outlet points in districts (Rent and infrastructure)
- District Level Farmers Workshop
- Inter State Exposure visit (5 days)
- Banana / Amla in noon meal scheme (TANHOPE)
- 21.Ten hectare mega demo plot for the districts
- Enterprising framers associations
- Community fencing
- Support for betelvine
- Support senna cultivation

5.2 Animal Husbandry

5.2.1 Baseline Information of Livestock / Poultry Sector

Dairy farming in Tiruchirappalli district rural and towns are sustainable livestock micro enterprise as it provides income of about Rs.1500 on an average per milch animal per month. Many farmers started cultivating perennial fodder such as Co 3, Guinea grass, desmanthus, etc. Govt. financial institutions encourage loan for dairy farms as the repayment is highly satisfactory. About 1 lakh litres of cattle milk is procured by Aavin and about 1.6 lakh litres by private entrepreneurs and vendors daily. Crossbred Jersey / Holstein Friesian, Upgraded Zebu / Murrah are reared.

Population - 2004

Species	Population in Nos.
Cattle	3, 93,000
Buffalo	44,000
Sheep	2, 10,000
Goats	4, 63,000
Poultry	5, 86,000

Production - 2006-2007

Cow milk	178480 ton
Buffalo milk	28980 ton
Mutton	1045.05 ton
Chevon	1525.29 ton

Productivity - 1997-2007 (per cent)

Indigenous cow	3.76
Crossbred cow	1.03
Buffalo	1.53

Growth Rate

Cattle	5 per cent per annum
Sheep	5 per cent per annum
Goat	20 per cent per annum

Feed and Fodder Availability

Mostly grazing / fed with greens, dry fodder, oil cakes, bran, cotton seed

	Demand	Supply	Deficit	Deficit per cent
Green fodder	3.2559	0.328	2.927	89.9
Dry fodder	1.316	1.2670	0.049	03.7

Sheep and Goat

Feed availability : Only grazing, migratory towards harvesting areas

Fodder availability : Deficit per cent : Green fodder : 89.9 and Dry fodder - 03.7

Number of Breedable Bovine population (2004) : 1,35,000

Number of A.I.done (2007)

DAH	Aavin
1,65,000	36,000

5.2.2 Strength, Weakness, Opportunity and Challenges Analysis**1. Dairy Farming****Strength**

- Growing demand for milk and daily / weekly income / easy maintenance
- Procurement of milk by Govt. / Private entrepreneurs / vendors
- Conducive atmosphere for dairy farming / Loan facilities / hide export potential
- Dung for organic farming, others products for panchakavya

Weakness

- Reluctance to grow fodder as it is uneconomical
- Insufficient veterinary institutions (required – 97, available – 53, deficit – 44)
- Low milk price offered by milk men and vendors
- Reluctance in technology adoption for increased milk production, augmenting fertility, deworming and required vaccination and reluctance to produce clean milk
- Non availability of A.I. service in time and also door to door

Opportunities

- More loan facilities with a condition to grow fodder (at least 10 cents/cow)
- Supplementing micronutrients to augment fertility
- Establishing village fodder nurseries to cater the need of fodder seeds, saplings, root slips etc. to the farmers to grow fodder
- Chaff cutter to improve nutrient utilization and minimize wastage
- Knowledge and technology empowerment of farmers / rural women (SHGs) on scientific dairy farming to increase milk production, to augment fertility, to produce clean milk and preparation/marketing of value added milk products wherever possible
- Sensitizing Veterinarians and farmers on Ethno Veterinary Medicine and Practice as primary health care of livestock to save time, energy and money and it is ecofriendly
- Registration / updating farmers database and issuing Cards for incentives for growing fodder, tree fodder, micro nutrients, preference for farmers tour, etc.

Challenges

- Diminishing pasture land , deficit of green fodder is 89.9 per cent
- Diminishing indigenous germplasm
- Increasing cost of dairy feed ingredients / shortage of labour due to higher labour cost
- Diseases such as Anthrax, HS, BQ, FMD often demoralize the farmers
- Mastitis and lack of will to produce clean milk

2. Sheep and Goat

- Population : Sheep : > 200000
Goat : 463000
- Breeds : Tiruchy black, Mecheri, Keezakkarisal, Ramanathapuram white, vembur and crosses of sheep and in Goat, Kanni aadu, Kodi aadu, Salem black, and crosses
- Production (Normal)
- (2004-05 to 2006-07) : Mutton : 1045.05 tonnes
Chevon : 1525.29 tonnes
- Productivity : Increasing trend both in sheep and goat every year
- Growth rate : Sheep - > 5per cent Goat - > 25 per cent during the past decade
- Feed availability : Only grazing, migratory towards harvesting areas
- Fodder availability : Deficit per cent
 - Green fodder : 89.9
 - Dry fodder : -03.7

5.2.3 Small Ruminants (Sheep and Goat Farming)

Strength

- Consumers most preference, growing demand, higher cost (selling by body weight)
- Easy flock management and very easy market
- Dung for organic farming, hide export

Weakness

- Reluctance to grow fodder as it is uneconomical
- Insufficient veterinary institutions (required – 97, available – 53, deficit – 44)
- Reluctance in technology adoption for health cover ,augmenting fertility, deworming and required vaccination
- Improper / insufficient shelter leads to low productivity, disease problems
- Very poor slaughter hygiene, unauthorised slaughter
- Local ban on goat rearing, ban on foraging in forest
- Labour shortage , malpractices in trade

Opportunities

- More loan facilities with a condition to grow fodder (at least 10 cents/5 sheep/goat)
- Cultivation of fodder, tree fodder, agro forestry in private/community lands/wastelands with livestock integration to boost income and improve soil fertility
- Supplementing micronutrients / grains/concentrates to augment fertility, production
- Establishing village fodder nurseries to cater the need of fodder seeds, saplings, root slips etc. to the farmers to grow fodder and tree fodder
- Chaff cutter to improve nutrient utilization and minimize wastage
- Knowledge and technology empowerment of farmers / rural women (SHGs) on scientific dairy farming to increase milk production, to augment fertility, to produce clean milk and preparation and marketing of value added milk products wherever possible
- Sensitizing Veterinarians and farmers on Ethno Veterinary Medicine and Practice as primary health care of livestock to save time, energy and money and it is ecofriendly
- Registration / updating farmers database and issuing Cards for incentives for growing fodder, tree fodder, micro nutrients, preference for farmers tour, etc.
- Distribution of elite rams / bucks to registered flock owners/rural women SHGs
- Utilization of processed crop residues, unconventional feedstuffs

Challenges

- Diminishing pasture land , deficit of green fodder is 89.9 per cent, tree fodder
- Diminishing indigenous germplasm / unhygienic slaughter / poor shelter
- Shortage of labour due to higher labour cost
- Diseases such as Anthrax, HS,BT, sheep pox and ET, PPR demoralize the farmers

5.2.4 Poultry

- Population : 586000
- Breeds : Desi chicken (Aseel, silky, naked neck, kadakanath, crosses
- Hybrid broilers : Contract system
- Hybrid pullets : All cage
- Production : Few thousand hybrid broilers and layers
- Productivity (1998-99 to 2006-07) (Annual Compound Growth Rate in per cent)
- Desi egg : 21.20
- Improved egg : 22.42
- Improved egg in lakh : 863.64
- Desi egg in lakh : 98.06
- Poultry meat in ton : 25.67
- Growth rate : Declining due to heavy fluctuation in market price of eggs / meat
- Feed : only foraging for backyard poultry
- Some women, farmers rear turkeys, guinea fowls, geese, pigeons and love birds.
- Ducks are nomadic and brought here for foraging soon after harvest.

5.2.5 Potential of Livestock / Poultry Sector to be explored

Opportunities Exist in

- Empowering rural women to rear goats for revenue generation
- Facilitating to grow perennial fodder and tree fodder for livestock
- Supporting the rural families with concentrate feed for desi chicken to enhance productivity and production of eggs and meat
- Distributing turkeys and feed to rural women to grow and market to earn profit
- To encourage rural farmers to produce more milk, clean milk, creating facilities to chill, to prepare value added milk products

5.2.6 Poultry Farming

Strength

- Growing demand for desi chicken, eggs, other poultry, products
- Premium price for desi chicken and desi eggs/Encouraging loan facilities
- TANUVAS rural women friendly technologies on low cost/high return desi chicken production, rearing and marketing
- Poultry droppings for bio gas / vermicompost / organic farming

Weakness

- Reluctance to feed with nutrient rich feed, sufficient grains, etc.
- Insufficient veterinary institutions (required – 97, available – 53, deficit – 44) to cover immunization to prevent ranikhet disease
- Reluctance in immunizing the birds due to laziness and a few number of birds.

Opportunities

- Supplementing feed/grains/micronutrients to increase production of birds/eggs
- Establishing custom hatching units in rural women households to energise rural women economy through desi chicken production, rearing and marketing

- Knowledge and technology empowerment of farmers / rural women (SHGs) on TANUVAS rural rural women technologies on poultry production/revenue generation
- Registration / updating farmers database and issuing Cards for incentives for grains/concentrates/immunization cover and preference for tour, etc.

Challenges

- Diminishing indigenous germplasm /Heavy fluctuation in broiler chicken / farm egg rate
- Unhygienic slaughter of birds
- Lack of bio-security and spread of rumours

5.2.7 Others

(Rabbits, Pigs, Japanese Quails, Turkeys, Geese, Pigeons, Love Birds, etc.)

Strength

- TANUVAS rural women friendly technologies on poultry development throw low cost/high return poultry production, rearing and marketing
- Interest of some consumers to taste other poultry meat

Weakness

- Reluctance to consume other bird meat /eggs
- Reluctance in immunizing the birds due to laziness and a few number of birds

Opportunities

- Supplementing feed/grains/micronutrients to increase production of birds/eggs
- Registration / updating farmers database and issuing Cards for incentives for feed/immunization cover and preference for tour, etc.

Challenges

- Seasonal marketing /Unhygienic slaughter/spread of rumours .

II. On going Government Development Schemes for Livestock & Poultry (State& Central)

i) Tamilnadu Livestock Development Agency (TNLDA) – Programmes

1. Supply of frozen semen straws for A.I / Training rural educated unemployed youth on A.I. / Orientation program for Field veterinarians and Veterinary officers
2. Assistance to States to Control Animal Diseases (ASCAD)- programmes:
3. To control endemic livestock diseases (FMD & PPR) in intensive way / Farmers training on livestock diseases and their prevention and control.

ii) Tamilnadu Women Development Agency (TNWDA) – Programmes

1. To train women SHGs on self employment micro enterprises including livestock rearing
2. Irrigated Agricultural Modernisation-Water Bodies Restoration Project (IAMWARM) programmes:
3. Fodder seeds distribution to farmers-CO3 in 4 hectares and Fodder Cholan in 90 hectares
4. Farmers training- 200 farmers trained on fodder, feeding and livestock farming;
5. Sterility camps in villages to augment fertility and Door to door Clinical services including A.I through 2 Cluster Sub basin Veterinary Units.

iii) District Rural Development Agency (DRDA) Programmes

1. Capacity building programme for women and farmers on livestock farming.

iv) District Industries Centre (DIC) Programmes

1. Training farmers before issuing loan for livestock units.

v) Tamilnadu Adi Dravidar Housing Development Corporation (THADCO) Programmes

1. Training farmers before issuing loan for livestock units.

III. Interventions required Areas Livestock and Poultry Sector

i) Dairy

Perennial fodder production - tree fodder biomass production - supply of chaff cutter to improve nutrient utilization and to prevent wastage - programmed breeding of indigenous cattle/buffalo to increase conception rate-mobile input units to augment fertility, milk production/productivity-mobile veterinary clinics, veterinary laboratories, control of parasitic diseases-livestock immunization for Anthrax, HS, BQ, FMD –model sheep/goat units in intensive system to motivate farmers-identification and traceability of bovines for database on breedable population-livestock health cover through supply of mineral mixture/by-pass protein-augmenting clean milk production through milking machines, PC based automatic milk collection stations-milk processing facilities through bulk milk coolers, walk-in coolers-manufacturing facilities for value added milk products-revival of dormant MPCs -milk chilling facilities –supply of micro nutrients – quality assurance lab.- farmers study tour-capacity building of farmers / officers on newer technologies to augment fertility, productivity, production – ICT tool for technology dissemination.

ii) Sheep and Goat

perennial fodder production - tree fodder biomass production – distribution of bucks/rams to augment fertility/ production and productivity- immunization for Anthrax, ET, HS, PPR, BTV, sheep pox – supply of micro nutrients – capacity building of farmers / officers on newer technologies.

iii) Poultry

Feed for desi chicken to improve egg / bird production and productivity-immunization against NCD door to door – capacity building of rural women and farmers – distribution of turkeys and Japanese quails for revenue generation

Knowledge Empowerment on Ethno Veterinary Medicine & Practice (EVP): Veterinarians and farmers may be educated/sensitized on Ethno veterinary medicine and practice for primary health care of livestock and poultry

Strengthening the infrastructure of existing units and expansion of ongoing development schemes: Veterinary University Training and Research Centre, Tiruchirapalli, Department of Animal Husbandry, Tiruchirapalli and Tiruchirapalli district co-operative milk producers union (TDCMPU) require strengthening of the infrastructure of existing units and expansion of ongoing development schemes pertaining to capacity building of rural farmers, study tours, workshop/conference for farmers to empower them on newer technologies for sustainable and commercially viable livestock farming, milk chilling, preparation of value added milk products, handling the excess milk during flush season, encouraging rural dairy farmers to produce more milk, clean milk, quality milk so as to earn more profit. Facilities for the above programmes are included. Automatic milk units in selected Aavin societies for producing clean milk. Revival of dormant Aavin societies will facilitate more milk handling and thereby more milk production. Providing touch screen facilities will offer quick and easy access for technologies for improved farming systems and sustainable additional revenue generation part from strengthening the critical marketing of farm produce for satisfactory returns.

5.2.8 Fisheries

1. Baseline Information

- ❖ Inland Water spread Area - 10929 ha.
 - Reservoirs - 2 (117.35 ha)
 - Large irrigation tanks - 460 (5463 ha)
 - Ponds and tanks - 857(5349 ha.)
- ❖ Total fishermen population - 2437.
- ❖ Average fish production in ponds - 1500 kg per ha
- ❖ Present fingerlings production - 4.00 lakhs
- ❖ Fingerlings production - 4.00 lakhs against requirement 45.00 lakhs per year for covering existing water bodies of about 3377 ha
- ❖ Private fish farms - 52 Nos. - 32.60 ha
- ❖ Inland fish production - 2100 tonnes against potential of 4100 tonnes.

Strength

- ❖ Cauvery river flows across the district
- ❖ Five inland fishermen captive society
- ❖ Active inland fisherwomen
- ❖ More intake of freshwater fish

Weakness

- ❖ No self sufficiency in fish seed production.
- ❖ Fish culture in natural small water system is being practiced by stock and harvested system and not by scientific culture method
- ❖ Non availability of stock able size quality fish seeds throughout the year
- ❖ Insufficient training packages on fish culture, breeding and seed rearing, feed formulation fish diseases diagnosis, etc.
- ❖ Disappearance of waterbodies as a result of industrialization and human inhabitation.
- ❖ Under utilization of short seasonal tanks
- ❖ Absence of Dead storage level in the reservoirs affects the natural fish stock.

Opportunities

- ❖ Expansion of freshwater aqua culture practices along Cauvery river stretch
- ❖ Awareness on freshwater fish culture and technical support
- ❖ Scope for Scampi and ornamental fish farming
- ❖ Sathiram complex for fish and ornamental fish marketing facilities
- ❖ Thanjavur fish harvest marketed at Trichy
- ❖ Live fish feed development from the stagnant water body along the Cauvery stretch

Challenges

- ❖ Increasing the area under fish culture by shifting from aquaculture / horticulture
- ❖ Assumed water supply
- ❖ Meeting the seed requirements for carps and scampi

II. On going Government Development Schemes

Schemes pertaining to Inland Fisheries Development

- ❖ Fishermen Group Accidental Insurance – (Central scheme)
- ❖ Fishermen savings – cum Relief scheme
- ❖ Construction of new ponds and tanks in beneficiaries own land with proper screened inlet, outlet and shallow tube well
- ❖ Reclamation / Renovation of ponds / tanks
- ❖ First year inputs (Fish seed, fish seed fertilizers, manures and preventive measures for fish disease (EUS)
- ❖ Anna Marumalarichi Thittam – All Villages
- ❖ IAMWARM –
- ❖ Fisheries Development Minor programme – popularization of scampi culture

III. Intervention required Areas

- ❖ Strengthening of Asoor Fish Seed Farm.
- ❖ Private participation for inland fish culture in farm pond activities, expansion of fish culture in open water system by extending subsidy.
- ❖ To increase the fish production & promote marketing facilities through hygienic marketing.
- ❖ River ranching of native fish varieties for augmenting fish production
- ❖ Supply of fishing implements (modified or advanced craft & gear for operation in deep inland water bodies).
- ❖ Regional fish farmers training centre
- ❖ Farmers training to increase technical knowledge

5.3 Agricultural Engineering

5.3.1 Interventions Required Areas

- Rain water harvesting and runoff management
- Introduction of innovative agricultural machinery stroke implements
- Innovative water harvesting structures
- Strengthening and upgradation of agricultural engineering training centre

- Popularisation of agricultural mechanization through conventional machinery stroke equipments
- Soil conservation works
- Water management works
- Farmers training on improved water management techniques

5.4 Agricultural Marketing and Agribusiness

5.4.1 Interventions Required Areas

- Commodity group formation
- Market Intelligence dissemination
- Facilitation of contract farming
- Trainings /Capacity building of farmers
- Exposure visit to markets
- Arrangement of buyer seller meetings
- Strengthening of market extension centre
- Strengthening of village shandies
- Facilitation of market finance
- Market price surveillance
- Publicity - regulated market
- Export promotion
- Minimizing PH losses
- Value addition
- Market infrastructure activities
- Visit to national market
- Purchase of marketing intelligence materials

5.5. Public Works Department

5.5.1 Interventions Required Areas

- Standardization of Ex-Zamin tanks
- Rehabilitation of public works departments tanks

5.6. Agricultural Credit

5.6.1. Credit Disbursement

Government of India, State Government, Reserve Bank of India and NABARD have taken a number of steps and policy measures for the growth and development of Agriculture and Rural sectors. Besides, they have introduced several innovations in Agricultural Credit flow system to augment access of the rural people to the banking system. Some of the important policy measures / innovations are outlined in what follows.

I. Policy Innovations of Government of India:

1. Agricultural Debt Waiver (For Small Farmers / Marginal Farmers) and Debt Relief (for other Farmers) Scheme covering direct Agricultural Credit.
2. Short Term Crop Loans continued to be disbursed at seven per cent with interest subvention.
3. National Agricultural Insurance Scheme (NAIS) to continue in the present form for Kharif and Rabi 2008-09.
4. Adoption of concept of Total Financial Inclusion (TFI) and meeting the entire credit requirement of Self-Help-Groups.
5. Implementation of Rain-fed Area Development Programme with an allocation of Rs.348 crores with priority to areas not benefited by Watershed Development Schemes.
6. Central Banks and Rural Regional Banks (RRBs) to add 250 accounts every year in Rural and Semi-urban branches.

II. Policy initiatives of Reserve Bank of India:

1. Guidelines on Priority Sector Lending (PSL) revised enlarging its scope.
2. Limits for loans under DRI scheme raised from Rs.6500 to Rs.15000 and that for housing loan under scheme from Rs.5000 to 20000.

3. CBs/RRBs to introduce on a pilot basis in one district, a simplified cyclical credit product whereby the farmers can use core component of 20 per cent of credit limit throughout the year, provided interest is serviced.
4. Banks are allowed to utilize the services of retired bank / Government employees and ex-servicemen as business correspondents.

III. Policy and Development Initiatives of NABARD:

1. NABARD to play an active and supportive role in the implementation of 'Rural Business Hub' Scheme of Ministry of Panchayat Raj envisaging Public-Private-Panchayat Partnership to develop holistic and integrated partnership between decentralized rural production units and larger corporate entities.
2. A new fund "Farmers' Technology Transfer Fund" created to support programmes, workshops / seminars on technology transfer, marketing of agriculture produce and imparting training on new technologies / agriculture practices
3. NABARD in collaboration with Department of Posts, Government of India, to set up showcases in 100 post offices across the country to showcase the products of SHGs and rural artisans.
4. Krishak Saathi Scheme introduced to provide refinance to banks to provide loans to farmers to free themselves from the clutches of money lenders.
5. RIDF loan at 90 per cent of the project cost allowed for roads and social sector projects in Hill States; also, higher mobilisation advance at 30 per cent of total RIDF loans allowed for these states.

IV. Policy Initiatives of Government of Tamil Nadu:

1. Rs.1150 crores allocated in 2008-09 for compensating co-op. banks for waiver of crop loans.
2. It is proposed to disburse new crop loans to the tune of Rs.1,500 crores during 2008-09.

3. The rate of interest on crop loan reduced from five per cent to four per cent for prompt repayments in 2008-09.
4. Rs.40 crores to provide 50 per cent Insurance Premium for 25 lakhs farmers towards crop insurance.
5. SRI cultivation of paddy to be extended to all districts at an estimated cost of Rs.64 crores.
6. 25 per cent subsidy to farmers for purchasing farm machinery under NADP.
7. Afforestation Programme in 51,500 hectares at a cost of Rs.113 crores. 1,000 check dams and 300 percolation ponds to be constructed throughout the State. Rupees three crores provided for forest roads. Rs.10 crores allocated for planting one crore saplings in private lands.
8. Tamil Nadu Co-operative Milk Producers Federation to provide 10,000 crossbred milch animals to Women Self Help Groups in 200 villages covering 5000 women. This scheme will be implemented at a cost of Rs.22 crores for a period of two years.
9. IAMWARD Project extended to another 16 sub-basins.
10. Construction of 48,500 checkdams and percolation tanks in 232 over exploited blocks for conserving ground water at a cost of Rs.550 crores.
11. State Government to open 4 SEZs in Tirunelveli, Tiruvannamalai, Erode and Vellore Districts.
12. A sum of Rs.504 crores is allocated under “Anaithu Grama Anna Marumalarchi Scheme” for undertaking basic infrastructure related works in 2521 village panchayats.
13. Rs.50 crores provided in 2008-09 for 1625 community developmental works under ‘Namakku Naame Thittam’.

Activity wise credit disbursement and projection under agricultural and allied sectors in Tiruchirappalli district is furnished in Table 5.1.

Table 5.1.Activity Wise Credit Disbursement and Projections under Agricultural and Allied Sectors in Trichy district**(Rs in lakhs)**

Sectors	2008-09	2009-10	2010-11	2011-12
Crop loan	58415.88	61336.67	64403.51	67623.68
Term loan	0	0	0	0
Micro Irrigation	2153.21	2260.87	2373.91	2492.61
Land Development	1464.88	1538.12	1615.03	1695.78
Farm Mechanization	5725.27	6011.53	6312.11	6627.72
Plantation & Horticulture	588.06	617.46	648.34	680.75
Forestry & Waste land Development	551.02	578.57	607.5	637.87
Dairy Development	4615.98	4846.78	5089.12	5343.57
Poultry	256.34	269.16	282.61	296.75
Sheep/Goat/Piggery	618.67	649.6	682.08	716.19
Fisheries	20.1	21.11	22.16	23.27
Storage Godown & Market yards	309.4	324.87	341.11	358.17
Bio-gas	0	0	0	0
Sericulture	0	0	0	0
Others	2444.23	2566.44	2694.76	2829.5
Sub total - Term loan	18747.16	19684.51	20668.73	21702.18
Total Agriculture Credit (1+2)	77163.04	81021.18	85072.24	89325.86
Non Farm sector	13324.3	13990.52	14690.04	15424.54
Other Priority Sector	27068.17	28421.58	29842.66	31334.79
Grand Total	117555.51	123433.28	129604.94	136085.19

From the table it could be seen the projected flow of credit disbursement for agriculture and allied sectors during 2009-10, 2010-11 2011-2012 would be Rs. 123433.28 Rs. 129604.94 and Rs. 136085.19 lakhs respectively. The total flow of agriculture credit in terms of crop loan and term loan in 2011-12 would be Rs. 89325.86 lakhs. The flow of credit for non farm sector and other priority sectors in 2011-12 would be Rs. 15424.54 and 31334.79 lakhs respectively.

CHAPTER - VI

DISTRICT PLAN

Introduction

The agriculture and allied sectors such as animal husbandry, fisheries, sericulture, agricultural marketing and agricultural engineering are the major sectors to be improved to enhance production and productivity of the crops and other products to improve the net income of the producers. This in turn will contribute for increasing the agricultural growth to four percent in the XI plan. There are many programmes proposed under NADP for implementation in the next four years.

Innovative Schemes

Innovative programmes in various sectors are proposed under NADP in Tiruchirappalli district. It includes promotion of SRI in paddy cultivation, promotion of maize through distribution of hybrid seeds, mechanization of agricultural operations, organic farming through promotion of vermin compost, promotion of vegetable, fruit crops by making plant protection measures, net house structures, promotion of mechanized village models, Commodity groups, involving self help group members, inter state exposure visits etc.

Vision of XI Plan

The major vision of the XI plan is to achieve the agricultural growth rate by four per cent. To reach this objectives, agricultural and allied sectors need interventions in various activities such as crop improvement through technologies, marketing support, farmers organizations and other supporting activities such as soil and water conservation, dissemination of price information, market intelligence and creation of awareness programmes and infrastructural facilities. In this context, all the agricultural and allied sectors proposed needed interventions at the district level to achieve the growth at national level.

District Plan

The total budget requirements of proposed plan for agricultural and allied sectors to be implemented under NADP in the next four years viz. 2008-09 to 2011-2012 is Rs.19572.70 lakhs in Tiruchirappalli district.

6.1 Agriculture

In Tiruchirappalli district for the past ten years the deceleration in growth agriculture was noticed. However, it is not uniform and there are regions that still hold promise for stimulating the growth. Studies confirmed that the sharp erosion of total factor productivity in agriculture in Tiruchirappalli district on account of multiple factor relating to technology fatigue, soil fatigue, declining fertilizer response rate depleting capital stock and agro-climatic aberrations.

Based upon the analysis of issues problems and opportunities, relevant and feasible strategic plans have been worked out for agricultural development of Tiruchirappalli district.

6.1.1 Increasing Productivity of Paddy through Adoption of Modern (SRI) Technologies

Paddy is one of the major crop being grown in Tiruchirappalli District. The production of paddy had decreased from 2,70,907 tonnes in 1981 to 236,740 tonnes in 2005-06. Since productivity of paddy mainly depends on the use of quality seed materials, production and distribution of hybrid, seed and high yielding varieties is highly essential.

System of Rice Intensification is implemented in Tiruchirappalli District in order to get higher profitability due to lower cost of production by restricting the seed rate, optimum use of inputs and also by curtailing unnecessary use of human capital. SRI technology will be only successful when the key technologies like uniform leveling of field, proper spacing and timely weeding using suitable machineries and implements at

the time of requirement. Having this in mind, it is proposed to distribute machineries and implements like transplanter, marker and conoweeder to farmers following SRI technologies under NADP Project. Also, it is proposed to distribute power thrasher, mini harvester and construction of thrashing floor to reduce the cost of labour and post harvest losses.

i) Budget

The budget requirement for this project is 1633.95 lakhs.

ii) Background

Increasing the productivity of paddy is highly dependent on the use of seed of hybrids and high yielding varieties (HYVs). Moreover, timely completion of nursery and main field operations require use of transplanter, marker, power tiller, construction of thrashing floor, distribution of power thrasher and mini harvester.

iii) Project Rationale

Paddy is one of the major crops being grown in Tiruchirappalli District and the productivity of paddy mainly depends on the use of quality seed materials and high yielding varieties. The cost of cultivation of paddy is also high as compared to the income realized from the crop. The cost of labour accounts for the major share in the total cost and timely harvest is also essential to retain the profitability of the crop. Hence, this project necessitates some of the interventions like production and distribution of hybrid seeds, distribution of Power tiller, Paddy transplanter, conoweeder and marker, power thrasher and construction of thrashing floor etc.

iv) Project Goal

The project aims at increasing production and productivity of paddy through use of seeds of hybrids and high yielding varieties, use of system of rice intensification and reduces the cost of cultivation by reducing the use of inputs like seed, labour and inorganic fertilizers.

v) Project Components

1. One time grant to TANWABE / FIG to take certified seed production and distribution @ Rs.50000/- per group (30 TONNES / Annum)
2. Incentive for seed production to Self Help Groups @ Rs.3 / kg. - TANWABE Groups
3. Seed distribution subsidy for the seeds produced by Self Help Groups @ Rs.5 / kg.
4. Supply of Quality Certified seeds at nominal cost to enhance the SRR @ Rs.5/- per kg. (Public and Private seeds)
5. Seed Minikit of new HYV @ Rs.100/- minikit
6. Hybrid rice seed production subsidy @ Rs.20/- per kg. to FIG / TANWABE groups @ 10 Ac / group (4 TONNESs.)
7. Hybrid Rice seed distribution subsidy – 75 per cent cost or Rs.100/- whichever is less
8. Distribution of Green Manure seeds at 75 per cent subsidy of Rs.15/kg.
9. Distribution of Soil Health Card @ Rs.100/- per card (Soil + Water testing)
10. Assistance to start vermicompost production unit @ Rs.10000 per unit (Self Help Group women farmers)
11. Distribution of Micro Nutrient Mixture @ Rs.500 / Ha.or 50per cent subsidy
12. Gypsum 500 kg/ ha @ Rs.500/Ha. or 50 per cent subsidy
13. Farmers Field School @17000/ No.
14. Massive Rat control campaign in village @ Rs.5000/village
15. Publicity & Training @ Rs.50000/- per district
16. Promotion of SRI Distribution of Marker, Conoweeder and other items @ Rs.3000 / Ha.
17. Transplanter to TANWABE / FIG / farmers @ Rs.75000 each or 50per cent subsidy
18. Power Tiller @ Rs.65000/- each or 50 per cent subsidy

19. Power Thrasher @ Rs.50000/- per No.or 50 per cent subsidy
20. Demonstration on SRI / Hybrid Rice Rs.3000/demo (to be organised in cluster of 10 Ha.)
21. Village campaigns - Kharif / Rabi @ Rs.1000/- per campaign
22. Production of short film on New technologies each Rs.2.5 lakhs
23. Tarpaulin @ Rs.5000/- Nos. or 50 per cent subsidy
24. Biofertiliser @ 50 per cent subsidy @ Rs.3 per No.
25. Publicity / POL & Hireing of Vehicle @ Rs.50000/- per district
26. Community Thrashing floor @ Rs.2 lakhs/- per No. (20'x20')

vi) Project Cost and Implementation Chart

The proposed programmes will cost about Rs.1633.95 lakhs for the four years. The details of year wise cost requirement and physical implementation units are presented in the Table 6.1.

vii) Reporting

After completion of the project, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.1 The Details of Year wise Cost requirement and Physical Implementation Units for Increasing Production and Productivity of Rice

S. No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	One time grant to TANWABE / FIG to take certified seed production and distribution @ Rs.50000/- per group for 23 districts (30 TONNES / Annum)	Nos.	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00
2	Incentive for seed production to Self Help Groups @ Rs.3 / kg. - TABWAVE Groups	Tonnes	420.00	12.60	420.00	12.60	420.00	12.60	420.00	12.60	1680.00	50.40
3	Seed distribution subsidy for the seeds produced by Self Help Groups @ Rs.5 / kg.	Tonnes	420.00	21.00	420.00	21.00	420.00	21.00	420.00	21.00	1680.00	84.00
4	Supply of Quality Certified seeds at nominal cost to enhance the SRR @ Rs.5/- per kg. (Public and Private seeds)	Tonnes	2150.00	107.50	2150.00	107.50	2150.00	107.50	2150.00	107.50	8600.00	430.00
5	Seed Minikit of new HYV @ Rs.100/- minikit	Nos	200.00	0.20	200.00	0.20	200.00	0.20	200.00	0.20	800.00	0.80

Table 6.1 Contd....

S. No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
6	Hybrid rice seed production subsidy @ Rs.20/- per kg. FIG / TANWABE groups @ 10 Ac / group (4 TONNESs.)	Tonnes	10.00	2.00	20.00	4.00	30.00	6.00	30.00	6.00	90.00	18.00
7	Hybrid Rice seed distribution subsidy - 75per cent cost or Rs.100/- whichever is less	Qtl.	10.00	1.00	20.00	2.00	30.00	3.00	30.00	3.00	90.00	9.00
8	Distribution of Green Manure seeds at 75per cent subsidy of Rs.15/kg.	Tonnes	40.00	6.00	50.00	7.50	70.00	10.50	70.00	10.50	230.00	34.50
9	Distribution of Soil Health Card @ Rs.100/- per card (Soil + Water testing)	Nos	65000.00	65.00	65000.00	65.00	65000.00	65.00	65000.00	65.00	260000.00	260.00
10	Assistance to start vermicompost production unit @ Rs.10000 per unit (Self Help Group women farmers)	Nos	20.00	2.00	20.00	2.00	30.00	3.00	30.00	3.00	100.00	10.00
11	Distribution of Micro Nutrient Mixture @ Rs.500 / Ha.or 50per cent subsidy	L.Ha	0.13	65.00	0.13	65.00	0.14	70.00	0.14	70.00	0.54	270.00

Table 6.1 Contd....

