NATIONAL AGRICULTURAL DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN
THOOTHUKUDI 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

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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

The GDP of agriculture increased annually at more than three per cent during the 1980s.Since the Ninth Five-Year Plan (1996 to 2001-02), India has been targeting a growth rate of more than 4 per cent in agriculture, but the actual achievement has been much below the target. Concerned by the slow growth in the Agriculture and allied sectors, the National Development Council (NDC), in its meeting held on 29th May, 2007 resolved that a special Additional Central Assistance Scheme (RKVY) be launched. The NDC resolved that agricultural development strategies must be re-oriented to meet the needs of farmers and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture. The NDC reaffirmed its commitment to achieve 4 per cent annual growth in the agricultural sector during the 11th plan.

The Main Objectives of the Scheme are:

- To incentive the states so as to increase public investment in Agriculture and allied sectors.
- To provide flexibility and autonomy to states in the process of planning and executing Agriculture and allied sector schemes.
- To ensure the preparation of agriculture plans for the districts and the states based on agro-climatic conditions, availability of technology and natural resources.
- To ensure that the local needs/crops/priorities are better reflected in the agricultural plans of the states.
- To achieve the goal of reducing the yield gaps in important crops, through focused interventions.
- To maximize returns to the farmers in agriculture and allied sectors.
- To bring about quantifiable changes in the production and productivity of various components of agriculture and allied sectors by addressing them in a holistic manner.

Thoothukudi district was carved out from Tirunelveli District in 1986. Thoothukudi district is located in the extreme southeastern corner of Tamil Nadu. It is bounded on the north by the districts of Tirunelveli, Virudhunagar, and Ramanathapuram, on the east and southeast by the Gulf of Mannar and on the west and southwest by Tirunelveli district. The total geographical area of the district is 4621 square kilometers. The area of the district is 4621 Sq.k.m. and the population is 1572273.The district has three revenue divisions, eight taluks, twelve blocks, three municipalities, nineteen town panchayats and 468 revenue villages. Seven Assembly constituencies are in the district.

The district has a coastal line of 163.5Kms and the famous Thoothukudi port helps major export of all commodities and the main source of income for the district. The hot and dry climate of the district is highly suitable for dryland crops. The perennial nature of the river Thamirabarani helps cultivation of paddy year round in Thamirabarani belt. Agriculture in the district depends on monsoon rains; hence probability of success is limited. The average rainfall of the district is below 700 mm. Therefore, successful crop production depends heavily on the success / failure of monsoon thus making agricultural production riskier in many parts of the district. Most of the area is covered with sandy soils since the district has a long coastal area of 163.5 kms. There are opportunities to develop cold storage units to increase agricultural exports via. Thoothukudi port. There are ample opportunities to promote new crop varieties and new technologies such as precision farming and System of Rice Intensification as the farmers are now educated on these aspects and willing to adapt the new varieties and technologies. Sea water intrusion in many parts of the district is a major threat. Location of industries and reduction in the area of agricultural lands is an alarming factor.

Interventions

In this context the NADP aims to address the development works of all the line departments by implementing the following interventions.

Agriculture

Rice

- One time grant to TANWABE / FIG to take certified seed production and distribution @ Rs.50000/- per group for 23 districts (30 MT / 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
- Distribution of Soil Health Card @ Rs.100/- per card (Soil + Water testing)
- Distribution of Micro Nutrient Mixture @ Rs.500 / Ha.or 50 per cent subsidy
- 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.
- Publicity / POL & Hireing of Vehicle @ Rs.50000/- per district
- Community Thrashing floor @ Rs.2 lakhs/- per No. (20'x20')

Millet

- 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

Maize (Rainfed)

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

Groundnut (Rainfed)

- Seed distribution subsidy @ 50 per cent limited to Rs.12/Kg.
- MN Mixture distribution @ 50 per cent cost limited to Rs.500/Ha.

Gingelly

- MN SO4 distribution @ 50 per cent cost limited to Rs.100/Ha.

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.

Extension Activities

- Exposure visit Inter-state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh)
- Exposure visit Intra state @ 50 farmers/Tour, 5 days @ Rs.300/day/farmer (Rs.1.50 lakhs each)
- Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, Radio & other mass media @ Rs.2.0 Lakh / district
- Farmers Training through FTC @ 40 training (2 Days) / year @ 50 farmers / training Rs.20000/ training

Special Schemes

- Training to TANWABE womens to test the soil by FTC, 25 womens per batch @ Rs. 500 per head + contingencies.
- Weedicide distribution for all crops @ Rs.1000 per ha.
- Distribution of Farm tool Kits to Agricultural Labourers to encourage them @ Rs.1500 per kit with 90 per cent subsidy.
- Distribution of combined harvester @ Rs.500000 per machine with 90 per cent subsidy.

Horticulture

- Precision Farming
- Plastics Crates for Vegetable handling and transport @ Rs. 250 / crate with 50 per cent subsidy
- Banana @ Rs. 1.5 lakhs / ha @ 75 per cent subsidy
- Banana Corm injector @ Rs. 300 / No. with 50 per cent subsidy
- Support senna cultivation @ Rs.15,000/ha with 50 per cent subsidy
- Establishment of banana fibre industry @ 50 per cent subsidy

Animal Husbandry

- Scientific fodder production
- Door-to-door health covers to livestock.
- Tracing of breedable bovine population
- Strengthening the veterinary institutions with basic facilities like fencing, bore-wells, water troughs etc.
- Genetic upgradation of buffalo, small ruminants and poultry.
- Capacity building through adoption of technology – Training
- Establishment of Animal Disease intelligence Unit
- Disaster management

Fisheries

- Diversify fishing methods to long lining, gill netting, Squid jigging
- Breeding center for sea ranching.
- Construction of mini cold storages, net mending halls and auction halls at village level.
- Capacity building of fisher folk.
- Restoration and long term monitoring of critical habitats.

Agricultural Engineering

- Introduction of Newly Developed Agrl. Machinery / Implements
- Innovative water harvesting structures
- Control of sea water intrusion
- Promoting the concept of Mechanized villages
- Popularization of agricultural mechanization through conventional machinery /equipments
- Water harvesting structures
- Soil conservation works
- Water management works

Agricultural Marketing and Agribusiness

- Commodity group formation
- Market intelligence dissemination
- Facilitation of contract farming
- Exposure visit to markets
- Arrangement of buyer seller meetings
- Strengthening of market extension centre
- Development of market infrastructure

Public Works Department

- Rehabilitation of system tanks
- Rehabilitation of non-system tanks

The sector-wise and year-wise budget outlays for the XI plan period under NADP in Thoothukudi district have been summarized below.

Summary of Budget Outlay for XI Plan under NADP in Thoothukudi District

(Rs. in lakhs)

S.No.	Sector	2008-09	2009-10	2010-11	2011-12	Total
1.	Agricultural	87.850	88.050	85.050	85.050	346.000
2.	Horticulture	66.675	84.275	126.925	149.425	427.305
3.	Animal Husbandry	516.091	213.970	149.720	149.220	1029.002
4.	Fisheries	1060.250	210.250	142.750	63.750	1477.000
5.	Agrl. Engineering	214.330	216.090	218.900	219.760	869.080
6.	Agricultural Marketing	68.75	278.20	263.28	257.45	867.67
7.	Public Works Department	1079.500	600.000	600.000	635.500	2915.000
8.	Agricultural Research	89.000	122.000	22.000	24.000	257.000
	Total	**3182.45**	**1812.84**	**1608.63**	**1584.16**	**8188.06**

In sum, an overall budget outlay of Rs. 8188.06 is required during XI plan under NADP for the development of agriculture and allied sectors in Thoothukudi district as could be seen from the table, above.

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 11^{th} 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.

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 17.06.08 under the chairmanship of District Collector. This meeting was attended by the scientists from TNAU, officials from line departments and the representatives of local bodies wide coverage was given in the media also.

Finalization

The feedback received in the District Collectors Meeting were incorporated before finalization of the District Agriculture Plan. The Strategic Research Extension Plan and Agriculture Technology Management Agency reports were also reviewed and relevant details have been incorporated in the draft report.

CHAPTER - II

GENERAL DESCRIPTION OF THE DISTRICT

2.1 Introduction

Thoothukudi district was carved out from Tirunelveli district in 1986. The total geographical area of the district is 4621 square kilometers. Thoothukudi is the head quarters of the district and the population of the district is 15,72,273. Thoothukudi municipality has been upgraded as the corporation on 05.08.08 and it is also an important port city. The only Fishery College in the State of Tamil Nadu is also located in Thoothukudi. Thus, it is an important urban agglomeration and is also the taluk head quarters.

2.2 District at a Glance

2.2.1.Location

Thoothukudi District is located in the extreme south-eastern corner of Tamil Nadu State, between 8° and 22’ to 9° and 22’ North Latitude and 77°40’ and 78° East Longitude. It is bounded on the north by the districts of Tirunelveli, Virudhunagar, and Ramanathapuram, on the east and south-east by the Gulf of Mannar and on the west and southwest by Tirunelveli district (Fig.1).

2.2.2. Administrative Divisions

The district has three revenue divisions, (Table 2.1) eight taluks (Fig.2), twelve blocks (Fig.3) and (Table 2.2), three municipalities, nineteen town panchayats, 408 village panchayats and 468 revenue villages (Table 2.3). Seven Assembly constituencies are in the district.

Figure 1. Location of Thoothukudi District in Tamil Nadu

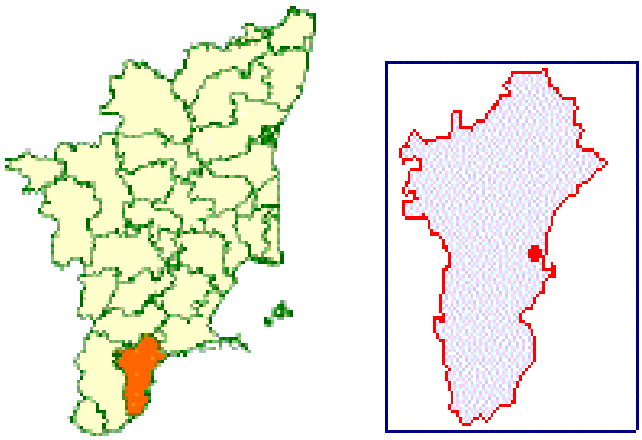


Figure 2. Thoothukudi District Map indicating the Taluks

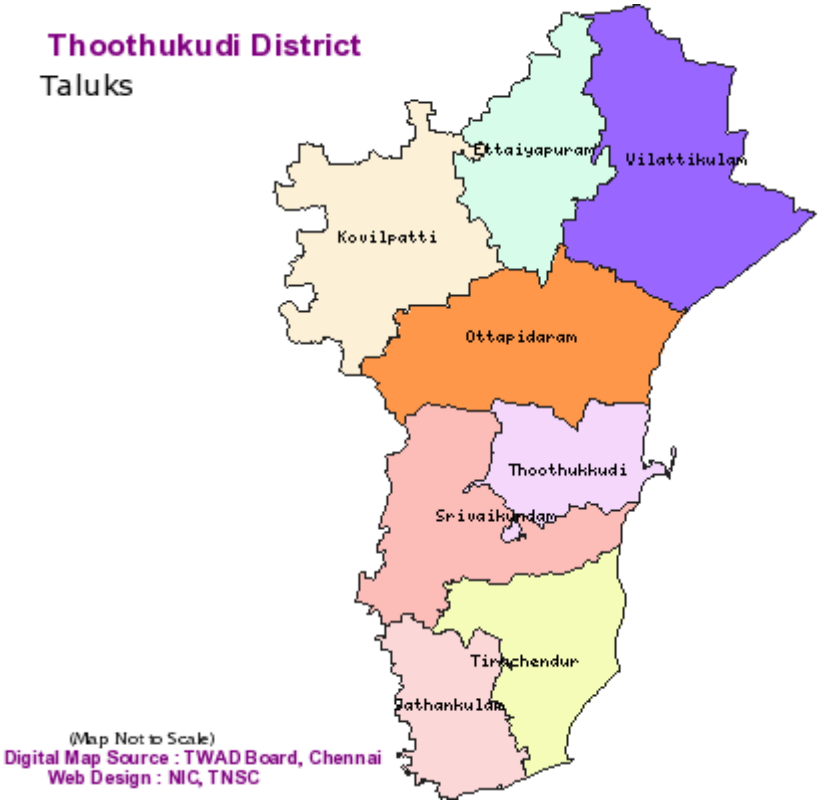
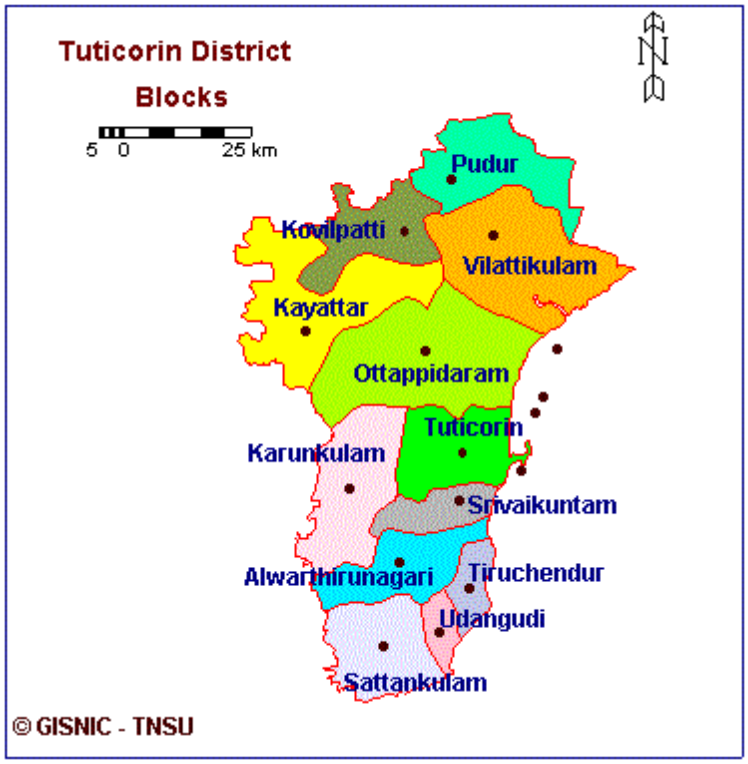