S. No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
12	Gypsum 500 kg/ ha @ Rs.500/Ha. or 50per cent subsidy	L.Ha	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.40	0.20
13	Farmers Field School @ 17000/ No.	Nos	28.00	4.76	28.00	4.76	28.00	4.76	28.00	4.76	112.00	19.04
14	Massive Rat control campaign in village @ Rs.5000/village	Nos	170.00	8.50	170.00	8.50	170.00	8.50	170.00	8.50	680.00	34.00
15	Publicity & Training @ Rs.50000/- per district	Nos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Promotion of SRI Distribution of Marker, Conoweeder and other items @ Rs.3000 / Ha.	Ha.	1500.00	45.00	1500.00	45.00	1500.00	45.00	1500.00	45.00	6000.00	180.00
17	Transplanter to TANWABE / FIG / farmers @ Rs.75000 each or 50per cent subsidy	Nos	8.00	6.00	8.00	6.00	8.00	6.00	8.00	6.00	32.00	24.00
18	Power Tiller @ Rs.65000/- each or 50per cent subsidy	Nos	15.00	9.75	20.00	13.00	20.00	13.00	30.00	19.50	85.00	55.25
19	Power Thrasher @ Rs.50000/- per No.or 50per cent subsidy	Nos	14.00	7.00	14.00	7.00	14.00	7.00	14.00	7.00	56.00	28.00

Table 6.1 Contd....

S. No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
20	Demonstration on SRI / Hybrid Rice Rs.3000/demo (to be organised in cluster of 10 Ha.)	Nos	288.00	8.64	288.00	8.64	288.00	8.64	288.00	8.64	1152.00	34.56
21	Village campaigns - Kharif / Rabi @ Rs.1000/- per campaign	Nos	200.00	2.00	200.00	2.00	200.00	2.00	200.00	2.00	800.00	8.00
22	Production of short film on New technologies each Rs.2.5 lakhs	Nos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Tarpaulin @ Rs.5000/- Nos. or 50per cent subsidy	No.	280.00	14.00	280.00	14.00	280.00	14.00	280.00	14.00	1120.00	56.00
24	Biofertiliser @ 50per cent subsidy @ Rs.3 per No.	L.Nos	0.60	1.80	0.60	1.80	0.60	1.80	0.60	1.80	2.40	7.20
25	Publicity / POL & Hiring of Vehicle @ Rs.50000/- per district	Nos	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50	4.00	2.00
26	Community Thrashing floor @ Rs.2 lakhs/- per No. (20'x20')	Nos	1.00	2.00	2.00	4.00	2.00	4.00	2.00	4.00	7.00	14.00
	Total			402.30		402.05		414.05		420.55		1638.95

6.1.2 Increasing the Productivity of Millets

Millets are the important crops being grown in Tiruchirappalli District with normal area of 68200 hectares and its area is increasing in recent years due to increase in consumer demand for value added projects. The production and productivity of millets could be increased mainly by way of using hybrid seeds and hence, the production and distribution of hybrid seeds at nominal / subsidized cost is essential as the price of hybrid seeds is very high. In addition to the distribution of hybrid seeds, distribution of bio fertilizer is essential as these will reduce the inputs costs.

i) Budget

The budget requirement for this project proposal is 11.6 lakhs.

ii) Background

Millets are the important crops being grown in Tiruchirappalli district with normal area of 68200 hectares and its area is increasing in recent years due to increase in consumer demand for value added projects. The production and productivity of millets could be increased mainly by way of using hybrid seeds and hence, the production and distribution of hybrid seeds at nominal / subsidized cost is essential as the price of hybrid seeds is very high. In addition to the distribution of hybrid seeds, distribution of bio fertilizers is essential as these will reduce the inputs costs.

iii) Project Rationale

Enhancement of production, productivity of millets, reduction of input costs and minimizing the post harvest losses necessitates the following items.

1. HYV Seed distribution
2. Technology Demonstration and
3. Distribution of Bio fertilizer

iv) Project Strategy

The project envisages enhancement of production, productivity of millets, reduction in input costs and minimizing the post harvest losses by way of following technological interventions with demonstration approach.

v) Project Goal

The project aims at enhancement of production, productivity of millets by way of production and distribution of seeds of hybrid maize.

vi) Project Component

1. HYV Seed distribution @50 per cent subsidy limited to Rs.8/Kg
2. Technology demonstration including minor millets subsidy @ Rs.2000/Ha
3. Distribution of Bio fertilizers @ 50 per cent subsidy limited to Rs.3/pocket

vii) Project Cost

The programmes covered under NADP will have a total budget of Rs.296.40 lakhs. The details of year wise cost requirement and physical implementation units are presented in Table 6.2.

viii) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.2 The Details of Year wise Cost requirement and Physical Implementation Units for Increasing Production and Productivity of Millets**Financial: Rs. in lakhs**

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	HYV Seed distribution @ 50 per cent Subsidy limited to Rs.8/Kg	Tonnes	5.00	0.40	5.00	0.40	5.00	0.40	5.00	0.40	20.00	1.60
2	Technology Demonstration including minor millets Subsidy @ Rs.2000/Ha	Ha	35.00	0.70	35.00	0.70	35.00	0.70	35.00	0.70	140.00	2.80
3	Distribution of Bio fertilizer @ 50 per cent subsidy limited to Rs.3/pocket	L.No	0.60	1.80	0.60	1.80	0.60	1.80	0.60	1.80	2.40	7.20
	Total			2.90		2.90		2.90		2.90		11.60

6.1.3 Increasing the Productivity of Maize (Rainfed)

Maize area in Tiruchirappalli district was less than 10,000 hectares but its area is increasing in recent years due to increase in profitability and demand for starch and poultry feed industries. The production and productivity of maize could be increased mainly by way of using hybrid seeds and hence, the production and distribution of hybrid seeds at nominal / subsidized cost is essential as the price of hybrid seeds is very high.

In addition to the distribution of hybrid seeds, distribution of rotavator, mini harvester, stripper, erection of pipelines, construction of thrashing floor and vermicompost units are essential as these will reduce the inputs, labour costs and also will reduce the post harvest losses.

i) Budget

The budget requirement for increasing productivity of maize in Tiruchirappalli district is Rs. 270.00 lakhs.

ii) Background

Maize is one of the promising crops to the farmers of Tiruchirappalli district as the farmers are getting remunerative price for maize due to increase in demand for starch and poultry feed industries.

In this context, increase in productivity and profitability of maize depends mainly on the production and distribution of hybrid seeds at subsidized rate. In addition to this, other inputs like distribution of rotavator, mini harvester, stripper, erection of pipelines, construction of thrashing floor, and vermi - compost units are essential as these not only reduce the input costs but also will reduce the post harvest losses.

iii) Project Rationale

Enhancement of production and productivity of maize by way of production and distribution of seeds of hybrid maize.

iv) Project Strategy

The project envisages enhancement of production, productivity of maize, reduction in input costs and minimizing the post harvest losses by following technological interventions with demonstration approach.

v) Project Goal

The project aims at enhancement of production and productivity of maize by way of production and distribution of seeds of hybrid maize.

vi) Project Component

Distribution of Hybrid Seeds.

vii) Project Cost and Financing

The programmes covered under NADP will have a total budget of Rs.270 lakhs. The budget and implementation chart of the project of the project are presented in Table 6.3.

viii) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.3 The Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Maize

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Hybrid seed distribution @ 50 per cent subsidy limited to Rs.75/Kg	Tonnes	90.00	67.50	90.00	67.50	90.00	67.50	90.00	67.50	360.00	270.00

6.1.4 Increasing the Productivity of Pulses

The pulses production remained unsatisfactory at an annual average of about 13.04 million tonnes, lower than the average annual production of 13.35 million tonnes achieved during the VIII Plan. The creation of Technology Mission on Pulses does not made any impact, as production remained almost stagnant with year to year fluctuations. There was no increase in productivity either. The availability of pulses, a main source of protein for most of the India's vegetarian population, had declined from 69 gms / capita / day in 1961 to 32 gms/capita/day in 2000. Hence there is an urgent need for increasing productivity in the district to meet the demand supply gap. In this project proposal, the enhancement of production, productivity of pulses in the Tiruchirappalli district was suggested by way of production and distribution of seeds of pulses, adoption of precision farming in pulses, foliar nutrition, INM, IPM and capacity building of farmers. For this Rs. 1450.70 lakhs is required for implementation of this proposal.

i) Project Rationale

Enhancement of production and productivity of pulses by way of production and distribution of seeds of pulses, adoption of precision farming in pulses, foliar nutrition, INM, IPM and capacity building of farmers.

ii) Project Strategy

The project envisages enhancement of production and productivity of pulses, reduction in input costs and minimizing the post harvest losses by following technological interventions with demonstration approach.

iii) Project Goal

The project aims at enhancement of production and productivity of pulses by way of production and distribution of seeds of pulses, adoption of precision farming in pulses, foliar nutrition, INM, IPM and capacity building of farmers.

iv) Project Component

1. Seed production Subsidy @ Rs.10/Kg
2. Seed production through FIG/ TANWABE one time grant @ Rs.50000/group (10 Tonnes/group/year)
3. Seed production Subsidy @ Rs.10/Kg shared by seed producing groups / grower @ 25:75 basis
4. Seed Distribution Subsidy @ Rs.12/Kg through Dept./Private/TANWABE and FIG
5. Pipes carrying water from source to field @50 per cent subsidy limited to Rs15000/- max of 800tonness.
6. Precision farming by sprinkler @ 90 per cent subsidy limited to Rs15000/ha
7. Distribution of Rain Gun @ 50 per cent subsidy limited to Rs.15000/unit
8. Distribution of Bio fertilizers @ 50 per cent subsidy Rs.3/No.
9. Foliar Nutrient application subsidy @ 50 per cent cost limited to Rs.200/Ha
10. Farmers Training for 50 farmers for 2 days / Rs.15000/ Training
11. Integrated Nutrient Management (INM) @ Rs.1250/Ha. and
12. Integrated Pest Management (INM) @ Rs.750/Ha.

v) Project Cost and Financing

The programmes covered under NADP will have a total budget of Rs.1450.70 lakhs. The budget and implementation chart of the project of the project are presented in Table 6.4.

vi) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.4 The Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Pulses**Financial: Rs. in lakhs**

S.No	Details of Specific intervention	Unit	2008-09		2009-10		2010-11		2011-12		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Seed production Subsidy @ Rs.10/Kg	Tonnes	170	17.000	170	17.000	170	17.000	170	17.000	680	68.00
2	Seed production through FIG/ TANWABE one time grant @ Rs.50000/group (10 Tonnes/ group/year)	No	17	8.500	0	0	0	0	0	0	17	8.50
3	Seed production Subsidy @ Rs.10/Kg shared by seed producing groups / grower @25:75 basis	Tonnes	170	17.000	170	17.000	170	17.000	170	17.000	680	68.00
4	Seed Distribution Subsidy @ Rs.12/Kg through Dept./Private/TANWABE and FIG	Tonnes	340	40.800	340	40.800	340	40.800	340	40.800	1360	163.20
5	Pipes carrying water from source to field @ 50 per cent subsidy limited to Rs15000/- max of 800tonness.	Nos.	80	12.000	80	12.000	80	12.000	80	12.000	320	48.00

Table 6.4 Contd....

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-09		2009-10		2010-11		2011-12		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
6	Precision farming by sprinkler @ 90 per centsubsidy limited to Rs15000/ha	Ha	100	15.000	100	15.000	100	15.000	100	15.000	400	60.00
7	Distribution of Rain Gun @ 50 per cent subsidy limited to Rs.15000/unit	No.	3	0.450	3	0.450	3	0.450	3	0.450	12	1.80
8	Distribution of Bio fertilizer @ 50 per cent subsidy Rs.3/No.	L.No	0.3	0.900	0.3	0.900	0.3	0.900	0.3	0.900	1	3.60
9	Foliar Nutrient application subsidy @ 50 per cent cost limited to Rs.200/Ha	Ha	3200	6.400	2400	4.800	2400	4.800	2600	5.200	10600	21.20
10	Farmers Training 50farmers for 2 days / Rs.15000/ Training	No	14	2.100	14	2.100	14	2.100	14	2.100	56	8.40
11	Integrated Nutrient Management (INM) @ Rs.1250/Ha.	L.Ha.	0.1	125.00	0.10	125.00	0.15	187.50	0.15	187.50	1	625.00
12	Integrated Pest Management (INM) @ Rs.750/Ha.	L.Ha.	0.10	75.00	0.10	75.00	0.15	112.50	0.15	112.50	1	375.00
	Total			320.15		310.05		410.05		410.45		1450.70

6.1.5 Increasing the Productivity of Groundnut

Groundnut is the major oilseed and single largest source of edible oils in India. Tamil Nadu covers an area of about eight lakh hectares and contributes 1.2 million tonnes (16 per cent) of the groundnut production in India. Production is highly dependent on rainfall distribution and exhibits huge fluctuations over years. Around 70 per cent of the area is sown as rainfed crop and the remaining 30 per cent area under irrigated conditions. The average groundnut yield is 1784 kg of pods /ha . Nowadays, palm oil and soyabean oil act as a close substitute for groundnut oil. Increased import of soya oil and palm oil from Malaysia, Indonesia and Brazil in recent years has impact on domestic prices of groundnut and leads to reduction in profitability of groundnut cultivation. Hence there is an urgent need to increase productivity of groundnut so that it can act as competitive to the palm oil and soya oil. In this project proposal, the enhancement of production and productivity of groundnut in the Tiruchirappalli district was suggested by way of production and distribution of seeds of groundnut, adoption of precision farming in groundnut, INM, IPM and capacity building of farmers. For this Rs.612.04 lakhs is required for implementation of this proposal.

i) Project Rationale

Enhancement of production and productivity of groundnut by way of production and distribution of seeds of groundnut, adoption of precision farming in groundnut, INM, IPM and capacity building of farmers.

ii) Project Strategy

The project envisages enhancement of production and productivity of groundnut, reduction in input costs and minimizing the post harvest losses by following the technological interventions with demonstration approach.

iii) Project Goal

The project aims at enhancement of production and productivity of groundnut by way of production and distribution of seeds of groundnut, adoption of precision farming in groundnut, INM, IPM and capacity building of farmers.

iv) Project Component**Details of Specific intervention Groundnut irrigated**

1. Purchase and distribution of Breeder seeds @ Rs.50/Kg.
2. Seed Production subsidy @ Rs.10/Kg.
3. Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.
4. Pipes carrying water from source to field @ 50 per cent subsidy
5. Bio-fertiliser distribution @ Rs.3/Nos.
6. Distribution of Gypsum subsidy @ 50 per cent cost + TC limited to Rs.750/Ha.
7. MN Mixture distribution @ 50 per cent cost limited to Rs.500/Ha.
8. Farmers field school @ Rs.22680/No.
9. Distribution of Tarpaulin subsidy @ Rs.5000/No.
10. Farmers Training @ Rs.20000/Training two days for 50 farmers
11. Publicity /POL/Hiring of Vehicle @ Rs.100000/year/District
12. Precision farming (Drip fertigation) 10 ha cluster subsidy @ 90per cent subsidy limited to Rs.8 Lakhs/Cluster
13. Strengthening of rural godowns and Marketing Centres to stock and distribute seeds and other inputs for TANWABE/FIG @ Rs.10 Lakhs/each
14. Seed Village Scheme- Seed distribution @ 50 per cent cost limited to Rs.20/Kg.

Details of Specific Intervention Groundnut (Rainfed)

1. Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.
2. Distribution of Gypsum subsidy @ 50 per cent cost + TC limited to Rs.750/Ha.
3. MN Mixture distribution @ 50 per cent cost limited to Rs.500/Ha.

v) Project Cost and Financing

The programmes covered under NADP will have a total budget of Rs.612.84 lakhs and 56.20 lakhs respectively for irrigated and rainfed groundnut respectively. The budget and implementation chart of the project are presented in Table 6.5a & 6.5b.

vi) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.5 a The Details of year wise cost requirement and Physical implementation Units for increasing Production and Productivity of Groundnut (Irrigated)**Financial: Rs. in lakhs**

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Purchase and distribution of Breeder seeds @ Rs.50/Kg.	Tonnes	0.85	0.43	0.85	0.43	0.85	0.43	0.85	0.43	3.40	1.70
2	Seed Production subsidy @ Rs.10/Kg.	Tonnes	120	12.00	120	12.00	120	12.00	120	12.00	480	48.00
3	Seed Distribution subsidy @ 50per cent limited to Rs.12/Kg.	Tonnes	120	14.40	120	14.40	120	14.40	120	14.40	480	57.60
4	Pipes carrying water from source to field @ 50 per cent subsidy	No.	100	15.00	100	15.00	100	15.00	100	15.00	400	60.00
5	Bio-fertiliser distribution @ Rs.3/Nos.	L.No.	0.5	1.50	0.5	1.50	0.5	1.50	0.5	1.50	2	6.00
6	Distribution of Gypsum subsidy @ 50 per cent cost + TC limited to Rs.750/Ha.	Ha	900	6.75	900	6.75	900	6.75	900	6.75	3600	27.00
7	MN Mixture distribution @ 50per cent cost limited to Rs.500/Ha.	Ha	150	0.75	150	0.75	150	0.75	150	0.75	600	3.00
8	Farmers field school @ Rs.22680/No.	No.	5	1.13	5	1.13	5	1.13	5	1.13	20	4.54

Table 6.5a Contd....

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
9	Distribution of Tarpaulin subsidy @ Rs.5000/No.	No	15	0.75	15	0.75	15	0.75	15	0.75	60	3.00
10	Farmers Training @ Rs.20000/Training 2 days for 50 farmers	No	10	2.00	10	2.00	10	2.00	10	2.00	40	8.00
11	Publicity /POL/Hiring of Vehicle @ Rs.100000/year/District	No.	0	1.00	0	1.00	0	1.00	0	1.00	0	4.00
12	Precision farming (Drip fertigation) 10 ha cluster subsidy @ 90 per cent subsidy limited to Rs.8 Lakhs/Cluster	No.	5	40.00	5	40.00	5	40.00	5	40.00	20	160.00
13	Strengthening of Rural godowns and Marketing Centre to stock and distribute seeds and other inputs for TANWABE/FIG @ Rs.10 Lakhs/each	No.	7	70.00	0	0.00	0	0.00	0	0.00	7	70.00
14	Seed Village Scheme-Seed distribution @ 50 per cent cost limited to Rs.20/Kg.	Tonnes	200	40.00	200	40.00	200	40.00	200	40.00	800	160.00
	Total			205.71		135.71		135.71		135.71		612.84

Table 6.5 b The Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Groundnut (Rainfed)

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.	Tonnes	50.00	6.00	50.00	6.00	50.00	6.00	50.00	6.00	200.00	24.00
2	Distribution of Gypsum subsidy @ 50 per cent cost + TC limited to Rs.750/Ha.	Ha	900.00	6.75	900.00	6.75	900.00	6.75	900.00	6.75	3600.00	27.00
3	MN Mixture distribution @ 50 per cent cost limited to Rs.500/Ha.	Ha	260.00	1.30	260.00	1.30	260.00	1.30	260.00	1.30	1040.00	5.20
	Total			14.05		14.05		14.05		14.05		56.20

6.1.6 Increasing Area and Productivity of Sesame

Sesame is also a crop of choice for farmers due to its wider adaptability, high yield potential, shorter duration and profitability. There is a wide scope for increasing area under sunflower in garden land as well as rainfed situations in Tiruchirappalli district. Recently when compared to the other competitive crops in rainfed situation sesame gives good remuneration to farmers. Hence the proposal is formulated to increase the area under sesame in non traditional areas of Tiruchirappalli district. In this project proposal, the enhancement of production and productivity of sesame in the Tiruchirappalli district by way of production and distribution of seeds of sesame. For this Rs. 14.72 lakhs is required for implementation of this proposal.

i) Project Rationale

Enhancement of production and productivity of sesame by way of production and distribution of seeds and $MnSO_4$.

ii) Project Strategy

The project envisages enhancement of production and productivity of sesame, reduction in input costs and minimizing the post harvest losses by following the technological interventions with demonstration approach.

iii) Project Goal

The project aims at enhancement of production and productivity of sesame by way of production and distribution of seeds.

iv) Project Component

1. Seed Production subsidy @ Rs.10/Kg.
2. Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.
3. MN SO4 distribution @ 50 per cent cost limited to Rs.100/Ha.

v) Project Cost and Financing

The programmes covered under NADP will have a total budget of Rs.14.72 lakhs for increasing productivity of sesame. The budget and implementation chart of the project of the project are presented in Table 6.6.

vi) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.6 Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Sesame

Financial: Rs. in lakhs

Sl. No.	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Seed Production subsidy @ Rs.10/Kg.	Tonnes	14.00	1.40	14.00	1.40	14.00	1.40	14.00	1.40	56.00	5.60
2	Seed Distribution subsidy @ 50 per cent limited to Rs.12/Kg.	Tonnes	14.00	1.68	14.00	1.68	14.00	1.68	14.00	1.68	56.00	6.72
3	MN SO4 distribution @ 50 per cent cost limited to Rs.100/Ha.	Ha	600.00	0.60	600.00	0.60	600.00	0.60	600.00	0.60	2400.00	2.40
	Total			3.68		3.68		3.68		3.68		14.72

6.1.7 Increasing Area and Productivity of Sunflower

Sunflower is the oil of preference among the consumers world over due to its health appeal. In India too, sunflower oil is the largest selling oil in the branded oil segment (about 45 per cent). The crop is raised in two seasons *viz.*, Karthigai pattam (October-November) and Chitrai pattam (April-May). Marketing activities coincides with March – May and June – August. Indian sunflower seed production ranged between 10-15 lakh tonnes. The major producers in India are Karnataka (35 per cent), Andhra Pradesh (30 per cent), Maharashtra (15 per cent), Punjab (4 per cent) and Haryana (4 per cent). Around 70 per cent of the crop is produced in Rabi (November – March) season, and remaining 30 per cent in kharif (June – September). Tiruchirappalli, Erode, Karur, Villupuram and Dindigul are the major sunflower growing belts in Tamil Nadu. Sunflower is also a crop of choice for farmers due to its wider adaptability, high yield potential, shorter duration and profitability. There is wide scope for increasing area under sunflower in garden land as well as in rainfed situation in Tiruchirappalli district. Recently when compared to the other competitive crops in rainfed situations, sunflower gives good remuneration to farmers. Hence the proposal is formulated to increase the area under sunflower in non traditional areas of Tiruchirappalli district. In this project proposal, the enhancement of production and productivity of sunflower in the Tiruchirappalli district was suggested by production and distribution of seeds of sunflower. For this Rs.103.60 lakhs is required for implementation of this proposal.

i) Project Rationale

Enhancement of production and productivity of Sunflower by way of production and distribution of seeds.

ii) Project Strategy

The project envisages enhancement of production and productivity of Sunflower, reduction in input costs and minimizing the post harvest losses by following the technological interventions with demonstration approach.

iii) Project Goal

The project aims at enhancement of production and productivity of Sunflower by way of production and distribution of seeds.

iv) Project Component

1. Hybrid seed distribution @ 50 per cent subsidy limited to Rs.150/Kg.
2. Crop production technology demonstration @ 50 per cent subsidy limited to Rs.5000/ha.
3. Hybrid Seed Minikit @ free of cost 1 Kg kit (Rs.400/Kit)

v) Project Cost and Financing

The programmes covered under NADP will have a total budget of Rs.103.60 lakhs for increasing productivity of sunflower. The budget and implementation chart of the project of the project are presented in Table 6.7.

vi) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.7 Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Sunflower

Financial: Rs. in lakhs

Sl. No.	Details of Specific intervention	2008-09		2009-10		2010-11		2011-12		Total	
		No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Hybrid seed distribution @ 50 per cent subsidy limited to Rs.150/Kg.	15.00	22.50	15.00	22.50	15.00	22.50	15.00	22.50	60.00	90.00
2	Crop production technology demonstration @ 50 per cent subsidy limited to Rs.5000/ha.	60.00	3.00	60.00	3.00	60.00	3.00	60.00	3.00	240.00	12.00
3	Hybrid Seed Minikit @ free of cost 1 Kg kit (Rs.400/Kit)	100.00	0.40	100.00	0.40	100.00	0.40	100.00	0.40	400.00	1.60
	Total	175.00	25.90	175.00	25.90	175.00	25.90	175.00	25.90	700.00	103.60

6.1.8 Increasing area and Productivity of Cotton

Cotton, the traditional and important commercial crop has been in cultivation in India for more than five thousand years. In India, cotton farming provides livelihood for over four million farm families. Various allied activities like ginning, spinning, weaving, textile processing, garment manufacturing, marketing etc., provide employment to several million people. In Tamil Nadu, cotton is one of the important cash crops and the area under cotton declined from 2.39 lakh hectares in 1990's to 0.75 lakh hectares in 2002-03. Thereafter from 2003-04, the area under cotton is expanding. The reasons for the expansion are contract farming, good yield and reasonable price received in the last year. The pace of expansion is slow because of land availability and higher cost of cultivation. Cotton is cultivated throughout the year in Tamil Nadu in four seasons namely winter irrigated, Summer – Irrigated, Rainfed and Rice fallow. Among this, the area under winter irrigated is more (Masipattam). The major varieties cultivated in Tamil Nadu are MCU5, RCH and LRA-5166. According to the market sources the demand for cotton in Tamil Nadu is 65 lakh bales but production is only 4 to 5 lakh bales. The deficit is outsourced from Gujarat, Maharashtra, Karnataka, Andhra Pradesh and imports from USA and Egypt. Hosiery units of Tamil Nadu uniquely require Shankar-6 variety. Hence they specifically outsourced from Gujarat and Maharashtra. Due to high freight charges, (Rs 400-450/bale) procurement from Punjab is in a declining trend. Hence there is unique scope for increasing area under cotton there by bridging the demand and supply of cotton in Tamil Nadu. Therefore increasing area under cotton in Tiruchirappalli district is proposed. In this project proposal, the enhancement of production and productivity of cotton in the Tiruchirappalli district was suggested by way of production and distribution of seeds of cotton and MN mixture. For this Rs.61.15 lakhs is required for implementation of this proposal.

i) Project Rationale

Enhancement of production and productivity of cotton by way of production and distribution of seeds and MN mixture.

ii) Project Strategy

The project envisages enhancement of production and productivity of cotton, reduction in input costs and minimizing the post harvest losses by following the technological interventions with demonstration approach.

iii) Project Goal

The project aims at enhancement of production and productivity of cotton by way of production and distribution of seeds.

iv) Project Component**Details of Specific intervention of Cotton (irrigated)**

1. Seed distribution subsidy for Bt. Cotton @ 50 per cent limited to Rs.375/pocket of 450 gram
2. FFS to TANWABE/ FIG Rs.17000/ FFS
3. Distribution of MN Mixture @ 50 per cent subsidy limited to Rs.500/ha

Details of Specific Intervention of Cotton (rainfed)

1. Seed distribution subsidy @ Rs.20/Kg.

v) Project Cost and Financing

The programmes covered under NADP will have a total budget of Rs. 61.15 lakhs for increasing productivity of cotton. The budget and implementation chart of the project are presented in Table 6.8a & 6.8b.

vi) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.8 a Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Cotton (Irrigated)

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Seed distribution subsidy for Bt. Cotton @ 50 per cent limited to Rs.375/pocket of 450 gram	L.No	0.03	11.25	0.03	11.25	0.03	11.25	0.04	15.00	0.13	48.75
2	FFS to TANWABE/ FIG Rs.17000/ FFS	No	10.00	1.70	10.00	1.70	10.00	1.70	10.00	1.70	40.00	6.80
3	Distribution of MN Mixture @ 50 per cent subsidy limited to Rs.500/ha	Ha	200.00	1.00	200.00	1.00	200.00	1.00	200.00	1.00	800.00	4.00
	Total			13.95		13.95		13.95		17.70		59.55

Table 6.8b Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production and Productivity of Cotton (Rainfed)

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		2011-2013	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Seed distribution subsidy @ Rs.20/Kg	Qtl	20	0.40	20	0.40	20	0.40	20	0.40	80	1.60

6.1.9 Strengthening of Extension Activities at each District/ Block Level for Capacity Building and Dissemination of Technology

i) Project Rationale

Over the last few years mass media has seen a phenomenal growth in the country both in terms of reach and advance in technology. This medium has not been exploited to its full potential for the purpose of agricultural extension specifically market led extension. A concerted and well-coordinated effort now needs to be made to use the electronic media in the Extension strategy by strengthening infrastructure facility. Market led Extension is now becoming more diversified, technology intensive, knowledge oriented and more demand-driven. This requires the extension workers at the cutting edge level to be master of so many trades, which is neither practicable nor possible. Use of IT in extension enables the extension workers to be more effective in meeting the information needs of farmers. The growing Information and communication technology is used widely in the entire developmental sector except in agricultural sector. Use of interactive multimedia and such other tools will help the extension workers to serve the farmers better. Similarly, extension systems have to utilize the existing print and electronic mass media for faster dissemination of information to farmers. The technological advancement in telecommunication and space technology has to be fully tapped for devising appropriate programs for farmers. Hence there is an urgent need to strengthening of extension activities at each district/ block level with LCD projectors and lap top computer including internet facilities.

ii) Project Strategy

Strengthening of extension centre at each district/ block level for capacity building and dissemination of marketing information.

iii) Project Goals

Strengthening of extension centre at each district/ block level for capacity building and dissemination of Technology in Tiruchirappalli district over the period of four years from NADP funding.

iv) Project Components

1. Strengthening of District Information Centre, Providing Lap Top ,Printer, LCD, Scanner, Digital Camera, Copier etc.
2. Formation of FIG @ Rs.12500/ group for trainig and office automation, ID card, District level meetings etc.
3. Establishment of Agriclinic.& Agri Business by unemployed agri graduates 25 per cent subsidy @ Rs.2.5 lakh each.
4. Exposure visit Inter state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh).
5. Exposure visit Inter state @ 50 farmers/Tour, 5 days @ Rs.300/day/farmer (Rs.0.75 lakhs each).
6. District level exhibition/ kissan mela @ Rs.2.0 Lakh/ District.
7. Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, Radio & other mass media @Rs.2.0 Lakh / district.
8. Video Conferencing facilities at District HQ @ Rs.10.0 Lakh/ District & State HQ @Rs.15 Lakh.
9. Farmers Training through FTC @ 40 training (2 Days) / year @ 50 farmers / training. Rs.20000/ training.
10. Strengthening of FTC with Laptop, Printer, Scanner, LCD, Copier, Digital Camera etc for 23 Centres @ Rs.2.5 Lakh each. Including Neyveli Centre.
11. Exposure visit to Technical Officers to other states 300 officers / year (10 Batches) for 10 days @ Rs.3.0 Lakh / batch.

v) Project Cost and Financing

Over the last few years mass media has seen a phenomenal growth in the country both in terms of reach and advance in technology. This medium has not been exploited to its full potential for the purpose of agricultural extension specifically market led extension. A concerted and well-coordinated effort now needs to be made to use the electronic media in the Extension strategy by strengthening infrastructure facility. In this project it is proposed to strengthening market extension centre in Tamil Nadu over the period of four years. This will require resources of Rs. 318.25 lakhs for the period of four years. The details of implementation chart are presented in Table 6.9.

vi) Reporting

After completion of the project implementation, year wise evaluation will be made by monitoring and evaluation wing and the report will be submitted every year.

Table 6.9 Details of Year wise Cost Requirement and Physical Implementation Units for Strengthening of Extension Activities**Financial: Rs. in lakhs**

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
1	Strengthening of District Information Centre, Providing Lap Top, Printer, LCD, Scanner, Digital Camera, Copier etc	L.Rs.	1.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.50
2	Formation of FIG @ Rs.12500/ group for trainig and office automation, ID card, District level meetings etc	L.Rs.	150.00	18.75	100.00	12.50	0.00	0.00	0.00	0.00	250.00	31.25
3	Establishment of Agriclinic.& Agri Business by unemployed agri graduates 25 per cent subsidy @ Rs.2.5 lakh each	No	8.00	20.00	6.00	15.00	0.00	0.00	0.00	0.00	14.00	35.00
4	Exposure visit Inter state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh)	L.Rs	3.00	5.40	3.00	5.40	3.00	5.40	3.00	5.40	12.00	21.60

Table 6.9 Contd.....