Figure 3. Thoothukudi District Indicating the Blocks



The revenue divisions and taluks are listed in Table 2.1. below.

Table 2.1. Revenue Divisions and Taluks

Sl.No.	Revenue Divisions	Taluks comprised in the Revenue Division
1.	Thoothukudi	a. Thoothukudi b. Srivaikundam
2.	Tiruchendur	a. Tiruchendur b. Sattankulam
3.	Kovilpatti	a. Kovilpatti b. Ettayapuram c. Vilathikulam d. Ottapidaram

Thoothukudi district includes 12 blocks (Fig. 2) and 408 Village Panchayats. The block wise number of Village Panchayats are depicted in the Table 2.2, below.

Table 2.2. Blocks and Panchayat Villages

Number of Blocks		**12**	
Number of Panchayat Villages		**408**	
Block	**Panchayat Villages**	**Block**	**Panchayat Villages**
Alwarthirunagari	30	Karunkulam	31
Kayattar	45	Kovilpatti	38
Ottappidaram	61	Pudur	44
Sattankulam	24	Srivaikuntam	31
Tiruchendur	11	Tuticorin	25
Udangudi	17	Vilattikulam	51

The district comprises of eight taluks, and 468 revenue villages. The details are given in Table 2.3. below.

Table 2.3. Taluks and Revenue Villages

Number of Taluks	**8**
Number of Revenue Villages	**468**
Taluk	**Revenue Villages**
Ettayapuram	56
Kovilpattai	75
Ottapidaram	63
Sathankulam	25
Srivaikundam	69
Thoothukkudi	33
Tiruchendur	58
Vilathikulam	89

Revenue Firkas : 40

Revenue Villages : 468

For the purpose of Election, this district is divided into 7 Assembly constituencies and comes under 3 Parliamentary Constituencies, as given below:

1. Parliamentary Constituencies

1. Tirunelveli 2. Tiruchendur and 3. Sivakasi

2. Assembly Constituencies

1. Vilathikulam, 2. Ottapidaram, 3. Kovilpatti, 4. Sattankulam, 5. Tiruchendur, 6. Srivaikuntam and 7. Thoothukudi.

The local bodies and their numbers in the district are detailed below.

- Corporation : 1
- Municipalities : 1
- Panchayat Unions : 12
- Town Panchayats : 20
- Village Panchayats : 408
- Revenue Firkas : 40
- Revenue Villages : 468

2.2.3 Population (2001 Census)

Thoothukudi district has a total population of 15,72,273. The taluk-wise male and female population is given in Table 2.4 that follows.

Table 2.4. Taluk-wise Population Details

(Numbers)

Sl.No.	Name of the Taluk	Male	Female	Total
1.	Thoothukudi	203368	201995	405363
2.	Tiruchendur	138040	153388	291428
3.	Kovilpatti	128711	133538	262249
4.	Sathankulam	43692	53128	96820
5.	Srivaikuntam	93472	98411	191883
6.	Vilattikulam	66743	68542	135285
7.	Ottapidaram	57201	58053	115254
8.	Ettayapuram	35596	38395	73991
	District Total	766823	805450	1572273

Source: Records of the Office of the Assistant Director of Statistics, Thoothukudi

2.2.4 Rainfall and Climate

The district received annual rainfall of 1048.9 mm during the year 2007. The season-wise rainfall details are given in the Table 2.5, below.

Table 2.5. Season-wise Rainfall Data in Thoothukudi District

(in mm)

Season	2006-07	2005-06	2004-05	2003-04	2002-03
South West Monsoon	91.0	48.4	151.1	48.1	27.7
North East Monsoon	768.9	453.6	551.4	319.5	357.0
Winter	18.8	36.1	61.5	41.7	59.9
Summer	170.2	139.9	171.1	108.6	112.4
Annual	1048.9	678.0	935.1	517.9	557.0

Source: Records of the Office of the Directorate of Economics and Statistics, Chennai

The district receives the maximum rainfall during North East Monsoon season.

2.2.5. Soil Types

The major soil types found in the district include montmorillonitic, Vertisols, Alfisols, Inceptisols and kaolinitic. Deep fine, montmorillonitic, vertisols occupies a major area of 114817.11 hectares. The types of soil and the area are listed in Table 2.6, below.

Table 2.6. Thoothukudi Soils and Area in Hectare

Soil Description	Area (ha)
Deep, fine, montmorillonitic, Vertisols	114817.11
Very deep, fine, montmorillonitic, Vertisols	40187.37
Deep, fine, mixed, Alfisols	30725.16
Deep, fine loamy, mixed, Inceptisols	28038.39
Deep, fine, mixed, Inceptisols	20420.71
Moderately deep, coarse loamy, mixed, Entisols	17536.03
Very deep, fine loamy, mixed, Inceptisols	17396.05
Moderately deep, fine, montmorillonitic, Vertisols	14887.04
Deep, fine loamy, mixed, Alfisols	14579.23
Moderately shallow, fine, mixed, Inceptisols	13483.62
Moderately deep, fine loamy, mixed, Inceptisols	9873.02
Very deep, clayey skeletal, kaolinitic, Alfisols	9523.80
Deep, clayey skeletal, mixed, Alfisols	9401.93
Moderately deep, fine, mixed, Alfisols	8927.22
Very deep, fine, kaolinitic, Alfisols	8775.08
Very deep, fine, mixed, Alfisols	7644.39
Deep, sandy, mixed, Entisols	7500.68
Moderately deep, fine, montmorillonitic, Inceptisols	6250.15
Deep, coarse loamy, mixed, Alfisols	5927.32
Very deep, fine, mixed, Inceptisols	5820.04
Deep, fine loamy, mixed, Entisols	5612.32
Moderately shallow, fine loamy, mixed, Alfisols	5138.38

Table 2.6. Contd…

Soil Description	Area (ha)
Shallow, loamy, mixed, Entisols	4927.41
Moderately deep, very fine, montmorillonitic, Vertisols	4425.67
Very deep, sandy, mixed, Entisols	3709.12
Very deep, fine, montmorillonitic, Inceptisols	3125.65
Very deep, fine loamy, mixed, Alfisols	3091.10
Moderately deep, clayey skeletal, mixed, Alfisols	2510.03
Shallow, clayey skeletal, mixed, Inceptisols	1914.93
Moderately shallow, loamy skeletal, mixed, Inceptisols	1787.10
Moderately deep, loamy skeletal, mixed, Alfisols	1544.93
Moderately shallow, loamy skeletal, mixed, Entisols	420.95
Very deep, contrasting particle size, mixed, Inceptisols	415.34
Very deep, coarse loamy, mixed, Alfisols	298.22
Deep, fine, montmorillonitic, Inceptisols	291.53
Moderately shallow, fine loamy, mixed, Entisols	188.68
Deep, contrasting particle size, mixed, Inceptisols	74.64
Deep, coarse loamy, mixed, Entisols	7.28

The particulars on the common types of soils and the places in the district are furnished in Table 2.7. below.

Table 2.7. Common Soils Types and Locations in Thoothukudi District

S. No.	Type of Soil	Places in District
1.	Red Loam	Udangudi, Kayatar, Sattankulam
2.	Lateritic Soil	Srivaikundam, Tiruchendur
3.	Black Soil	Kovilpatti, Kayatar, Vilathikulam, Thoothkudi, Ottapidaram
4.	Sandy Coastal Alluviam	Tiruchendur
5.	Red Sandy Soil	Udangudi, Sattankulam, Srivaikundam, Karungulam, Ottapidaram, Vembar

Source: Records of the Office of the Directorate of Economics and Statistics, Chennai

From the above table, it is found that the Black soil occupies the major area in the district.

The details in the types of waste lands block-wise are presented below in Table 2.8.

Table 2.8. Block wise Problem Soils in Thoothukudi District

(in ha.)

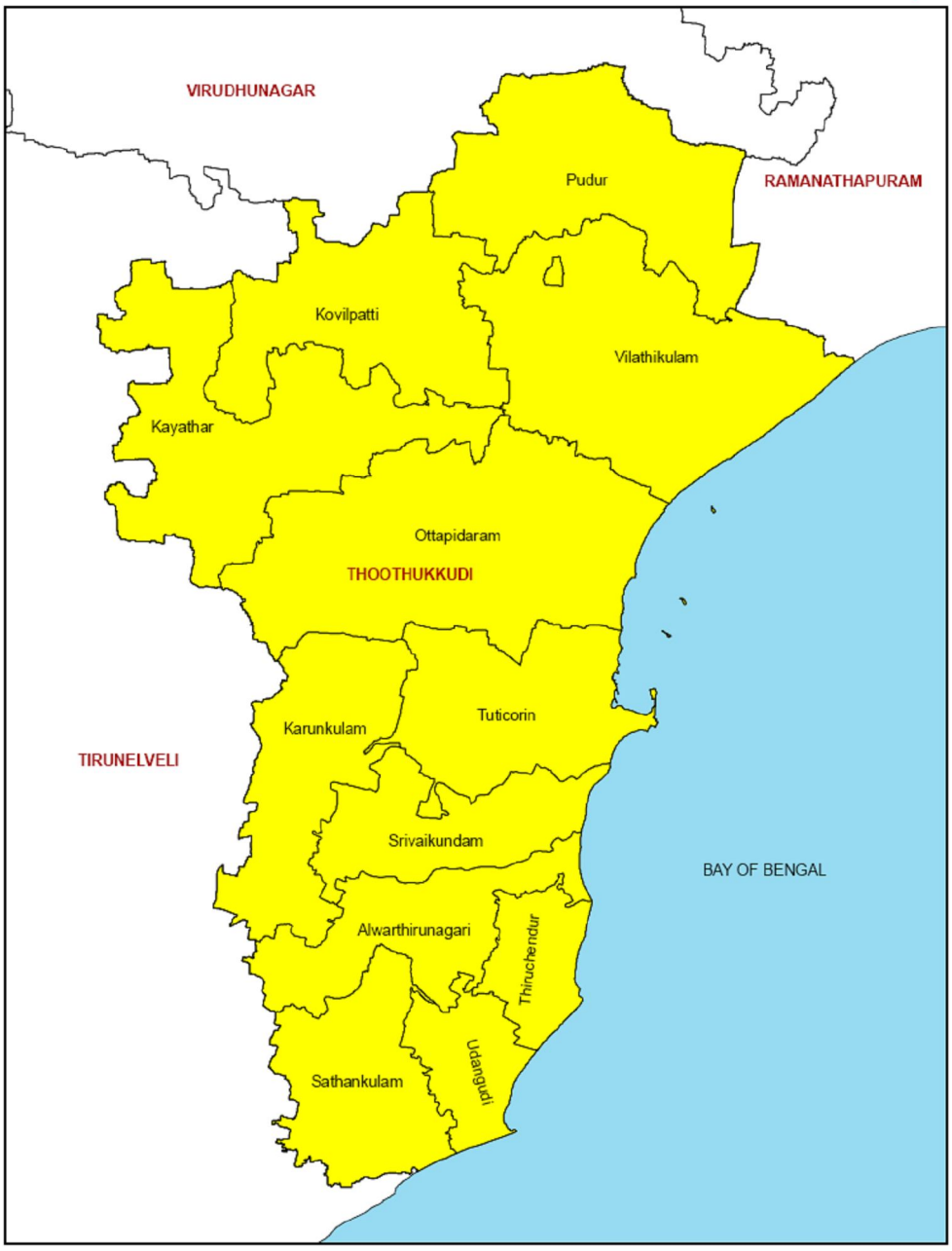
S.No.	Blocks	1	2	3	4	5	6	7	8
1.	Alwarthirunagari	562.90	--	1657.2	--	124.3	112.6	--	--
2.	Karungulam	2568.50	--	4089.1	2101.3	--	24.6	--	37.3
3.	Kayathar	11888.00	--	3702.8	1404.5	--	3.9	6.6	46.0
4.	Kovilpatti	1630.70	--	3749.5	31.90	--	2.1	1.9	21.5
5.	Ottapidaram	3655.90	13.40	2638.7	1515.1	--	441.4	--	86.6
6.	Pudur	365.50	--	3677.1	--	--	9.6	--	73.0
7.	Sattankulam	1308.60	--	1211.6	--	--	3000.3	--	64.9
8.	Srivaikundam	2589.70	--	1620.2	190.3	--	125.6	6.0	1.5
9.	Thoothukudi	3292.50	--	1711.7	--	--	452.1	304.2	--
10.	Tiruchendur	223.40	--	603.8	--	--	1171.6	14.2	--
11.	Udankudi	1169.30	41.30	1116.7	4964.6	--	381.5	--	6.9
12.	Vilathikualm	340.70	--	4182.5	--	--	3815.1	--	--
	Total	**29595.70**	**54.70**	**29960.9**	**10207.7**	**124.3**	**9540.0**	**332.9**	**337.70**

Note:

1. Upland with or without scrub
2. Waterlogged and marshy land
3. Land affected by salinity / alkalinity – coastal / inland
4. Degraded notified forest land
5. Degraded land under plantation crops
6. Sands – Desertic/Coastal
7. Mining / industrial wastelands
8. Barren rocky/stony waste/sheet rock area

Source: Perspective plan for wasteland development in Thoothukudi District, Centre for Agrl. and Rural Development Studies (CARDS), TNAU, Coimbatore.

AGROCLIMATIC ZONES OF THOOTHUKUDI DISTRICT



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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 Perambulur 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, Tiruchirapalli, Lalgudi, Thuraiyur and Kulithalai taluks of Tiruchirapalli district, Aranthangi taluk of Pudukottai 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.

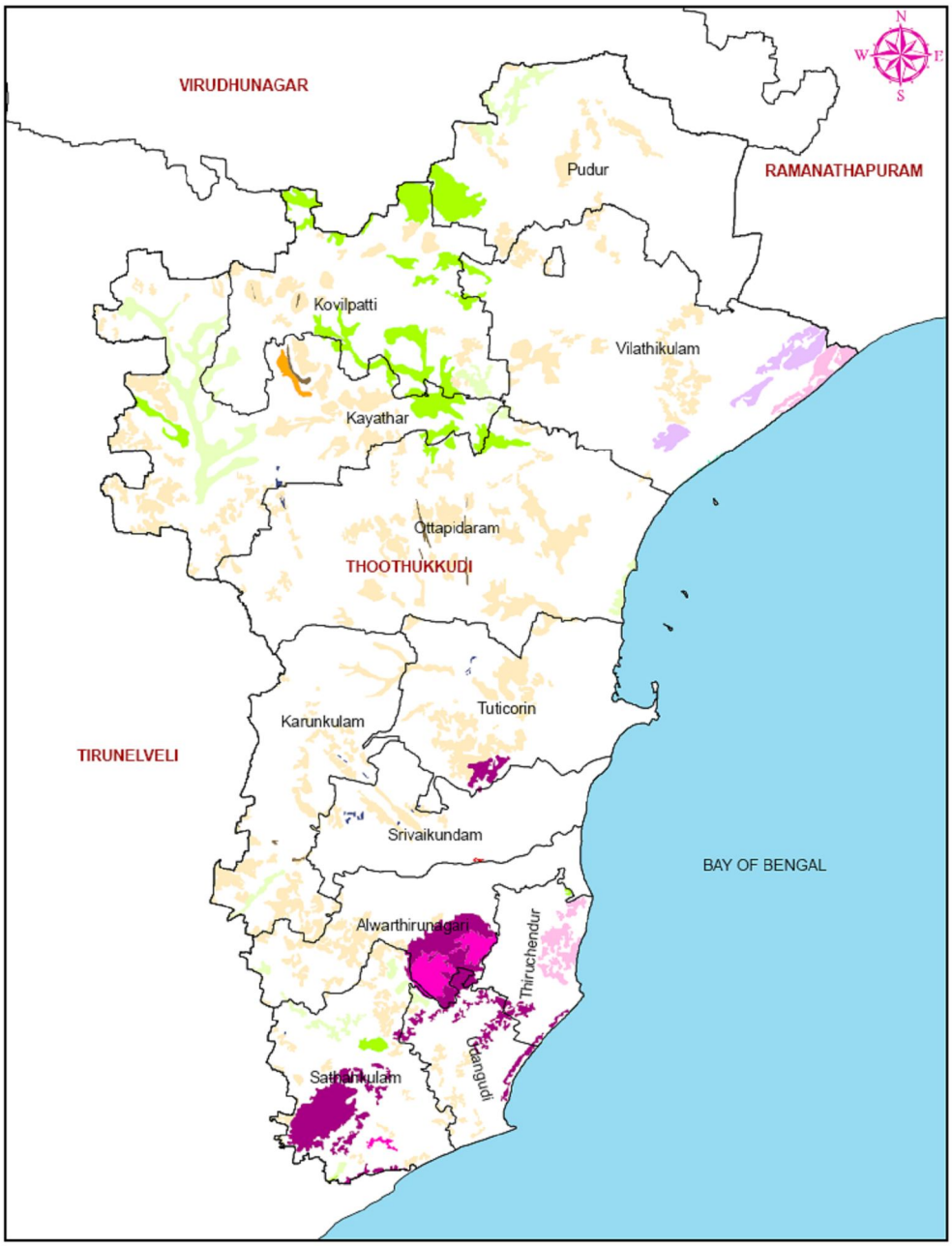
HIGH RAINFALL ZONE

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 THOOTHUKUDI 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

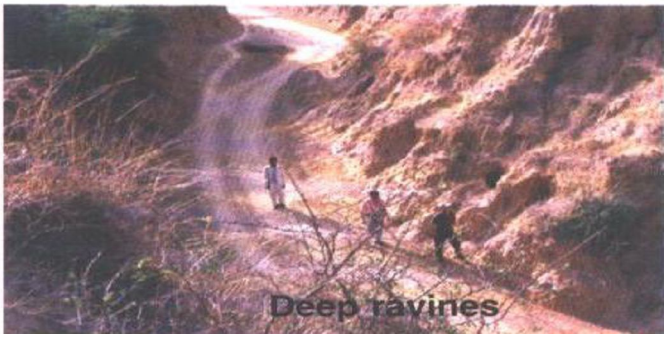
When the surface runoff goes in the form a concentric flow, a tiny water channels are formed in the field. These are small rivulets of such a size that they can be worked over with farm machinery. Rills are generally associated with the cultivated lands and are visible in the ploughed soil after first 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 of 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 with in 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 >4ds/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.

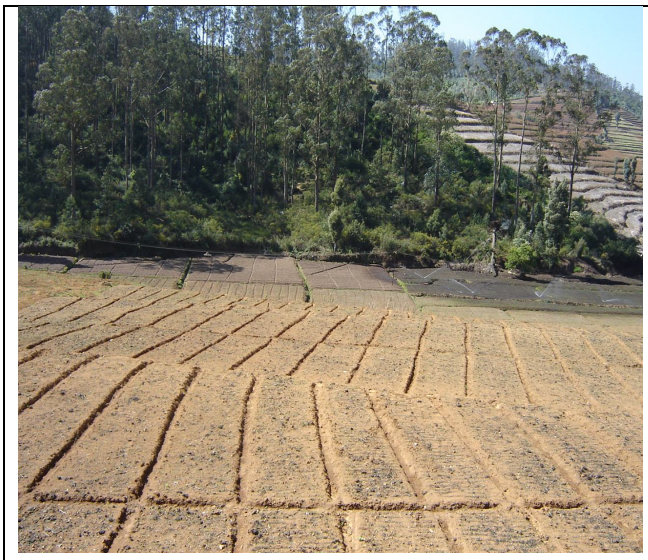
Salinity

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**

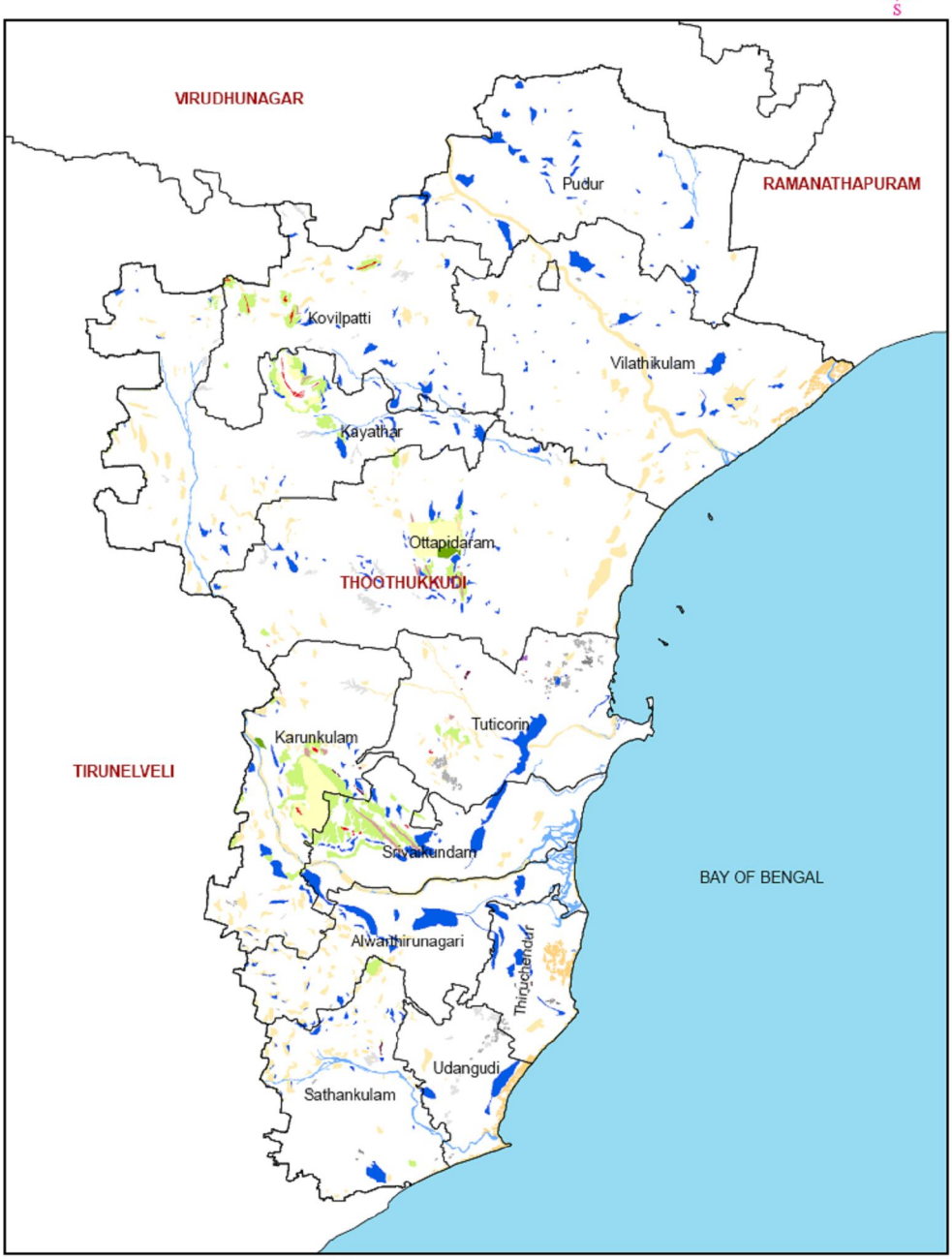
Barren / rocky / stony areas are the rock exposures of varying lithology often barren and devoid of soil and vegetal cover. They occur in hill forests as openings or as isolated exposures on plateau and plains. These can be easily delineated from other type of degraded land because of their severe nature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

19. Miscellaneous

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

Sea Ingress areas

WASTELAND MAP OF THOOTHUKUDI DISTRICT



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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 ravinous land. The world '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).