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
5	Exposure visit Inter state @ 50 farmers/Tour, 5 days @ Rs.300/day/ armer (Rs.0.75 lakhs each)	L.Rs	3.00	2.25	3.00	2.25	3.00	2.25	3.00	2.25	12.00	9.00
6	District level exhibition/ kissan mela @ Rs.2.0 Lakh/ District	L.Rs	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	4.00	8.00
7	Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, adio & other mass media @Rs.2.0 Lakh / district	L.Rs	2.00	4.00	1.00	2.00	1.00	1.00	1.00	2.00	5.00	9.00
8	Vedio Conferencing facilities to District HQ @Rs.10.0 Lakh/ District & State HQ @Rs.15 Lakh	L.Rs	1.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00
9	Farmers Training through FTC @ 40 training 2 Days) / year @ 50 farmers / training . Rs.20000/ training	L.Rs	40.00	8.00	40.00	8.00	40.00	8.00	40.00	8.00	160.00	32.00

Table 6.9 Contd.....

Financial: Rs. in lakhs

S.No	Details of Specific intervention	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
			No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
10	Strengthening of FTC with Laptop, Printer, Scanner, LCD, Copier, Digital Camera etc for 23 Centres @ Rs.2.5 Lakh each. Including Neyveli Centre	L.Rs	10.00	30.00	10.00	30.00					20.00	60.00
11	Exposure visit to Technical Officers to other states 300 officers / year (10 Batches) for 10 days @ Rs.3.0 Lakh / batch	L.Rs		25.00		25.00		25.00		25.00	0.00	100.00
	Total		219.00	127.90	164.00	102.15	48.00	43.65	48.00	44.65	479.00	318.35

6.2 Horticulture

In Tiruchirappalli district, horticulture crop *viz.*, Banana occupies the major share as compared to the agricultural crops. The other major horticultural crops are tomato, bhendi, brinjal, greens and gourds. Among the plantation crops, betel vine accounted for major share of area. Similarly, mango and guava are the two fruit crops that occupy major share in the cropped area.

To increase the production and productivity of horticultural crops various interventions were being attempted by the government from time to time. Of which, some of the major programmes being implemented by the Department of Horticulture as on going schemes like National Horticulture Mission programme, Micro irrigation project and IAMWARM project in effective manner .

Since the vegetable crops, plantation crops and fruit crops accounted for the major share in the cropped area, the Department of horticulture has proposed some of the interventions to increase the productivity of the crops under NADP other than the ongoing programmes. A project proposal has been given for three projects *viz.*, increasing vegetable production, increasing major fruits and plantation crops and extension support to increase the production of Horticulture Crops in Tiruchirappalli District.

6.2.1 Increasing Production of Vegetable and Plantation crops in Tiruchirappalli District

Onion, tomato, bhendi, brinjal, greens and gourds are the important vegetable crops grown in Tiruchirappalli district. The allocation of area under vegetables is highly influenced by the prevailing market prices and hence the area is fluctuating year after year. The productivity of vegetables is also comparatively lower than the attainable average yield. As the area under vegetable crops is influenced by market price, the possibility of increasing the production can be increased by improving the productivity of vegetables. In addition, the district has the following advantages in growing of

vegetables. They are; the prevailing temperature is suitable for vegetable cultivation in Tiruchirappalli District, Farmers in Tiruchirappalli district are well experienced in vegetable cultivation and marketing of their products to distant markets like Kerala through Ottanchatram market for getting remunerative prices and adequate transport facilities to move vegetables from farm to selling point are available. Moreover, Uzavar shandhais are functioning well in this district located around 20-25 km away from all the production centers and the farmers are provided with drip system assisted by the department under Micro Irrigation System with 50per cent subsidy to cope up with the water scarcity.

In this back drop, the major goal or objective of the project is to increase the area and productivity of vegetables and betel vine by 15 to 20per cent in the next four years. The major interventions in this project are; provision of net house structure for nursery to produce healthy, pest and disease free, quality and well rooted seedlings for better establishment, provision of net house structure and pandal installation to increase the vegetable production, supply of disease free seedling (tissue culture plants) fertilizer and plant protection management to vegetable crops and betel vine crops to increase the productivity as well as the standard of living of the farming communities. To implement these programmes, a total budget of Rs.171.95 lakhs is required for the year 2008-2012.

i) Budget

The component wise interventions and its budget for increasing the production of vegetable and plantation crops are provided in Table 6.10.

Table 6.10 The Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production of Vegetable and Plantation Crops

Financial: Rs. in lakhs

S. No.	Activities	Unit cost	2008-09		2009-10		2010-2011		2011-12		Total	
			Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
1	Net House structure											
	a. Nursery & Vegetable production	Rs. 1.00 lakh / 300 Sq.m	2	2.00	2	2.00	2	2.00	2	2.00	8	8.00
2	Pandal for vegetable production	Rs. 1.00 lakh / ha	10	10.00	10	10.00	10	10.00	10	10.00	40	40.00
3	Package for plant protection	Rs. 3,000 / ha	200	6.00	200	6.00	200	6.00	200	6.00	800	24.00
4	Farm waste shredder / vegetable waste Shredder	Rs. 40,000 / No.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
5	Borewell with casing pipe	Rs. 1.5 lakh / No.	5	7.50	5	7.50	5	7.50	5	7.50	20	30.00
6	Humic acid / Effective E Microbes	Rs.400/ litre	50	0.20	50	0.20	100	0.40	100	0.40	300	1.20
7	Eraction of net for production of disease free planting material of Tapioca	Rs. 1.00 lakh / 300 sq.m	6	6.00	12	12.00	18	18.00	24	24.00	60	60.00
8	Plastics Crates for Vegetable handling and transport	Rs. 250/crate	500	1.25	1000	2.50	1000	2.50	1000	2.50	3500	8.75
	Total		773	32.95	1279	40.2	1335	46.4	1341	52.4	4728	171.95

ii) Project Rationale

1. The prevailing temperature is suitable for vegetable cultivation in Tiruchirappalli District.
2. Farmers in Tiruchirappalli District are well experienced in vegetable cultivation.
3. Farmers are experienced in marketing of vegetables to the near by districts and also near by Kerala for getting good price for their vegetables through Ottanchattram market.
4. Transport facilities are adequate to move vegetables from farm to selling point.
5. For easy selling of vegetables Uzhavar shandhais are located around 20-25 kilometers away from all the production centers.
6. Eventhough water scarcity occurs in some seasons, farmers can manage with drip system which is assisted by the Department under Micro Irrigation System with 50 per cent subsidy.

iii) Project Strategy / Interventions

- Provision of net house structure for nursery: This will help to produce healthy, pest and disease free, quality and well rooted seedlings for better establishment in the main field.
- Net house structure and Pandal installation: This will help vegetable production during the lean months i.e., March – June.
- To overcome the incidence of mosaic disease in Tapioca, disease free setts are to be supplied to the tapioca growers from TNAU / CTCRI Trivandrum.
- Fertilizer management in vegetables for improved productivity.
- Organic method of cultivation: For producing pesticide residue free vegetables and betel leaves for consumption as well as to ensure the environmental and soil health, effective use of organic pesticides and fertilizers is required.
- Betel vine cultivating farmers are 95 per cent leased in farmers and their economic status is very low. In addition, betel vine cultivation is highly expensive than other crops and labour cost account for major share in the cost of cultivation. To overcome these problems, farmers can be supported in terms of 50 per cent subsidy.

iv) Project Goals

The proposed components under this project aim at increasing the area and productivity under vegetables and betel vine by 15 – 20 per cent.

v) Project Components

To achieve the set goals the following components are proposed for this district in vegetable crops and betelvine.

1. Net house structure for nursery and vegetable production.
2. Erection of pandal for vegetable production.
3. Package for plant protection ie. non Hazardous in nature.
4. Use of Humic Acid / E.M. and
5. Erection of net for production of disease free Tapioca planting materials under seed farm conditions.

6.2.2 Increasing Production of Major Fruits (Banana / Mango) in Tiruchirappalli District

Tiruchirappalli district is having a normal rainfall and the temperature ranging from 30-40°C. The district is having water source mainly from the Cauvery river which facilitates the cultivation of fruit crops, especially Banana. Banana is one of the major fruit crops grown in Tiruchirappalli district and it necessitates the promotion of Banana in terms of increasing the productivity through technological interventions. The water availability and temperature prevailing in these blocks enables the Banana cultivation. Marketing facilities are also available in the local markets i.e. Uzhavar sandhai situated in and around 20-30 km away to all places and to distant markets either to nearby district / states. Though it has many advantages, banana production is affected by some of the factors. The major factors are; i) yield reduction due to torrential rain during north east monsoon and heavy winds. This will in turn reduce the profitability of the farmer. In this condition, provision of support at the time of bearing will reduce the production loss to some extent, ii) thrips damage and fruit rot reduces the quality of the fruit and price of banana which drastically affect the income of the farmer. Mango is one of the major fruit

crop in Tiruchirappalli district and is being sold to local as well as distant markets. The farmers are facing labour problem at the time of peak harvesting season and also it lacks quality by natural harvest. To avoid seasonal delays and improve the quality of mango, mechanical harvesting may be promoted by supply of mango harvester under this project. With this back drop, the project has the major goal of increasing production and income to the Banana farmers to the tune of 20-25per cent as against the present level. To achieve this objective the following interventions are suggested under NADP. They are; i) supply of bunch cover to reduce the damage of the fruit from thrips and fruit rot, ii) usage of organic based pesticides, fertilizers, iii) Sucker treatment in banana by giving 50per cent subsidy for the corm injector, iv) provision of staking poles and v) supply of mango harvester to the mango growers. To implement all these interventions the project would require a budget outlay of Rs.9241.25 lakhs.

i) Background

Tiruchirappalli district is having a normal rainfall and the temperature prevailing is 30-40°C and the water source available in areas situated at the banks of Cauvery river which facilitates the cultivation of horticultural crops, especially banana and mango. Banana is one of the major crops grown in Tiruchirappalli district. To augment the export of Banana and to increase the yield, technological intervention is needed. Hence, this project focuses on maintaining quality and improving production of both the crops namely banana and mango.

ii) Project Rationale

The most parts of the district are the major banana growing areas. The water availability and temperature prevailing in these area enables the banana cultivation. Marketing of products is easy either by meeting local demand by selling it in the Uzhavar sandhai or in distant markets. The transportation to neighbouring district and nearby states is also easier because of the availability of transport facilities.

iii) Project Strategy

Provision of support system at the time of bearing will reduce the production loss to the farmers due to heavy winds at time especially during May to August and torrential rainy days at the time of north east monsoon period.

The thrips damage and fruit rot to the fruits reduces the quality and price of the Banana which drastically affect the income of the farmer. The bunch cover is one such technology which will reduce this damage and adds colour and smoothness to the fruit. Hence it adds value to the fruit and fetches higher price for the produce.

Usage of organic based pesticides and fertilizers have to be introduced to avoid health hazards to the consumers.

To reduce the cost of cultivation of banana, banana corm injector is to be provided to the farmers @ 50 per cent subsidy for sucker treatment.

In Banana cultivation, major portion of the cost is incurred for purchase of staking poles. To overcome this, 50 per cent subsidy to be given to the Banana growers for the purchase of poles as back ended subsidy. This will be highly helpful to the Banana grower for purchasing other inputs like plant protection chemicals and fertilizers.

The mango farmers are facing labour problem at the time of peak harvesting season and also it lacks quality by natural harvest. To avoid seasonal delays and improve the quality of mango, mechanical harvesting is to be promoted by supply of mango harvester under this project.

iv) Project Goals

The proposed components will ensure increased production and increased income to the Banana / Mango farmers to the tune of 20-25 per cent as against the present level.

v) Project Components

The following components are proposed under this project.

1. Providing support system to banana crops (poles).
2. Use of Humic Acid / E.M.
3. Use of Banana bunch cover and
4. Promotion of Mango harvester

vi) Budget and Implementation Chart

To implement all these interventions, the project would require a budget outlay of Rs.9241.25 lakhs. The budget and the implementation chart are presented in Table 6.11.

vii) Reporting

1. Monthly report of the progress made will be sent to the Dept. concerned for monitoring and evaluation of the progress.
2. Annual progress report will be sent to the Dept. concerned for monitoring and evaluation of the progress.

Table 6.11 Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Production of Major Fruits (Banana / Mango)**Financial: Rs. in lakhs**

S.No.	Activities	Unit cost	2008-09		2009-10		2010-2011		2011-12		Total	
			Physi cal	Finan cial	Physi cal	Finan cial	Physi cal	Finan cial	Physi cal	Finan cial	Physi cal	Finan cial
1	Banana Bunch cover	Rs. 10 /piece	500000	50.00	500000	50.00	500000	50.00	500000	50.00	2000000	200.00
2	Support system for crops											
3	a. Banana	Rs. 1.5 lakhs / ha	2000	3000.00	2000	3000.00	1000	1500.00	1000	1500.00	6000	9000.00
4	b. Gloriosa	Rs. 40,000 / ha	25	10.00	25	10.00	25	10.00	25	10.00	100	40.00
5	Banana Corm injector	Rs. 300 / No.	100	0.30	100	0.30	100	0.30	100	0.30	400	1.20
6	Mango harvester	Rs. 500 / No.	10	0.05		0.00		0.00		0.00	10	0.05
	Total		502135	3060.35	502125	3060.3	501125	1560.3	501125	1560.3	2006510	9241.25

6.2.3 Extension Support to Increase the Production of Horticulture Crops in Tiruchirappalli District

Tiruchirappalli District has 16 blocks. Under restructuring of Agriculture and allied Departments, the flow of extension personnel to the Horticulture sector has been increased to nearly 100 per cent. Currently, each district is headed by a Deputy Director of Horticulture and each block is headed by an Assistant Director of Horticulture with Horticultural officers and Assistant Agricultural officers. This team forms a Block Technical Team in each block to implement the projects pertaining to the Horticulture. The personnel now in the Horticulture Department is basically new to the Department by virtue of restructure, who hitherto worked in Department of Agriculture need practical orientation in the horticultural schemes and they should be given exposure to the horticulture crops. There are no separate infrastructure facilities available at present in any of the schemes in all the blocks for Horticulture promotion.

There is no specific / separate horticultural sale outlets and information centers available as on date to distribute quality seed materials, seedlings etc., to the farming communities. The suggested components will ensure better technical support to the farming community which would help in increased production of horticultural crops in the district and will contribute to agricultural growth at a national level. Further farmers will also be enlightened or made aware of the new technologies / information / in Horticulture by way of interstate study tours / crop specific seminar / workshops etc.,

i) Project Rationale

- ❖ Quality seed and seedlings are to be distributed to the farming community in each block.
- ❖ Orientation of latest know-how to the extension personnel as well as farmers through workshops, seminars, demonstrations, exposure visits etc.,

- ❖ Since the vegetable cultivation is confined to smaller areas by farmers, the use of water source in lean months to be encouraged.
- ❖ In marketing of the produces, packaging component is to be improved / introduced (packaging materials) to increase the share of farmers income.
- ❖ Farmers associations already existing may be encouraged / improved to the level of agri-clinics by providing necessary infra-structure facilities to enable a better liaison between farming community and the extension wing.

ii) Project Strategy

- ❖ Promotion of Sales outlet cum information centre will enhance a better contact between extension personnel and the farming community.
- ❖ The latest marketing techniques can be educated and thus the farming community will be gaining remunerative income by selling at right price and in appropriate places.
- ❖ Mega Demonstrations (10 Ha in size) may be organized by the extension personnel for dissemination of all the technologies in a specific location.
- ❖ Exposure visit to farms and farmers' workshop on crop specific nature will help in effective dissemination of technologies.

iii) Project Goals

The trained personnel on latest technology in horticultural technology dissemination will pave way for increased area under horticultural crops to the tune of 10-15 per cent and production increase around 20 per cent by stabilizing the productivity.

iv) Project Components

The following components are enlisted to boost the extension as one time grant.

1. Sales outlet cum Information centre
2. 10 Ha mega Demonstration plot
3. Workshop (Crop specific)
4. Interstate study tour to Farmers and
5. Exposure visit to Farmers / Extension personnel

v) Budget and Implementation Chart

To implement all these interventions the project would require a budget outlay of Rs.305.10 lakhs. The budget and the implementation chart are presented in Table 6.12.

vi) Reporting

1. Periodical monthly progress report.
2. Annual consolidated progressive report.

Table 6.12 Details of Year wise Cost Requirement and Physical Implementation Units for Increasing Extension Support to Increase the Production of Horticulture Crops**Financial: Rs. in lakhs**

S.No.	Activities	Unit cost	2008-09		2009-10		2010-2011		2011-12		Total	
			Physi cal	Finan cial	Physi cal	Finan cial	Physi cal	Finan cial	Physi cal	Finan cial	Physi cal	Finan cial
1	Sales outlet points in districts (Rent and infrastructure)	Rs. 2.60 lakhs / No.	1	2.60	1	2.60	1	2.60	1	2.60	4	10.40
2	District Level Farmers Workshop	Rs. 400 / farmer / day	200	0.80	200	0.80	200	0.80	200	0.80	800	3.20
3	Tractor mounted steam boiler	Rs. 50,000 / No.		0.00		0.00		0.00		0.00	0	0.00
4	Inter State Exposure visit (5 days)	Rs. 5,000 /farmer	200	10.00	200	10.00	200	10.00	200	10.00	800	40.00
5	Banana / Amla in noon meal scheme (TANHOPE)	Rs. 50,000 / group / district	3	1.50		0.00		0.00		0.00	3	1.50
6	10 hectare mega demo plot for the districts	Rs. 25.00 lakhs each	2	50.00	2	50.00	2	50.00	2	50.00	8	200.00
7	Enterprising framers associations	Rs. 25.00 lakhs each	2	50.00		0.00		0.00		0.00	2	50.00
	Total		408	114.9	403	63.4	403	63.4	403	63.4	1617	305.1

6.3 Animal Husbandry

The proposed project involving five broad area viz. feed and fodder development, genetic upgradation, Improvement of livestock health, processing facilities and extension facilities are included. Finance required for strengthening of existing unit and expansion of ongoing development schemes are also included. To achieve the proposed target based on the proposed project the following action plan is proposed under each broad area specified.

6.3.1 Feed & Fodder Development

6.3.1.1 For Dairy, Sheep, Goat and Poultry Farming

i) Abstract (Summary of the Project)

To augment fertility, milk, meat and egg production, clean milk production feeding the livestock with required quantity of nutrient rich perennial fodder and tree fodder is essential. Current status of 90 per cent deficit of green fodder should be given priority and hence perennial fodder and tree fodder production is proposed in 10 acres per block per year. Chaff cutter usage to enhance digestibility and to prevent wastage of feed is proposed. It is proposed to supply feed for desi chicken to improve their performance.

ii) Budget : 219.80 Lakhs

iii) Background / Problem Focus

Deficit of green fodder is 90per cent and hence it is essential to feed the crossbred milch animals with nutrient rich perennial fodder and tree fodder biomass to explore full genetic potential. The present background with regard to dairy, sheep and goat farming in this district is mainly grazing wherever possible, feeding with available greens in the market and feeding the milch animals with polish, bran, oil cakes, cotton seed. Sheep and goat are taken for grazing only. No supplemental feed, grains, concentrate is given to them. Immunization against endemic diseases is carried out by Department of Animal Husbandry, ASCAD program. Desi chickens are allowed for foraging and kitchen left over and available excess grains are fed to the extent possible.

Keeping this background, the action plan is proposed to focus these problems namely perennial fodder cultivation, tree fodder production, chaff cutter usage, distribution of feed for desi birds. Supply of micro nutrients/mineral mixture will enhance the fertility, production and productivity.

iv) Project Rationale

To augment fertility, productivity and production of livestock including poultry and to achieve 4 per cent annual growth rate during XI plan period. The action plan is prepared to achieve this target.

v) Project Strategy

Based on current background of livestock sector, project strategy is proposed involving Tamilnadu Veterinary and Animal Sciences University, Department of Animal Husbandry, Tiruchirappalli District Co-operative Milk Producers Union (the implementing agencies) to achieve the target with technical interventions for the target group namely the rural women, farmers and entrepreneurs. The project strategy is proposed to strengthen the existing infrastructure and expansion of ongoing development scheme of the implementing agencies. The strategy will be spread out for four years for project works whereas the strengthening of existing infrastructure and expansion of ongoing development scheme will be carried out during the first year i.e. II year of XI plan period.

vi) Project Goals

To improve milk yield, to improve fat and solids not fat in milk, to produce clean milk, to facilitate chilling of milk, to prepare value added milk products and immunization of livestock and poultry. Capacity building of farmers, veterinarians, NGOs for technological interventions through adoption for improving milk, meat and eggs. To empower farmers, rural women, officers on Ethno Veterinary Medicine and Practice for primary health care of livestock and Poultry, extension programmes are proposed. All these proposed activities will lead to achievement of stipulated goals in

stipulated time. Overall goal is to augment fertility, production, productivity through proposed perennial fodder production to bridge the huge gap in availability and demand, tree fodder cultivation to manage the milch animals effectively even during summer / draught period. All such activities will envisage revenue generation of stake holders.

vii) Project Components

The following project components (action plan) under Feed and fodder development is proposed.

- Perennial fodder cultivation
- Tree fodder production

I. Fodder Production – DAH and DDD

1. Perennial Fodder Production @ 10 acre/ block/year (14 blocks) & for 4 years by the Department of Animal Husbandry and the Aavin, Trichy:Rs. 0.235 Lakhs/Acre

I.	Training Cost	
Sl. No.	Details	Amount (in Rs.)
1.	Incentive @ Rs.100/person/day, for 2 days, for 15 members	3,000.00
2.	Refreshment expenses @ Rs.10/day/person, for 2 days, 15 persons	300.00
3.	Study materials including scribbling pad, pen etc.@ Rs.15/person, for 15 members	225.00
	Total training cost per SHG	3,525.00

II.	Fodder Cultivation of Fodder (Co-3) per Acre	
Sl. No.	Name of Operation	Amount (in Rs.)
1 a)	Bush clearance and land reclamation	2,600.00
1.b)	Cost of ploughing	1,600.00
2.	Formation of ridges and furrows/beds and irrigation channels	500.00
3.a)	Cost of FYM 10 tonnes. @ Rs.300/mt.	3,000.00
3.b)	Labour cost for transportation and application, loading and unloading	1,000.00
4.a)	Cost of slips 16,000 numbers @ Rs.0.25 /slip	4,000.00
4.b)	Planting cost	840.00
5.a)	Cost of chemical fertilizers N 150 Kg @ Rs.5.48/kg – 822.00 P 50 Kg @ Rs.10.88/kg – 544.00 K 40 Kg @ Rs.3.85/Kg - 154.00	1,520.00
5. b)	Cost of labour for application	400.00
6.	After cultivation weeding	840.00
7.	Cleaning the channels	500.00
8.	Irrigation charges	800.00
9.	Harvesting charges and transportation	1,600.00
10.	Miscellaneous expenses	800.00
	Total Cost Required Per Acre	20,000.00

	Financial Requirement Per Self Help Group	Rs. in Lakhs
1.	Cost of training per SHG	0.035
2.	Cost of fodder cultivation	0.20
	Total Requirement per SHG	0.235
DAH	Total requirement for 14 blocks with 14 SHG @ 10 Acres /Block/year for 4 years, 560 acres totally by DAH	131.60
DDD	Fodder development activities (in IDF villages & in farmers field)Total requirement for 100 acres totally by DDD	23.50

2. Fodder Development Activities for Production of Fodder Seed / Slips in Dairy or Chilling Centre & Land of DDD (9 acres) Aavin, Trichy at Unions, CCs, Dairies and MPCS

Sl.No	Particulars	Amount (Rs. in Lakhs)
I	Capital Investment	
1.	Demarcation of boundary and fencing	0.60
2.	Land development	0.10
3.	Farm sheds for equipments, seeds manure etc.,	0.20
4.	Purchase of agricultural implements	0.10
5.	Creation of irrigation facilities (wells, pumps, powerline, water tanks, pump room, pipeline etc.,)	0.50
	Sub –Total (I)	1.50

Sl.No	Particulars	Amount (Rs. in Lakhs)
II	Recurring Expenditure	
1.	Wages of supervising staff	0.20
2.	Seeds, fertilizers / manure and insecticides	0.20
3.	Cultivation charges	0.05
4.	Irrigation charges	0.05
5.	Maintenance of store / dead stock	0.05
6.	Miscellaneous	0.05
	Sub-Total (II)	0.60
	Grand Total (I + II)	2.10

Rs. 2.10 lakhs/acre as above. Totally for 9 Acres – Rs. 18.90 Lakhs – DDD.

- Supply of Feed for Birds - DAH**

Sl.No.	Particulars	Amount (Rs.)
1.	Feed for desi chicken	
	1kg feed	12.50
	4kg feed will be one bag (12.50 X 4) = Rs.50/- 100 bags = 1 unit	5000.00
	Total units required will be 500 by DAH	25,00,000.00

- Popularising Chaff Cutter - DDD**

Project Cost and Financing**(Rs. in Lakhs)**

Action plan / mplementing agency	Unit ost	2008-2009		2009-2010		2010-2011		2011-2012		Grand total	
		Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Total Unit	Total ost
DAH											
Perennial Fodder production @ 10 acre/ block/year (14 blocks) & for 4 years	0.235	140	32.90	140	32.90	140	32.90	140	32.90	560	131.60
Popularizing chaff cutter for efficient nutrient utilization with 50per cent subsidy	0.125	25	3.125	25	3.125	25	3.125	25	3.125	100	12.50
Feed for desi chicken to rural women to improve egg production and productivity @ 4 kg/ bag&100 bags=1 unit Rs.5000/-	0.05	125	6.25	125	6.25	125	6.25	125	6.25	500	25.00

(Rs. in Lakhs)

[illegible]

viii) Implementation Chart of the Project**(Year wise-2008-09;2009-10;2010-11;2011-12)**

Works proposed	I Quarter	II Quarter	III Quarter	IV Quarter
DAH				
Perennial Fodder production @ 10 acre/ block / year (14 blocks) & for 4 years	40-40-40-40	40-40-40-40	30-30-30-30	30-30-30-30
Popularizing chaff cutter for efficient nutrient utilization with 50per cent subsidy	10-10-10-10	05-05-05-05	05-05-05-05	05-05-05-05
Feed for desi chicken to rural women to improve egg production and productivity @ 4 kg/Bag &100 bags=1 unit Rs.5000-	40-40-40-40	40-40-40-40	25-25-25-25	20-20-20-20
DDD				
Fodder development activities for production of fodder seed / slips in dairy or chilling centre & land of DDD	03	02	02	03
Fodder development activities in 100 IDF villages & in farmers field)	5-15-5-5	5-15-5-5	5-10-3-3	5-10-2-2
Chaff cutters for elite farmers (small type) @Rs.20000-with 100 er cent grant	1-0-1-1	1-0-1-1	1-0-1-1	1-0-0-0
Chaff utters(mechanized) for IDF villages on community basis	0-4-0-0	0-2-0-0	0-2-0-0	1-0-0-0

ix) Reporting

The implementing agencies viz. Department of Animal Husbandry, Tiruchirapalli District Co-operative Milk Producers Union and the TANUVAS, Veterinary University Training and Research Centre, Tiruchirapalli will submit periodical project report to their controlling officers.

6.3.2 Genetic Upgradation**6.3.2.1 For Dairy, Sheep and Goat Farming****i) Abstract (Summary of the Project)**

To augment fertility strengthening A.I. service will be of much useful at field level. To augment fertility, meat production and to offset the effect of inbreeding distribution of elite bucks and rams is proposed. Programmed breeding of cattle and buffalo will offset the declining buffalo population apart from improving its fertility, productivity and production. Indigenous cattle, now at declining trend will have more such animals apart from its improved production and productivity. Proposed mobile input units will enhance fertility and improve the genetic performance of milch animals.

ii) Budget : Rs. 97.30 Lakhs**iii) Background / Problem Focus**

Animal health is more important in terms of milk, meat production which considerably contributes to the India's GDP growth. Large number of cattle, buffaloes and their economic value makes imperative breeding cows, heifers, buffaloes with least number of highest quality bulls. The present invention "synchronization of estrus in a group of cows and heifers" provides convenient and assured method of reproduction in the dairy cattle industry. Sheep flocks are taken for grazing to a long distance and post harvested fields. Animals breed naturally and hence every likely hood that the effect of inbreeding will affect the flock performance. Keeping this problem it is focused to distribute elite bucks and rams to upgrade the genetic performance of goat and sheep during XI plan period. To improve the local cattle and crossbred milch animals fertility,

milk yield, calving rate and calving interval, strengthening of A.I. services is important. Conservation and improvement of performance of indigenous cattle and buffalo is the need of the hour and hence proposal to address these problems is included.

iv) Project Rationale

Animal husbandry practices including a relatively close confinement, supplementary feeding of high energy concentrate feedstuffs and heavy density in milk shed areas convenient to metropolitan centres have encouraged to establish A.I. districts and regular Aavin routes therein A.I will augment fertility and upgrade local cattle and establish desirable exotic blood in the cross bred cattle and buffalo. Increasing fertility in indigenous cattle and buffalo is very important to maintain their population. Buffaloes exhibit silent heat, comparatively poor breeders with less conception rate and longer inter calving period than white cattle. This makes farmers to opt for cross bred cows leading to decline in buffalo population. But buffaloes are good converter of crop residue/wastages in to milk with higher fat and total solids in milk and this has to be tapped. This proposal of programmed breeding will augment conception rate in buffaloes and this will motivate farmers to maintain buffaloes rather switching over. To eradicate infectious and contagious livestock diseases. Animal identification helps in disease control through its traceability. To augment fertility, productivity and production of more sheep and goat. Therefore it is important to have sufficient veterinary facilities to reach the farmers at their doorstep to give proper care to the livestock at right time.

v) Project strategy

To improve the present conception rate of 45 to 50per cent to 65 to 70per cent in cattle by programmed breeding technique. To improve the present declining buffalo population. To reduce the lean season of the dairy industry. For animal health activities, veterinary health care is provided through regular input units, emergency units and by conducting camps. Based on current background of livestock sector, project strategy is proposed to distribute elite bucks and rams to farmers to augment fertility and productivity. The proposal of mobile input units will augment fertility and thereby improve genetic improvement in crossbred, indigenous and buffalo population.

vi) Project Goals

To increase the conception rate from 40 to 45 per cent to 65 to 70 per cent. To reduce intercalving period particularly in buffaloes. To increase average number of lactation. To strengthen A.I. service to upgrade local cattle, buffalo and also crossbred milch animals. To improve fertility in crossbred cattle, indigenous cattle, buffalo. Overall goal is to augment fertility, production, productivity which will envisage revenue generation of stake holders. This will reduce the cost of production of milk, meat etc, through proper care to livestock. Enhancing the veterinary services to the farmers. 100 per cent coverage of milk producer members of the dairy co-operatives. Overall, to improve the economy of the dairy industry.

vii) Project Components

- **Distribution of Bucks & Rams @ Rs.4000/- per buck or ram.** A total of 500 bucks and 500 rams will be distributed – **DAH**
- **Programmed breeding of indigenous cattle & buffalo** to increase conception rate @ Rs.700/animal, for 2400 animals. (DDD)- will result in 3150 additional adult female buffaloes are brought in and additional revenue of Rs.3.024 lakh per day is created to the farmer through additional milk expected to be produced – **DDD**
- **Mobile input units:** Establishment of mobile input units @ Rs. 4.5 Lakhs/unit. The cost is inclusive of salary for the veterinarian, medicines, veterinary equipment and other expenses, 9 units totally - **DDD**

(Rs. in Lakhs)

Action plan / Implementing agency	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand total	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost	Total Units	Total Cost
DAH											
Distribution of Bucks @ Rs. 4000/ buck / DAH	0.04	125	5.00	125	5.00	125	5.00	125	5.00	500	20.00
Distribution of Rams @Rs. 4000/ Ram / DAH	0.04	125	5.00	125	5.00	125	5.00	125	5.00	500	20.00
DDD											
Programmed breeding of indigenous cattle & buffalo to increase conception rate / DDD	0.007	600	4.20	600	4.20	600	4.20	600	4.20	2400	16.80
Mobile input units (One per 50 DCS) / DDD	4.50	9	40.50	-	-	-	-	-	-	9	40.50
Total											97.30

ix) Implementation Chart of the Project**(Year wise-2008-09; 2009-10; 2010-11; 2011-12)**

Works proposed	I Quarter	II Quarter	III Quarter	IV Quarter
DAH				
Distribution of Bucks (125 X 4)	30-30-30-30	30-30-30-30	30-30-30-30	35-35-35-35
Distribution of Rams (125 X 4)	30-30-30-30	30-30-30-30	30-30-30-30	35-35-35-35
DDD				
Programmed breeding of indigenous cattle & buffalo to increase conception rate	150-150-150- 150	150-150- 150-150	150-150-150- 150	150-150-150- 150
Mobile input units (One per 50 DCS)	2-0-0-0	3-0-0-0	2-0-0-0	2-0-0-0

x) Reporting

The implementing agencies viz. Department of Animal Husbandry, Tiruchirappalli District Co-operative Milk Producers Union and the TANUVAS, Veterinary University Training and Research Centre, Tiruchirappalli will submit periodical project report to their controlling officers.