2.2.6 Land Use Pattern (2004-2007) (in Ha.)

From the following Table 2.10, it is found that the net sown area is 1,69,689 ha and the gross cropped area is 1,77,226 ha. The area under different uses is presented in the Table 2.9, below.

Table 2.9. Land Use Pattern during 2004-2007

(in hectares)

S. No.	Classification	2006-07	2005-06	2004-05
1.	Forest	9043	11012	11027
2.	Barren and Uncultivable uses	19760	19762	19749
3.	Land put to Non-agricultural uses	74468	74489	67054
4.	Cultivable Waste	56669	58139	49584
5.	Permanent Pastures and Other Grazing Land	5130	5132	5121
6.	Land Under Miscellaneous Tree Crops and Groves not included in Nett Area Sown	39756	39256	40467
7.	Current Fallow	10075	6693	2175
8.	Other Fallows Land	72150	72756	79749
9.	Net Area Sown	169689	171815	170835
10.	Geographical Area According to Village Papers	459059	459054	459057
11.	Gross cropped area	177226		180098
12.	Area sown more than once	7537		1544

The land put to non-agricultural uses occupies considerable area (74468). This reflects that there is scope to increase the area under cultivation.

The details on the Lands not suitable for cultivation, lands partially suitable for cultivation and lands suitable for cultivation and the respective area are listed in the table 2.10, below.

Table 2.10. Wastelands and Area in Thoothukudi District

S. No.	Wasteland category	Area in '00 ha
	Lands not suitable	
1.	Water logged marshy land (permanent)	0.00
2.	Land affected by salinity (strong)	1.37
3.	Barren rock / rock sheet area	2.56
4.	Steep sloping area	0.00
5.	Gullied and ravinous land (medium)	0.00
6.	Gullied and ravinous land (deep)	0.00
	Lands partially suitable	
7.	Gullied and ravenous land (shallow)	0.00
8.	Land affected by salinity (medium)	7.9
9.	Mining wastelands	0.77
10.	Industrial wastelands	0.25
	Lands Suitable	
11.	Land with scrub	65.99
12.	Land without scrub	5.18
13.	Water logged marshy land (seasonal)	0.00
14.	Land affected by salinity (slightly)	12.06
15.	Under utilized notified forest land	39.42
16.	Under utilized notified forest land (agriculture)	2.96
17.	Degraded forest and grazing land	0.00
18.	Degraded land under plantation crop	0.00
19.	Sand (flood plains)	0.00
20.	Sands (levees)	0.00
21.	Sands (coastal sands)	26.28

Source: NABARD, Potential linked credit plan 2008-09

2.2.7. Land Holding Pattern of the Farmers – Size Group-wise Number and Area of Holdings

The land holding pattern of the farmers is presented below in table 2.11.

Table 2.11. Land Holding Pattern of the Farmers

Size/ Class of holdings (Hectares)	Number				Area			
	S.C.	S.T.	Others	Total	S.C.	S.T.	Others	Total
Below 0.5	14835	5	57084	72026	3832.755	0.495	14857.155	18717.490
0.5-1.0	8247	3	30395	38682	5619.925	2.325	22621.015	28270.525
1.0-2.0	6824	--	27939	34805	9418.174	--	39475.655	48954.319
2.0-3.0	2257	--	11721	14036	5397.640	--	28597.655	34011.260
3.0-4.0	949	--	6144	7115	3210.530	--	21090.610	24377.855
4.0-5.0	467	--	3608	4092	2042.545	--	16022.980	18143.800
5.0-7.5	433	--	4073	4534	2602.505	--	24639.530	27409.630
7.5-10.0	154	--	1703	1874	1272.695	--	14464.735	15889.375
10.0-20.0	78	--	1446	1556	978.775	--	19266.090	20681.785
20 & above	12	--	304	373	369.280	--	9739.510	14940.575
Total	**34256**	**8**	**144482**	**179125**	**34726.824**	**2.820**	**210774.935**	**251427.464**

Source: Agricultural Census 2001

It is inferred from the above table that 72026 farmers are falling under the category of below 0.5 hectare land holding size.

2.2.9. Irrigation and Ground Water

A. Sources of Irrigation

The various sources of irrigation and the area irrigated in the district are indicated below.

Table 2.12. Block-wise Net Area Irrigated by Irrigation Sources

(in Ha.)

S.No.	Name of the Block	2006-2007			
		Canal	Tank	Wells	Others
1.	Alwarthirunagiri	-	635	NA	4799
2.	Karungulam	1846	1636	1815	-
3.	Kayathar	-	995	2554	-
4.	Kovilpatti	-	509	NA	1280
5.	Ottapidaram	-	508	1592	-
6.	Pudur	-	203	752	-
7.	Sattankulam	-	1129	3039	-
8.	Srivaikundam	-	2591	492	5998
9.	Thoothukudi	-	956	760	-
10.	Tiruchendur	-	2197	1009	-
11.	Vdankudi	-	-	3005	-
12.	Vilathikulam	-	241	2418	-
	Total	**1846**	**11600**	**15621**	**12077**

Table 2.13 Gross Irrigated Area Block-wise

(in Ha.)

S.No.	Name of the Block	2006-2007			
		Canal	Tank	Wells	Others
1.	Alwarthirunagiri	-	702	-	6919
2.	Karungulam	-	1790	-	-
3.	Kayathar	-	995	2554	-
4.	Kovilpatti	-	509	-	1280
5.	Ottapidaram	-	508	1592	-
6.	Pudur	-	203	752	-
7.	Sattankulam	-	1129	3027	-
8.	Srivaikundam	-	2284	366	4616
9.	Thoothukudi	-	956	760	-
10.	Tiruchendur	-	3407	1009	-
11.	Vdankudi	-	-	3113	-
12.	Vilathikulam	-	241	2418	-
	Total	**-**	**12724**	**15591**	**12815**

Source: Assistant Director of Statistics, Thoothukudi

B.Ground Water Potential

Three types of ground water classifications are seen in the district. The ground water potential is very high in Vilathikulam block followed by Alwarthirunagari. The details of block-wise ground water potential are presented in Table 2.14, below.

Table 2.14. Ground Water Potential in Thoothukudi District

S. No.	Block	Potential	Utilisation (ha)	Balance in ac. ft.	Classification	Ground water classification	% G.W. Extraction
1	Kovilpatti	4105	2618	1487	Grey	Grey	65% to 85% exploited
2	Srivaikundam	2258	511	1747	Grey		
3	Kayathar	5357	2649	2708	White	White	Below 65% exploited
4	Pudur	3735	991	2744	White		
5	Ottapidaram	5981	2685	3296	White		
6	Thiruchendur	926	643	283	Grey		
7	Alwarthirunagari	7258	1090	6168	White		
8	Karungulam	4570	1524	3046	White		
9	Pudukottai	4581	544	4037	White		
10	Vilathikulam	8494	883	7611	D	Dark	above 85% exploited
11	Udangudi	2338	1534	804	D		
12	Sattankulam	3218	2446	772	D		
	Total	**52821**	**18118**	**34703**			

Source: Assistant Director of Statistics, Thoothukudi

2.2.8 Cropping Pattern (Area under each crop (ha) – Rainfed/Irrigated

The area particulars and major crops in the district are furnished below in Table.

Table 2.15. Area of Major Crops

(i) Paddy – Kar **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri		564		643		2850
Karungulam		45		1337		1657
Kayathar	0	1362	0	862	0	1370
Kovilpatti						
Ottapidaram						
Pudur						
Sattankulam				71		42
Srivaikundam		1086				2325
Thiruchendur		143		1601		1055
Thoothukudi						
Udankudi		29		69		
Vilathikulam						
Total	**0**	**3229**	**0**	**4583**	**0**	**9299**

(ii) Paddy – Samba **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri		2152		2472		1322
Karungulam		2810		2354		2457
Kayathar						
Kovilpatti				380		459
Ottapidaram		775				571
Pudur		127		163		
Sattankulam		938		777		77
Srivaikundam		1668				1590
Thiruchendur		797		629		1
Thoothukudi		792	649			666
Udankudi		21		31		74
Vilathikulam		289		237		241
Total	**0**	**10369**	**649**	**7043**	**0**	**7458**

(iii) Black gram **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri	668	6	600	4	528	38
Karungulam	1010	141	955	1		3
Kayathar	1868	0	3308	15	0	0
Kovilpatti	2939	5	4298	5	5340	
Ottapidaram	3785				6809	
Pudur	1436		2246			77
Sattankulam	2	2	2	3	1	3
Srivaikundam					16	
Thiruchendur	130		95			
Thoothukudi	319	456	388			
Udankudi						
Vilathikulam	2156		3905		5183	1
Total	**14118**	**154**	**15410**	**484**	**17964**	**122**

(iv) Green gram **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri	102		60		55	
Karungulam	812	97	885			
Kayathar	6861	0	5528	105	3639	3
Kovilpatti	5578	8	5121	30	4849	8
Ottapidaram	7800				6061	
Pudur	2475		3016			1
Sattankulam	2			1	1	2
Srivaikundam		1				
Thiruchendur			6		103	3
Thoothukudi	124		1	130	87	
Udankudi						
Vilathikulam	2024		2770		3669	
Total	**25778**	**106**	**17387**	**266**	**18464**	**17**

(v) Groundnut **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri		23	888	172	1064	82
Karungulam	7	31	5	36		25
Kayathar	29	56	29	48	14	52
Kovilpatti	5		2	1	3	1
Ottapidaram	47	4				33
Pudur		10		6		
Sattankulam	540	143	143	163	574	77
Srivaikundam	2	1				2
Thiruchendur		30				11
Thoothukudi	4	4	2		9	
Udankudi				14		10
Vilathikulam	130		136	3	131	
Total	**764**	**302**	**1205**	**443**	**1795**	**293**

(vi) Gingelly **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	Area (Irrigated)	Area (Rainfed)	Area (Irrigated)	Area (Rainfed)	Area (Irrigated)
Alwarthirunagiri	982	1				
Karungulam	397	3	306			5
Kayathar	1220	0	918	0	516	0
Kovilpatti	310		305		243	
Ottapidaram	1653				1029	
Pudur	44		38			6
Sattankulam				1637		
Srivaikundam						
Thiruchendur	195		62	622	66	
Thoothukudi	225	3		177	119	
Udankudi		12				
Vilathikulam	33		51		47	
Total	**5059**	**19**	**1680**	**2436**	**2020**	**11**

(vii) Coconut **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri	2	204		199	9	200
Karungulam		110		129		144
Kayathar	0	171	0	166	0	165
Kovilpatti		64		66		60
Ottapidaram						113
Pudur		14		14		14
Sattankulam		1773	1773	9		1594
Srivaikundam	4	400				424
Thiruchendur		632				629
Thoothukudi	3	99	128			124
Udankudi						2347
Vilathikulam		264		260		206
Total	**9**	**3731**	**1901**	**843**	**9**	**6020**

(viii) Castor **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri						
Karungulam						
Kayathar	2	11	1	16	72	5
Kovilpatti	2	2		2		8
Ottapidaram	7	134				9
Pudur						
Sattankulam		5	5	6		9
Srivaikundam						
Thiruchendur						
Thoothukudi						
Udankudi		2052		2271		
Vilathikulam			12	5	17	
Total	**11**	**2204**	**18**	**2300**	**89**	**31**

(ix) Sunflower **(hectare)**

Name of the Block	2004-05		2005-06		2006-07	
	Area (Rainfed)	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**	**Area (Rainfed)**	**Area (Irrigated)**
Alwarthirunagiri						
Karungulam				1		2
Kayathar	126	11	129	33	20	13
Kovilpatti	111	6	140	14	119	3
Ottapidaram	83				11	
Pudur	388		474			
Sattankulam				6		6
Srivaikundam					3	
Thiruchendur						
Thoothukudi				28		
Udankudi			5			74
Vilathikulam	206		262		272	
Total	**914**	**17**	**1010**	**82**	**425**	**98**

A. Production of Agricultural Commodities (Rainfed / Irrigated)

The data on production of food grains, oil seeds, fibre and other crops are given in table 2.16, below.

Table 2.16. Production of Major Agricultural Products in Thoothukudi District

Sl.No.	Crops	Production (2005-06) 000'tonnes
a)	**Cereals & Millets**	
	Paddy	82.47
	Cholam	7.17
	Cumbu	41.10
b)	**Pulses**	
	Black gram	11.75
	Green gram	11.90
2.	**FIBRE**	
	Cotton	3.10
3	**OIL SEEDS**	
	Groundnut	1.35
	Gingelly	1.77
	Sunflower	0.55
4.	**OTHER CROPS**	
	Chilli	9.00

Source: Directorate of Economics and Statistics, Chennai.

Paddy ranks first in production, followed by Cumbu, etc.

Area, production and productivity of fruits, vegetables and medicinal plants in Thoothukudi district are listed in Table 2.17, that follows.

Table 2.17. Area, Production and Productivity of Fruits, Vegetables and Medicinal Plants in Thoothukudi District

Sl.No	Name of the Crop	Area (Ha.)	Production (Tonnes)	Productivity (Tonnes/Ha.)
1.	Banana	8272	386862	46.77
2	Mango	592	2460	4.16
3	Jack	1	10	10.00
4	Papaya	4	728	182.00
5	Pomegranate	49	1225	25.00
6	Guava	206	1446	7.02
7	Grapes	1	24	24.00
8	Sapota	113	2825	25.00
9	Orange	1	2	2.00
10	Lemon	143	149	1.04
11	Amla	193	2702	14.00
12	Other Citrus fruits	6	150	25.00
Total		**9581**	**398583**	**41.60**
	Vegetables			
13	Tapioca	5	168	33.60
14	Sweet potato	64	928	14.50
15	Yam	144	4320	30.00
16	Onion	1509	8619	5.71
17	Brinjal	207	2315	11.18
18	Lady’s finger	206	1129	5.48
19	Lab Lab	14	182	13.00
20	Tomoto	427	3051	7.15
21	Pumpkin	20	460	23.00
22	Snake Gourd	7	105	15.00
23	Ribbed Gourd	6	72	12.00
24	Colacasia	2	20	10.00

Table 2.17 Contd…

Sl.No	Name of the Crop	Area (Ha.)	Production (Tonnes)	Productivity (Tonnes/Ha.)
25	Greens	14	224	16.00
26	Beans	248	3720	15.00
27	Drumstick	1456	72800	50.00
28	Other Vegetables	116	3132	27.00
29	Bottle Gourd	1	14	14.00
30	Bitter Gourd	77	924	12.00
31	Ash Gourd	7	126	18.00
32	Cucumber	47	329	7
	Total	**4577**	**102638**	**22.42**
	Medicinal and Aromatic Plants			
33	Lemon Grass	1	20	20.00
34	Senna	1282	1282	1.00
	Total	**1283**	**1302**	**10.50**
	Plantation Crops			
35	Cashew	749	259	0.35
36	Betalvine	183	4026	22.00
	Total	**932**	**4285**	**4.60**
	Spices and condiments			
37	Chillies	23421	6665	0.28
38	Curry leaves	409	81800	200.00
39	Coriander	5188	903	0.17
40	Turmeric	4	17	4.25
41	Tamarind	401	930	2.32
	Total	**29423**	**90315**	**3.07**
	Flowers			
42	Rose	34	247	7.25
43	Jasmine	176	1364	7.75

Table 2.17 Contd…

Sl.No	Name of the Crop	Area (Ha.)	Production (Tonnes)	Productivity (Tonnes/Ha.)
44	Mullai	1	9	9.00
45	Jadhi malli	1	9	9.00
46	Crossandra	17	34	2.00
47	Chrysanthimum	2	18	9.00
48	Mary gold	30	450	15.00
49	Arali	38	295	7.75
50	Others	45	450	10.00
	Total	**344**	**2876**	**8.36**
	Grand Total	**46140**	**599999**	**13.00**

2.2.10. Livestock Sector

A. Population

The particulars on livestock population in the district are presented in Table 2.18, below.

Table 2.18 Livestock Population in Thoothukudi District (2006-07)

Species	Population in Numbers
Cross bred cattle	102477
Indigenous cattle	60866
Buffaloes	20933
Sheep	202419
Goat	342180
Pigs	9641
Horses	1011
Donkey	2257
Rabbits	829
Poultry	450229

Source: Asst. Director of Statistics, Thoothukudi

B. Livestock Population Growth Rates (1997-2004)

(Annual Compound Growth Rate in Percent)

1.	Cattle	:	1.69
2.	Buffaloes	:	-10.83
3.	Sheep	:	0.60
4.	Goat	:	4.49
5.	Poultry	:	-3.04
6.	Draught Bovines	:	-11.543
7.	Female Cross-bred	:	21.437
8.	Female Indigenous	:	-11.220
9.	She-buffaloes		-9.778

C. Population Change from 1997-2004 (in Percent)

1.	Cattle	:	12.43
2.	Buffaloes	:	-55.16
3.	Sheep	:	4.26
4.	Goat	:	35.96
5.	Poultry	:	19.45
6.	Draught Bovines	:	-57.62
7.	Female Cross-bred	:	289.47
8.	Female Indigenous	:	-56.53
9.	She-buffaloes		-51.34

D. Production: (Average Production from 2004 to 2007)

1.	Cow milk (in 000 Tonnes)	:	85.94
2.	Buffalo milk (in 000 Tonnes)	:	15.78
3.	Improved egg (in Lakh numbers)	:	99.46
4.	Desi egg (in Lakh numbers)	:	156.77
5.	Poultry meat (in Tonnes)	:	316.00
6.	Mutton (in Tonnes)	:	196.61
7.	Chevon (in Tonnes)	:	1765.95

E. Production Growth Rates (1998 to 2007)

(Annual Compound Growth Rate in percent)

1.	Cow milk	:	9.61
2.	Buffalo milk	:	-19.77
3.	Total milk	:	0.08
4.	Desi egg	:	-3.72
5.	Improved egg	:	-4.30
6.	Total egg	:	-3.28
7.	Total meat	:	-2.28

F. Productivity

Analysis of the trend in Productivity (1998-2007)

(Annual Compounded Growth rate in Percent)

Indigenous Cow	Cross-bred Cow	Buffalo	Desi Egg	Improved Egg
2.78	-1.28	-4.31	21.51	21.31

Feed and Fodder Availability (2004) million ton per Year

Fodder	Demand	Supply	Deficit	Deficit %	Excess %
Green	1.8140	0.2178	1.3465	74.2	-
Dry	0.602	0.866	-0.265	-	44.0

A. Number of Breedable Bovine Population

Cattle : 75,721

Buffalo : 10,946

Total Breedable Bovine Population : 86,667

B. **Number of AI done (AI Coverage)**

Year	DAH	TCMPF	Total
2005-2006	56477		
2006-2007	53452	6597	60049
2007-2008	49724		

2.2.11 Fisheries Sector

- Coastal length - 164 km
- Inland fish production is 3200 tonnes & Marine fish production - 35,000 tonnes
- 23 coastal fishing villages.
- 24 marine fishermen, 21 fisherwomen & 3 inland fishermen cooperative societies
- Dominated mainly by marine fishery resources
- Major marine fisheries activities take place throughout the coast
- Chank fishery resources are predominant at Thoothukudi and Tiruchendur.
- Most famous pearl fishery predominant till 1962, became endangered

- 4 coral reef islands – coral reefs - one the highly productive ecosystems
- Mechanized boats – 325; Motorized FRP boats – 1250; Motorized wooden vallams – 1880;
- Motorized wooden catamarans – 900
- 21 fish landing centres & 1 fishing harbour.
- One whole sale fish market (at Thirespuram) & 100 retail outlets
- Average fish sale - 15 tons per day
- Important fishes marketed are the Seer fish, Groupers, Snappers, Carangids, Barracudas, Skates and Rays, prawns, crabs and lobsters
- 23 ice plants (capacity of 340 tons) totally
- 10 cold storages (storage capacity of 2,230 tonnes)
- 12 processing plants (capacity of 232 tonnes)
- Two crab processing units, dry fish exporters & seashell exporters.
- 14765.28 ha of inland water bodies - water retention period limited to 4 months.
- Kadambakulam (656 ha) - only pro water tank where active fishing activities are carried out.
- System tanks - available for fish culture.
- 438 ha brackish water resources available.
- Potential for Inland fish farming - less.
- Existence of Fisheries College & Research Institute at Thoothukudi, Fisheries department training centre, Regional MPEDA office, CMFRI & Tamil Nadu Maritime Academy
- One shrimp hatchery (private) - present at Kallamoli

2.2.12 Agricultural Engineering

Approaches and Strategies are needed to Achieve the Objectives are as follows.

(i) Soil and Water Conservation

Rainwater management

Land use management

Water harvesting structures

(ii) Farm Mechanization

Popularization of labour saving implements from sowing to harvest for mechanized cultivation of crops.

- Support price for farm products
- Provision of cold storage facilities at block level
- Provision of threshing floor, storage yard, transport facility
- Formation of commodity group at village level
- marketing information system at Block level

CHAPTER - III

SWOT ANALYSIS OF THE DISTRICT

3.1 Introduction

Understanding the potentials for development, the problems, challenges and the possibilities are the pre- requisites for effective planning. SWOT is one of the management tools applied in the planning scenario. Therefore, the SWOT analysis has been attempted for the district as a whole.

3.2 SWOT Analysis of the District

The results of the SWOT analysis are listed below.

3.2.1. Strengths

- The district has a coastal line of 163.5Kms and the famous Tuticorin port helps major export of all commodities and the main source of income for the district
- The hot and dry climate of the district is highly suitable for dryland crops
- The perennial nature of the river Thamirabarani helps cultivation of paddy year round in Thamirabarani belt
- The district has a good local market and interstate market for its agricultural commodities
- District has potential and favorable agro-climatic conditions for cultivation of Rice, Maize, Cotton, Pulses, Sunflower, Ground nut, sugarcane and all other dry land crops.
- The district has both surface and groundwater potential for cultivation of irrigated crops.
- Infrastructural facilities like good road facilities, electrification of villages etc, support the growth of agriculture and allied industries in the district

3.2.2. Weaknesses

- Agriculture in the district depends on monsoon rains; hence the probability of success in agriculture constrained. The average rainfall of the District is below 700 mm. Therefore, successful crop production depends heavily on the success / failure of monsoon thus making agricultural production riskier in many parts of the district.

- Most of the area is covered with sandy soils since the district has a long coastal area of 163.5 kms.

- Limited availability of surface and groundwater in some taluks is a major weakness for the agricultural development in the district.

- Majority of the lands are fragmented.

- Increasing scarcity of labour due to tremendous increase in migration from rural to urban areas.

- Owing to the rise in the agricultural labor wages, many of the farmers tend to shift from agricultural crops to perennial crops.

- The area under rainfed crops in the district has been increasing over the years due to increasing scarcity of labour and stagnation in yield and profitability of crops.

- Lack of water harvesting structures to harness the rain water is another threat for sustaining irrigated agriculture in the district.

3.2.3. Opportunities

- There are opportunities to develop cold storage units to increase agricultural exports via Thoothukudi port.

- There are ample opportunities to promote new crop varieties and new technologies such as precision farming and System of Rice Intensification as the farmers are now educated on these aspects and willing to adapt the new varieties and technologies.

- Similarly, there is an opportunity to introduce water-saving technologies in irrigated agricultural systems in view of the huge seepage loss of water during flood irrigation of the fields. There is also scope for introducing water-saving technologies at farm level especially for high water-intensive crops such as paddy.

- Dry land agriculture has a good potential in this district by appropriate combination of crops, tree crops and livestock enterprises.

- Supporting institutions such as research station, banking institutions, agricultural inputs stores, farm machineries and state agricultural marketing institutions, extension functionaries for agriculture, horticulture, animal husbandry, fisheries, agricultural Engineering etc., are available for the development of the farming community.

3.2.4. Threats

- Sea water intrusion in many parts of the district is a major threat.