6.3.3 Improvement of Livestock Health**6.3.3.1 For Dairy, Sheep, Goat and Poultry Farming****i) Abstract (Summary of the Project)**

To provide comprehensive livestock health cover including immunization against important viral, bacterial diseases and to cover almost all animals including poultry

required programmes are proposed. This will protect livestock and poultry from diseases and overall improvement in health is anticipated. To maintain livestock health micronutrients and mineral mixture to be supplied. The proposal “Identification and traceability of bovines” will enable creation and maintenance of breedable bovine population which is very important for policy decision. Control of parasitic diseases will enhance vaccine response which will ensure optimum immunity. Intensive system of model sheep/goat unit will motivate the farmers to adopt such technologies for sustainable and economically viable farming wherever possible. Mobile veterinary laboratory will monitor and maintain continued health cover and disease forecasting system. Supply of mineral mixture/micro nutrients will ensure adequate health cover to animals and by pass protein will help the milch animals to utilize the nutrients effectively and economically. Mobile input units in Aavin will cover the health of animals. Milking machines will ensure quality and clean milk production. PC based milking stations will save time and encourage farmers to produce more clean, quality milk. Cold storage facilities for vaccine storage is already available.

ii) Budget : Rs. 315.19 Lakhs

iii) Background / Problem Focus

Artificial insemination service to livestock, immunization of animals and birds are carried out with the available manpower. Mobile veterinary laboratory facility will help in disease diagnosis, disease mapping and disease forecasting easily and quickly. Immunization and deworming of livestock and poultry. Further almost all the domestic animals are deficient in micro nutrients since most of the animals are allowed only for grazing especially sheep and goat. For better digestibility of feed consumed and also to satisfy the micro nutrient requirements it is proposed to supplement the livestock with mineral mixture. Economical production of milk depends largely upon efficiency of animals, its nutrition and management.

iv) Project Rationale

Dairy cattle requires at least 17 minerals in their diet for optimal milk production, reproductive performance and herd health. As milk producing ability increase, more minerals in their ration is needed and hence their adequate level should be ensured in feed to achieve optimum performance and herd health. To provide optimum health cover of livestock through quick, effective and timely disease diagnosis one Mobile veterinary laboratory facility is proposed. Supplementing livestock with micro nutrients would ensure their optimal health cover. Controlling parasitic diseases will ensure optimum immunity.

v) Project Strategy

Total cattle population under co-operative ambit is 16 lakh. of which 70 per cent are breedable at any given time. Average requirement of mineral mixture for breedable animals is 50 g. per day. Hence, requirement of mineral mixture for breedable animals is 55 MT per day. Mobile veterinary laboratory facility will help in disease diagnosis, disease mapping and disease forecasting easily and quickly. Supplementing livestock with micro nutrients would ensure their optimal health cover. Immunization against Newcastle disease and for Ducks immunization against Duck plaque is proposed.

vi) Project Goals

To provide optimum health cover to livestock and poultry including immunization for NCD and DP. It is proposed to supplement the livestock with micro nutrients which will result in optimum performance of livestock and poultry which will ensure improved productivity and production. To increase milk production and also to produce clean, quality milk effectively and economically. Providing mineral mixture daily will enhance milk production, reduce breeding problem and will reduce intercalving period.

vii) Project Components

- **Mobile Veterinary Clinics - DAH**

Anticipated expenditure (recurring and non-recurring expenditure) for one year for Mobile Veterinary Clinic.

Non-recurring Expenditure

1) Equipments (Rs.30, 000)	:	Rs.0.30 lakh
2) LN2 container (Rs. 30,000)	:	Rs.0.30 lakh
3) Small LN2 container (Rs.5000)	:	Rs.0.05 lakh
4) Jeep	:	Rs.4.75 lakh

Recurring Expenditure

Diesel 90 Lit x 12 xRs.40	:	Rs.0.432 lakh
Total cost	:	Rs.5.832 lakh

List of Equipments and Instruments required for one Mobile Veterinary Unit

Sl.No	Name of the Item	Unit cost (in Rs.)
1.	Surgical Kit	5000
2.	Obstetrical Kit	5000
3.	Microscope	20000
	Total	30,000

- **Mobile Veterinary Laboratory : One unit is Rs. 12 lakhs - DAH**

For mobility and to provide diagnosis at the farmer's doorsteps, the Animal Disease Diagnostic unit will be provided with one vehicle with facilities to make on the spot diagnosis. The vehicle will be fitted with a refrigerator, a centrifuge, a microscope and equipments to conduct post mortem examinations. This will help in identification of the pathogens quickly and thus undertake disease control measures without wastage of time.

The cost of the vehicle is approximately Rs.11.00 lakh. The cost of microscope will be Rs.0.50 lakh cost of refrigerator will be Rs.0.25 lakh, cost of centrifuge will be Rs.0.15 lakh, cost of post mortem kits and other chemicals and chemical reagents will be Rs.0.10 lakh.

- **Popularizing Mineral mixture by supplying at subsidized cost - DAH**

Popularizing Mineral mixture to improve livestock production to dairy cows @ Rs.600/cow/year, 1 kg / cow / month @ Rs.50/kg,12 kg/year, 1000 cows/year, 4000 cows/years- 4 Blocks (DAH). Total amount Rs.24 lakhs

- **Control of parasitic diseases - DAH**

Control of parasitic diseases to enhance vaccine response @ Rs.1/- per sheep or goat and Rs.3/- per calf below one year, 4 times /year, Rs. 8.92 Lakhs/year, for 4 years (DAH) for 96,175 calves, 2,10,000 Sheep and 4,63,000 Goats.

- **Intensive system of sheep/goat rearing - DAH**

It is proposed to provide, sheep/Goats each unit comprising of 20 ewes/buck and one Ram/ Doe, by formation of Self Help Groups. The cost per unit (20 females and 1 male) will be Rs.42,000/-

- **Identification & traceability of bovines @ Rs. 20 /animal - DAH**

- **Establishment of Mineral mixture plant @ Rs.20 lakh per unit – DDD**

Mineral mixture plant will be established at a total cost of Rs. 20.00. Mineral mixture will be supplied to the dairy cows through the Department of Animal Husbandry, Thiruchirappalli to the small farmers at Rs.600/- per cow per year (One kg/animal/month, 12 kg for one year, @ Rs.50/kg) at subsidized rate @ 5000 farmers per year, for 4 years. A total of 5,200 cows comprising 1300 cows from each block (Totally 4 blocks) will be supplemented with mineral mixture at a total cost of Rs.31.20 Lakhs. The Aavin,

Thiruchirappalli will supply mineral mixture to the milch animals of the society members at subsidized cost (50 per cent subsidy) @ Rs. 500/- for 18 kg per year/cow, A total number of 12000 animals will be benefited at a total cost of Rs.60.00 Lakhs. Improvement in milk yield and fertility rates is expected from these 17,200 cows benefited.

- **Supply of mineral mixture to milch animals at subsidized cost (50 per cent) @ 18 kg per year @ Rs.500/- per animal – DDD**
- **Supply by-pass protein feed to the milch animals of the members of the society 360 kg/animal/year) for 1800 cows @ 50 per cent subsidy of Rs.9/- per kg. – DDD**
- **Milking machines for ID farms @ Rs. 1.00 lakh per unit - DDD**
- **Portable milking machines for farmers @ Rs.0.18 lakh per unit - DDD**
- **PC based automatic milk collection stations to IDF villages @ Rs.1.75 lakhs per unit - DDD**

(Rs. in Lakhs)

[illegible]

(Rs. in Lakhs)

Action plan / Implementing agency	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand total	
		Units	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Total Units	Total Cost
DDD											
Establishment of Min.mix. plant	20.00	1	20.00	-	-	-	-	-	-	1	20.00
Supply of Min.mix. to milch animals at subsidized cost (50per cent) @18 kg per year	0.005	1375	6.875	1375	6.875	1375	6.875	1375	6.875	5500	27.50
Supply of by-pass protein feed to milch animals (360 kg / year / animal @ 50per cent subsidised cost of Rs.9-/kg)	0.033	450	14.85	450	14.85	450	14.85	450	14.85	1800	59.40
Milking machines for ID farms	1.00	-	-	9	9.00	-	-	-	-	9	9.00
Portable milking machines for farmers	0.18	15	2.70	15	2.70	10	1.80	10	1.80	50	9.00
PC based automatic milk collection stations to IDF villages, milk producers co-op. societies	1.75	7	12.25	9	15.75	7	12.25	6	10.50	29	50.75
Total											315.19

ix) Implementation Chart of the Project**(Year wise-2008-09; 2009-10; 2010-11; 2011-12)**

Works proposed	I Quarter	II Quarter	III Quarter	IV Quarter
DAH				
Mobile Vety.Clinics-1/ taluk. Total 8, Available -2	2-0-0-0	2-0-0-0	2-0-0-0	0-0-0-0
Mobile Vety.Lab-1/ dist. Cost + Recurring cost for 4 years (2008-2009 only)	Tender invitation	Tender processing	Purchase and establishment	Started functioning
Popularizing Min. mix to improve livestock production @ 1kg/month/Animal-1 block/year	250-250- 250-250	250-250- 250-250	250-250-250- 250	250-250- 250-250
Control of parasitic diseases through treatment to enhance vaccine response	-	-	-	-
Intensive system of sheep/goat rearing(20+1=1unit)/block / DAH (2008-2009 only)	3-0-0-0	3-0-0-0	4-0-0-0	4-0-0-0
Identification & traceability of bovines (2008-2009 only)	30000	30000	35000	40000
DDD				
Establishment of Min. Mix. plant	Tender invitation	Tender processing	Purchase and establishment	Started functioning
Supply of Min.mix. to milch animals at subsidized cost (50per cent) @18 kg per year	175-175- 175-175	400-400- 400-400	400-400-400- 400	400-400- 400-400
Supply of by-pass protein feed to milch animals (360 kg / year / animal @ 50per cent subsidised cost of Rs.9-/kg	100-100- 100-100	100-100- 100-100	125-125-125- 125	125-125- 125-125
Milking machines for ID farms	0-2-0-0	0-2-0-0	0-2-0-0	0-3-0-0
Portable milking machines for farmers	3-3-3-3	4-4-4-4	4-4-4-4	4-4-4-4
PC based automatic milk collection stations to IDF villages, milk producers co-op. societies	2-2-2-1	2-2-2-2	2-2-2--2	1-3-1-1

x) Reporting

The implementing agencies viz. Department of Animal Husbandry, Tiruchirapalli District Co-operative Milk Producers Union and the TANUVAS, Veterinary University Training and Research Centre, Tiruchirapalli will submit periodical project report to their controlling officers.

6.3.4 Processing Facilities**6.3.4.1 For TDCMPU (Aavin) Tiruchirapalli****i) Abstract (Summary of the Project)**

Facilities to handle excess milk during flush season and also making available of value added milk products to consumers are proposed. Milk weighing machines will save time and will infuse confidence among Aavin society members. Bulk milk coolers and Walk in coolers will facilitate more milk production by farmers.

ii) Budget : Rs. 65.82 Lakhs**iii) Background / Problem Focus**

The TDCMPU, Tiruchirapalli is handling about 2.4 lakh litres of liquid milk daily. The quality of milk need to be improved, limited chilling milk units threatens the quality maintenance and hence it needs to be strengthened and expanded to handle excess milk during flushing season, to encourage rural dairy farmers to produce more milk, to market quality milk, preparation of value added milk products and to maintain the plant and machineries clean to increase shelf life of milk at consumers home and place. Based on this background, the existing problems are addressed through above mentioned facilities.

iv) Project Rationale

To produce clean milk and to measure the quality (fat and SNF) and quantity of milk, save time and to collect accurate data on milk parameters. To encourage more milk production, to sustain rural family earnings, to handle the milk during flush season, to

pasteurize milk to ensure quality, safety, particularly destroying TB bacillus. To convert excess milk in to khoa, paneer, ice cream facilities are proposed and thereby encouraging the farmers to produce more milk.

v) Project Strategy

To strengthen the existing dairy plant of Aavin and to expand the development schemes to ensure quality milk for the consumers and to encourage rural dairy farmers to produce more clean milk and to increase their profit. To prepare value added milk products.

vi) Project Goals

To strengthen the existing dairy plant of Aavin and to expand the development schemes to ensure quality milk for the consumers and to encourage rural dairy farmers to produce more clean milk and to increase their profit. To prepare value added milk products.

vii) Project Components

- Bulk milk coolers
- Walk-in-coolers
- Manufacturing facilities for Milk khoa
- Manufacturing facilities for Panner
- Manufacturing facilities for Ice cream

(Rs. in Lakhs)

[illegible]

ix) Implementation Chart of the Project**(Year wise-2008-09; 2009-10; 2010-11; 2011-12)**

Works proposed	I Quarter	II Quarter	III Quarter	IV Quarter
DDD				
Bulk milk coolers (2008-2009 only)	Tender invitation	Tender processing	Purchase & establishment	Started functioning
Walk-in-coolers (2008-2009 only)	Tender invitation	Tender processing	Purchase & establishment	Started functioning
Manufacturing facilities for Milk khoa (2008-2009 & 2009-2010 only)	Tender invitation	Tender processing	Purchase & establishment	Started functioning
Manufacturing facilities for Panner (2008-2009 & 2009-2010 only)	Tender invitation	Tender processing	Purchase & establishment	Started functioning
Manufacturing facilities for Ice cream (2008-2009 & 2009-2010 only)	Tender invitation	Tender processing	Purchase & establishment	Started functioning

x) Reporting

The implementing agencies viz. Department of Animal Husbandry, Tiruchirappalli District Co-operative Milk Producers Union and the TANUVAS, Veterinary University Training and Research Centre, Tiruchirappalli will submit periodical project report to their controlling officers.

6.3.5 Extension Facilities**6.3.5.1 For Stake holders, to enrich Knowledge, Infuse Skill, Empower them to earn through Self Employment and to Strengthen the Infrastructure of Implementing Agencies****i) Abstract (Summary of the Project)**

To empower knowledge of stake holders, to impart skill, to transfer technologies for adoption proved extension programmes is highly essential. It is proposed to carryout the required extension facilities to farmers, rural women, entrepreneurs, veterinarians,

officers, NGOs, etc mainly by the Tamilnadu Veterinary and Animal Sciences University peripheral centre, Tiruchirapalli and also by Department of Animal Husbandry and Aavin. Revival of dormant Aavin societies.

ii) Budget: Rs. 296.77 Lakhs

iii) Background / Problem Focus

Capacity building exercises are offered to rural farmers, women, officers, entrepreneurs, NGOs by many agencies. To empower large sector of the stake holder and to update their knowledge on advanced, user friendly technologies, communication tools and other extension facilities are proposed for training thousands of farmers, rural women and officers. The knowledge on Ethno veterinary medicine for primary health care of livestock and poultry will be shared with farmers and veterinarians.

iv) Project Rationale

To ensure quality in milk .To empower stake holders, officers on recent advances in technology, EVM and EVP and user friendly technologies like touch screen facility for easy access

v) Project Strategy

Milk analytical checks at random to ensure safe, good quality milk and milk products conforming to the prescribed standards. For knowledge sharing, capacity building exercise for farmers, women, officers, etc. by Tamilnadu veterinary and Animal Sciences University, Department of Animal Husbandry and Aavin. To popularize turkey rearing among rural women, supply of turkeys with some feed is proposed. This will fetch them a satisfactory profit during festive seasons. This action plan goal includes ensuring quality of milk and milk products in the interest of public and to prevent adulteration.

vi) Project Components

- Infra Structure Development of Veterinary Institutions – DAH Fencing, borewell with water troughs, minor repair of Veterinary Institutions for 20 units @ Rs. 5.00 lakhs per unit
- Revival of dormant Aavin milk societies @ Rs.1.00 lakh - DDD
- Milk weighing machines @ Rs.17,000 per unit - DDD
- To ensure quality in milk, MMPO laboratory to test milk samples - DDD

Establishment of a MMPO Laboratory @ Rs. 56.00 Lakhs (DDD). The cost includes civil works for Rs. 12.00 Lakhs for 1000 sq.ft. @ Rs. 1,200/sq.ft, laboratory equipment for Rs. 30.00 Lakhs, glassware and chemicals for Rs.5 Lakhs, furniture, computer and accessories for Rs. 1 Lakh and a jeep for Rs. 6 Lakhs and training for Rs. 2 Lakhs.

- Strengthening of the quality assurance laboratory @ Rs. 10.0 Lakhs –DDD

Quality Assurance Lab

Sl. No.	Name of the equipment	Amount in lakhs
1.	Incubator	0.35
2.	Hot air oven	0.35
3.	Water bath	0.35
4.	Auto clave	0.30
5.	Microscope	0.50
6.	Laminar air flow	0.50
7.	Refrigerator	0.35
8.	Air conditioner	0.35
9.	Analytical Balance	2.00
10.	Water Distillation Plant	0.35
11.	Glass ware	0.50
12.	Chemicals & Bacteriological media	0.50
13.	Furniture and work tables	0.50
14.	Colony counter	0.10
15.	PH, TDS meter	1.00
16.	Civil work	2.00
	Total	10.00

- Farmers study tour @ Rs.5000/- per farmer 150 farmers totally - DDD
- Skill development training for technical staff of Aavin, Trichy 25 staff per year, @ Rs.5000/- per staff, for 4 years -DDD
- Energy management system @ Rs. 10.00 Lakhs per unit -DDD
- Orientation training/workshop for milk producers' at society level Rs.20,000 per programme, 4 programmes/year, for 4 years - DDD
- Strengthening of the TANUVAS Centre at Trichy

Strengthening of the TANUVAS with a mobile disease investigation cum training unit comprising of a van (Rs. 7.00 lakhs), binocular microscope (Rs.0.20 Lakhs), LCD Projector and other accessories (Rs.2.50 Lakhs) and other AV Aids (Rs.0.30 Lakhs) Training farmers and officers

- Capacity building training farmers and village level campaigns @ Rs.500 per farmer - TANUVAS
- Capacity building training officers and village level campaigns @ Rs.5000 per officer - TANUVAS
- Sensitizing Veterinarian on EVM and veterinarians on EVP @ Rs.3000/- per head - TANUVAS
- Touch screen facilities @ Rs.1.00 lakh inclusive of computer and accessories - TANUVAS
- Field tours of farmers, MCP, Infertility camps, farmers workshop, conference, etc. @ Rs.25,000/- per unit for 25 to 50 farmers. - TANUVAS
- Distribution of turkeys (3+1) and 10 kg feed + health cover @ Rs.10,000/- per unit- TANUVAS
- Popularizing Japanese quail among rural women SHGs along with feed and health cover @ Rs.40,000/- per unit - TANUVAS

vii) Project Cost and Financing**(Rs. in Lakhs)**

Action plan / Implementing agency	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand total	
		Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Total Unit	Total Cost
DAH											
Vety.Institutions-Infra.dev. Fencing, borewell with water troughs, minor repair /DAH	5	20	100.00	-	-	-	-	-	-	20	100.00
DDD											
Revival of dormant MPCS / DDD	1.00	6	6.00	7	7.00	6	6.00	6	6.00	25	25.00
Milk weighing machine for milk producers co-op. societies / DDD	0.17	33	5.61	34	5.78	33	5.61	31	5.27	131	22.27
MMPO laboratory/ DDD	56.00	-	-	-	-	1	56.00	-	-	1	56.00
Quality assurance lab. Strengthening/ DDD	10.00	-	-	1	10.00	-	-	-	-	1	10.00
Farmers study tour @ Rs.5000- per farmer / DDD	0.05	40	2.00	40	2.00	40	2.00	30	1.50	150	7.50
Skill development for technical staff / DDD	0.05	25	1.25	25	1.25	25	1.25	25	1.25	100	5.00
Energy management system /DDD	10.00	1	10.00	-	-	-	-	-	-	1	10.00
Orientation training/workshop for milk producers at society level /DDD	0.20	4	0.80	4	0.80	4	0.80	4	0.80	16	3.20

(Rs. in Lakhs)

Action plan / Implementing agency	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand total	
		Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Total Unit	Total Cost
TANUVAS											
Strengthening of TANUVAS centre for training for ToT, extension program for capacity building & skill enhancement / TANUVAS	10.00	1	10.00	-	-	-	-	-	-	1	10.00
Capacity building (ToT) training for farmers & village level campaigns/ TANUVAS	0.005	500	2.50	500	2.50	500	2.50	500	2.50	2000	10.00
Capacity building (ToT) training for officers / TANUVAS	0.05	50	2.50	50	2.50	50	2.50	50	2.50	200	10.00
Training farmers on EVM / TANUVAS	0.003	100	0.30	100	0.30	100	0.30	100	0.30	400	1.20
Touch screen facilities /TANUVAS	1.00	5	5.00	5	5.00	5	5.00	5	5.00	20	20.00
Field tour for farmers / TANUVAS	0.25	1	0.25	1	0.25	1	0.25	1	0.25	4	1.00
Turkeys(3+1), feed and health cover – as a pilot program to popularize among rural SHG /TANUVAS	0.01	100	1.00	100	1.00	100	1.00	100	1.00	400	4.00
Popularizing Japanese quail among rural women SHGs /TANUVAS	0.40	1	0.40	1	0.40	1	0.40	1	0.40	4	1.60
Total											296.77

viii) Implementation Chart of the Project**(Year wise-2008-09; 2009-10; 2010-11; 2011-12)**

Works proposed	I Quarter	II Quarter	III Quarter	IV Quarter
DAH				
Vety.Institutions- Infra.dev. Fencing, borewell with water troughs, minor repair / DAH (2008-2009 only)	5	5	5	5
DDD				
Revival of dormant MPCS	1-2-1-1	1-2-1-1	2-2-2-2	2-1-2-2
Milk weighing machine for milk producers co-op. societies	Tender invitation 9-8-7	Tender processing 9-8-8	18-8-8-8	15-8-9-8
MMPO laboratory (during 2010-2011 only)	Tender invitation	Tender processing	Establishment	Function
Quality assurance lab. Strengthening (during 2009-2010 only)	Tender invitation	Tender processing	Establishment	Function
Farmers study tour @ Rs.5000- per farmer	0-0-0-0	0-40-0-0	0-0-40-0	40-0-0-30
Skill development for technical staff	0-0-	0-25-0-0	0-0-25-0	25-0-025
Energy management system	Tender invitation	Tender processing	Establishment	Function
Orientation training/ workshop for milk producers at society level	1-1-1-1	1-1-1-1	1-1-1-1	1-1-1-1
TANUVAS				
Strengthening of TANUVAS centre for training for ToT, extension program for capacity building & skill enhancement	Tender invitation	Tender processing	Establishment	Function

Works proposed	I Quarter	II Quarter	III Quarter	IV Quarter
Capacity building (ToT) training for farmers & village level campaigns	125-125-125-125	125-125-125-125	125-125-125-125	125-125-125-125
Capacity building (ToT) training for officers	0-25-0-25	25-0-25-0	0-25-0-25	25-0-25-0
Training to farmers on EVM	25-25-25-25	25-25-25-25	25-25-25-25	25-25-25-25
Touch screen facilities	1-2-1-2	2-1-1-1	2-1-1-1	1-1-1-1
Field tour for farmers	0-0-0-1	0-1-0-0	0-0-1-0	1-0-0-0
Turkeys(3+1), feed and health cover – as a pilot program to popularize among rural SHG	25-25-25-25	25-25-25-25	25-25-25-25	25-25-25-25
Popularizing Japanese quail among rural women SHG	0-0-0-1	0-1-0-0	0-0-1-0	1-0-0-0

ix) Reporting

The implementing agencies viz. Department of Animal Husbandry, Tiruchirappalli District Co-operative Milk Producers Union and the TANUVAS, Veterinary University Training and Research Centre, Tiruchirappalli will submit periodical project report to their controlling officers.

The project cost for the interventions of animal husbandry sector are given in Table 6.13.

Table 6.13 Project Cost for the Interventions of Animal Husbandry Sector**(Rs. in lakhs)**

Sl. No.	Name of the Programme	Unit cost	2008-09		2009-10		2010-11		2011-12		Total	
			Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost
1	CATTLE & BUFFALO											
I	FEED AND FODDER DEVELOPMENT											
1	Perennial Fodder production @ 10 acre/ block/year (14 blocks) & for 4 years (DAH)	0.235	140	32.9	140	32.9	140	32.9	140	32.9	560	131.6
2	Popularizing Chaff cutter for efficient nutrient utilization with 50per cent subsidy/DAH	0.125	25	3.125	25	3.125	25	3.125	25	3.125	100	12.5
3	Feed for desi chicken to rural women to improve egg production and productivity @ 4 kg/ bag&100 bags=1 unit Rs.5000/- (DAH)	0.05	125	6.25	125	6.25	125	6.25	125	6.25	500	25
4	Fodder development activities for production of fodder seed / slips in dairy or chilling centre & land of DDD.(acres)	2.1	9	18.9	-	-	-	-	-	-	9	18.9
5	Fodder development activities (in IDF villages & in farmers field) (DDD)	0.235	20	4.7	50	11.75	15	3.525	15	3.525	100	23.5
6	Chaff cutters for elite farmers (small type) @ Rs.20000-with 100per cent grant (DDD)	0.2	4	0.8	-	-	3	0.6	3	0.6	10	2

Table 6.13 Contd....

(Rs. in lakhs)

Sl. No.	Name of the Programme	Unit cost	2008-09		2009-10		2010-11		2011-12		Total	
			Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost
7	Chaff cutters (mechanized) for IDF villages on community basis (DDD)	0.7	-	-	9	6.3	-	-	-	-	9	6.3
II	GENETIC UPGRADATION											
1	Distribution of Bucks / DAH	0.04	125	5	125	5	125	5	125	5	500	20
2	Distribution of Rams / DAH	0.04	125	5	125	5	125	5	125	5	500	20
3	Programmed breeding of indigenous cattle & buffalo to increase conception rate / DDD	0.007	600	4.2	600	4.2	600	4.2	600	4.2	2400	16.8
4	Mobile input units (One per 50 DCS) / DDD	4.5	9	40.5	-	-	-	-	-	-	9	40.5
II	IMPROVEMENT OF LIVESTOCK HEALTH											
1	Mobile Veterinary Clinics-1/ taluk. Total 8, Available -2 / DAH	5.83	6	34.98	-	-	-	-	-	-	6	34.98
2	Mobile Vety.Lab-1/ dist. Cost + Recurring cost for 4 years /DAH	12	1	12	-	-	-	-	-	-	1	12
3	Popularizing Mineral mixture to improve livestock production@ 1kg/month/Animal- 1 block/year /DAH	0.006	1000	6	1000	6	1000	6	1000	6	4000	24
4	Control of parasitic diseases through treatment to enhance vaccine response /DAH	-	-	8.92	-	8.92	-	8.92	-	8.92	-	35.68

Table 6.13 Contd....

(Rs. in lakhs)

Sl. No.	Name of the Programme	Unit cost	2008-09		2009-10		2010-11		2011-12		Total	
			Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost
5	Intensive system of sheep/goat rearing (20+1=1unit)/block /DAH	0.42	14	5.88	-	-	-	-	-	-	14	5.88
6	Identification & traceability of bovines /DAH	0.0002	135000	27	-	-	-	-	-	-	135000	27
7	Establishment of Mineral mixture. Plant /DDD	20	1	20	-	-	-	-	-	-	1	20
8	Supply of Mineral mixture. to milch animals at subsidized cost (50per cent) @18 kg per year / DDD	0.005	1375	6.875	1375	6.875	1375	6.875	1375	6.875	5500	27.5
9	Supply of by-pass protein feed to milch animals (360 kg / year / animal @ 50per cent subsidised cost of Rs.9-/kg) /DDD	0.033	450	14.85	450	14.85	450	14.85	450	14.85	1800	59.4
10	Milking machines for ID farms/ DDD	1	-	-	9	9	-	-	-	-	9	9
11	Portable milking machines for farmers / DDD	0.18	15	2.7	15	2.7	10	1.8	10	1.8	50	9
12	PC based automatic milk collection stations to IDF villages, milk producers co-op. societies / DDD	1.75	7	12.25	9	15.75	7	12.25	6	10.5	29	50.75

Table 6.13 Contd....

(Rs. in lakhs)

Sl. No.	Name of the Programme	Unit cost	2008-09		2009-10		2010-11		2011-12		Total	
			Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost
III	PROCESSING FACILITIES											
1	Bulk milk coolers /DDD	30.00	1	30.00	-	-	-	-	-	-	1	30.000
2	Walk-in-coolers /DDD	30.00	1	30.00	-	-	-	-	-	-	1	30.000
3	Manufacturing facilities for Milk khoa /DDD	0.77	1	0.77	1	0.77	-	-	-	-	2	1.54
4	Manufacturing facilities for Panner / DDD	1.02	1	1.02	1	1.02	-	-	-	-	2	2.04
5	Manufacturing facilities for Ice cream / DDD	1.12	1	1.12	1	1.12	-	-	-	-	2	2.24
IV	Extension facilities											
1	Veterinary Institutions-Infrastructure development. Fencing, bore well with water troughs, minor repair /DAH	5	20	100	-	-	-	-	-	-	20	100
2	Revival of dormant MPCs /DDD	1	6	6	7	7	6	6	6	6	25	25
3	Milk weighing machine for milk producers co-op. societies /DDD	0.17	33	5.61	34	5.78	33	5.61	31	5.27	131	22.27
4	MMPO laboratory /DDD	56	-	-	-	-	1	56	-	-	1	56
5	Quality assurance lab. Strengthening/ DDD	10	-	-	1	10	-	-	-	-	1	10
6	Farmers study tour @ Rs.5000-per farmer /DDD	0.05	40	2	40	2	40	2	30	1.5	150	7.5
7	Skill development for technical staff /DDD	0.05	25	1.25	25	1.25	25	1.25	25	1.25	100	5

Table 6.13 Contd....

(Rs. in lakhs)

Sl. No.	Name of the Programme	Unit cost	2008-09		2009-10		2010-11		2011-12		Total	
			Units	Cost	Units	Cost	Units	Cost	Units	Cost	Units	Cost
8	Energy management system /DDD	10	1	10	-	-	-	-	-	-	1	10
9	Orientation training / workshop for milk producers at society level /DDD	0.2	4	0.8	4	0.8	4	0.8	4	0.8	16	3.2
10	Strengthening of TANUVAS centre for training for ToT, extension program for capacity building & skill enhancement /TANUVAS	10	1	10	-	-	-	-	-	-	1	10
11	Capacity building (ToT) training for farmers & village level campaigns/ TANUVAS	0.005	500	2.5	500	2.5	500	2.5	500	2.5	2000	10
12	Capacity building (ToT) training for officers /TANUVAS	0.05	50	2.5	50	2.5	50	2.5	50	2.5	200	10
13	Training farmers on EVM /TANUVAS	0.003	100	0.3	100	0.3	100	0.3	100	0.3	400	1.2
14	Touch screen facilities /TANUVAS	1	5	5	5	5	5	5	5	5	20	20
15	Field tour for farmers / TANUVAS	0.25	1	0.25	1	0.25	1	0.25	1	0.25	4	1
16	Turkeys(3+1), feed and health cover – as a pilot program to popularize among rural SHG /TANUVAS	0.01	100	1	100	1	100	1	100	1	400	4
17	Popularizing Japanese quail among rural women SHG/TANUVAS	0.4	1	0.4	1	0.4	1	0.4	1	0.4	4	1.6
	Total			483.35		180.31		194.91		136.32		994.88

6.3.6 Fisheries Sector

6.3.6.1 Construction of Additional Nursery Area in Asur, Govt. Fish Seed Farm (2800 sq.m.)

i) Abstract

There is a government fish seed rearing centre functioning at Asur, Trichy District. The total area of land available is 2.3 ha. This fish farm is having 10 nos. of nurseries (10x7x1.5 m) having a size of 700 sq.ft. The yearly fingerling production is 3.0 lakhs. In the unutilized area (90per cent) available in this farm, additional rearing space can be created by constructing new nurseries

ii) Budget : Rs. 39.20 lakhs

iii) Project Cost and Financing

1.	Construction of Additional nurseries 20 x 10 x 1.5m ² = 200x 14= 2800m ² xRs1000/m ²	Rs.28,00,000.00
2.	Cost of brooders, maintenance, ways, feed etc.	Rs.11,20,000.00
	Total	Rs.39,20,000.00

iv) Implementation Chart

Sl. No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Construction of additional nurseries		√		
2.	Equipping with seed production implements including bore well (5 HP)		√		
3.	Production of fingerlings			√	
4.	River ranching				√

v) Reporting

The programme of work will be evaluated by State Fisheries Department.

6.3.6.2 Private Fish Seed Farmer participation by Extending 50 per cent Subsidy**i) Abstract**

The fish farmers in Trichy district are progressive and adopt modern technologies in fish seed production / fish production. The resources can be utilised to expand the inland fisheries activities in the district. The potential can also be tapped to cater to the need of other districts. Hence, it is proposed to encourage private participation in fish seed production / fish seed rearing by extending subsidy assistance of 50 per cent of the capital cost with a production capacity of 10 million early fry / one million fingerlings. The total cost of one unit will be Rs. 10 lakhs.(50 per cent subsidy component). The culturable area available in Trichy District is 10929 ha. The total seed requirement is 45.0 lakhs which is met by the Departmental Fish Seed Farm (16.0 lakhs) and the balance will be met by private participation (29.0 lakhs). The expected fish production is 3944.0 tonnes per year.

ii) Budget : Rs. 15.00 lakhs**iii) Background / Problem Focus**

- ❖ Inadequate infrastructure causing problems to attain self sufficiency in seed production
- ❖ Fish seed production / rearing is not adequate. The demand for fish seed is mostly met from other Districts / States near by.
- ❖ Fish seed production / rearing in private sector has not been encouraged to minimize intake from neighboring States.

iv) Project Rationale

- ❖ Infrastructure development to attain self sufficiency in seed production
- ❖ Fish seed production / rearing in private sector should be encouraged to minimize import from other States.