- Industrial development and reduction in the area of agricultural lands is an alarming factor.

- Increasing scarcity of water and labour in many parts of the district is a major threat to expansion of irrigated agricultural production.

- The transformation of Agricultural lands into residential complexes will be in an alarming rate.

- Attractive urban employment opportunities not only absorb the agricultural labour population but also the farmers as well which poses a major threat to agricultural development.

- Disaster management – Like sea water intrusion and Tsunami and flood during monsoon season.

3.3. Composite Index of Agricultural Development of Thoothukudi 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 … m, d = 1,2,3…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

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

where $Min\ X_{id}$ and $Max\ X_{id}$ are the minimum and maximum of $(X_{i1}, X_{i2}, ...X_{in})$ 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

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

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 Toothukudi district is taken from various government publications like Season and Crops Report and Economic Appraisal of Tamil Nadu for the 4 periods 1990-91, 1995-96, 2000-01 and 2005-06. In all, 25 indicators of agricultural development as given in Table 3.1 were used for estimating the composite index of development for the district. The 25 indicators were grouped into 6 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 Toothukudi district which was classified as 'backward' in agricultural development during 90-91 and became 'very backward' in agriculture during 1995-96, 2000-01and 2005-06. In terms of overall agricultural development, its rank among the 29 districts of Tamil Nadu, varied from 24 to 27 during the 1990-91 to 2005-06. As far as the individual components of agricultural development are concerned, its ranks in the above periods are summarized in the Table 3.2. The table shows that except fisheries, in all other components its performance in the period of study was not satisfactory. For example, in irrigation it ranked between 27th and 29th rank in all the four periods. Similarly in crop variables also, it ranked between 15th and 26th ranks.

Table 3.1. Selected Indicators of Agricultural Development for Thoothukudi 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 food grains to Gross Cropped Area	
	Per cent Share of food crops to Gross Cropped Area	
	Per cent Share of non food crops 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	

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 3.2. Rank of Thoothukudi 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	15	29	21	-	-	21	24
	1995-96	26	27	21	4	27	24	27
	2000-01	22	29	21	11	27	24	25
	2005-06	25	29	24	4	23	24	26

CHAPTER - IV

DEVELOPMENT OF AGRICULTURAL SECTOR

4.1 Introduction

The outcome of the analytical description of the resource base in chapter II and the results of the SWOT analysis in chapter III had facilitated the process of identifying the development issues. The ongoing projects/schemes are listed. The constraint analysis has been attempted and the needed interventions for further development have been outlined in this chapter. Issues related to land- use pattern are discussed first.

4.2 Development Issues

i) Land Use

The current fallow, other fallows, cultivable waste, barren land and uncultivable land and sandy soils occupies major area. Small farm holdings are in large numbers. These lead to identify the following development issues in agriculture.

- Minimizing current fallows
- Bringing the land area of cultivable waste under cultivation of either field crops or tree crops.
- Development of small farmers.
- Development of sandy soils into cultivable lands suitable for tree crops

Thus, the scope for wasteland development exists to a considerable extent.

ii) Soil Health

The fertility status of the soil in general is low in most parts of the district. Problem soils are found in few pockets. Thus, the following issues emerge in this district.

- Soil health improvement practices
- Reclaiming the problem soils
- Use of organics
- Inclusion of micronutrients
- Soil testing

Application of organic manures, raising green manure crops, application of gypsum are some of the soil amendment measures, that can be thought of in improving the soil health.

iii) Integrated Farming System

Inclusion of dairy / goat / poultry component with crop husbandry.

iv) Diversified Cropping System

Inclusion of conventional / cash crops / medicinal plants in the cropping system. Inclusion of horticultural crops like, vegetables/ fruits / flower crops in the system.

v) Organic Farming System

Recycling of waste
Vermicompost
Green leaf & Green manuring
Organic certification
Marketing
Bio control measures

vi) Alternate Land Use System

Agro forestry
Forage Development
Medicinal trees
Bio fuel

vii) Human Resource Development

Capacity Building training to officials / stake holders.

viii) Transfer of Technology

Training for farmers / stack holders.

FLD's, Kisan Mela

Exhibition, Expos

Seminars, Group discussion

Farmer's Kiosks (KT's)

ix) Food Security for Sustainable Livelihood

- Increase in yield of existing crops
- Exploitation of unutilized small millets

x) Value addition and Agro based Industry

- Bio fortified crops with nutrient rich products

xi) Weather based Farming Advisory Service

- Organising block level network for dissemination of weather bulletin.

4.3 Special Projects / Programmes Ongoing in the District

The existing schemes in the district are:

1. Integrated Cotton Development Programme

a) Seed

- Supply of Breeder Seeds
- Distribution of Certified Seeds

b) Plant Protection Measures

- Conducting farmers' training
- Providing seed treat with chemicals
- Surveillance of pests
- Distribution of Pheromone Traps

- Distribution of Bio-agents
- Supply of MOS
- Supply of POS
- FCS on Production Technology

c) Human Resource Development

- State Level Training

d) New Interventions

- Bio-fertilizer Distribution
- Micro Nutrient Distribution
- Inter Cropping with Pulses
- Farmers Field School
- Contingencies

e) 100 percent Funded by Government Of India

- Production of 'F' Seed
- Production of 'C' Seed
- Electronic Print Media etc.

2. Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (Isopom – Oilseeds)

- Purchase of Breeder Seeds
- Production of Foundation Seeds
- Production of Certified Seeds
- Distribution of Certified Seeds
- Pipes carrying water from sources to field
- Block demonstration covering with polythene mulch
- IPM Demonstration
- Distribution of Gypsum
- Bio-pesticides distribution

- Bio-fertilizer distribution
- Distribution of Hand Sprayers
- Distribution of Power Sprayers
- Weedicide Distribution
- CBD-Groundnut
- Gingelly
- Sunflower
- Combined Nutrient Spray
- Farmers Training
- Provision of Audio Visual Aids

3. Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (Isopom –Pulses)

- Purchase of Breeder Seeds
- Foundation Seed Production
- Certified Seed Production
- Certified Seed and Seed Distribution
- DAP Spray
- Bio-Fertilizer Distribution
- Pipes for carrying water from sources
- CBD
- IPM Demonstration
- N.P.V. Distribution
- Bio-pesticides Distribution
- P.P.Equipments Distribution
- Micro Nutrient Spray
- Farmers Training

4. Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (Isopom-Oilpalm)

- Assistance for planting materials-II installments
- Area Expansion

- II year cultivation maintenance
- Installation of Drip Irrigation system
- Farmers Training
- Block Demonstration
- Oilpalm Chaff Cutter

5. Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (Isopom-Maize)

- Production of Certified Seeds
- Distribution of Certified Seeds
- Block Demonstration
- IPM Demonstration
- Pipeline distribution
- Seminars
- Farmers Training
- Contingency & P.O.L
- Officers Training

6. Seed Village Scheme

- Distribution of Paddy Seeds
- Distribution of Oilseeds
- Distribution of Pulses Seeds
- Farmers Training

7. Coconut Development Schemes (Coin Board Assisted Schemes)

- Management of disease affected palm
- Laying out of organic manure pit
- Laying out of Demonstration plot

8. Innovative Schemes - Formation of 'FIG'

- Formation of new 'FIGs'

The state government sponsored schemes like paddy seed procurement, Millet seed procurement, procurement and distribution of pulses etc., are listed in the Table 4.1.

Table 4.1. State Government Sponsored Schemes - Agriculture

(Tonnes)

Sl. No	Name of Scheme	Unit	Physical Achievement
	STATE SCHEMES		
1	Procurement and Distribution of Paddy and Millet Seeds		
	Paddy seed Procurement	Tonnes	217.92
	Millet seed procurement	Tonnes	4.63
	Paddy seed distribution	Tonnes	235.92
	Millet seed distribution	Tonnes	14.52
2	Procurement and Distribution of Pulses Seeds (SCP)		
	Procurement	Tonnes	54.87
	Distribution	Tonnes	52.42
3	Procurement and Distribution of Green Manure Seeds (Distribution @ 25 per cent subsidy)		
	Procurement	Tonnes	1.0
	Distribution	Tonnes	1.000
4	Blue Green Algae		
	Distribution	Tonnes	5
5	Vermicomposting		
	Demonstrations cum Training	Nos	3
	Farmers Trained	Nos	150
	Samples Analysed	Nos.	441
9	Integrated Cotton Development		
	Seed Production	Tonnes	15.44
	Seed distribution	Tonnes	10.14
10	Increasing the Production of Oilseeds		
	Seed Procurement		

Table 4.1 Contd…. **(Tonnes)**

Sl. No	Name of Scheme	Unit	Physical Achievement
	Groundnut	Tonnes	9.735
	Gingili	Tonnes	3.63
	Sunflower	Tonnes	2.00
	Seed Distribution		
	Groundnut	Tonnes	11.37
	Gingili	Tonnes	3.63
	Sunflower	Tonnes	2.00
11	Integrated Coconut Development		
i)	Procurement of Tall nuts	L.Nos.	
	a) Tall nuts	L.Nos.	0.14
	b) T x D nuts	L.Nos.	0.19
ii)	Distribution of seedlings	L.Nos.	
	a) Tall seedlings	L.Nos.	0.083
	b) T x Seedlings	L.Nos.	0.025
12	Repair of 44 Nos. of Agricultural Extn. Centres	Nos	6
	ANNOUNCEMENT		
1	National Insurance Scheme		10002
	No.of farmers enrolled		
2	Soil Health Card distribution	L.Nos.	3840

9. Centrally Sponsored Scheme

Under Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), Oilseeds, pulses and maize are identified and funds sanctioned by the government of India. The list of ongoing schemes funded by GOI and the achievements are listed in the Table 4.2.

Table 4.2. Centrally Sponsored Schemes – Agriculture

Sl. No.	Name of Scheme	Unit	Physical Achievement
I.	**ISOPOM**		
1	**ISOPOM - Oilseeds**		
	Purchase of Breeder seed	Qtls.	1.04
	F seed production	Qtls.	74.22
	C seed production	Qtls.	53.45
	C seed distribution	Qtls.	139.77
	Polythene Mulch Demonstration	Nos.	9
	Pipe for carrying water from sources to field	Nos.	3
	Block demn. in Groundnut	Nos.	10
	Block Demon. in Gingelly	Nos	12
	IPM demonstration	No.	2
	Distribution of gypsum	Ha.	53.75
	Distribution of biofertiliser	Ha.	1106
	Distribution of bio pesticides	Ha.	84
	Farmers Training	Batch	4
	combined Nutrients spray on Groundnut	Ls.	20
	Distribution of Weedicides	Ha.	2
2	**ISOPOM - PULSES**		
	Breeder seed Purchase	Qtls	0.28
	Foundation seed production subsidy	Qtls	45.29
	Certified seed production subsidy	Qtls	27.6
	Certified seed distribution subsidy	Qtls	90.21
	Compact Block Demonstration	Nos.	115
	IPM Demonstration	Nos.	6
	Distribution of Biofertilisers and Bio Agents	Ha.	1530
	Distribution of Biopesticide	Ha.	0.2
	Distribution of NPV virus	L.Ha.	42

Table 4.2 Contd…

Sl. No.	Name of Scheme	Unit	Physical Achmt.
	Pipe for carrying water from sources to field	Nos.	3
	Farmers Training	Batch	2
	Micronutrient spraying	Batch	188
	DAP spraying		983
3	**ISOPOM – MAIZE**		
	Production of C seeds through Dept.	Qtls.	
	Distribution of C seeds	Qtls.	21
	Block demonstration by Dept.	Nos.	15.4
	IPM by Dept.	Nos.	2
	Training to farmers	Nos.	2
	Pipe line for carrying water from Water Source to the field	Nos.	1
II	**Technology Mode Mission**		
	ICDP – COTTON		
	Supply of Breeder seed	Qtls	40
	Certified seed Distribution	Qtls	88.28
	Farmers Training	Nos.	50
	Seed Treatment	Qtls	55.75
	Surveillance and Monitoring of pest and diseases	Nos.	100
	Distribution of pher Traps/light traps	Ha.	90
	Supply of Bio agents and Biopesticides	Ha.	124
	FLD ON Technical Demo.	No.	50
	New Interventions		
	Distribution of biofertilisers	Nos.	15970
	Bt Cotton/Cotton Hybrid detection kits distribution	Nos.	
	Production of 'F' seed by Dept.	Qtls	6.48
	Production of 'C' seed by Dept.	Qtls	154.5

Table 4.2 Contd…

Sl. No.	Name of Scheme	Unit	Physical Achmt.
III	**Macro Management Mode Schemes**		
1	**Cereal Development**		
	Distribution of Certified seeds /Paddy	Tonnes	182.4
	Crop Prodn. Demn. In SRI pattern	Nos.	10
	IPM demonstration	Nos	5
5	**INNOVATIVE SCHEMES**		
i)	**Farmers Interest Group**		
	Group Formation	Nos.	35
	Sustenance of Old FIG Groups	Nos.	35
	Total		60
IV	**TANWABE**		
b)	Setting of EDP skill Units for 6000 groups Rs.3500/group	No.	2
VIII	**Centrally sponsored scheme 100per cent assistance**		
1	Integrated farming in Coconut holding for productivity improvement		
a)	Maintenance of disease affected palms	Nos.	400
b)	Demonstration Plots	Ha.	
	New	Ha.	3
	Maintenance	Ha.	27
c)	Organic Manure pits	Units	
8	Seed Village Programme		
	Paddy	Ha	508
	Pulses	Ha.	90

4.4. Constraint Analysis

i) Extent of Yield Gap and Identify the Strategies to fill this Yield Gap in the next Four Years

a) Extent of Yield Gap

The extent of yield gap is very high in rice crop followed by maize. The extent of yield gaps in most of the crops is indicated in Table 4.3, below.

Table 4.3. Extent of Yield Gap

Crop	Research station yield kg/ha	Farmer yield kg/ha	Extent of yield gap
Rice	7000	4000	3000
Sorghum	2500	2000	500
Maize	2500	1500	1000
Cumbu	2000	1300	700
Cotton	800	600	200
Pulses	800	600	250
Sunflower	750	600	150

There is a huge difference between the yields of researchers and farmers for paddy, maize and Cumbu crops.

b) Technological Gap

The technological gaps for rice, millet, cotton, pulses etc., are presented in table 4.4, below.

Table 4.4. Technological Gap

S. No.	Crop	Technologies Mostly adopted	Technologies Least adopted
1.	Rice	Use of high yielding variety Application of inorganic fertilizers. Plant protection measures	Water management Maintenance of optimum plant population INM / IPM
2.	Millet	Use of high yielding varieties Summer ploughing Adoption of inorganic fertilizers	INM (Micronutrients, Bio-fertilizers) Weed management Soil and water conservation technologies.
3.	Cotton	High yielding varieties Premonsoon sowing Cotton-pulses intercropping system	IPM (Indiscriminate use of pesticides) INM (Devoid of organic manures / Biofertilizers) Maintenance of plant population.
4.	Pulses	High yielding varieties DAP foliar spray Sowing by seed drill under pre monsoon situation.	Timely weed management Maintenance of optimum plant population Use of Biofertilizers
5.	Oilseed	(i) High yielding varieties (ii) Gypsm application for Groundnut (iii) Sowing by tiller.	1. Poor plant population 2. INM (Inadequate organic / inorganic fertilizers / micronutrients). 3. Weed management.

The results of the constraint analysis are briefly indicated below.

- The yield gap exists in major field crops grown in the district and this requires effective transfer of technologies.

- Lower literacy level, lack of entrepreneurial traits limit the pace of development and hence the development education must be the core of development planning.

- Lack of organized efforts in adopting the water harvesting techniques resulting in more surface run- off rain water and hence the recharge of groundwater is at the minimal.

- Sea water intrusion in the coastal areas becomes a major problem.
- Non- availability of right type of fertilizers in right time, right place, right quantity and in right prices hampers the productivity and hence the production in the major crops cultivated.

4.5. Recommended Interventions in the District

In Thoothukudi district Paddy, Millets, Pulses, Oilseeds are the major food crops cultivated. Cotton is also cultivated on a limited area.

The Government of India proposed the Scheme, National Agriculture Development Programme during the XI Five Year Plan period aiming at increasing the food production with annual growth rate of 4 per cent in Agriculture Sector. Its main aim is to develop the agriculture as a profitable venture and improve the productivity of agriculture through the application of science - based latest technologies. The recommended interventions for the proposed DAP are given below.

(i) Rice

- One time grant to TANWABE / FIG to take certified seed production and distribution @ Rs.50000/- per group for 23 districts (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

- Distribution of Soil Health Card @ Rs.100/- per card (Soil + Water testing)
- Distribution of Micro Nutrient Mixture @ Rs.500 / Ha. or 50 per cent subsidy
- 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 50per cent subsidy
- Power Thrasher @ Rs.50000/- per No. or 50 per cent subsidy
- Village campaigns - Kharif / Rabi @ Rs.1000/- per campaign
- Tarpaulin @ Rs.5000/- Nos. or 50per cent subsidy
- Biofertiliser @ 50 per cent subsidy @ Rs.3 per No.
- Publicity / POL & Hiring of Vehicle @ Rs.50000/- per district
- Community thrashing floor @ Rs.2 lakhs/- per No. (20'x20')

(ii) Millet

- 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

(iii) Maize (Rainfed)

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

(iv) Groundnut (Rainfed)

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

(v) Gingelly

- MN SO4 distribution @ 50 per cent cost limited to Rs.100/Ha.

(vi) 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.

(vii) Extension Activities

- Exposure visit Inter state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh).
- Exposure visit Intra state @ 50 farmers/Tour, 5 days @ Rs.300/day/farmer (Rs.1.50 lakhs each).
- Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, Radio & other mass media @ Rs.2.0 Lakh / district
- Farmers Training through FTC @ 40 training (2 Days) / year @ 50 farmers / training. Rs.20000/ training.

(viii) Special Schemes

- Training to TANWABE women to test the soil by FTC, 25 women per batch @ Rs.500 per head + contingencies
- Weedicide distribution for all crops @ Rs.1000 per ha.
- Distribution of Farm tool Kits to Agricultural Labourers to encourage them @ Rs.1500 per kit with 90 per cent subsidy.
- Distribution of combined harvester @ Rs.500000 per machine with 90 per cent subsidy.

(ix) Establishment of Seed Testing Laboratory

Establishing a seed testing lab at a cost estimate of Rs.6 lakhs.

x) The other interventions

Sl.No.	Interventions		Components
1.	Integrated farming system	:	Crop husbandry + Livestock = demonstration unit at block level
2.	Crop diversification	:	Introduction of maize / sunflower / vegetables / flowers / medicinal / Fruit crops in the conventional farming system Medicinal – Senna, vinca, coleus, acorus, Aloevera Vegetables – Brinjal, tomato, cluster bean, onion, coriander, curryleaf Fruit crops – Banana, citrus, amla, sapota, guava Flower – Crysanthamum, cucumber Inclusion of sugarcane in rice based system
3.	Soil health management		Adoption of Integrated Nutrient Management for all crops Use of leaf colour chart for Nitrogen application Foliar nutrition Cropwise micronutrient application Gypsum application in sodic soils Drainage management in saline soils Application of composted manures and Bio-fertilizers. Setting up of soil testing lab at block level and soil health card for farmers.
4.	Organic farming system	:	Block level demonstration units on organic farming. Supply of biocontrol agents / organic pesticides / biofertilizers

Sl.No.	Interventions		Components
5.	Alternate land use system	:	Introduction of multipurpose trees in community / private lands. Introduction and demonstration of high yielding fodder crops. Introduction of biofuel / medicinal crops in marginal / degraded lands.
6.	Human Resource development	:	Capacity building to officials / stake holders
7.	Transfer of technology	:	Training to the farmers / seed producers / on improved production technologies Technology demonstration in farmers field Organising field days / Farmers mela / Exhibition / Seminars Installation of farmers kiosks at block level.
8.	Food security for livelihood	:	Production and distribution of high yielding / Hybrid seed material for all crops. Demonstration of improved production technology for important crops. Population and utilization of small millets with value added products.
9.	Weather based farm advisory services	:	Installation of mini observatory at block level

CHAPTER - V

DEVELOPMENT OF ALLIED SECTORS

5.1 Introduction

Allied agricultural sectors like horticulture, agricultural engineering, PWD, animal husbandry, fisheries and irrigation systems (PWD) as they supplement the income to farmers and also are equally important for the development of the district. The development issues of the allied sectors are identified, the ongoing schemes/projects are described, the constraint analysis results are discussed and the needed interventions are outlined, sector-wise in this chapter.

5.2 Horticulture Sector

There is a very good scope for the development of horticulture in the district. Banana is the most important crop accounting for the major area under horticulture in the district.

5.2.1 Development Issues

Following are the major issues of development identified in the district.

- Yield levels and area under traditional vegetables can be increased by effective transfer of technologies and provisions of high yielding seeds as nearby markets are available.
- Banana cultivation faces the cyclone havoc in most years and hence a well developed support system must be advocated to get a good crop.
- There exists potential for raising fruit trees like Sapota, Pomegranate, Amla, etc in the reclaimed wastelands.
- There exists demand for disease free seedlings etc.
- There exists potential for hill products development in the Kalrayan hills.
- Precision Farming: Popularization of pressurized irrigation systems and liquid fertilizers for high value crops.

Area proposed for precision farming under National Agriculture Development programme - 100 Ha. The crop-wise area is listed in the Table 5.1, below.

Table 5.1. Area Proposed for Precision Farming

Sl.No	Name of the Crop	Area in Ha
1	Tomato	25
2	Brinjal	25
3	Bhendi	25
4	Chilles	25
Total		**100**

5.2.2. Ongoing Schemes

5.2.3 Constraints Analysis

The major constraints identified in developing horticulture in the district are

- Lack of exposure of farmers particularly of dry land tract to the feasibility of cultivating horticultural crops for more profitability.
- Heavy investment requirement and long waiting time for economic bearing of fruit trees.
- Lack of proper irrigation infrastructure support, including precision farming devices.
- Lack of easy access for technology transfer and timely input support, including disease free seed materials.

5.2.4. Recommended interventions for Horticultural Development

Based on the resource base available in the district and the needs of the people the following interventions for horticultural development in this district are recommended.

- Plastics Crates for Vegetable handling and transport @ Rs. 250 / crate with 50 per cent subsidy.
- Support system for crops.
- Banana @ Rs. 1.5 lakhs / ha @ 75 per cent subsidy
- Banana Corm injector @ Rs. 300 / No. with 50per cent subsidy
- District Level Farmers Workshop @ Rs. 400 / farmer / day
- Inter State Exposure visit (5 days) @ Rs. 5,000 /farmer
- Banana / Amla in noon meal scheme (TANHOPE) @ Rs. 50,000 / group / district
- Establishment of Banana fibre industry @ 50 per cent subsidy
- Support senna cultivation @ Rs.15,000/ha with 50 per cent subsidy
- Precision farming Installation of fertigation, drip irrigation, mobile sprinkler system etc.

5.3. Agricultural Engineering Sector

5.3.1 Introduction

Agricultural growth in the recent years goes against the general economic trend. Among the many reasons attributed for this deceleration in agricultural growth, one reason could be the non - availability of labour and under-utilization of machinery/implements in various areas of agricultural sector. Government policies have made the common man to earn more i.e. per capita income has increased particularly in the urban areas. Govt. policies and novel schemes also have opened new avenues of employment for agricultural labourers in the rural areas. As a result, there is shortage and non-availability of labour during needy days of farm operations i.e., during transplanting, weeding, harvesting etc., Though efforts on farm mechanization dates back to three decades, farm mechanization has gained wider acceptance among farming community only in the recent years, particularly in farm operations like ploughing, harvesting, thrashing, transportation etc.

5.3.2. Development Issues

At present there is a Centrally Sponsored Scheme which targets mainly individual farmers, particularly small and marginal farmers. Also many small and marginal farmers are not affordable to pay back the non-subsidy portion even with bank loans. Entire demand could not be met by government departments and also by other hiring agencies/farmers. Except government department, private agencies hire out machinery at a higher cost which is not affordable by small/marginal farmers.

It thus, becomes inevitable that agricultural mechanization is one important focus area for increasing the production and productivity. Also, agricultural mechanization has to be focused from a different angle. Popularization of agricultural machineries may be done not only through individual farmers/ demonstrations but also through a community consisting of only farmers. Thus, it is right time to shift our focus towards farmers associations / water users' associations as being carried out for many Government Programmes. Machinery owned by Farmers' Associations may be a viable alternative in the present scenario. This will help mainly the small and marginal farmers at the appropriate time of cultural operations. Employment of rural youth for operating community owned machinery could also be possible. As NADP/RKVY provides scope for specific agricultural mechanization projects, the same has been proposed to help small and marginal farmers. The other details of the Project are furnished below.