- ❖ Fish culture activity shall be encouraged by extending 50per cent subsidy on inputs.

v) Project Strategy

Providing assistance for the rearing of seeds thereby the seed demand can be met in the district. This will ensure proper stocking and production.

vi) Project Goals

- To increase good quality fish seed and fish production capacity
- To expand fish culture in hitherto unutilized water bodies.

vii) Project Components

Repair / Renovation of Carp nurseries, Provision of bore well, Water supply arrangement, fish seeds and 50per cent subsidy.

viii) Project Cost and Financing : Rs. 15.00 lakhs

Unit cost	5.0lakhs * nursery and fish seed production
No. of units	3.0
Total cost	15 lakhs

ix) Implementation chart of the project

Sl. No	particulars	2008-09	2009-10	2010-2011
1.	Renovation of nurseries	√		
2.	Rearing of seeds		√	
3.	Completion of civil works	√		√
4.	Full fledged operation			

x) Reporting

The project will be implemented by Department of Fisheries and valuated by the higher authorities of State Fisheries Department.

6.3.6.3 Supply of Fishing Implements (Gear) 50 per cent Subsidy**i) Abstract**

Improving the fishing efficiency of the fisherfolk it is proposed to distribute 100 units of gill nets (20 Kgs. gill net). The fishing implements will be supplied at 50per cent subsidy to the beneficiaries.

ii) Budget : Rs. 10.00 lakhs

iii) Background / Problem Focus

Providing fishing implements, particularly note and traps will greatly favour the farmers to enhance the fishing operation. The yield can also be improved.

iv) Project Rationale / Project Strategy / Project Goals

- To enhance fish production through capture fisheries.
- To provide 200 nos. of gillnets to the inland fishermen.
- To intervene fishing in natural water bodies.

v) Project Components

Supply of gillnets at 50per cent subsidy

vi) Project Cost and Financing

1.	Subsidy as the cost of gillnets (20 kg)	Rs.5000.00
2.	Total No. of units to be supported	Rs.200.00
	Total Budget	Rs.10.00 Lakhs

vii) Implementation Chart of the Project

Sl. No.	Particulars	2008-12			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Identification of fishermen	√			
2.	Procurement of gear materials supply / distribution	√	√	√	
3.	Efficiency evaluation			√	√

viii) Reporting

The progress of the project will be reported periodically to the State Fisheries Department Authorities.

6.3.6.4 Supply of Moped with Ice Box at Subsidized Price**i) Abstract**

The mopeds with ice box will be provided to inland fishermen for hygienic marketing.

ii) Budget : Rs. 7.50 lakhs**iii) Background / Problem Focus**

For transporting and marketing fish hygienically.

iv) Project Rationale/ Project Strategy / Project Goals

- Fishermen and vendors will be provided with ice box and mopeds that could make available the fish in time with quality.
- Making available mopeds and ice box at affordable price to meet the fishermen needs.
- To promote and sale of fish of high quality

v) Project Components

Supply of 30 units of mopeds with ice box at 50per cent subsidy.

vi) Project Cost and Financing**Subsidy for**

1. Cost of moped : Rs.12,500

2. Cost of ice box : Rs.2,500

Cost per unit : Rs.15,000

Total cost Rs. 0.15 lakh x 50 units : 7.5 lakhs

vii) Implementation Chart of the Project

TAFCOFED will implement this project for State Fisheries Department.

viii) Reporting

Progress of the project will be reported periodically.

Sl. No.	Particulars	2008-2009 I Qtr	2009-10 II Qtr	2010 -11 III Qtr	2011-12 IV Qtr
1.	Identified of Vendors / fishermen	√			
2.	Procurement of Ice Box	√	√		
3.	Distribution of vendors		√	√	
4.	Evaluation and success of the ice box from the fish consumers			√	√

6.3.6.5 Capacity Building**i) Abstract**

Trichy district has vast potential for inland fish culture. The technological advancement need to percolate at grass root level for which a regular farmers training is required. The proposed training will be a sandwiched programme with both theory and practical on different technologies such as scientific fish culture practices, ornamental

fish breeding, hygienic handling, marketing and cage culture of fin fishes will be undertaken. The farmers will be taken to other states like Andhrapradesh, Orissa, West Bengal etc., to have field exposures. A total No. of 40 persons will be trained at an estimated cost of Rs.4.00 lakhs @ Rs.10,000 per trainee.

ii) Budget : Rs. 4.00 lakhs

iii) Background / Problem Focus

The State fisheries department personnel have to be trained in recent advances of fisheries techniques for dissemination to the field level staff, fisherfolk and entrepreneurs. So they have to be empowered with adequate knowledge. It will also help in formulation of new project proposals.

iv) Project Rationale

Empowering the fisheries staff, official and the field level staff in modern fisheries techniques for updating.

v) Project Strategy

- ❖ To disseminate the modern techniques to fisheries officials and progressive fish farmer – entrepreneur by visit to other states for exposure.
- ❖ The project will be implemented by TANUVAS

vi) Project Goals

To empower the fisheries staff and officials through visit to states will advanced fisheries techniques.

vii) Project Components

Fisheries staff of TANUVAS, State Fisheries Department officials and scientist – empower by the dissemination of new techniques in various fish folks like aquaculture old fish culture, value added fishery products, net, seer application, raceways, cage fish and poow.

viii) Project Cost and Financing

Unit cost for a participant	0.10 lakhs (travel, farm visit, demonstration)
No. of units	40
Total cost	4 lakhs

ix) Implementation Chart of the Project

Sl. No.	Particulars	2008 - 2012			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Selections of officers	√			
2.	Selection of farmers		√		
3.	Visit to various states for experience			√	
4.	Evaluation / amount			√	√

Fisheries staff will be identified as per the merit of the candidature with eagerness towards updating their knowledge similar state fish Department officials will be chosen for extending the capacity building for adoption in Tamil Nadu.

x) Reporting

TANUVAS by evaluating and by conducting workshop.

6.3.6.6 Marketing and Trade Establishment of Wholesale Fish Market at Trichy**i) Abstract**

In Trichy district, there are established fish markets run by the municipalities concerned. The improperly stored unsold fish kept overnight result in fish spoilage and loss of quality and revenue. To avoid this, intervention is necessary to establish modern fish retails outlets at Trichy.

ii) Background / Problem Focus

The retail market at present are poorly maintained. The essential market infrastructure like electricity, water, drainage and civic amenities in most of the retail fish markets are inadequate

iii) Project Rationale

This is the last link in the marketing channel. Consumers' satisfaction is guaranteed at this retail outlet.

iv) Project Strategy

The retail market will be located in 20 district headquarters of Tamilnadu based on the marketing potential

v) Project Goals

- ❖ Providing quality fishes at reasonable price.
- ❖ To enhance revenue for the fisher folk engaged in fish marketing

vi) Project Components

Fish market, chilling facilities, modern tools for fish preservation.

vii) Project Cost and Financing

S. No.	Particulars	Rs. in lakhs
1.	Cost for renovation of existing retail market with sanitation facilities	200
2.	Providing pest cential, waste disposal, cold storage facilities, droning and water facilities	100
Total		300

viii) Implementation Chart of the Project

Sl. No.	Particulars	2008-2009 I Qtr	2009-10 II Qtr	2010 -11 III Qtr	2011-12 IV Qtr
1.	Selections of vendors	√			
2.	Establishment of whole sale		√		
3.	Fish market			√	
4.	Region wise			√	√

ix) Reporting

All the retail fish markets will be monitored by the Dept. of Fisheries.

6.3.6.7 Expansion of Fish Culture by providing 50 per cent Assistance to Fish Farmers for Stocking Fingerlings**i) Abstract**

It is proposed to cover 250 ha of water bodies additionally to every year to bring all the water bodies under fish culture by extending 50per cent subsidy assistance for stocking fingerlings. The total cost would be Rs.5.00 alkhs per year for the supply fo 12.50 lakhs fingerlings @ 50per cent subsidy. The total cost involved for 4 years would be Rs.5.00 lakhs.

ii) Budget : Rs. 5.00 lakhs**iii) Project Cost and Financing**

Unit cost per ha	0.005 lakh (cost of fingerlings)
Area to be covered per year	1000 ha
Total cost Rs. 500 x 1000	Rs.5.00 lakhs

iv) Implementation Chart of the Project

Sl. No.	Particulars	2008-2009 I Qtr	2009-10 II Qtr	2010 -11 III Qtr	2011-12 IV Qtr
1.	Selection of farmers and supply of fingerlings	√	√	√	√

v) Reporting

The project will be implemented by State Fisheries Department.

6.3.6.8 Development of Marketing Strategy for Fishes**i) Abstract**

Fish marketing system includes all those activities involved from the point of production / landing to the point of final consumption. More than 90per cent of marine fish landings of Tamilnadu is supplied to internal markets. Marine fishermen are known to suffer because of greater uncertainties in fish catch, high perishability, assembling from too many coastal landing centres, wide seasonal and spatial variation in price, disequilibrium of demand and supply and lack of marketing infrastructure.

ii) Budget : Rs.3.00 lakhs**iii) Background /Problem Focus**

Even though urban consumers are conservative in their fish eating habits, their consumption pattern may be influenced to a larger extent by several factors. The determinants may arise as a result of internal factors, such as varying income, educational standards, social status, size of family and age. The external factors include supply of fish, price and substitute commodities.

iv) Project Rationale

The development of fisheries marketing will require an understanding of the spatial distribution of fish consuming population and infrastructure facilities at various

levels of marketing systems starting from the fishermen to the final consumers. It is believed that the consumption pattern of fish might reveal some seasonal fluctuations depending on the production pattern.

v) Project Strategy

A total of 1,000 consumer respondents distributed in the selected city would be randomly selected. Consumer segmentation would be made depending on income, age, education, family size and life cycle. Data would be collected using a pretested survey schedule. The factors influencing fish consumption would be estimated using suitable econometric models. Based on the results of the study marketing strategies would be suggested for each city to improve fish marketing of fish based on consumer needs.

vi) Project Goals

- ❖ To analyse the fish consumption pattern in the major fish consumption centres.
- ❖ To estimate the demand for the supply of fish in the study area.
- ❖ To conduct test marketing of commercially available fishes among different sections of the consumers.
- ❖ To assess the market infrastructure and development needs.
- ❖ To formulate appropriate marketing strategies for the development of marketing activities.

vii) Project Components

- Conduct of survey among the respondents in the study area.
- Data entry and processing
- Analysis of data with statistical tools.
- Preparation and submission of final report.

viii) Project Cost and Financing

S. No.	Item	Rs. in lakhs
1.	Pay to Enumerators @ Rs. 8,000/- month (24 months)	1.92
2.	Traveling allowance	0.48
3.	Contingencies	0.60
Total		3.00

ix) Implementation Chart of the Project

The project will be implemented by TANUVAS in Trichy.

S. No.	Activities	I Qr.	II Qr.	III Qr.	IV Qr.
1.	Conduct of survey	√	-	-	-
2.	Data entry	-	√	-	-
3.	Analysis of data	-	-	√	-
4.	Preparation of final report	-	-	-	√

x) Reporting

The scheme will be reviewed by the Director of Research and Extension (Fisheries), TANUVAS periodically.

Project Cost for the Interventions of Fisheries Sector are furnished in Table 6.14.

Table 6.14. Project Cost for the Interventions of Fisheries Sector**(Rs.in lakh)**

Sl. No.	Components	Implementing Agency	Total Units	Unit cost	2008-09		2009-10		2010-11		2011-12		Total cost
					Units	Cost	Units	Cost	Units	Cost	Units	Cost	
1	Creation of additional nursery area in Asur Govt. Fish seed farm (2800 sq.m)	Fisheries Department	2800 sq.m	0.03	2800 sq.m	39.20							39.20
2	Private fish seed farmer participation by extending 50per centsubsidy	Fisheries Department	3	5.00	1.00	5.00	1	5.00	1	5.00			15.00
3	Supply of fishing implements (gear) 50per cent subsidy	Fisheries Department	200	0.05	50.00	2.50	50	2.50	50	2.50	50	2.50	10.00
4	Supply of moped with ice box at subsidized price	TAFCOFED	50	0.15	15.00	2.25	15	2.25	15	2.25	5	0.75	7.50
5	Marketing and Trade												0.00
a	Establishment of whole sale fish market at Trichy	TNFDC	1	300.00	1.00	300.00							300.00

Table 6.14 Contd.....

(Rs.in lakh)

Sl. No.	Components	Implementing Agency	Total Units	Unit cost	2008-09		2009-10		2010-11		2011-12		Total cost
					Units	Cost	Units	Cost	Units	Cost	Units	Cost	
b	Expansion of fish culture by providing 50per cent assistance to fish farmers for stocking fingerlings	Fisheries Department	1000	0.005/ha	250 ha	1.25	250	1.25	250	1.25	250	1.25	5.00
	Fisheries Total					350.20		11.00		11.00		4.50	376.70
1	Capacity building - Training to Fishfarmers	TANUVAS	40	0.10	10.00	1.00	10	1.00	10	1.00	10	1.00	4.00
2	Development of Marketing strategy for fishes	TANUVAS	1	3.00	1.00	3.00							3.00
	TANUVAS - Total					4.00		1.00		1.00		1.00	7.00
	Grand Total					354.20		12.00		12.00		5.50	383.70

6.4 Agri.Engineering

Problems focus

In Tiruchirappalli district, more or less equal share of rainfall is received during both North-East and South-West Monsoons. Hence, both wet land and dry land farming are being practiced in this district.

In wet land farming, paddy is the main crop cultivated in the district. Banana and sugarcane are the other major crops. Farmers of this district have switched over to utilize farm machinery / implements for land preparation from the age old practices like using cattle for ploughing and puddling activities. But, activities after land preparation such as transplanting, weeding, harvest etc. are being done only by engaging manual labourers. Harvesting by machinery is slowly picked up due to paucity of labour and high wages.

Due to lack of available farm machinery/implements and paucity of labourers especially during critical stages, the farmers mainly face the problems in completing the agricultural activities within the season. As a result, yield from the crop also gets considerably reduced.

The major dry land crops includes millets (sorghum, fodder maize, minor millets), fodder crops (forage legumes, cereal fodder, forage grass), pulses (black gram, green gram, cowpea, horse gram, etc) and oilseeds (groundnut, castor, and sunflower).

The constraints in the production system are due to low or erratic distribution of rainfall coupled with frequent droughts. With the result, crops often fail with low or no yields making the farmers to be in very poor living conditions. The constraints are summarized as given below:

- Erratic distribution of rainfall with recurring droughts and crop failures
- Poor soil moisture regime in critical stages of crop growth and poor soil fertility.

- Non adoption of scientific cultivation practices (Line sowing / seed drill, improper input use etc.)
- Non - adoption of machinery for field operation and value addition and
- Poor resource base of farmers.

Further, over exploitation of ground water is also contributed in the area other than cauvery command by means of irrigation through deep wells and bore wells. Paddy, sugarcane, millets, pulses and oil seeds are cultivated and irrigated by wells and bore wells. Ground water table is much lowered below 100 m in certain area due to over exploitation.

Rain water harvesting and runoff management programme is implemented through watershed basis. Some watersheds are left over in the on going programme due to paucity of funds.

i) Project Rationale

The average land holding of the farmers in wet land farming is 0.80 – 0.90 hectare and most of them are poor. They could not make use of the farm machinery/implements for doing entire farm activities. They also face the problems of labour shortage in critical stages of agricultural activities. Even the available labourers demand more wages and they have to meet with much difficulty. The problems could be overcome by supplementing new and additional farm machinery/implements on subsidy basis. Thereby timely completion of farming activities could be possible within the season resulting in considerable increase in crop production.

Currently, the production and productivity of dry land crops decline due to non-scientific cultivation practices, erratic distribution of rainfall and poor economic condition of the dry land farmers. The major dry land crops under this category includes millets (sorghum, fodder maize, pearl millet, minor millets), fodder crops (forage

legumes, cereal fodder, forage grass), pulses (black gram, green gram, cowpea, horse gram, etc) and oilseeds (groundnut, castor, and sunflower). As the water becomes the main constraint in the dry lands, the usage of input has become marginalized. Therefore, the potential yield of the above crops could not be realized.

Rainwater harvesting and recycling for supplemental irrigation is the basic need for increasing agricultural productivity in drylands. It also enhances the use of other agricultural inputs/ technologies to a higher level by providing improved soil moisture regime during critical stages of crop growth. Farm ponds are considered to be the suitable structure to store excess rain water from dryland farm plots and to store it sufficiently for a long time (say 3 to 4 months) so as to give supplemental irrigation during critical stage of crop growth at times of failure or non – receipt of rainfall . Rain water harvesting and runoff management programme in the left over watersheds can be a best solution to increase the productivity. In addition to the improvement of soil moisture regime and poor soil fertility, ground water recharge could also be achieved.

Though various programmes are implemented by the department, they do not completely fulfill the demand of the farming community for the following important reasons

- i) inadequate allocation of funds
- ii) Most of the programmes are implemented either on watershed or command area basis. The areas outside the selected watersheds / commands are poorly concentrated and farmers in these areas do not get their due share.
- iii) Lack of integrated approach

Under these circumstances, it is considered that the introduction of NADP will be a boon to the farming community as this programme is expected to cover the above shortcomings.

Therefore proposals are made by Agricultural Engineering Department under NADP for the years 2008-09 to 2011-12.

ii) Project Strategy

a. Project Area

All the fourteen blocks of this district will be covered under this project. Four blocks are under Cauvery command and six blocks are dry land area and the rest of the blocks i.e., four are covered partly by both wet and dry lands.

Popularizing new innovative farm machinery/implements will be concentrated more in four blocks under Cauvery command. Rain water harvesting and runoff management programme along with farm mechanization will be implemented in the rest of the blocks. Small and marginal farmers will be the major beneficiaries.

b. Agencies Involved

1. Department of Agricultural Engineering
2. TNAU (Technical Support and Training)

Activities	Implementing Agency
Introduction of newly developed Agricultural Machinery/implements	Agricultural Engineering Department
Innovative water harvesting structures	Agricultural Engineering Department
Soil and water conservation measures	Agricultural Engineering Department
Water harvesting structures	Agricultural Engineering Department
Popularization of Agricultural Mechanization through conventional machinery/ equipments (Sowing to harvest)	Agricultural Engineering Department
Strengthening of Agricultural Engineering Training Centre	Agricultural Engineering Department

Activities	Implementing Agency
Training on transfer of technology to the farmers	Agricultural Engineering Department
Overall Technological Support and training	TNAU
Participatory research	TNAU
Monitoring / mid term evaluation and corrective measures	TNAU and Agricultural Engineering Department

iii) Project Goals

- To make awareness on farm mechanization
- To conserve soil moisture and to recharge ground water table through rainwater harvesting
- Strengthening and infrastructural development of existing state level training center. Imparting training to the farming community on transfer of newly developed agricultural technologies.

iv) Project Components

Project components are proposed into two categories *viz.* Introduction of innovative measures (Stream-I) and Support to the ongoing programmes (Stream –II).

A) Proposals under Stream - I

6.4.1 Introduction of Innovative Agricultural Machinery / Implements

Popularization and adoption of labour saving package for timely operation through agricultural implements and reducing post harvest losses for improving income and value addition.

Under the existing centrally sponsored Agricultural Mechanization programme, 25 per cent of the cost of the machinery/implements or the maximum ceiling prescribed by Govt. of India, whichever is less is allowed as subsidy to farmers for the purchase of tractors, power tillers and implements such as rotavator, paddy transplanter etc. Under the existing programme, machinery and implements, which are duly certified with a Test Certificate by Farm Machinery Training and Testing Institutes located at Ananthapur, Budni, Hissar, are eligible to be provided to farmers with subsidy assistance. At the same time, the innovative machinery and implements developed by Tamil Nadu Agricultural University and private entrepreneurs such as Mini Combine Harvester, Multi Crop Thresher, Power Weeder, Maize husker cum Sheller, Coconut de-husker etc., which do not have test certificates and not covered under existing GOI scheme are also to be popularized to increase the pace of agricultural mechanization. It is proposed to provide 50 per cent subsidy assistance to farmers for procuring the above machinery / implements and 75 per cent subsidy assistance for Gender friendly equipments and tools.

Objectives

- Supply and demonstration of agricultural implements for the various unit operations from seedbed preparation to harvest
- Popularization of post harvest technologies for the production of value added products
- Timeliness of agricultural operations involved, eliminating shortage of labour
- Efficient application and utilization of agricultural inputs
- Saving in labour, time and cost of operation
- Increase in production and productivity

Activities

- ❖ Procurement of chisel plough, Broad bed former
- ❖ Procurement of Seed drill

- ❖ Procurement of long handled weeders / Power weeders
- ❖ Procurement of Mini combine Harvester
- ❖ Procurement of Multi crop thresher
- ❖ Procurement of Paddy Transplanter
- ❖ Procurement of Post Hole digger
- ❖ Procurement of Sugarcane cutter-planter
- ❖ Procurement of Maize Husker/Sheller
- ❖ Gender Friendly Equipments

Machineries will be purchased by progressive farmers / agri-clinic / SHGs selected by Department of Agriculture and the same will be utilized by other farmers on custom hiring basis.

6.4.2 Innovative Water Harvesting Structures

In Tiruchirappalli District there are more than 700 percolation ponds that were constructed for the past two decades. In addition to renovation of the existing ponds, construction of two recharge shafts per pond will ensure rising the groundwater table.

Objectives

- ❖ To recharge groundwater more effectively.
- ❖ To harvest the rainwater effectively and reuse for supplemental irrigation
- ❖ Mitigating stress in intervening dry spells during crop growth
- ❖ Enhancing water use efficiency in dry lands
- ❖ Soil erosion control and prevention of nutrient loss
- ❖ Aids in flood mitigation
- ❖ Enhancing crop yields

Activities

- Site selection and design for recharge shaft
- Construction of recharge shaft in the pond
- Rejuvenation of the pond to restore its original capacity

6.4.3 Strengthening and Upgradation of Agricultural Engineering Training Center, Tiruchirappalli

A state level training centre for Agricultural Engineering Department is functioning at Tiruchirappalli since 1982. Various training programmes for the departmental staff in all the categories in multi disciplinary activities are organized and conducted through this institution. Farmers all over the state are also being imparted training on latest technology developments in agriculture and allied activities. Farmers are given training in the area of dry land development, command area development, waste land development, watershed programme and awareness and utilization of farm machinery / implements. This institute is functioning under the asbestos roof shed. Strengthening of this training center by the way of providing RCC roof, infrastructural development for computer & data center lab, training hall, provision of training aids & materials, procurement of computer systems & peripherals will enhance the effectiveness of technology transfer from lab to land. Hence proposal is made as one time grant for strengthening and upgradation of this state level training institution.

B) Proposals under Stream - II**6.4.4 Popularization of Agricultural Mechanization through Conventional Machinery/Equipments**

Presently, the centrally sponsored Agricultural Mechanization Programme is being implemented in the state with the aim of popularizing the agricultural machinery among the farmers. Under this programme, assistance is provided to farmers for procuring agricultural machinery / implements such as Power tiller, Paddy Transplanter, Rotavator, Cage wheel etc.,. This programme is well received by the farming community

and the demand is on higher side as these machinery / implements are required right from the basic cultural operations. Shortage of agricultural labourers especially during critical stages and migration to construction work are the major reasons for expanding agricultural mechanization which is need of the hour. Even the available labourers demand more wages. Due to the paucity of funds the demand could not be met with. Hence it is proposed to get additional funds to extend subsidy assistance to farmers for procuring machinery / implements such as Power tiller, Rotavator, Cultivator, Disc Plough, Offset Disc harrow, Zero till seed drill, which are on more demand. The subsidy pattern will be similar to the existing one for the machinery. Except one or two manufacturers, others do not possess the Farm Machinery Training and Testing Institute test certificate for tractor drawn implements. But still these implements can be provided with subsidy without insisting the test certificate after ascertaining the required specifications.

Objectives

- Popularization and adoption of labour saving package for timely operation through agricultural implements
- Supply and demonstration of agricultural implements for the various unit operations from seedbed preparation to harvest
- Saving time and cost of operation
- Increase in production and productivity

Activities

- ❖ Procurement of Power tiller
- ❖ Procurement of Seed drill
- ❖ Procurement of Rotovator
- ❖ Procurement of Cultivator
- ❖ Procurement of Disc Plough
- ❖ Procurement of Off-set Disc Harrow

6.4.5 Water Harvesting Structures

Rain fed areas is mostly undulated terrain in nature. During the monsoon rapid soil erosion occurs. The lands adjoining gullies are eroded more due to heavy runoff. Hence a meager quantum of rainwater only infiltrates into the soil. Crop production becomes unsustainable in these areas and leads to ecological and socio-economic crisis. The run off, thus formed, flows with high velocity and forms deep and wide gullies. These gullies are further widened over a period of years. This results in loss of fertile land on either sides of the gully. Further, the runoff when it flows, it carries along with the minimum top soil available. Whatever the nutrients applied to these lands and useful micro-organisms available are washed away. This further renders the land unproductive. The most essential input required for production of crops is water, which is scarce in the rain fed area. The average annual rainfall is around 780mm, and is highly erratic with uneven distribution. The rain fed agriculture is affected in both ways, viz. flash floods during rainy season and acute drought in summer. Since the terrain is rolling, the groundwater recharge is very poor and the existing water bodies are also sited up very easily.

To control erosion, the water harvesting structures like check dams are proposed. The other water harvesting structures like farm ponds, percolation ponds, new village tanks, collection wells, recharge shaft are also proposed to promote effective recharge of ground water.

Though the above works are taken up in the on going programmes done on watershed basis, the left out watersheds as well as to meet the demand in the existing watershed will also be taken care off in this programme.

Objectives

- ❖ To recharge groundwater more effectively.
- ❖ To harvest the rainwater effectively and reuse for supplemental irrigation

- ❖ Mitigating stress in intervening dry spells during crop growth
- ❖ Harvesting and storing a part of run off at suitable location for recycling during critical periods.
- ❖ To meet out the demand in existing watersheds
- ❖ To cover the left out watersheds
- ❖ To conserve soil moisture through rainwater harvesting
- ❖ Enhancing water use efficiency in dry lands
- ❖ Soil erosion control and prevention of nutrient loss
- ❖ Aids in flood mitigation
- ❖ Enhancing crop yields

Activities

- Construction of check dams
- Construction of recharge shaft
- Rainwater collection well
- Construction of percolation pond
- Formation of new village tanks
- Construction of farm ponds

6.4.6 Soil Conservation Works

Currently, the State funded Rain water harvesting and runoff management programme is implemented in CWP watersheds and the NABARD assisted Rainwater harvesting programme is carried out. In order to have an extensive coverage in the selected watersheds as well as left over watersheds, the Soil and water conservation works like Compartmental bunding, Land Shapping are proposed for soil erosion control, moisture retention, water harvesting and improving the ground water recharge for sustainable agriculture.

Objectives

- To recharge groundwater in the aquifer thereby increasing the water table
- Mitigating stress in intervening dry spells during crop growth
- To meet out the demand in existing watersheds
- To cover the left out watersheds
- To conserve soil moisture in soil profile for a considerable period
- Soil erosion control and prevention of nutrient loss
- Aids in flood mitigation
- Enhancing crop yields

Activities

- Formation of compartmental bunding
- Land shaping the undulated cultivable lands

6.4.7 Water Management Works

A large number of farmers having wells as a source for irrigation are desperately in need of efficient and effective conveyance system to minimize the seepage, infiltration and percolation losses and for irrigating their fields which are located at higher elevation. Hence, it is proposed to provide PVC pipe laying in farmer's fields so as to improve the conveyance efficiency of irrigation water and irrigating the lands at higher levels effectively.

Objectives

- To improve the conveyance efficiency of irrigation water
- To irrigate the land at higher levels
- To minimize the seepage, infiltration and percolation losses

Activities

- Water conveyance through PVC pipe line.

6.4.8 Farmers Training

To impart knowledge to the beneficiaries on improved water management techniques, moisture conservation practices, mechanized crop cultivation and post harvest technologies.

Objectives

- To make awareness on innovative techniques
- To sensitize the farmers on moisture conservation practices and farm mechanization
- To make awareness on ground water recharge
- Capacity building of farmers
- Effective technology transfer from lab to land

Project Cost and Financing (Table 6.15)

	Budget	
1. Stream I	:	276.28 lakhs
2. Stream II	:	549.77 lakhs
Total	:	826.05 lakhs

Table 6.15. Details of Interventions and Project Cost

Sl.No.	Project Component	Project Cost (Rs. in Lakhs)
	Stream I	
1.	Introduction of newly Agricultural Machinery/implements	41.28
2.	Innovative Water Harvesting Structures	200.00
3.	Government support to state government institutions for upgrading Agricultural Engineering Training Center, Tiruchirappalli	35.00
	Total	276.28
	Stream II	
1.	Popularization of Agricultural Mechanization through conventional Machinery / Equipments	32.21
2.	Water harvesting structures	473.55
3.	Soil Conservation Works	18.00
4.	Water management works	20.25
5.	Farmers' training	5.76
	Total	549.77
	GrandTotal	826.05

[illegible]

6.5 Strengthening of Agricultural Marketing and Agribusiness Development in Tiruchirappalli District through NADP Funding

i) Current Status of Agribusiness

Agriculture, as a primary sector provides livelihood to 56 per cent of the population and contributes around 13 per cent of the State GDP. In value terms between 65 and 75 per cent of agricultural produce is transacted in markets, usually through long marketing chains, regulated markets and an emerging commercialized retail system in urban centers. Unorganized small players (handling less than 0.5 t/day) process more than 75 per cent of industry output. The Government is taking efforts to achieve targeted growth rate of 4 per cent in Agriculture during XI Plan period. Though fertile soil, good quality water and long period of sunlight which are the basic requirements for Agriculture are available in abundance in Tamil Nadu, still the productivity has not been enhanced to its potential level.

The Government is taking efforts to attain sustainable agricultural development by bringing agriculture as a commercial venture by switching over from the present method of cultivation through adoption of new scientific method of cultivation to increase the productivity manifold, value addition, processing and utilization of marketing opportunities. To improve the marketing opportunities for agricultural produce, the Uzhavar Santhai, post harvest management, cold storage facilities for perishables, food processing, establishment of export zones and terminal markets have been taken up. To reduce the loss of the food products which are upto 30 per cent, necessary provisions are made in the Agricultural Industrial Policy to ensure remunerative price to the produce, encourage food processing sector and export to earn foreign exchange by increasing the food processing from the present level of one per cent to 10 per cent, out of the total production, increasing value addition from seven per cent to 30 per cent. Under this policy, all assistance which is provided to other industries will be extended to agro based industries, agricultural machineries and industries manufacturing micro irrigation equipments.

One Deputy Director of Agriculture (Agri Business) for each district, one Agricultural Officer for every two blocks and one Assistant Agricultural Officer for one block have been posted as per restructuring to regulate Agri Business and encourage entrepreneurs. In 103 Uzhavar Shandies, 51 Agricultural Officers and 52 Deputy Agricultural Officers are posted. After restructuring 239 original posts have been enhanced to 906 posts in Agricultural Marketing and Agri Business Department.

2. Agribusiness and the National Development Goals

The Planning Commission's Mid-Term Appraisal (MTA) of the Tenth Plan notes that achieving higher growth rates depends on reversing the decline in growth of the agricultural sector and requires a move away from 'business as usual'. Under the eleventh Plan, areas identified for special attention in the agriculture sector included among others: (i) diversification to high value crops and activities; (ii) increasing cropping intensity; (iii) strengthening of marketing, processing and value addition infrastructure; (iv) revamping and modernizing the extension systems and encouraging the private sector to provide extension services; and (v) bridging the gap between research and farmers' yields.

For the agriculture sector, the eleventh Plan projected an annual growth rate of 4 per cent which was seen as achievable if growth of 6 to 8 per cent could be achieved in horticulture. These growth rates have not been achieved largely because constraints identified in the Plan have not been overcome. These constraints include lack of modern and efficient infrastructure, poor technological support and post harvest management, underdeveloped and exploitative market structures, inadequate research and extension to address specific agricultural problems and linkages with farmers and industry. The strong relationship between agriculture and rural poverty means that current plans, policy and sector performance will be unable to address the needs of rural poor.

The two most important programs related to agribusiness development are the Technology Mission for Integrated Development of Horticulture (TM) and the National Horticultural Mission (NHM). The focus of the TM is production of horticultural

products in Hill states, whereas post harvest management and processing have only a nominal presence. The NHM has a broader coverage of states and addresses issues of market infrastructure development and processing. However, the key issue of coordination within value chains is not addressed. There needs to be a better understanding of why despite generous subsidies in the past, progress has been slow with private investment in market infrastructure and development of the processing industry. At present 21 Market committees are functioning in Tamil Nadu at district Level There are 277 Regulated Markets, 15 Check Posts, 108 Rural Godowns and 108 grading centres functioning under the Market Committees.

3. Major Constraints and Challenges in Agricultural Marketing and Agribusiness Development in the State

Current agricultural marketing and agribusiness system in the state is the outcome of several years of Government intervention. The system has undergone several changes during the last 50 years owing to the increased marketed surplus; increase in urbanization and income levels and consequent changes in the pattern of demand for marketing services; increase in linkages with distant and overseas markets; and changes in the form and degree of government intervention. An important characteristic of agricultural produce markets in Tamil Nadu has been that private trade has continued to dominate the market. With the large quantities required to be handled by the private trade, the size and structure of markets over time have considerably expanded. There are a large number of wholesalers and retailers who handle the trade in food grains. Apart from traders, processors also play an important role as they also enter in the market as bulk buyers and sellers.

Agricultural development continues to remain the most important objective of State planning and policy. The experience of agricultural development in the State has shown that the existing systems of delivery of agricultural inputs and marketing of agricultural output have not been efficient in reaching the benefits of technology to all the sections of farmers. The timely, quality and cost effective delivery of adequate inputs still remains a dream despite the marketing attempts of the corporate sector and the

developmental programmes of the State. Also, the farmers are not able to sell their surplus produce remuneratively. There are plenty of distress sales among farmers both in agriculturally developed as well as backward regions in the State. There are temporal and spatial variations in the markets and the producers' share in consumers' rupee has not been satisfactory, except for a few commodities. In fact, in some commodities like tomato in some regions in the State, producers end up making net losses at the same time traders make substantial profits from the same crop. However, it needs to be recognized that producers' relative share in the final price of a product certainly goes down with the increase in the number of value-adding stages, and therefore, cannot be used as an indicator of a market's efficiency or inefficiency. Nevertheless, the other aspects of the market performance like absolute share of the producer in terms of remunerability, fluctuations in prices across seasons, large spatial price differences and lack of proper market outlets itself, are the issues which have become increasingly crucial in the present context. There are structural weaknesses of agricultural markets like unorganized suppliers as against organized buyers, weak holding capacity of the producers and the perishable nature of the produce in the absence of any storage infrastructure. In the presence of these characteristics of the market, the rural producers cannot simply be left to fend for themselves so far as marketing of their produce is concerned. And if the marketing system does not assure good returns to producers, not much can be achieved in the field of product quality and delivery which are critical for processing and manufacturing sectors. In the environment of liberalization and globalization, the role of the state in agricultural marketing and input supply is being reduced, and an increasing space is being provided to the private sector to bring about better marketing efficiency in input and output markets. On the other hand, processors and/or marketers face problems in obtaining timely, cost effective, and adequate supply of quality raw materials.

Small farms produce more than 35 percent of State total grain, and over half of total fruits and vegetables despite being resource constrained. The marginal holdings have higher cropping intensity compared with that of the small, medium and large farmers, mainly owing to higher irrigated area as percentage of net sown area. The small

and marginal farmers are certainly going to stay for long time in State though they are going to face a number of challenges. Therefore, what happens to small and marginal farmers has implications for the entire State and people's livelihoods. But, they can adequately respond to these challenges only if there is efficient marketing system for handling their small surpluses. Otherwise, they will only be losers in the process of globalization and liberalization. The viability of the small holdings is an important issue and promoting agricultural diversification towards high value crops through an efficient marketing system is argued to be one of the means through which this can be achieved. Hence, there is an urgent need for specific intervention in agricultural marketing in Tamil Nadu.

Tiruchirappalli district has number of marketing institutions which facilitates smooth marketing of different crops grown in this district. There are 10 regulated markets, 5 wholesale markets (Rice, turmeric, tamarind, fruits and flowers) and Uzhavar Sandhais functioning in this district. Value added enterprise is promoted for puffed rice, tomato and tapioca. In addition, 5 storage godowns, Central Warehousing Corporation (1), civil supplies godowns (9) and three private cold storage units are available in this district to cater to the needs of the farm produce for sale (Table 6.16).

Table 6.16 Regulated Markets, Check Posts, Rural Godowns, Commercial Grading Centres, Kapas Grading Centres In Tiruchirappalli District 2006-07

S.No	Details	Numbers
1	No. of Regulated Markets	10
2	No. of sub Regulated Markets	1
3	Quantity of arrivals in MT	27169
4	Receipts (Rs in Lakhs)	106.57
5	Check Post	2
6	Rural Godown	5
7	Commercial Grading Centre	1

4. Sector Problem Analysis

The core problem for agribusiness development in Tamil Nadu is the general failure in coordinating the decisions of private stakeholders (e.g. farmers, traders and agro-processors in the case of the agri -food system) and service providers from the public, private and nongovernmental organizations (NGO) sectors.

Farmers fail to link among themselves though effective producer organizations to be able to undertake joint decisions in production and marketing. Farmers have weak linkages with enterprises and often fail to link effectively to markets because of limited access to relevant market intelligence and inadequate market infrastructure. Farmers are also poorly linked to research and extension and so unable to address their specific technology and knowledge needs that would enable them to innovate into high value production systems.

Entrepreneurs have weak linkages with farmers through contracts and vertical integration arrangements and are distant from consumers because of the absence of organized retail chains. Linkages with service providers are characterized by a lack of confidence particularly in the case of research and extension organizations. The absence of proper certification, quality assurance systems and inadequate infrastructure continues to limit the integration of production with international markets.

Most Service Provider agencies fail to link with each other, particularly during implementation of national programs. Links between states and central agencies are often limited. Service providers from the public sector are often unable to provide effective services due to lack of funding, bureaucratic hurdles and the lack of a culture that is client and business oriented. Most NGOs are not used to working in the field of enterprise development and their presence in the agribusiness sector is marginal. Service providers from the private sectors are emerging but are mainly oriented to the needs of corporate clients rather than small and medium enterprises or producer groups that dominate total production.

Past interventions to improve technology, infrastructure and access to credit and markets had modest impact on growth of the sector. The policy assumption that more funds and subsidies will lead to the desired results has proved to be incorrect. Steps for ensuring coordination within each value chain have not been recognized. In spite of subsidies, progress has been slow with few effective value chains emerging and few stakeholders investing in market infrastructure such as the cooperative sector in Bangalore. The capacity of individuals, groups and service providers to understand and practice value chain principles and management remains low.

For growth to accelerate substantially a new way of thinking about agribusiness development in Tamil Nadu and promoting agribusiness is needed. This new way, and the related business practices that go with it, implies overcoming significant coordination failures. This requires appropriate institutional mechanisms that currently do not exist within current policy setting.

5. Project Rationale

The rationale for the proposed Augmentation of Agricultural Marketing and Agribusiness development in Tamil Nadu through NADP funding is based on the following:

1. The rate of agricultural growth over the past decade has been declining in Tamil Nadu. Agribusiness through its linkages to production, industry and services has the potential to transform the agricultural system into a more dynamic sector.
2. As urbanization and incomes grow, there is a growing demand for a wider range of agri-food products, of higher quality and greater convenience, to use in Tamil Nadu. Meeting this demand requires organized retailing and effective agribusiness supply chains.

3. Agribusiness contributes to the production of higher value products and diversification away from staple foods. Through this diversification and the development of the value chain between producers and consumers, the rural economy benefits from innovation and the creation of non-farm employment.
4. Tamil Nadu has a comparative advantage in a number of agricultural commodities. Increasing integration with global markets and the potential to become a stronger player in agricultural trade requires quality assurance and competitive advantage.
5. The State Government has identified agribusiness development as a strategic priority. In Tamil Nadu, agribusiness has a significant role to play in rural and economic development, and agro-enterprises could be a major source of rural non-farm employment and income.
6. The existing government programs to promote agricultural diversification are broad-based programs with multiple objectives. For agribusiness development to happen, a more focused approach is needed to complement the initiatives already covered by the different national programs.

6. Project Strategy

The project will promote the Agri-business practices and models required to support agribusiness development in Tamil Nadu, allowing the sector to contribute to economic growth, particularly in rural areas. New Agri-business practices will be introduced relating to: (i) farmers and entrepreneurs engaging service providers to solve specific technology problems (ii) learning to work together in the value chain (iii) making effective use of market intelligence in decision making; and (iv) making investments in supply chain infrastructure and market places.

7. Project Approach

The project aims at improving business practices needed for agribusiness development in Tamil Nadu. Profit motivations are critical to the improvement of business practices. Rather than starting from a production point of view, stakeholders are encouraged to start from understanding market requirements and opportunities. The project will help stakeholders to access the relevant technologies and knowledge services needed for realizing the identified profit opportunities. Those profit opportunities are realized by working together with other stakeholders in the value chain, and by improving linkages through investments and existing physical infrastructure.

8. Project Goals

The expected impact of the project will be an increasingly competitive agribusiness sector, informed by the adoption of improved business practices in the Agriculture sector, leading to diversification, higher value addition and higher incomes for farmers, farm workers and entrepreneurs and reduced rural poverty. The expected outcome of the project will be increased benefits (incomes) for farmers, farm workers and entrepreneurs in the selected value chains.

Through the adoption of improved agribusiness practices the project will facilitate the development of a competitive agribusiness sector in Tamil Nadu, promoting diversification and contributing to the transformation of agriculture into a system producing higher value and contributing to the reduction of poverty in rural areas.

The envisaged project's interventions will provide higher value for consumers, value that will be shared as distributed benefits to value chain stakeholders including farmers, entrepreneurs and workers. This will be achieved through activities that improve business practices related to use of market information, investment in technology transfer and knowledge services, development of value chain linkages and investment in market infrastructure. The distributed benefits will provide incentive for ongoing involvement and further innovation from which the sector can extend its development.

The project impact is to develop an increasingly competitive agribusiness sector in Tamil Nadu attained through the adoption of improved business practices in the horticultural sector leading to higher value addition and higher income of farmers, farm workers and entrepreneurs, particularly women amongst them.

The project outcome is increased benefits to farmers, entrepreneurs and workers who are involved in selected value chains in Tamil Nadu.

9. Project Components

1. Establishment/ organization of commodity groups for marketing in the Tiruchirappalli district
2. Facilitation of Contract Farming between farmers and bulk buyers in the state
3. Dissemination of Market intelligence
4. Arrangement of Buyers - Sellers Meet
5. Organizing the exposure visits to important markets within the State and outside the state by commodity groups / farmers and extension functionaries.
6. Strengthening of market extension centre at each district/ block level for capacity building and dissemination of marketing information.
7. Strengthening of selected village shandies
8. Capacity building of farmer's skill
9. Price surveillance
10. Regulated Market uzhavar Shandies Publicity
11. Market Infrastructure

10. Project Components Description

6.5.1 Establishment / Organization of Commodity Groups for Marketing in the State with Financial Assistance from NADP

i) Project Rationale

According to Government sources, the inefficient marketing system leads to an avoidable waste of around Rs 50,127 crores. A major part of this can be saved by

introducing scale and technology in agricultural marketing. Milk and eggs marketing are two success areas of role of scale and technology in marketing. The extent to which the farmer-producers will benefit (out of saving of avoidable waste) depends on the group-marketing practices adopted by the farmers. In this sense, Farmers' Groups/ Commodity Groups need to be promoted for undertaking marketing activities on behalf of the individual members of the group.

Based on the international experience, in view of expanding retail trade, organizing the farmers and equipping the commodity groups can facilitate the aggregation of produce and also enhance the bargaining power of the farmers. The experience in Malaysia, Thailand and Philippines indicated that the retail chains will depend on some intermediary agency for sourcing the produce. If this role can be taken by the farmers' commodity groups, the commodities can move directly to the market without any intermediary. Further, adoption of technology both in production and post-harvest management which is expected to flow from the organized retailers and other research institutions can be efficient through the farmers' commodity groups. There is no single model for organizing the farmers for the whole country. Depending on the strength of the existing farmers' institutions, various models could be adopted. The model of farmers' marketing commodity groups cannot be the same throughout the country. It can be Cooperatives, SHGs or any other form. Therefore it is proposed to organize the commodity groups for marketing of agricultural commodities in Tamil Nadu over the period of four years.

ii) Project Strategy

Formation of commodity groups for group marketing in the state with financial assistance from NADP.

iii) Project Goals

Organizing Group Marketing of major agricultural commodities for realizing higher prices through establishing commodity groups.

iv) Project Components

1. Organizing meetings with large number of farmers
2. Identification of willing / co operating Farmers
3. Organizing the willing farmers in to groups and
4. Periodical meeting with groups and coordinating the activities

v) Project cost and Financing

Arranging / organizing Commodity Groups involves several rounds of meeting with large number of farmers to begin with and finally arriving at about required number of farmers for group cultivation of marketing. To organize these, an amount of Rs.20000/- is provided per group.

In this project it is proposed to organize 522 commodity groups in ten commodities for marketing of agricultural commodities in Tiruchirappalli District over the period of four years. This will require resources of Rs.120.50 Lakhs for the period of four years. The details are presented in Table 6.17 A.

vi) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officer (Agricultural Marketing and Agri Business) and Secretaries of Marketing Committees.
2. Periodical Inspection to be undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.2 Facilitation of Contract Farming between Farmers and Bulk Buyers in Tiruchirappalli District**i) Project Rationale**

Apart from linking the farmer to consumer through farmers' organizations, another initiative for reducing transaction cost is establishment of direct channel between farmer-processor/bulk consumers, through contract farming (CF). For different reasons,

both farmers and farm product processors/distributors may prefer contracts to complete vertical integration. A farmer may prefer a contract which gives access to additional sources of capital, and a more certain price by shifting part of the risk of adverse price movement to the buyer. Farmers also get an access to new technology and inputs, including credit, through contracts which otherwise may be beyond their reach. For a processor or distributor, contracts are more flexible in the face of market uncertainty, make smaller demands on scarce capital resources, and impose less of an additional burden of labour relations, ownership of land, and production activities, on management.

At more macro economic level, contracting can help to remove market imperfections in produce, capital (credit), land, labour, information and insurance markets; facilitate better coordination of local production activities which often involve initial investment in processing, extension etc.; and can help in reducing transaction costs. It has also been used in many situations as a policy step by the State to bring about crop diversification for improving farm incomes and employment. CF is also seen as a way to reduce costs of cultivation as it can provide access to better inputs and more efficient production methods. The increasing cost of cultivation was the reason for the emergence of CF in Japan and Spain in the 1950s and in the Indian Punjab in the early 1990s. Though there are concerns about the ability of the small farms and firms to survive in the changing environment of agribusiness, still there are opportunities for them to exploit like in product differentiation with origin of product or organic products and other niche markets. But, the major route has to be through exploitation of other factors like external economies of scale through networking or clustering and such other alliances like CF.

Marketing tie-ups between farmers and processors or bulk purchasers have special significance for small farmers, who have small marketable surplus and do not have staying power. Such arrangements are being encouraged to help in reducing price risks of farmers and to also expand the markets for farm products. It is to be noted that contract farming of sugarcane is going on for more than 50 years in Tamil Nadu. In case of cotton,

maize and medicinal plants there are few cases of contract farming. Contract farming in milk, eggs and broiler production is successfully taking place in large scale in Tamil Nadu. The lessons taught in case of sugarcane, cotton and other commodities have to be taken into account during formulation of the project. For this in this NADP programme facilitation contract farming between the traders and producer is proposed.

ii) Project Strategy

Facilitation contract farming between the traders and producers by organising buyers and sellers meet in the block levels.

iii) Project Components

- ❖ Organizing meeting with farmers, large scale buying firms, crop insurance companies and banks.
- ❖ Identification of willing / co operating Farmers/ commodity clusters
- ❖ Organizing the willing farmers in to groups
- ❖ Arranging the Groups to have contract/agreement with select large scale buyers, banks and crop insurance firms and
- ❖ Periodical watching of contracts and conflict management.

iv) Project Cost and Financing

Arranging / organizing Commodity Groups involve several rounds of meeting with large number of farmers and traders, train them in contract specification and monitor them. To organize these an amount of Rs.10,000/- is provided.

In this project it is proposed to organize the meeting on various crops regarding contract farming between farmers and bulk buyers in Tiruchirappalli district for marketing of agricultural commodities in Tamil Nadu over the period of four years. This will require resources of Rs 2.64 lakhs for the period of four years. The details are presented in Table 6.17 A.

v) Implementation Chart of the Project

Implementation chart of the project is given in Table 6.17 A.

vi) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officers (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.3 Dissemination of Market Intelligence and Purchase of Market Intelligence Materials**i) Project Rationale**

Rural (primary and periodic) Markets are the first contact points of farmers with the market economy, both for selling and buying. As there have been high price differentials many times between the Wholesale Markets and the Rural Markets, there is room for arbitrage which is being exploited by the traders to their advantage. Therefore, it is imperative to make the Wholesale Markets as the price discovery point and the Rural Markets as the price takers with due consideration for transport and other costs. As the Rural Markets have few traders, the tendency to collude among them is high. In the Wholesale Markets, as traders are many, one can expect a fair price. In a country like India with 70 percent of its population living in about 6.25 lakhs villages and depending on agriculture as their main occupation, accurate and timely information about the market prices of the agricultural commodities is of extreme significance.

The most important marketing information is price data. Agricultural price data are based on thousands or millions of transactions, many of them on a small scale, that are taking place every day all over the country. Collecting an adequate sample and

making sure that these are representative enough to be useful is not an easy task. As farmers become more market oriented, extension workers need to be in a position to advise them not only on how to grow crops but also on how to market them. Knowledge of produce handling, storage and packaging is also essential. An understanding of costs and margins is essential for all those involved in agricultural marketing. Before any agro-processing venture is started, or before an existing venture decides to expand its product line, an understanding of the market for the planned products is essential. Market research can never guarantee success but it can certainly increase the likelihood that the new business will turn out to be profitable. Hence in this project is included the dissemination of market intelligence provided by the Domestic and Export Market Intelligence Cell, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore and other agencies.

ii) Project Strategy

Dissemination of Market intelligence provided by the Domestic and Export Market Intelligence Cell, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore and other agencies through different mass media.

iii) Project Components

1. Procurement of market intelligence reports and
2. Dissemination of Market intelligence to all the Stake holders through different mass media.

iv) Project Cost and Financing

In this project it is proposed to disseminate Market intelligence of agricultural commodities to all the Stake holders through different mass media in Tiruchirappalli district over the period of four years. This will require resources of Rs. 120.96 Lakhs for the period of four years. The details are presented in Table 6.17 A.

v) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Marketing (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.4 Arrangement of Buyers - Sellers Meet**i) Project Rationale**

Indian farmers usually produce diverse goods and services to meet the family requirements. Marketable surpluses, if any, are disposed off immediately after harvest to meet the cash requirements when prices are generally depressed and often to specific buyers who have provided credit.

There is limited market for all goods and services produced by the farmers in the vicinity. In contrast, quite often, they buy goods and services in lean period when prices are generally higher. Therefore, the nature, degree and the complexity of the problems faced vary among the farmers, regions, and markets.

Several alternatives are available within each market for the farmers. Critical evaluation of the alternatives is important in deciding a profitable set to determine the overall profitability of the farms.

The most important aspect of the agricultural market intelligence is to create awareness about the demand and quality requirements for various agricultural produce among farmers and also to build knowledge on the availability of various agricultural commodities among the traders.

There is increasing pressure on all segments of the agriculture produce economy to respond to the challenges that the global markets pose in the new post WTO world trade order regime.

Buyers and sellers meet functions as platform linking agribusiness community namely farmers, traders, commission agents, agricultural processed food organizations, millers, machinery manufacturers in an egalitarian exchange of ideas and materials.

It is beautifully explained as a business partnership between producers and buyers to enhance their knowledge for mutual gain.

Arrangement of these meetings brings together the two important aspect of success i.e. technology and human resources. Besides display of agricultural commodities through exhibitions, the meet aspect covers all the latest market related interventions and provides need based solutions to farmers through direct contact with experts.

ii) Project Cost and Financing

In this project it is proposed to arrange for 40 buyers sellers meet in Tiruchirappalli district over the period of four years. This will require resources of Rs.36.8 Lakhs for the period of four years. The details are presented in Table 6.17 A.

iii) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officers (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.5 Organizing the Exposure Visits to Important Markets with in the State and out side the State by Commodity Groups / Farmers and Extension Functionaries

i) Project Rationale

The goal of 4per cent growth in agriculture can only be achieved by increasing productivity per unit of land. Considering the costs and constraints of resources such as water, nutrients and energy, the genetic enhancement of productivity should be coupled with input use efficiency. This can be made possible only by creation and utilization of new and improved technology. Since new technology creation and development is a slow process, for attaining the desired 4per cent growth during the XIth Plan period, we will have to rely more on known and proven technology. Agriculture research system claims to have a large number of promising technologies to achieve high growth and promote farming systems that improve natural resource base. However, these are not seen at farmers' fields at large. Visit to other areas, where new technologies are implemented successfully i.e., exposure visits is an important thing to enlighten the farmers for implementing those technologies in their areas also. It is easy to know the new technology through demonstration. Farmers will be selected to visit different places within the State where the technologies are well adopted. Therefore it is proposed to organize the exposure visit to important markets within the state and outside the state by commodity groups / farmers and extension functionaries in the state for marketing of agricultural commodities in Tamil Nadu over the period of four years.

ii) Project Strategy

Organizing the exposure visits to important markets within the state and outside the state by commodity groups / farmers and extension functionaries.

iii) Project Goals

Organizing the exposure visit to important markets within the State and outside the state by commodity groups / farmers and extension functionaries in the state for marketing of agricultural commodities in Tamil Nadu over the period of four years from NADP funding.

iv) Project Components

1. Organizing the exposure visit to important markets within the State by commodity groups / farmers
2. Organizing the exposure visit to important markets outside the State by commodity groups / farmers
3. Organizing the exposure visit to important markets within the State and outside the State by extension functionaries

v) Project Cost and Financing

Visit of important markets, where new opportunity for marketing of the commodity and consumer preference i.e., exposure visit to SAFAL market Bangalore is an important thing to enlighten the farmers for marketing their produce as well as consumer preference. It is easy to know the marketing of the commodity through observation and participation in the well developed markets. Farmers will be selected to visit different market places within the State where the new opportunities for marketing of commodities exist. This will require resources of Rs. 34.73 Lakhs for the period of four years. The details are presented in Table 6.17 A.

vi) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officers (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.6 Strengthening of Market Extension Centre at each District/ Block Level for Capacity Building and Dissemination of Marketing Information**i) Project Rationale**

Over the last few years mass media has seen a phenomenal growth in the country both in terms of reach and advance in technology. This medium has not been exploited to

its full potential for the purpose of agricultural extension specifically market led extension. A concerted and well-coordinated effort now needs to be made to use the electronic media in the Extension strategy by strengthening infrastructure facility. Market led Extension is now becoming more diversified, technology intensive, knowledge oriented and more demand-driven. This requires the extension workers at the cutting edge level to be master of so many trades, which is neither practicable nor possible. Use of IT in extension enables the extension workers to be more effective in meeting the information needs of farmers. The growing information and communication technology is used widely in the entire developmental sector except in agricultural sector. Use of interactive multimedia and such other tools will help the extension workers to serve the farmers better. Similarly, extension systems have to utilize the existing print and electronic mass media for faster dissemination of information to farmers. The technological advancement in telecommunication and space technology has to be fully tapped for devising appropriate programs for farmers. Hence, there is an urgent need to strengthening of market extension centre at each district/ block level with LCD projectors and lap top computer including internet facilities.

ii) Project Strategy

Strengthening of market extension centre at each district/ block level for capacity building and dissemination of marketing information.

iii) Project Goals

Strengthening of market extension centre at each district/ block level for capacity building and dissemination of marketing information in Tamil Nadu over the period of four years from NADP funding.

iv) Project Components

Strengthening of market extension centre at each district/ block level.

v) Project Cost and Financing

Over the last few years mass media has seen a phenomenal growth in the country both in terms of reach and advance in technology. This medium has not been exploited to its full potential for the purpose of agricultural extension specifically market led extension. A concerted and well-coordinated effort now needs to be made to use the electronic media in the Extension strategy by strengthening infrastructure facility. In this project it is proposed to strengthening market extension centre in Tiruchirappalli district over the period of four years. This will require resources of Rs.5.0 Lakhs for the period of four years. The Details are presented in Table 6.17 A.

vi) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officers (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.7 Capacity Building of Farmers' Skill**i) Project Rationale**

Apart from pursuing policies and creating formal organizations to intervene in agricultural marketing, governments have adopted several programmes of providing market support services. It appears that the types of programmes initiated cover a very wide spectrum of possible solutions to help small and marginal farmers. However, the benefits have not adequately reached the intended target groups. The main reason is that agricultural marketing and business related aspects of training, education and research have remained neglected in our country.

The role of the market as knowledge and information exchange amongst the converging farmers needs to be appreciated and harnessed. Farmers get benefit from

deregulation of markets, minimum guaranteed price scheme, contract farming, and crop/income insurance, only to the extent they organize in marketing groups, self-help groups, cooperatives or companies and learn skills suited to the new marketing environment. Understanding quality standards (including FAQ), learning the terms of contract and insurance, and choosing and preparing the produce for the market are going to be essential skills for farmers. There is a need for greater synergy between extension services and market. State Marketing Departments and Boards, APMCs, Krishi Vigyan Kendras (KVKs), Marketing Cooperatives, NGOs and PRIs should pay increasing attention to train the farmers in marketing related skills. All stakeholders in the Supply Chain (i.e. from farmers to consumers) should be exposed to the following characteristics and complexities of the marketing system to make it more efficient. Hence in this project the following training programmes are proposed with budget requirement of Rs. 31.74 Lakhs

- ❖ Training on Warehousing and storage
- ❖ Training on Grading
- ❖ Training on Market intelligence
- ❖ Training on Post Harvest Management of selected commodities
- ❖ Massive awareness programme is to be undertaken to demystify the commodity futures markets and enable the farmers to enter into futures contract so as to insure their price risk.
- ❖ Training to farmers on selected commodities for Export Promotion.

ii) Project Strategy

Training will be organized for farmers / commodity groups on Warehousing and storage, Grading, Market intelligence, Post Harvest Management of selected commodities and awareness programme is to be undertaken to demystify the commodity futures markets and enable the farmers to enter into futures contract so as to insure their price risk in the state with financial assistance from NADP.

iii) Project Components

Organizing training to farmers / commodity groups on Warehousing and storage, Grading, Market intelligence, Post Harvest Management of selected commodities and awareness programme is to be undertaken to demystify the commodity futures markets and enable the farmers to enter into futures contract so as to insure their price risk.

iv) Project Cost and Financing

In this project it is proposed to organize about 276 trainings under Capacity Building of Farmers Skill for marketing of agricultural commodities in Tiruchirappalli district over the period of four years. This will require resources of Rs.31.74 Lakhs for the period of four years. The details are presented in Table 6.17 A.

v) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officer (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.8 Strengthening of Selected Market Infrastructure (Equipments)**i) Rationale**

Considering the importance of different Markets, there is an urgent need to develop these markets in a phased manner with necessary infrastructural amenities to have a strong base of the marketing channel. Suitability and adequacy of marketing infrastructure depends on the type and quantity of marketed surpluses of agricultural produce in the State. The estimated marketed surpluses of various commodities are given below, which reflects the need for improvement in the market infrastructure in coming years.

Estimates of Marketed Surpluses of Various Commodities

Commodity	Marketed Surplus Ratio (per cent)
Rice	51.9
Wheat	53.8
Jowar	39.7
Bajra	45.4
Maize	46.2
Other Coarse Cereals	57.1
Pulses	53.9
Oilseeds	79.6
Sugarcane	92.9
Fruits and Vegetables**	88.2
Cotton	100.0
Fish	100.0
Milk	60.0
Mutton and Goat Meat	100.0
Beef and Buffalo Meat	100.0
Meat(Total)	100.0
Eggs	88.2

** Source of Marketed Surplus (MS) Output Ratio for Fruits and Vegetables is Achyra, S S (2003). Agril. Marketing in India, (as a Part of Millennium Study of Indian Farmers), P134 (Original Source- Agril Statistics at a Glance 2001. Agril. Statistics Division, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi).

ii) Project Components

Purchasing and Establishing price display board and mobile controlled display board.

iii) Project Cost and Financing

In this project it is proposed to strengthen market infrastructure in Tiruchirappalli district over the period of four years. This will require resources of Rs.328.76 Lakhs for the period of four years. The Details are presented in Table 6.17 A.

iv) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officer (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

6.5.9 Strengthening of Regulated Market and *Uzhavar Shandies* Publicity through NADP Funding**i) Rationale**

Arrivals to market yards of regulated markets is only about 15 per cent of the marketed surplus in Tamil Nadu. Similarly sale through *Uzhavar Shandies* is also limited in case of fruits and vegetables. Hence it is necessary to have publicity programme on the benefits of sale through regulated markets and *Uzhavar Shandies* so that the net price realized by the farmers could be increased. To achieve this publicity and propaganda programmes will be undertaken in this district for the next four years.

ii) Project Components

Hoardings, publicity through F.M. radio, posters, folders, wall paintings and village cultural programmes will form the components.

iii) Project Cost and Financing

In this project it is proposed to have the publicity programmes with the above components in this district with a financial outlay of Rs. 28.29 Lakhs over the period of four years. The Details are presented in Table 6.17 A.

iv) Reporting

1. Quarterly progress reports to be sent to the Deputy Director (Agricultural Marketing and Agri Business) by the concerned Agricultural Officer (Agricultural Marketing and Agri Business) and Secretaries of Marketing committees.
2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business).

11. Project Cost

The total cost for development of agricultural marketing so as to increase the profitability of farmers would be Rs. 2813.59 Lakhs for this district for the eleventh plan period.

12. Implementation

Department of Agricultural Marketing and Agribusiness, Government of Tamil Nadu will be the implementing agency for proposed project. The Deputy Director of Agricultural Marketing along with the team of Officials and the Secretary of District Market Committees and team of Officials of Market Committee and Regulated Markets will be implementing the project jointly.

13. Project Performance Monitoring System

Outcomes of the project will be measured against initial baseline data which will provide a benchmark for future interventions. The details of each monitoring and evaluation activity will be refined and finalized during the first six months of the project, as a joint effort of the management of the project, the stakeholders and technical assistance by the Performance Monitoring Evaluation unit.

14. Sustainability

Project sustainability refers to the continuation of benefits generated by the project even after project completion. Through the project activities, stakeholders will

improve their capacity in identifying market opportunities and taking sound business decisions regarding investment, production and marketing. The improved capacity will result in the emergence of profitable enterprises, able to adapt better market conditions and seize existing opportunities and benefits; the enterprises and the benefits will continue to exist even after the completion of the project. However, the success of the project also depends on the sustainability of some of the institutional mechanisms (for example DEMIC) introduced by the project. In some cases, the institutional support will have to be continued for the benefits to continue to flow after the completion of the project and result in the models and practices introduced by the project to be replicated by other stakeholders in the agricultural sector in the state.

6.6 Special Schemes

6.6.1 Enhancing Rice Production in Saline and Alkaline Soils in Tiruchirappalli District

Rice (*Oryza sativa*) is one of the world's most important food crops, particularly in Asia. Rice and wheat provide approximately 50 per cent of the calories consumed by the human population. The projected increase of human population from 6 billion in 2000 to 9 billion in 2050 requires increase in the production of rice. Any further increase in production will come principally from intensification of production in the abiotic stress environments such as salinity, alkalinity, drought, etc. Rice is sensitive to salt stress, particularly at the seedling stage and during reproduction. Tolerance at these two stages is weakly associated and involves several independent mechanisms. Rice is suitable for rehabilitating saline and alkaline soils because of its ability to grow under flooding and its high potential for genetic improvement.

In Tamil Nadu out of 4.7 lakhs ha of salt affected soils, about 3.0 lakhs ha are inland and 1.7 lakhs ha are confined to coastal areas. In inland salt affected soils, about 2.0 lakhs ha are alkali and 1.0 lakh ha are saline in nature. Tiruchirappalli district alone has an area of 11,165 ha of salt affected soils. The district-wise salt affected soils of Tamil Nadu is furnished in the Table 6.18.

Table 6.17 A. Original Project Proposals for Agricultural Marketing and Agri-Business**Financial: Rs. in lakhs**

S.No	Components	2008-2009		2009-2010		2010-2011		2011-2012		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
I	Commodity Group Formation									
	Banana	22	4.4	22	4.84	27	6.48	27	7.02	22.74
	Paddy	35	7	35	7.7	41	9.84	41	10.66	35.2
	Pulses	8	1.6	8	1.76	8	1.92	8	2.08	7.36
	Vegetables	18	3.6	18	3.96	18	4.32	18	4.68	16.56
	Fruits	6	1.2	6	1.32	6	1.44	6	1.56	5.52
	Maize	10	2	10	2.2	10	2.4	10	2.6	9.2
	Sunflower	17	3.4	17	3.74	17	4.08	17	4.42	15.64
	Onion	6	1.2	6	1.32	6	1.44	6	1.56	5.52
	Korai	1	0.2	1	0.22	1	0.24	1	0.26	0.92
	Cotton	2	0.4	2	0.44	2	0.48	2	0.52	1.84
	Total	125	25	125	27.5	136	32.64	136	35.36	120.5
II	Facilitation of Contract Farming									
1	Chillies	2	0.3	2	0.32	2	0.34	2	0.36	1.32
2	Sunflower	1	0.15	1	0.16	1	0.17	1	0.18	0.66
3	Maize	1	0.15	1	0.16	1	0.17	1	0.18	0.66
	Total	4	0.6	4	0.64	4	0.68	4	0.72	2.64

Table 6.17 A. Contd...

Financial: Rs. in lakhs

S.No	Components	2008-2009		2009-2010		2010-2011		2011-2012		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
III	Market Intelligence dissemination									
1	Banana	44	4.4	44	4.84	54	6.48	54	7.02	22.74
2	Paddy	70	7	70	7.7	82	9.84	82	10.66	35.2
3	Pulses	16	1.6	16	1.76	16	1.92	16	2.08	7.36
4	Vegetables	36	3.6	36	3.96	36	4.32	36	4.68	16.56
5	Fruits	12	1.2	12	1.32	12	1.44	12	1.56	5.52
6	Maize	20	2	20	2.2	20	2.4	20	2.6	9.2
7	Sunflower	34	3.4	34	3.74	34	4.08	34	4.42	15.64
8	Onion	12	1.2	12	1.32	12	1.44	12	1.56	5.52
9	Korai	2	0.2	2	0.22	2	0.24	2	0.26	0.92
10	Cotton	4	0.4	4	0.44	4	0.48	4	0.52	1.84
11	Purchase of marketing Intelligence materials	1	0.1	1	0.11	1	0.12	1	0.13	0.46
	Total	251	25.1	251	27.61	273	32.76	273	35.49	120.96
IV	Arrangement of buyer seller meetings	40	8.00	40	8.8	40	9.6	40	10.4	36.8
V	Exposure visit to markets									
1	Within State	4	0.8	4	0.88	4	0.96	4	1.04	3.68
2	Outside state	1	0.75	1	0.825	1	0.9	1	0.975	3.45
3	Visit to National Market	4	6	4	6.6	4	7.2	4	7.8	27.6
	Total	9	7.55	9	8.305	9	9.06	9	9.815	34.73

Table 6.17 A. Contd...

Financial: Rs. in lakhs

S.No	Components	2008-2009		2009-2010		2010-2011		2011-2012		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
VI	Strengthening of market extension centre	2	5.00							5.00
VII	Trainings on									
1	Warehousing	5	0.5	5	0.55	5	0.6	5	0.65	2.3
2	Grading	8	0.8	8	0.88	8	0.96	8	1.04	3.68
3	Market Intelligence	10	1	10	1.1	10	1.2	10	1.3	4.6
4	Post harvest	10	1	10	1.1	10	1.2	10	1.3	4.6
5	Commodity markets	10	1	10	1.1	10	1.2	10	1.3	4.6
6	Packaging	8	0.8	8	0.88	8	0.96	8	1.04	3.68
7	Export promotion		0							
	Banana	4	0.4	4	0.44	4	0.48	4	0.52	1.84
	Chillies	2	0.2	2	0.22	2	0.24	2	0.26	0.92
	Mango	2	0.2	2	0.22	2	0.24	2	0.26	0.92
	Fruits	1	0.1	1	0.11	1	0.12	1	0.13	0.46
8	Value addition		0							
	Banana	4	0.4	4	0.44	4	0.48	4	0.52	1.84
	Tomato	2	0.2	2	0.22	2	0.24	2	0.26	0.92
	Mango	2	0.2	2	0.22	2	0.24	2	0.26	0.92
	Tapioca	1	0.1	1	0.11	1	0.12	1	0.13	0.46
	Total	69	6.9	69	7.59	69	8.28	69	8.97	31.74

Table 6.17 A. Contd...

Financial: Rs. in lakhs

S.No	Components	2008-2009		2009-2010		2010-2011		2011-2012		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
VIII	Market infrastructure activities									
1	Collection centres	11	33	11	36.3	11	39.6	11	42.9	151.8
2	Price display board	2	4	0		0	0	0	0	4
3	Strengthening of village shandies	12	0.6	12	0.66	12	0.72	12	0.78	2.76
4	Plastic boxes	1250	6.25	1250	6.875	1250	7.5	1250	8.125	28.75
5	Pallets	800	20	800	22	800	24	800	26	92
6	Tarpauline	140	7	140	7.7	140	8.4	140	9.1	32.2
7	Dunnage	150	3.75	150	4.125	150	4.5	150	4.875	17.25
	Total	2365	74.6	2363	77.66	2363	84.72	2363	91.78	328.76
IX	Publicity - regulated market	1	5	1	5.5	1	6	1	6.5	23.00
	Grand total	2866	157.75	2862	163.605	2895	183.74	2895	199.035	704.13

Table 6.17 B. Additional Project Proposals for Agricultural Marketing and Agri-Business DDA(AB)**Rs.in lakhs**

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I.	<u>Office automation with computer facility with printer, xerox and Fax machine</u>								
	(i) D.D.A. (Agri Business) Office	1	1.00	1	1.00	1	1.00	3	3.00
	(ii) Agriultural Officer (A B) (Market Extension Centre)	1	1.00	0	0.00	0	0.00	1	1.00
	(iii) Agriultural Officer (AB) Lalgudy (Market Extension Centre)	1	1.00	0	0.00	0	0.00	1	1.00
	(iii) Agriultural Officer (AB) Musiri (Market Extension Centre)	1	1.00	0	0.00	0	0.00	1	1.00
	A.M.C. & Other Accessories for the Computer & Printer Etc.		1.50	0	1.50	0	1.50	0	4.50
II.	Distribution of various sieves for gingelly crop to small and marginal farmers	500	5.00	500	5.00	500	5.00	1500	15.00
III.	Distribution of Digital Moisture Meter to commodity Groups	50	5.00	50	5.00	50	5.00	150	15.00
IV.	Distribution of Groundnut decorticator	10	2.00	10	2.00	10	2.00	30	6.00
V.	Propaganda van for DDA(AB) for the District	1	10.00	0	0.00	0	0.00	1	10.00
VI.	P.O.L.	0	1.20	0	1.20	0	1.20	0	3.60
	N.A.D.P. Agri. Mktg. & Agri Business Activities								
1	Commodity Group Formation								
	Gingely	35	7.00	35	7.70	41	9.84	111	24.54
	Pulses	8	1.60	8	1.76	8	1.92	24	5.28

Table 6.17 B. Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Vegetables	18	3.60	18	3.96	18	4.32	54	11.88
	Fruits	6	1.20	6	1.32	6	1.44	18	3.96
	Maize	10	2.00	10	2.20	10	2.40	30	6.60
	Sunflower	17	3.40	17	3.74	17	4.08	51	11.22
	Chillies	6	1.20	6	1.32	6	1.44	18	3.96
2	Market Intelligence dissemination								
	Gingely	70	7.00	70	7.70	82	9.84	222	24.54
	Pulses	16	1.60	16	1.76	16	1.92	48	5.28
	Vegetables	36	3.60	36	3.96	36	4.32	108	11.88
	Fruits	12	1.20	12	1.32	12	1.44	36	3.96
	Maize	20	2.00	20	2.20	20	2.40	60	6.60
	Sunflower	34	3.40	34	3.74	34	4.08	102	11.22
	Onion	12	1.20	12	1.32	12	1.44	36	3.96
	Chillies	2	0.20	2	0.22	2	0.24	6	0.66
	Cotton	4	0.40	4	0.44	4	0.48	12	1.32
3	Facilitation of contract farming								
	Chillies	2	0.30	2	0.32	2	0.34	6	0.96
	Sunflower	1	0.15	1	0.16	1	0.17	3	0.48
	Maize	1	0.15	1	0.16	1	0.17	3	0.48

Table 6.17 B. Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
4	Trainings on								
	Warehousing	5	0.50	5	0.55	5	0.60	15	1.65
	Grading	8	0.80	8	0.88	8	0.96	24	2.64
	Market Intelligence	10	1.00	10	1.10	10	1.20	30	3.30
	Post harvest	10	1.00	10	1.10	10	1.20	30	3.30
	Commodity markets	10	1.00	10	1.10	10	1.20	30	3.30
	Packaging	8	0.80	8	0.88	8	0.96	24	2.64
5	Exposure visit to markets								
	Within State	4	0.80	4	0.88	4	0.96	12	2.64
	Outside State	1	0.75	1	0.83	1	0.90	3	2.48
6	Arrangement of buyer seller meetings	40	8.00	40	8.80	40	9.60	120	26.40
7	Market price surveillance	1	0.11	1	0.12	1	0.13	3	0.36
8	Publicity	1	5.00	1	5.00	2	10.00	4	20.00
9	Export promotion								
	Banana	4	0.44	4	0.48	4	0.52	12	1.44
	Chillies	2	0.22	2	0.24	2	0.26	6	0.72
	Mango	2	0.22	2	0.24	2	0.26	6	0.72
	Fruits	1	0.11	1	0.12	1	0.13	3	0.36

Table 6.17 B. Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
10	Minimizing PH losses								
	Plastic boxes	1250	6.88	1250	7.50	1250	8.13	3750	22.51
	Pallets	800	22.00	800	24.00	800	26.00	2400	72.00
	Tarpauline	140	7.70	140	8.40	140	9.10	420	25.20
	Dunnage	150	4.13	150	4.50	150	4.88	450	13.51
11	Value addition								
	Banana	4	0.44	4	0.48	4	0.52	12	1.44
	Tomato	2	0.22	2	0.24	2	0.26	6	0.72
	Mango	2	0.22	2	0.24	2	0.26	6	0.72
	Topioca	1	0.11	1	0.12	1	0.13	3	0.36
12	Market Infrastructure activities								
	Collection Centres	11	36.30	11	39.60	11	42.90	33	118.80
	Price display board	0	0.00	0	0.00	0	0.00	0	0.00
13	Visit to National Market	4	6.60	4	7.20	4	7.80	12	21.60
14	Purchase of marketing intelligence materials	1	0.11	1	0.12	1	0.13	3	0.36
	Grand Total	3347	175.36	3343	175.72	3362	196.97	10052.00	548.05

Table 6.17 C. Additional Project Proposals for Agricultural Marketing and Agri-Business Market Committee
Rs.in lakhs

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I.	Infrastructure								
1	Construction of rural godowns in the premises of the regulated markets	1	25.00	1	28.00	1	30.00	3	83.00
2	Storage godowns for storing produce under lock and key for few days	2	25.00	2	28.00	2	30.00	6	83.00
3	Construction of new drying yards/renovation of dilapidated ones	2	5.00	2	5.50	2	6.00	6	16.50
4	Construction of new auction halls/modernizing the existing ones	2	50.00	2	56.00	2	60.00	6	166.00
5	Construction of money disbursement halls/counters	0	0.00	0	0.00	0	0.00	0	0.00
6	Construction of office buildings and staff quarters	2	30.00	1	18.00	1	20.00	4	68.00
7	Installation of processing units/purchase of new instruments in the premises of the regulated markets								
	(i) Mechanical drier (Finance to be decided by TNAU)	2	2.00	2	2.00	2	2.00	6	6.00
	(ii) Mechanical winnower (Finance to be decided by TNAU)	2	2.00	2	2.00	2	2.00	6	6.00
	(iii) Groundnut decorticator (Finance to be decided by TNAU)	2	2.00	2	2.00	2	2.00	6	6.00
	(iv) Sieving machine (Finance to be decided by TNAU)	2	2.50	2	3.00	2	3.00	6	8.50
	(v) Cotton Ginning Unit / Pressing Unit	0	0.00	0	0.00	0	0.00	0	0.00

Table 6.17 C .Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	(vi) Coconut Kernel drying and oil processing units	0	0.00	0	0.00	0	0.00	0	0.00
	(vii) Packaging Units	0	0.00	0	0.00	0	0.00	0	0.00
8	Strengthening the State Ghee and Oil Grading Laboratories	2	10.00	2	10.00	2	10.00	6	30.00
9	Strengthening the Commercial Grading Centres with Laboratory facilities (more numbers can also be included)	3	1.50	3	1.50	3	1.50	9	4.50
10	Strengthening the infrastructure facilities in the Uzhavar Shandies	5	25.00	5	25.00	5	25.00	15	75.00
11	Construction of cold storage facilities in Uzhavar Shandies and in rural godowns	2	20.00	1	10.00	1	10.00	4	40.00
12	Office automation with computer facility for billing etc. in regulated markets	2	1.00	1	0.50	1	0.50	4	2.00
13	Lawying and relawying of village link roads	0	0.00	0	0.00	0	0.00	0	0.00
14	Provision of Oil moisture meters	0	0.00	0	0.00	0	0.00	0	0.00
15	Provision of Oil testing machines	0	0.00	0	0.00	0	0.00	0	0.00
16	Provision of Electronic weighing machines	0	0.00	0	0.00	0	0.00	0	0.00
17	Others if any (Specify)								
	Electronic Weigh Balance to Uzhavar Shandhai	180	18.00	100	10.00	70	7.00	350	35.00
	Office automation with computer facility in Uzhavar Shandai	5	5.00	0	0.00	0	0.00	5	5.00

Table 6.17 C. Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
II.	Publicity and Propaganda								
1	Market committee-wise strengthening of the Publicity and Propaganda units	1	5.00	0	0.00	0	0.00	1	5.00
2	Market committee-wise purchase of extension education aids	0	1.00	0	1.50	0	2.00	0	4.50
3	Strengthening the regional Publicity and Propaganda wings of the Marketing Board and establishing more regional units	1	2.00	1	3.00	1	4.00	3	9.00
4	Pre-harvest campaigns on large scale (A.O A.B)	100	10.00	100	11.00	100	12.00	300	33.00
5	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00
III.	Public relations								
1	Construction of bus-stop shed un front of the regulated markets and in selected villages	1	3.00	0	0.00	0	0.00	1	3.00
2	Taking up public relations activities in the villages	0	0.00	0	0.00	0	0.00	0	0.00
3	Construction of common village threshing floors	30	75.00	30	82.50	30	90.00	90	247.50
4	Construction of village common discussion (Chavadi) hall	20	20.00	20	22.00	20	24.00	60	66.00
5	Distribution of tarpaulins to small and marginal farmers	1400	70.00	1400	70.00	1400	70.00	4200	210.00
6	Installation of electric light facilities including solar lights in the community threshing floors	30	15.00	30	15.00	30	15.00	90	45.00

Table 6.17 C. Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
7	Construction of over head tanks, laying of street pipelines and provision of public drinking water taps in a village or two wherein the market arrivals are more	0	0.00	0	0.00	0	0.00	0	0.00
8	Provision of Education loan to the children of a few regular customers	0	0.00	0	0.00	0	0.00	0	0.00
9	Celebrating the regulated market fortnight in each district (just like co-operative weeks/fortnight)	0	0.00	0	0.00	0	0.00	0	0.00
10	Others if any (Specify)								
	Propaganda van for the committee	1	10.00	0	0.00	0	0.00	1	10.00
IV.	Facilities to farmers / Stakeholders								
1	Construction of rest/stay rooms for farmers I regulated markets	2	50.00	2	60.00	1	32.00	5	142.00
2	Construction/modernization of the common toiletry facilities in the regulated markets	3	1.50	3	1.50	2	1.00	8	4.00
3	Provision of parking lot facilities in the needy centers	0	0.00	0	0.00	0	0.00	0	0.00
4	Providing drinking water facilities to animals	0	0.00	0	0.00	0	0.00	0	0.00
5	Provision of transport facilities/routing the vehicle to transport commodities to the regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
6	Creating farm inputs retailing facilities	0	0.00	0	0.00	0	0.00	0	0.00
7	Others if any (Specify)								
	Internal Roads inside RM	3	60.00	2	44.00	2	50.00	7	154.00

Table 6.17C. Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
V.	Any other innovative interventions (specify)								
	(i)Transport assistance to farmers based on arrivals in bags	0	0.00	0	1.00	0	2.00	0	3.00
	(ii) Education assistance to farmers children based on the volume of transactions	0	2.25	0	2.25	0	2.25	0	6.75
	Grand Total	1808	548.75	1716	515.25	1684	513.25	5153	1577.25

Budget Abstract

(Rs.in lakhs)

Sl.No.	Particulars	2008-09	2009-10	2010-11	2011-12	Total
A.	Original Project	157.75	163.605	183.74	199.035	704.13
B.	Additional Project DDA(AB)	-	175.36	175.72	196.97	548.05
C.	Additional Project Market Committee	-	548.75	515.25	513.25	1577.25
	Grand Total	157.75	887.72	874.71	909.26	2829.43

Table 6.18. Salt Affected Soils of Tamil Nadu**(Area in ha)**

S.No	District	Saline	Alkali	Saline-alkali	Total
1	Chennai	-	-	-	-
2	Thiruvallur	11,036	18,165	52	29,253
3	Kanchipuram	23,224	42,100	259	65,583
4	Vellur	6,650	15,832	-	22,482
5	Thiruvannamalai	2,005	27,068	-	29,073
6	Villupuram	6,653	10,144	298	17,095
7	Cuddalur	7,011	5,050	26	12,087
8	Dharmapuri	4,250	10,540	-	14,790
9	Tiruchirappalli	6,020	10,830	-	16,850
10	Namakkal	14,500	6,380	-	20,880
11	Erode	660	4,400	-	5,060
12	Coimbatore	1,030	1,105	-	2,135
13	Karur	3,800	2,515	-	6,315
14	Tiruchirappalli	2,715	8,450	-	11,165
15	Pudukkattai	1,292	18,293	2,879	22,464
16	Perambalur	2,550	8,815	-	11,365
17	Thanjavur	4,183	12,516	3,181	19,880
18	Thiruvarur	11,161	12,956	9,920	34,037
19	Nagapattinam	24,250	21,526	18,133	63,909
20	Dindigul	160	295	-	455
21	Madurai	165	2,590	-	2,755
22	Theni	40	150	-	190
23	Virudhunagar	1,050	720	-	1,770
24	Ramanathapuram	5,318	16,359	321	21,998
25	Sivagangai	250	1,140	-	1,390
26	Thuthukudi	7,010	13,710	1,334	22,054
27	Thirunelveli	2,502	9,634	832	12,968
28	Kanyakumari	1,730	-	-	1,730
29	Nilgiris	-	-	-	-
	Total	1,51,215	2,81,283	37,235	4,69,733

Source: Records of Office of Joint Director of Agriculture, Tiruchirappalli

Hence popularizing the saline and alkaline tolerant rice genotypes, management practices and mechanization at farm field level has to be done to improve the yield potential of rice for the improvement of salt affected areas of Tiruchirappalli district.

i) Project Objectives

- i. Disseminating saline and alkaline tolerant rice varieties and management technologies to saline and alkaline soil areas of Tiruchirappalli district
- ii. Demonstration of mat nursery, machine planting, cono-weeder operation and mechanical harvester
- iii. Training farmers and monitoring the implementation of best management practices for rice cultivation and mechanization of rice in salt affected areas of Tiruchirappalli district

ii) Excepted Outcome / Utility of the Project

Development of varieties and management practices for salinity and alkalinity tolerance in rice will be helpful to increase rice yield and the net income of the farmers in an area of 2200 ha in Tiruchirappalli district of Tamil Nadu. This will improve the standard of the living of poor and downtrodden farmers who live in the stressful environment such as salt affected soils.

Average rice yields normal soil	: 3000 kg ha ⁻¹
Average rice yield in salt affected soils	: 2250 kg ha ⁻¹
Expected rice yield in salt affected soils with best management practices	: 5000 kg ha ⁻¹
Yield advantage in normal soil	: 2000 kg ha ⁻¹
Yield advantage in salt affected soil	: 2750 kg ha ⁻¹

The expenditure incurred in one ha in this project is Rs. 22,958/- approximately. The net profit obtained from salt affected soil due to adoption of improved technology is Rs.22,000/- per ha per season if the fine grain rice varieties such as Improved White

Ponni and BPT 5204 are grown with average grain yield of 2750 kg ha⁻¹ and a minimum grain cost of Rs. 8/- per kg. Similarly, The net profit obtained from salt affected soil due to adoption of improved technology is Rs.16,500/- per ha per season if the coarse grain rice varieties such as Co 43, TRY 1 and TRY (R) 2 are grown with average grain yield of 2750 kg ha⁻¹ and a minimum grain cost of Rs. 6/- per kg.

iii) Project Strategy

An average area of 100 ha will be selected from each block totaling 1400 ha in Tiruchirappalli district, depending on the extent of salt affected soils that can be brought under rice cultivation. The details of technology intervention, agencies to be involved and cost of implementation are furnished in Table 6.19.

Table 6.19. Technology Interventions and Input Costs for improving Rice Production and Productivity in Tiruchirappalli Districts

S.No.	Technology intervention	Materials Required	Cost (Rs)	To be implemented by
1.	Reclamation of alkali soils with gypsum	~ 2.5 tonnes of gypsum per ha (@ Rs.6000 ha ⁻¹ for 1400 ha)	84,00,000	Agriculture Department, Government of Tamil Nadu – JDA, Tiruchirappalli
2.	SRI Method of rice cultivation			
i.	Seeds	10 kg per ha (@ Rs.105.00 per ha for 700 ha)	73,500	ADAC & RI, TNAU, Tiruchirappalli
	A) Rice Varieties for Medium duration			
	i. CO 43			
	ii. TRY 1			
	iii. BPT 5204			
	iv. Improved			

S.No.	Technology intervention	Materials Required	Cost (Rs)	To be implemented by
	White Ponni	10 kg per ha (@ Rs.105.00 per ha for 700 ha)	73,500	KVK (ICAR), Sirugamani
	B) Rice Varieties for Short duration			
	i. ADT 43			
	ii. ADT 45			
	iii. ADT 36			
	iv. TRY 2			
ii.	SRI Marker	Two per block (28 Nos.) @Rs.2000 per unit	56,000	CAE & RI, TNAU, Kumulur
iii.	Mechanized Transplanter	One per block (14 Nos.) @ Rs.2,00,000/= per unit (VST make)	28,00,000	Agriculture Department, Government of Tamil Nadu– JDA, Tiruchirappalli
iv.	Power operated mechanized cono-weeder	Two per block (28 Nos.) @ Rs.10,000/unit	2,80,000	CAE & RI, TNAU, Kumulur
v.	Fertilizers			
	Nitrogen management by using Leaf Colour Chart (LCC)	One per ha (700 Nos) @Rs.50 per unit	35,000	ADAC&RI, TNAU, Tiruchirappalli
		One per ha (700 Nos) @Rs.50 per unit	35,000	KVK (ICAR), Sirugamani
	Bio fertilizers	10 kg BGA per ha @ Rs.12/kg (Rs. 120 x 1400 ha)	1,68,,000	ADAC & RI, TNAU, Tiruchirappalli
		250 kg Azola per ha @ Rs.3.00/kg (Rs.750 x 1400 ha)	10,50,000	ADAC & RI, TNAU, Tiruchirappalli
		4 kg Azophos (or) 2 kg Azospirillum + 2 kg	3,02,400	ADAC & RI, TNAU,

S.No.	Technology intervention	Materials Required	Cost (Rs)	To be implemented by
		Phosphobacterium per ha @ Rs.216/ha for 1400 ha		Tiruchirappalli
vi.	Herbicide	Butachlor 1.25 kg per ha @ Rs.400 per ha for 1400 ha	5,60,000	Agriculture Department, Government of Tamil Nadu– JDA, Tiruchirappalli
vii.	Plant protection			Agriculture Department, Government of Tamil Nadu– JDA, Tiruchirappalli
	<i>Pseudomonas fluorescens</i>	Seed treatment : 40 g per ha @Rs.7.50/ha for 1400 ha	10,500	
	Fungicide (Thiram/Captan / Carbendazim)	Seed treatment : 20 g per ha @Rs.10.00/ha for 1400 ha	14,000	
	<i>Trichogramma japonicum</i>	5 cc in the main field 3 times = 15 cc per ha @ Rs.300/ha for 1400 ha	4,20,000	
	<i>Trichogramma chilonis</i>	5 cc in the main field 3 times = 15 cc per ha @ Rs.300/ha for 1400 ha	4,20,000	
	Contact insecticide	Chloripyrifos @Rs.230/ha for 1400 ha	3,22,000	
	Systemic insecticide	Monocrotophos @Rs.210/ha for 1400 ha	2,94,000	
	Fungicide	Dithane @ Rs 210 per ha for 1400 ha	2,94,000	
		Total for plant protection	17,74,500	
	Bund Trimmer	One per block (14 Nos) @ Rs. 15,000 per unit	2,10,000	CAE & RI, TNAU,

S.No.	Technology intervention	Materials Required	Cost (Rs)	To be implemented by
				Kumulur
	Bund Trimmer	One each for ADAC&RI, Tiruchirappalli ; KVK, Sirugamani & CAE & RI, TNAU, Kumulur (3 Nos.) @ Rs.15,000 per unit	45,000	CAE & RI, TNAU, Kumulur
viii	Combined harvester Small size harvester @Rs.2.0 lakhs	Small size harvester one per block (14 Nos.) @ Rs.2,00,000 per harvester	28,00,000	Agriculture Department, Government of Tamil Nadu– JDA, Tiruchirappalli
	Small size harvester @Rs.2.0 lakhs	Small size harvester one each for ADAC & RI, Tiruchirappalli ; CAE & RI, Kumulur & SRS, Sirugamani, Tiruchy (3 Nos. @ Rs.2,00,000 per harvester	2,00,000	ADAC & RI, TNAU, Tiruchirappalli
			2,00,000	CAE & RI, Kumulur
			2,00,000	SRS, Sirugamani, Tiruchy
3.	Demonstration of mat nursery	One per block (7 blocks) @ Rs. 8600 per demonstration	60,200	ADAC & RI, TNAU, Tiruchirappalli
		One per block (7 blocks) @ Rs. 8600 per demonstration	60,200	KVK (ICAR), Sirugamani

Staff on Contractual Basis

The details of Staff Requirement are given in Table 6.20.

Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli

Table 6.20 Staff Requirement**(Budget in Rupees)**

Staff on contractual basis	Nos	I Year	II Year	III Year	IV Year	Total
Senior Research Fellow (5 Nos.)		7,74,000	7,74,000	8,94,000	8,94,000	33,36,000
Agronomy	1					
Soil Science and Agricultural Chemistry	1					
Agricultural Microbiology	1					
Agricultural Entomology	1					
Plant Pathology	1					
Junior Research Fellow (5 Nos)						
B.Sc.(Agri)/ BE(Agri) @ one per three blocks in the district	5	5,25,000	5,25,000	5,25,000	5,25,000	21,00,000
Total		12,99,000	12,99,000	14,19,000	14,19,000	54,36,000

Senior Research Fellow :@ Rs. 12,000/- + HRA Rs. 900 per month for I and II year & Rs.14,000/- + HRA Rs. 900 per month from III year.

Junior Research Fellows:@ Rs.8000/- + HRA Rs. 750 per month.

iv) Budget Components for Training during 2008-09 to 2011-12

From the 14 blocks, 100 farmers from each block will be trained on the best management practices for rice production in salt affected soils @ 25 farmers per batch, with a total of 1400 farmers. Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli and Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli will adopt seven blocks each. The trainings will be spanned throughout the project period.

All the 1400 farmers, those who got trained on the rice production technologies will be trained on usage of transplanter, harvester and tillage implements for rice production in salt affected soils by College of Agricultural Engineering and Research Institute, Kumulur.

Tamil Nadu Agricultural University Component

1. Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli

(Rupees)

S.No.	Particulars	Budget (Rs.)
1.	Accommodation charges @ Rs.100/day/farmer 25 farmers x 4 batches per block x 7 blocks (28 trainings) = Rs.100 x 700 farmers	70,000
2.	Breakfast, lunch, Dinner and Refreshment charges @.Rs.200/farmer/day Rs.200 x 700 farmers	1,40,000
3.	Training hall rent @ Rs.2000 /day Rs. 2000 x 28 days	56,000
4.	Fuel charges for vehicle for demonstration and training programme	30,000
5.	Training kit, Stationery items, CDs etc @ Rs.200 per farmer Rs.200 x 700 farmers	1,40,000
6.	Training manual, course materials & books @Rs.100 per farmer Rs.100 x 700 farmers	70,000
7.	Logistic charges which include Honorarium to SMS, Course Managers and secretarial charges etc. @ Rs.250/- per lecture; 6 lectures per day. Rs.250 x 6 lectures x 28 days	42,000
8.	Honorarium to nodal officer @ Rs.500/- per training Rs.500 x 28 trainings	14,000
9.	Secretarial Assistance, Computer lab charges, class arrangement, stationeries and other incidental expenses and other logistics including Miscellaneous charges @ Rs.2,500 per training Rs.2500 x 28 trainings	70,000
	Total	6,32,000

2. Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli**(Rupees)**

S.No.	Particulars	Budget (Rs.)
1.	Accommodation charges @ Rs.100/day/farmer 25 farmers x 4 batches per block x 7 blocks (28 trainings) = Rs.100 x 700 farmers	70,000
2.	Breakfast, lunch, Dinner and Refreshment charges @.Rs.200/farmer/day Rs.200 x 700 farmers	1,40,000
3.	Training hall rent @ Rs.2000 /day Rs. 2000 x 28 days	56,000
4.	Fuel charges for vehicle for demonstration and training programme	30,000
5.	Training kit, Stationery items, CDs etc @ Rs.200 per farmer Rs.200 x 700 farmers	1,40,000
6.	Training manual, course materials & books @Rs.100 per farmer Rs.100 x 700 farmers	70,000
7.	Logistic charges which include Honorarium to SMS, Course Managers and secretarial charges etc. @ Rs.250/- per lecture; 6 lectures per day Rs.250 x 6 lectures x 28 days	42,000
8.	Honorarium to nodal officer @ Rs.500/- per training Rs.500 x 28 trainings	14,000
9.	Secretarial Assistance, Computer lab charges, class arrangement, stationeries and other incidental expenses and other logistics including Miscellaneous charges @ Rs.2,500 per training Rs.2500 x 28 trainings	70,000
	Total	6,32,000

3. College of Agricultural Engineering and Research Institute, Kumulur**(Rupees)**

S.No.	Particulars	Budget (Rs.)
1.	Accommodation charges @ Rs.100/day/farmer 25 farmers x 4 batches per block x 14 blocks (56 trainings) = Rs.100 x 1400 farmers	1,40,000
2.	Breakfast, lunch, Dinner and Refreshment charges @.Rs.200/farmer/day Rs.200 x 1400 farmers	2,80,000
3.	Training hall rent @ Rs.2000 /day Rs. 2000 x 56 days	1,12,000
4.	Fuel charges for vehicle for demonstration and training programme	60,000
5.	Training kit, Stationery items, CDs etc @ Rs.200 per farmer Rs.200 x 1400 farmers	2,80,000
6.	Training manual, course materials & books @Rs.100 per farmer Rs.100 x 1400 farmers	1,40,000
7.	Logistic charges which include Honorarium to SMS, Course Managers and secretarial charges etc. @ Rs.250/- per lecture; 6 lectures per day Rs.250 x 6 lectures x 56 days	84,000
8.	Honorarium to nodal officer @ Rs.500/- per training Rs.500 x 56 trainings	28,000
9.	Secretarial Assistance, Computer lab charges, class arrangement, stationeries and other incidental expenses and other logistics including Miscellaneous charges @ Rs.2,500 per training Rs.2500 x 56 trainings	1,40,000
	Total	12,64,000

v) Budget Allotment for Different Implementing Agencies

The details of budget allotment for different implementing agencies along with technology interventions are given in Table 6.21.

Table 6.21 Details of Technology Interventions and Budget Estimate**(Rupees)**

S.No.	Technology intervention and other particulars	Implementing Agency				Total
		ADAC & RI, Tiruchirappalli	KVK, Sirugamani	CAE & RI, Kumulur	Agriculture Department, JDA-Tiruchirappalli	
1.	Staff on contractual basis	54,36,000	0	0	0	54,36,000
2.	Cost of inputs					0
	Gypsum for reclamation of alkali soils	0	0	0	84,00,000	84,00,000
	SRI marker	0	0	56,000	0	56,000
	Mechanized transplanter	0	0	0	28,00,000	28,00,000
	Power operated cono-weeder	0	0	2,80,000	0	2,80,000
	Bund trimmer	0	0	2,55,000	0	2,55,000
	Combined harvester small	2,00,000	2,00,000	2,00,000	28,00,000	34,00,000
	Seed	73,500	73,500	0	0	1,47,000
	Leaf Colour Chart (LCC)	35,000	35,000	0	0	70,000
	Bio-fertilizers	15,20,400	0	0	0	15,20,400
	Herbicides and plant protection chemicals	0	0	0	23,35,500	23,35,500
	Demonstration of mat nursery	60,200	60,200	0	0	1,20,400
3.	Training	6,32,000	6,32,000	12,64,000	0	25,28,000
4.	Traveling Allowances	2,00,000	2,00,000	2,00,000	0	6,00,000
	Total	81,57,100	12,00,700	22,55,000	1,63,35,500	2,79,48,300
6.	Institutional Charges/ Overhead Charges @ 15 per cent	12,23,565	1,80,105	3,38,250	24,50,325	41,92,245
7.	Grand total	93,80,665	13,80,805	25,93,250	18785825	3,21,40,545

vi) Year wise Consolidated Budget for 2008-09 to 2011-12

The yearwise consolidated budget is given in Table 6.22.

Table 6.22 Yearwise Consolidated Budget for 2008 – 09 to 2010 - 12**(Rupees)**

Budget particulars	I Year	II Year	III Year	IV Year	Total
Cost of Persons	1299000	1299000	1419000	1419000	5436000
Cost of inputs	9939325	3148325	3148325	3148325	19384300
Training	632000	632000	632000	632000	2528000
Traveling cost	150000	150000	150000	150000	600000
Sub Total	12020325	5229325	5349325	5349325	27948300
TNAU Share	1984825	3129325	3249325	3249325	11612800
Agriculture Department share	10035500	2100000	2100000	2100000	16335500
Institutional Charges/ Overhead charges @ 15per cent (TNAU)	297724	469399	487399	487399	1741920
Institutional Charges/ Overhead charges @ 15 per cent (Agriculture Department)	1505325	315000	315000	315000	2450325
Total TNAU Share	2282549	3598724	3736724	3736724	13354720
Total Agriculture Department share	11540825	2415000	2415000	2415000	18785825
Grand Total	13823374	6013724	6151724	6151724	32140545

6.2 Sustainable Forage Crops Production in Tiruchirappalli District

1. Title of Project

Technologies for sustainable forage crops production in Tiruchirappalli district.

2. Project Synopsis

Livestock rearing forms the backbone of the livelihood of the farmers and landless rural poor and is the only major asset for them. Livestock rearing offers substantial income to poor rural people particularly during non-agricultural seasons, which can create an impact in the shortest period on the rural economy. Women contribute 71 per cent of the labour force in livestock farming. There is an old saying “Milk is not there in the udder of (milch) cattle but it is in its mouth”. This highlights the importance of forage and feed to milch animals. India has the largest livestock wealth while the animal performance is one of the lowest in the world. The success of an efficient dairy, sheep, goat, piggery, poultry and other livestock industry revolves around the supply nutritious forage and feeds. Green forages are also required for the maintenance of draught animals. The main reasons for poor performance of cattle and buffaloes in India are inadequate supply of nutritious forage and feeds and lower production potential of the animals. Only 6.9 millions or 4.4 per cent of the country's cropped area is under fodder crops and there is hardly any scope of expansion because of pressure on agricultural land for food and cash crop. The forest grazing resources are also dwindling at the rate of roughly 1.5 millions of forests every year. The monsoonal grasslands of India are also impoverished, over grazed and infested with bushes. The grazing intensity is very high viz., 2.6 adult cattle unit per ha against 0.8 adult cattle unit per ha in the developed countries. This underlines the need to rejuvenate the natural grass lands, pastures etc., and also to increase the productivity of fodder crops. There is lack of sufficient amount of good quality fodder (both green and dry) and concentrates. In the absence of appropriate feeding schedule even the best animals fail to express their inherent productivity. Year round supply of forage is very important in order to stabilize animal production especially in the milk shed areas and also for small farmers who maintain dairy animals as a regular source of income. The solution lies in maximizing

forage production in space and time, identifying new forage resources, increasing forage production within the existing farming systems and utilizing marginal, sub-marginal dry lands and problem soils for developing feed and fodder resources. Moreover, the green forages form the cheap source of needed nutrients. This in turn governs the overall economics of livestock farming since feeding alone accounts 66 percent of the total cost of animal production.

Condition of the Animals in Relation to Forage Production

- i) Semi starvation
- ii) Emaciated in appearance
- iii) Prolonged dry periods leading to poor forage yield
- iv) Poor milk yield (200 kg compared to 4000 kg per year in temperate countries)
- v) Poor health except higher resistance to disease
- vi) Unproductive cattle are competing with productive farm animals and human beings.
- vii) Poor quality forage and
- viii) Pastures are not being maintained due to lack of even distribution of rain and heavy pressure of land because of population explosion.

Importance is not given for yield maximization in forage crops, like cereals crops, through increased input use efficiency and sustainable use of resources. Although improved technologies are available in forage crops production, steps are not taken to popularize among the farming community. There is need for wide spread adoption of improved technologies to feed the livestock with quality feed to harvest livestock products such as milk, meat, egg, skin, etc,. With this background, the project is proposed to be taken up in Tiruchirapalli district of Tamil Nadu by the Anbil Dharmalingam Agricultural College and Research Institute, (Tamil Nadu Agricultural University) Tiruchirapalli since this district is having good potential for forage crops production in

wetlands, garden lands and dry lands. The mandate of this Institute is to organize inter disciplinary research for solving the location specific problems for the different ecological situations in Tiruchirappalli and neighbouring districts and to provide technical know-how for the development of Agriculture and Agro-based industries in this region.

i) Agencies Involved

1. Agriculture Department, Government of Tamil Nadu
2. Tamil Nadu Agricultural University (Technical Support and Training)
 - a. Anbil Dharmalingam Agricultural College and Research Institute, Navalur Kuttapattu, Tiruchirappalli
 - b. Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli
3. Tamil Nadu Veterinary and Animal Sciences University (Training)

Activities	Implementing Agency
Selection of beneficiaries in clusters	Agriculture Department
Input distribution	Agriculture Department
Overall Technological Support and training	ADAC & RI, Tiruchirappalli, KVK, Sirugamani from TNAU and VUTRC, Tiruchirappalli from TNVASU
Monitoring / mid term evaluation and corrective measures	TNAU and Agriculture Department

i) Project Period

Four years from 2008-09 to 2011-12 during the 11th plan period.

iii) Project budget: Rs.1,78,99,232

iv) Objectives

- i. To demonstrate improved technologies on forage crops production in farmer's holdings
- ii. To train the rural youth and women on the improved technologies for forage production and cattle maintenance for year round employment and income generation opportunities and
- iii. Monitoring the implementation of best management practices for forage production and preservation in Tiruchirappalli district

v) Proposed Activities and Methodologies

Farmers who are interested in animal husbandry and fodder crops production will be selected through All India Radio announcements and through local officials in the Department of Agriculture with assistance from local Panchayat in Tiruchirappalli district of Tamil Nadu. 1400 farmers will be identified based on their resources position. Establishment and maintenance of forage crop slips / seeds Centre at Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli, Agricultural Engineering College and Research Institute, Kumulur and Sugarcane Research Institute, Sirugamani of Tamil Nadu Agricultural University located in the study area and procurement of forage crop (s) slips / seeds from IGFR, Jhansi, Forage Crops Regional Centres of Government of India, Department of Forage Crops, TNAU, Coimbatore, etc, to supply to the innovative farmers @ 0.25 ha per farmer on average. Development of two hundred numbers of community nursery units to the innovative farmers' field for sustainable fodder slips / seeds supply and farm income even after the project period. Cultivation of fodder trees on tank bunds, development of community pasture lands in identified wastelands, problem soils and tank bunds and supply of manual chaff cutters to create awareness among the farmers will be carried out. Farmers, Self Help Group and Rural youth will be provided inputs such as seeds / setts / slips of grasses and legumes and two day training with class room lectures followed by field visit, will be given in

phased manner during four years on production technology of forage crops, tree fodders and on feeding the forage crops to maximize production performance in livestock and also in documenting the impact of the same on milk yield, calving interval, conception rate of livestock and overall economic status of the farmers in collaboration with Tamil Nadu Veterinary and Animal Sciences University Training and Research Centres (VUTRCs) at Tiruchirappalli. Exhibitions / Field days on Forage crops will be arranged for the benefits of farmers.

vi) Status of the Proposed Technologies

Research on forage crops was initiated in the Botany section at the Agricultural College and Research Institute, Coimbatore in Tamil Nadu as early as 1959. It was identified as one of the Co-ordinating Centres of the All India Co-ordinated Project for Research on Forage Crops by the ICAR in 1971. A full-fledged Department, the first of its kind in India, dealing with breeding, agronomy and nutrition of fodder crops came into existence in the year 1976, at TNAU, Coimbatore. It has developed many forage crop varieties and developed package of practices for realizing maximum green fodder yield.

vii) Technology Proposed, Project Executed and Technically Trained Manpower Available

1. Technologies Proposed for Adoption / Execution

- Improved varieties of different forage crop varieties released from TNAU, Coimbatore and other institutes such as IGFRI, Jhanshi, (along with cultivation practices) will be popularized among farmers having irrigated / rainfed lands
- Under irrigated conditions, Bajra-Napier grass CO 3 + Desmanthus at 3:1 ratio is the best for high yield and protein rich fodder
- Under rainfed conditions, Cenchrus grass + Sirato / Stylo / Pea blue pasture legumes at 3:1 ratio is the best

- Planting 3-4 feet long Bajra-Napier stem cuttings horizontally is more economical and high yielding and
- Velimasal seeds should be soaked in hot water at 80°C for 4-5 minutes for better germination

2. Technical manpower for project guidance and monitoring is available at Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirapalli and Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli. Agricultural scientists are available in disciplines such as Agronomy, Soil Science and Agricultural Chemistry, Plant Breeding and Genetics, Agricultural Microbiology, Agricultural Extension, etc,. For project execution, Senior Research Fellows and Junior Research Fellows are required at Block level in Tiruchirappalli district.

viii) Technologies, Input Costs and Budget Estimate

From the 14 blocks, 100 farmers from each block will be selected for forage production in irrigated lands. Inputs for the establishment of fodder crops in an area of 0.25ha each will be supplied. For rainfed forage production, 50 farmers from each block will be selected. Inputs for the establishment of forage crops in dry land will be supplied for one acre for each farmer. All the farmers will be trained on the fodder production technologies by TNAU and on cattle maintenance by TNVASU.

ix) Budget

Staff on Contractual Basis

Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli
The staff requirement along with the budget is given in 6.23.

Table 6.23 Staff on Contractual Basis**Budget in Rupees**

Faculty	No	I Year	II Year	III Year	IV Year	Total
Senior Research Fellow (2 Nos.)						
Agronomy / Soil Science and Agricultural Chemistry/Agricultural extension	2	3,09,600	3,09,600	3,57,600	3,57,600	13,34,400
Junior Research Fellow (3 Nos)						
B.Sc.(Agri) @ 1 per 4 blocks	3	3,15,000	3,15,000	3,15,000	3,15,000	12,60,000
Total		6,24,600	6,24,600	6,72,600	6,72,600	25,94,400

Senior Research Fellow @ Rs. 12,000/- + HRA Rs. 900 per month for I and II year & Rs.14,000/- + HRA Rs. 900 per month from III year onwards.

Junior Research Fellows @ Rs.8000/- + HRA Rs. 750 per month.

x) Budget Component for Training during 2008-09 to 2011-12

From the 14 blocks, 100 farmers from each block will be trained on the best management practices for forage production in irrigated lands and 50 farmers from each block will be trained on the best management practices for forage production in dryland lands @ 25 farmers per batch, with a total of 2100 farmers. Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli and Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli will adopt seven blocks each. The total number of trainings will be 84 and divided into 42 each for ADAC & RI, Tiruchirappalli and KVK, Sirugamani. The trainings will be spanned throughout the project period.

All the 2100 farmers, those who got trained on the forage production technologies will be trained on livestock management for better milk and meat yield by Tamil Nadu Veterinary and Animal Sciences University. The total number of trainings will be 84.

Tamil Nadu Agricultural University Component

1.Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli

S.No.	Particulars	Budget (Rs.)
1.	Accommodation charges @ Rs.100/day/farmer (Rs.100 x 1050 farmers)	1,05,000
2.	Breakfast, lunch, Dinner and Refreshment charges @.Rs.200/farmer/day Rs.200 x 1050 farmers	2,10,000
3.	Training hall rent @ Rs.2000 /day 2000 x 42 days	84,000
4.	Fuel charges for vehicle for demonstration and training programme	30,000
5.	Training kit, Stationery items, CDs etc @ Rs.200 per farmer Rs.200 x 1050 farmers	2,10,000
6.	Training manual, course materials & books @Rs.100 per farmer Rs.100 x 1050 farmers	1,05,000
7.	Logistic charges which include Honorarium to SMS, Course Managers and secretarial charges etc. @ Rs.250/- per lecture; 6 lectures per day (Rs.250 x 6 lectures x 42 trainings)	63,000
8.	Honorarium to nodal officer @ Rs.500/- per training Rs.500 x 42 trainings	21,000
9.	Secretarial Assistance, Computer lab charges, class arrangement, stationeries and other incidental expenses and other logistics including Miscellaneous charges @ Rs.2,500 per training Rs.2500 x 42 trainings	1,05,000
	Total	9,33,000

2. Krishi Vigyan Kendra, Sirugamani, Tiruchirappalli

S.No.	Particulars	Budget (Rs.)
1.	Accommodation charges @ Rs.100/day/farmer (Rs.100 x 1050 farmers)	1,05,000
2.	Breakfast, lunch, Dinner and Refreshment charges @.Rs.200/farmer/day Rs.200 x 1050 farmers	2,10,000
3.	Training hall rent @ Rs.2000 /day 2000 x 42 days	84,000
4.	Fuel charges for vehicle for demonstration and training programme	30,000
5.	Training kit, Stationery items, CDs etc @ Rs.200 per farmer Rs.200 x 1050 farmers	2,10,000
6.	Training manual, course materials & books @Rs.100 per farmer Rs.100 x 1050 farmers	1,05,000
7.	Logistic charges which include Honorarium to SMS, Course Managers and secretarial charges etc. @ Rs.250/- per lecture; 6 lectures per day (Rs.250 x 6 lectures x 42 trainings)	63,000
8.	Honorarium to nodal officer @ Rs.500/- per training Rs.500 x 42 trainings	21,000
9.	Secretarial Assistance, Computer lab charges, class arrangement, stationeries and other incidental expenses and other logistics including Miscellaneous charges @ Rs.2,500 per training Rs.2500 x 42 trainings	1,05,000
	Total	9,33,000

3. Tamil Nadu Veterinary and Animal Sciences University Component VUTRCs at Tiruchirappalli district

S.No.	Particulars	Budget (Rs.)
1.	Accommodation charges @ Rs.100/day/farmer (Rs.100 x 2100 farmers)	2,10,000
2.	Breakfast, lunch, Dinner and Refreshment charges @.Rs.200/farmer/day Rs.200 x 2100 farmers	4,20,000
3.	Training hall rent @ Rs.2000 /day 2000 x 84 days	1,68,000
4.	Fuel charges for vehicle for demonstration and training programme	60,000
5.	Training kit, Stationery items, CDs etc @ Rs.200 per farmer Rs.200 x 2100 farmers	4,20,000
6.	Training manual, course materials & books @Rs.100 per farmer Rs.100 x 2100 farmers	2,10,000
7.	Logistic charges which include Honorarium to SMS, Course Managers and secretarial charges etc. @ Rs.250/- per lecture; 6 lectures per day (Rs.250 x 6 lectures x 84 trainings)	1,26,000
8.	Honorarium to nodal officer @ Rs.500/- per training Rs.500 x 84 trainings	42,000
9.	Secretarial Assistance, Computer lab charges, class arrangement, stationeries and other incidental expenses and other logistics including Miscellaneous charges @ Rs.2,500 per training Rs.2500 x 84 trainings	2,10,000
	Total	18,66,000

xi) Budget Allotment for different Implementing Agencies

The details of Budget Allotment for different Implementing Agencies are furnished in Table 6.24.

Table 6.24 Details of budget allotment**(Rupees)**

S.No.	Technology intervention and other particulars	Implementing agency				Total
		ADAC & RI, Tiruchirappalli	KVK, Sirugamani	TNVASU	Agriculture Department, JDA-Tiruchirappalli	
1.	Staff on contractual basis	25,94,400	-	-	-	25,94,400
2.	Cost of inputs					
	Seed materials	40,01,000	-	-	-	40,01,000
	Bio fertilizers	-	3,11,850	-	-	3,11,850
	Fertilizers	-	-	-	4325,300	43,25,300
3.	Training	9,33,000	9,33,000	18,66,000	-	37,32,000
4.	Traveling Allowances	2,00,000	2,00,000	2,00,000	-	6,00,000
	Total	77,28,400	14,44,850	20,66,000	4325,300	1,55,64,550
5.	Institutional Charges/ Overhead Charges @ 15 per cent	11,59,260	2,16,727	3,09,900	648,795	23,34,682
	Grand total	88,87,660	16,61,578	23,75,900	49,74,095	1,78,99,232

xii) Year wise Consolidated Budget for 2008-09 to 2011-12

The details of yearwise budget are given in table 6.25.

Table 6.25 Yearwise Budget**(Rupees)**

Budget particulars	I Year	II Year	III Year	IV Year	Total
Cost of Persons	6,24,600	6,24,600	6,72,600	6,72,600	25,94,400
Cost of inputs	21,59,538	21,59,538	21,59,538	21,59,538	86,38,150
Training	9,33,000	9,33,000	9,33,000	9,33,000	37,32,000
Traveling cost	1,50,000	1,50,000	1,50,000	1,50,000	6,00,000
Sub Total	38,67,138	38,67,138	39,15,138	39,15,138	1,55,64,550
TNAU Share	466500	466500	466500	466500	1866000
TNVASU Share	1241100	1241100	1289100	1289100	5060400
Agriculture Department share	21,59,538	21,59,538	21,59,538	21,59,538	86,38,150
Institutional Charges/Overhead charges @ 15per cent (TNAU)	1,86,165	1,86,165	1,93,365	1,93,365	7,59,060
Institutional Charges/Overhead charges @ 15 per cent (TNVASU)	69,975	69,975	69,975	69,975	2,79,900
Institutional Charges/Overhead charges @ 15 per cent (Agriculture Department)	3,23,930	3,23,930	3,23,930	3,23,930	12,95,720
Total TNAU Share	14,27,265	14,27,265	14,82,465	14,82,465	58,19,460
Total TNVASU Share	5,36,475	5,36,475	5,36,475	5,36,475	21,45,900
Total Agriculture Department share	24,83,468	24,83,468	24,83,468	24,83,468	99,33,872
Grand Total	44,47,209	44,47,209	45,02,409	45,02,409	1,78,99,232

6.7 Public Works Department

The details of the schemes along with the budget estimate are furnished in Table 6.26.

Table 6.26 Interventions of Public Works Department with Budget

(Amount in Crores)

Sl.No.	Name of the Scheme	Estimate
1.	Standardization of Ex-Zamine tanks in Thuraiyur, Musiri and Manapparai taluks of Trichy District (428 tanks)	15.00
2.	Rehabilitation of Public Works Department tanks in Thuraiyur, Musiri and Thottiyam taluks	4.01
	Total	19.01



District Collect delivers the Presidential address



Joint Director of Agriculture speaks about the Project



Lalgudi MLA addresses the Participants



District Panchayat Chair Person addresses the Gathering



Coordinating Scientist explains the Special Features



Discussion among the Participants

**NADP Sensitization Workshop and Discussion on District Agriculture Plan -
Vellore District held on 10.05.08**



Thiru. M.Madesan, Joint Director of Agriculture, Vellore delivers the welcome address.



Honouring the Project Officer, DRDA, Vellore



Project Officer, DRDA, Vellore Inaugurates the Group Discussion



Dr. K.Mani, Professor, TNAU Introduces the Plan



Dr. K. Mani, Professor, TNAU, Explains the DAP



Dr.D.Baskaran, Assistant Professor, Veterinary University Training and Research Centre, Vellore Discusses about the Plan



**Thiru P. Anbarasu, Assistant Executive Engineer, Public Works Department, Vellore
Explains the District Plan**



**Thiru. A. Selvaraj, Vellore District Fishermen Co-operative Federation, Fort,
Vellore Explains the Fisheries Developmental Programmes**



Panchayat Chairman Speaks



Panchayat Chairman Speaks





























































Line Department Officials discuss with Panchayat Persons



Dr. V.Ravichandran, Prof&Head, KVK, Virinjipuram Proposes Vote of Thanks

Trichy district soil legend

Legend

	DEEP, CLAYEY SKELETL, MIXED, ALFISOLS		MODERATELY SHALLOW, FINE LOAMY, MIXED, ENTISOLS
	DEEP, COARSE LOAMY, MIXED, ALFISOLS		MODERATELY SHALLOW, FINE LOAMY, MIXED, INCEPTISOL
	DEEP, COARSE LOAMY, MIXED, INCEPTISOL		MODERATELY SHALLOW, FINE, MIXED, ALFISOLS
	DEEP, COARSE LOAMY, MIXED, ULTISOLS		MODERATELY SHALLOW, FINE, MIXED, INCEPTISOL
	DEEP, FINE LOAMY, MIXED, ALFISOLS		MODERATELY SHALLOW, FINE, MONTMORILLONITIC, INCEPTISOL
	DEEP, FINE LOAMY, MIXED, ENTISOLS		MODERATELY SHALLOW, LOAMY SKELETL, MIXED, ENTISOLS
	DEEP, FINE LOAMY, MIXED, INCEPTISOL		MODERATELY SHALLOW, LOAMY SKELETL, MIXED, INCEPTISOL
	DEEP, FINE, MIXED, ALFISOLS		SHALLOW, CLAYEY SKELETL, MIXED, ALFISOLS
	DEEP, FINE, MIXED, INCEPTISOL		SHALLOW, CLAYEY SKELETL, MIXED, INCEPTISOL
	DEEP, FINE, MIXED, MOLLISOLS		SHALLOW, CLAYEY, MIXED, ALFISOLS
	DEEP, FINE, MONTMORILLONITIC, ENTISOLS		SHALLOW, CLAYEY, MIXED, ENTISOLS
	DEEP, FINE, MONTMORILLONITIC, INCEPTISOL		SHALLOW, LOAMY SKELETL, MIXED, ALFISOLS
	DEEP, FINE, MONTMORILLONITIC, VERTISOLS		SHALLOW, LOAMY SKELETL, MIXED, INCEPTISOL
	DEEP, LOAMY SKELETL, MIXED, INCEPTISOL		SHALLOW, LOAMY, MIXED, ALFISOLS
	DEEP, SANDY, MIXED, ENTISOLS		SHALLOW, LOAMY, MIXED, INCEPTISOL
	DEEP, VERY FINE, MONTMORILLONITIC, VERTISOLS		VERY DEEP, CLAYEY SKELETL, KAOLINITIC, ALFISOLS
	MODERATELY DEEP, CLAYEY SKELETL, MIXED, ALFISOLS		VERY DEEP, COARSE LOAMY, MIXED, ENTISOLS
	MODERATELY DEEP, COARSE LOAMY, MIXED, INCEPTISOL		VERY DEEP, FINE LOAMY, MIXED, ALFISOLS
	MODERATELY DEEP, FINE LOAMY, MIXED, ALFISOLS		VERY DEEP, FINE LOAMY, MIXED, INCEPTISOL
	MODERATELY DEEP, FINE LOAMY, MIXED, ENTISOLS		VERY DEEP, FINE LOAMY, MIXED, ULTISOLS
	MODERATELY DEEP, FINE LOAMY, MIXED, INCEPTISOL		VERY DEEP, FINE SILTY, MIXED, ENTISOLS
	MODERATELY DEEP, FINE, MIXED, ALFISOLS		VERY DEEP, FINE, KAOLINITIC, ALFISOLS
	MODERATELY DEEP, FINE, MIXED, INCEPTISOL		VERY DEEP, FINE, MIXED, ALFISOLS
	MODERATELY DEEP, FINE, MONTMORILLONITIC, INCEPTISOL		VERY DEEP, FINE, MIXED, INCEPTISOL
	MODERATELY DEEP, LOAMY SKELETL, MIXED, ALFISOLS		VERY DEEP, FINE, MONTMORILLONITIC, INCEPTISOL
	MODERATELY DEEP, LOAMY SKELETL, MIXED, INCEPTISOL		VERY DEEP, FINE, MONTMORILLONITIC, VERTISOLS
	MODERATELY DEEP, VERY FINE, MONTMORILLONITIC, VERTISOLS		VERY DEEP, VERY FINE, MONTMORILLONITIC, VERTISOLS
	MODERATELY SHALLOW, CLAYEY SKELETL, MIXED, ALFISOLS		Very SHALLOW, LOAMY SKELETL, MIXED, INCEPTISOL
	MODERATELY SHALLOW, CLAYEY SKELETL, MIXED, INCEPTISOL		Very SHALLOW, LOAMY, MIXED, ENTISOLS
	MODERATELY SHALLOW, FINE LOAMY, MIXED, ALFISOLS		WATERBODY / SETTLEMENT / MISCELLANEOUS LANDFORM

தினமலர்

திருச்சி • ஞாயிறு • மே 25 2008

வேளாண் அபிவிருத்தி திட்டத்தை முரண்பாடின்றி செயல்படுத்த முடிவு

கலெக்டர் தகவல்

திருச்சி, மே 25-

வேளாண்மை அபிவிருத்தி திட்டத்தை முரண்பாடுகளுக்கிடையே திட்டமாக செயல்படுத்தப்படும் முடிவு செய்யப்பட்டுள்ளதாக கலெக்டர் சவுண்டியா கூறினார்.

தமிழ்நாடு வேளாண் பங்குக்கழகம் மற்றும் அரசு வேளாண்மைத்துறை சார்பில் தேசிய வேளாண்மை அபிவிருத்தி திட்டத்தின் கீழ் மாவட்ட வேளாண்மைத் திட்டக் கலந்தாய்வுக் கூட்டம் நேற்று கலெக்டர் அலுவலகத்தில் நடந்தது. கூட்டத்திற்கு கலெக்டர் சவுண்டியா தலைமை வகித்து பேசுகையில்:

தேசிய பொருளாதார வளர்ச்சித் திட்டப்படி 8 சதவிகிதமாக உள்ளது. இதில் வேளாண்மைத்துறையில் பங்கு 2 சதவிகிதமாக உள்ளது. 75 சதவிகிதத்திற்கும் அதிகமான மக்கள் ஈடுபடும் வேளாண் தொழிலின் பங்கு மிகக் குறைந்த அளவே உள்ளது. அதனால் தேசிய பொருளாதார வளர்ச்சித் திட்டத்திற்காக உயர்வேண்டும் என்ற இலக்கை கொண்டு அந்நாடு வேளாண் துறையில் வளர்ச்சி 4 சதவிகிதமாக வரவேண்டும் என்ற நோக்கத்தில் இந்த வேளாண்மை அபிவிருத்தி திட்டம் செயல்படுத்தப்பட்டு வருகிறது.

அரசு திட்டங்களையே திறைவ முறை பாடுகள் உள்ளன. எல்லா மாநிலங்களிலும் ஒரே திட்டம் என்பதும், ஒரு மாநிலத்தில் அனைத்து மாவட்டங்களிலும் ஒரே திட்டம் என்பதும் அடிப்படையில் நவர, ஒவ்வொரு மாநிலமும், ஒவ்வொரு



திருச்சி கலெக்டர் அலுவலகத்தில் நடந்த மாவட்ட வேளாண்மை திட்டக் கலந்தாய்வு கூட்டத்தில் கலெக்டர் சவுண்டியா பேசினார். அருகில் மாவட்ட ஊராட்சி தலைவர் சக்திதா, வேளாண் கல்லூரி முதல்வர் ஜெயராமன், லல்குடி எம்.எல்.ஏ., சவுத்திரபண்டியன், வேளாண் இளை இயக்குனர் பொன்னுசாமி ஆகியோர் உள்ளனர்.

மாவட்டமும் தட்ப வெப்பநிலை, மழைமளவு, மண்ணின் தன்மை ஆகியவற்றின்மேல்படுகின்றன. இதன்கருத்தில் கொண்டு அனைத்துப் பகுதிகளிலும் செயல்படுத்தும் வகையில் முரண்பாடுகள் இல்லாத திட்டமாக வேளாண் அபிவிருத்தி திட்டத்தை செயல்படுத்த முடிவு செய்யப்பட்டுள்ளது. அந்நாடுகளிலுள்ள பிரதிநிதிகள், விவசாயிகள் மற்றும் பல்வேறு துறை அரசு அதிகாரிகளிடம் கருத்துக்கள் கேட்டறியப்பட்டு வரவே திட்டம் தயார் செய்யப்படும். இந்த திட்டம் மாநில அரசு மூலம் மத்திய அரசுக்கு அனுப்பப்பட்டு அனைத்து மாவட்டங்களிலும் ஏற்ற திட்டமாக செயல்படுத்தப்பட உள்ளது. இதன் விவசாயிகள் பயன்படுத்திக் கொண்டு நாட்டின் வளர்ச்சிக்கு உறுதுணையாக இருக்க வேண்டும் என்றும், தொடர்ந்து தேசிய வேளாண் அபி

விருத்தி திட்டம் குறித்து வேளாண் பங்குக்கழகத்தின் இளை பொருளாதாரத் திட்டம் பட்டக்காட்சிகளுடன் விளக்கினார்.

கூட்டத்தில் திருச்சி அன்டீஸ் தர்மலிங்கம், வேளாண் கல்லூரி மற்றும் ஊராட்சி நிலைய முதல்வர் ஜெயராமன், மாவட்ட வேளாண் இளை இயக்குனர் பொன்னுசாமி, லல்குடி எம்.எல்.ஏ., சவுத்திரபண்டியன், மாவட்ட ஊராட்சித் தலைவர் சக்திதா, உட்பட்ட உள்ளாட்சி பிரதிநிதிகள், முன்னேறுகிற

சாமின் உட்பட்ட பங்குக்கழகத்தின் இளை பொருளாதாரத் திட்டம் பட்டக்காட்சிகளுடன் விளக்கினார்.

விருத்தி திட்டம் குறித்து வேளாண் பங்குக்கழகத்தின் இளை பொருளாதாரத் திட்டம் பட்டக்காட்சிகளுடன் விளக்கினார்.

ஆட்கள் தேவை

வடம்பாட்சி பிரிவினரு 8th, 10th

தேவநிய / தவநிய திடகாத்திரமாவரை

பையன்கள் தேவை

நாள் : 25.05.08

நேரம் : காலை 10 மணி முதல் மாலை 6 மணி வரை

இடம்

தினமலர், பறவைகள் சாலை, திருச்சி.

SUNDAY, MAY 25, 2008

THE HINDU

Agricultural plan recommends Rs.163 crore

Document provides detailed plan of action on various components to be implemented in Tiruchi



CALCULATIVE EFFORT: Collector T.Soundiah speaking at a consultative meeting in Tiruchi on Saturday. PHOTO: R. ASHOK

Special Correspondent

TIRUCHI: The district agricultural plan, drawn up by the Centre for Agriculture and Rural Development Studies of the Tamil Nadu Agricultural University (TNAU), has recommended an allocation of Rs.163 crore for Tiruchi under the National Agricultural Development Programme (NADP) over a four-year period.

The plan proposes an allocation of nearly Rs.50 crore during 2008-09 under the NADP, one of the flagship programmes of the Union government which seeks to give a thrust to agricultural sector growth.

The document, presented at a consultative meeting organised by the Anbil Pharamalingam Agricultural College and Research Institute (ADARC) and the Agriculture Department here on Saturday, would be forwarded to the State and Central governments for approval.

The TNAU has been entrusted with the task of preparing the agricultural plans under the NADP for all districts in consultation with the government departments.

The document provides a detailed plan of action on various components to be implemented under various line departments such as the Agriculture, Horticulture, Agricultural Engineering and Marketing and Agri Business. Problems related to agriculture, both in general terms and crop-wise, would be identified and necessary intervention measures would be taken up under the programme.

During 2008-09, about Rs.11.77 crore lakhs is proposed to be spent through the Agriculture Department for enhancing productivity in various crops including rice, millets, maize, pulses, gingelly, groundnut, sunflower and cotton. About Rs.45.31 crore would be spent by the department over the four years, ending at 2011-12.

The Horticulture Department would take up intervention measures to promote precision farming, net house structures, vegetable shredders, high density planting in cashew and banana cover technique in banana. The requirement for the department for the four-year period is estimated at Rs.57.18 crore.

The Agricultural Engineering Department would promote farm mechanisation, development of water harvesting structures, soil conservation and water management practices. About Rs.82.06 lakh is planned to be spent through the department. Under Agricultural Marketing development, components such as dissemination of market information, market intelligence, contract farming, farmers-traders meets and infrastructure development would be implemented, with an allocation of Rs.71.49 lakh till 2011-12.

The ADARC would spend about Rs.321.39 lakh for enhancing rice productivity in saline and alkaline soils and for integrated fodder development programme.

Collector T. Soundiah emphasised the need for implementing need based and area-specific programmes by taking in the inputs of farmers. Farmers involvement is an essential requirement for the success of the programme.

The dean of the ADARC S. Jeyaraman, the Joint Director of Agriculture N. Ponnam, the district panchayat chairman V. Sangeetha, A. Soundarapandian, M.L.A., R. Subash Easwaran and G. Ranganathan, Professors, ADARC, and officials attended the meeting.