5.3.3. The Interventions needed to implement the Strategies

Various strategies like rain water management, farm mechanization etc., needed to implement the recommended interventions are presented in Table 5.2.

Table 5.2. Interventions needed to implement the Strategies

1.	**Soil and Water Management**		
	a) Rain water management	:	Farm ponds Check dams
	b) Land management	:	Summer ploughing Broad bed furrow / Ridges and furrows Compartmental bunding Graded bunds Vegetative barriers
2.	Farm Mechanization	:	Distribution of labour saving implements Weeder for all crops Combine harvestor cum thresher for custom hiring at block level

5.3.4. Special Projects / Programmes ongoing in the District

A) Land Development Scheme

Custom hiring of Tractor, Bulldozer and Combine Harvester to needy farmers at the rates fixed by Government.

B) Tube Well Scheme

Custom hiring of Percussion Drill, Rotary Drill, Hand Boring Set for sinking of bore/tubewells. Custom hiring of Rock Blasting units for deepening of wells.

C) Replacement of Old pumpsets

Subsidy is given to replace old pumpsets.

D) Agricultural Mechanization Programme

Subsidy is given to purchase Tractor, Power tiller, Rotavator and other gender friendly equipments.

E) Soil Conservation Scheme (RWH and Run off Management Structures)

Construction of Water harvesting structures like Check dams, Percolation Ponds and Farm ponds on watershed basis.

F) NABARD assisted RWH Works

Construction of Water harvesting structures like Check dams, Percolation Ponds and Farm ponds on watershed basis with assistance from NABARD-RIDF XI.

G) Reclamation of Saline Soils

Subsidy is given to raise horticultural plantations in saline affected lands.

h) National Agricultural Development Programme

Subsidy is given to purchase Power tiller, Rotavator and other Transplanter, posthole digger and gender friendly equipments.

i) Demonstration of Agricultural Machinery

Demonstration of Improved Agricultural implements for creating awareness among farmers.

j) Training to Farmers

Training is imparted to farmers on operation and maintenance of different type of machinery, Micro Irrigation Systems etc.

k) Micro Irrigation Scheme

Subsidy is given to needy farmers for installing MIS with assistance from TANHODA.

5.3.5 Constraints

The major constraints identified with reference to the development of agricultural engineering in the district are the following.

i. Lack of knowledge on the scientific methods of irrigation as well as mechanization of the farms among the farmers of the district.

ii. High investment requirement on the part of the farmers

iii. Paucity of the funds to take up mechanization on large scale.

iv. Large number of marginal and small farms.

5.3.6. Recommended Interventions for Agricultural Engineering Development

The following interventions are planned for agricultural engineering development in Thoothukudi district.

(i) Introduction of Newly Developed Agrl. Machinery / Implements

- Power weeder with attachment (all models)
- Power Thrasher
- Paddy Transplanter
- Post hole digger
- Shredder (Heavy)
- Shredder (Medium)
- Maize Husker Sheller
- Coconut De- husker
- Ground nut decorticator
- Power Weeder - Oleo mac
- Multi crop Thrasher (Tractor PTO)
- Knapsac Power operated Hydraulic Sprayer
- Power Operated Chaff Cutter
- Korean 4 - row walk behind transplanter

- Combine harvester - Tractor operated
- Combine harvester - Self propelled
- Maize combine harvester
- Gender friendly equipments

(ii) Innovative Water Harvesting Structures

- Lined farm pond with mobile sprinkler
- Rejuvenation of percolation ponds with 2 recharge shafts

(iii) Control of Sea Water Intrusion

- Recharge shafts to prevent sea water intrusion in coastal areas

(iv) IEC Components

- Publicity and training
- Exposure visit - interstate
- Exposure visit - intrastate
- District level workshop

And under Stream II

- Popularization of Agricultural Mechanization through Conventional Machinery /Equipments
- Water Harvesting Structures
- Soil Conservation works
- Water Management works

5.4. Animal Husbandry Sector

5.4.1. Introduction

Veterinary Services are extended to livestock either by protecting them from various livestock diseases (i.e.) Prevention & Control and (or) by providing treatment and other health services like Artificial Insemination, deworming, castration, etc. The health services to the livestock are provided through the wide network of Veterinary Institutions such as Polyclinics, Clinician Centres, Veterinary Hospitals, Veterinary Dispensaries, Sub-Centres and Mobile Veterinary Units.

The animal disease intelligence units undertake prevention and control of various contagious and infectious diseases. Most of livestock vaccines and poultry vaccines are manufactured in the Institute of Veterinary Preventive Medicine, Ranipet and are supplied to all the Veterinary Institutions as per requirements.

Apart from various regular vaccination programmes, centrally sponsored programmes such as NPRE, FMDCP, ASCAD and Canine Rabies Control Programme are also being implemented by the department. Veterinary services are also effectively controlling the various inter-state movements of cattle and other livestock. The details of the veterinary institutions available in the district are as follows.

5.4.2. On going Government Development Schemes for Livestock & Poultry (Both state and Central)

A. Central Government Schemes

Sl.No	Name of the Scheme	Implementing Agency
1.	Assistant to State in controlling Animal Diseases (ASCAD)	Department of Animal Husbandry, Thoothukudi
2.	Integrated Dairy Development Programme(IDDP)	TCMPF, Tirunelveli
3.	Tsunami Emergency Assistance Project (TEAP)	Asian development Bank

B. State Government Schemes

Sl.No	Name of the Scheme	Implementing Agency
1.	Kaalnadai Pathukappu Thittam (KPT)	Department of Animal Husbandry, Thoothukudi

5.4.3. Recommended Project Interventions

- Fodder cultivation
- Door step insemination to facilitate timely insemination
- Vaccination coverage
- Subsidy for purchase of livestock, poultry
- Training on modern method of scientific farming
- Animal disease diagnostic facilities
- Disaster management system
- Manufacturing facilities for value added milk products
- Strengthening of infrastructure facilities in veterinary institutions
- Identification system for breedable animals

5.5. Fisheries Development

5.5.1. Introduction

Thoothukudi district is one of the most potential districts for marine, inland and brackish water fishing. The recommended interventions for the development of fishing industry are outlined below.

- Diversify fishing methods to long lining, gill netting, Squid jigging
- Breeding center for sea ranching.
- Construction of mini cold storages, net mending halls and auction halls at village level.
- Capacity building of fisher folk.
- Restoration and long term monitoring of critical habitats.

- Deployment of artificial reefs.
- Restoration of mangroves.
- Short term culture practices using mirror carp scale carp and Tilapia (GIFT).
- Research and Development for value addition using low cost technology

5.6. Agricultural Marketing and Agribusiness Development

5.6.1. Introduction

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 available in abundance in Tamil Nadu, still the productivity has not yet been enhanced to its full 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 to 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, terminal markets etc 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 the value addition from seven per

cent to 30 per cent. Under this policy, all types of assistance which are 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, 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.

5.6.2. Recommended Project Interventions

The following interventions are planned for the development of the agricultural marketing in the state.

1. Establishment/ organization of commodity groups for marketing in the state with financial assistance from NADP
2. Facilitation of Contract Farming between farmers and bulk buyers in the state with financial assistance from NADP
3. Dissemination of Market intelligence
4. Arrangement of Buyers - Sellers Meet
5. Organizing the exposure visits to important markets with in the state and out side 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 with financial assistance from NADP
8. Capacity building of farmer’s skill
9. Price surveillance
10. Regulated Market/Uzhavar Shandies Publicity

11. Market Infrastructure development
12. Formation of commodity group at village / block/district/state level
13. Provision of cold storage structures at block level
14. Construction of threshing floor at village level and storage unit at block level

Marketing

- Support price for farm products
- Provision of cold storage facilities at block level
- Provision of threshing floor, storage yard, transport facility
- Formation of commodity group at village level
- marketing information system at Block level

5.7. Irrigation System Development (PWD)

Works proposed under National Agricultural Development programme (NADP) / Rashtriya Krishi Vikas Yojana (RKVY) for the years 2007 -2012 (Five Year Programme) in Thoothukudi district are Rehabilitation of system tanks and Rehabilitation of non-system tanks.

5.8. Recommended Interventions for the Development of Agricultural Research Station, Kovilpatti

- Establishment of Krishi kiosks for weather based farming in Rainfed agro eco system
- Establishment of land resource inventory centre in rain fed agro eco system
- Plant clinic centers on wheels
- Capacity building for stake holders in Rainfed farming
- Establishment of surveillance centre for pests of crops under Rainfed agro eco system
- Establishment of Rainfed farming training centre

5.9. Agricultural Credit

5.9.1. 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 find "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 mobilsation 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 Progrmme 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 perculation 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 Thoothukudi district is furnished in Table 5.3.

Table 5.3.Activity Wise Credit Disbursement and Projection under Agricultural and Allied Sectors in Thoothukudi District

(Rs in lakhs)

Sectors	2008-09	2009-10	2010-11	2011-12
Crop loan	32703.74	34338.93	36055.87	37858.67
Term loan		0	0	0
Micro Irrigation	281.88	295.97	310.77	326.31
Land Development	429.02	450.47	472.99	496.64
Farm Mechanization	1589.65	1669.13	1752.59	1840.22
Plantation & Horticulture	1797.93	1887.83	1982.22	2081.33
Forestry & Waste land Development	27.6	28.98	30.43	31.95
Dairy Development	1787.54	1876.92	1970.76	2069.3
Poultry	62.34	65.46	68.73	72.17
Sheep/Goat/Piggery	1095.01	1149.76	1207.25	1267.61
Fisheries	2873.72	3017.41	3168.28	3326.69
Storage Godown & Market yards	2296.5	2411.33	2531.89	2658.49
Bio-gas	0	0	0	0
Sericulture	0	0	0	0
Others	27936.9	29333.75	30800.43	32340.45
Sub total - Term loan	40178.09	42187.01	44296.34	46511.16
Total Agriculture Credit (1+2)	72881.83	76525.94	80352.21	84369.83
Non Farm sector	43648.89	45831.33	48122.9	50529.05
Other Priority Sector	49504.37	51979.59	54578.57	57307.5
Grand Total	**166035.09**	**174336.86**	**183053.68**	**192206.38**

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. 174336.86 Rs. 183053.68 and Rs. 192206.38 lakhs respectively. The total flow of agriculture credit in terms of crop loan and term loan in 2011-12 would be Rs. 84369.83 lakhs. The flow of credit for non farm sector and other priorty sectors in 2011-12 would be Rs. 50529.05 and 57307.50 lakhs respectively.

CHAPTER - VI

DISTRICT PLAN

6.1. Introduction

The important crops grown in this district are paddy, banana, millets, pulses, gingelly, groundnut, maize, sugarcane etc. The main source of irrigation is well, bore well and Thamirabarani river. Most of the area is rainfed and covered by sandy soils. The migration of people from urban to rural area has increased considerably between the years 1991 to 2001. The soil types found in the district are red, black and costal sand. The district enjoys a climate of semi-arid tropic. The district receives the maximum rainfall in the north east monsoon season. The maximum farmers own less than one hectare of land. Marine fishing is practiced in the coastal villages of the district. With this background, interventions in the agriculture, horticulture, agricultural engineering, marketing, animal husbandry and fisheries and the associated budget provisions are projectized in this chapter.

6.2. Agriculture Sector

6.2.1. Setting

In Thoothukudi District Paddy, Millets, Pulses, Oilseeds are the major food crops. The interventions are proposed in the form of crop-wise projects for the DAP, as detailed below.

6.2.2. Paddy

In Thoothukudi District, the normal area under paddy is about 14000 hectares. The productivity in paddy is about 6665 kgs / hectare. Yield gap analysis indicated the potentials for increasing the yield of paddy and hence the following project is planned.

Project - I

(i) Project Title : Increasing the Productivity in Paddy

(ii) Project Aim

- To Increase the productivity by the way of distributing 100 percent certified seeds to the farmers
- To reduce the labour scarcity by introducing the newly invented machineries.

(iii) Project Rationale

Thoothukudi is an industrial developing district. So the labour scarcity is high. There is a situation that non availability of suitable varieties in proper season to all farmers. To solve the above problems it is important to increase the production and productivity, maximizing the area by supply of inputs in proper season, utilizing the machineries to avoid the labour scarcity and motivating the farming community to adopt the technologies by providing inputs.

(iv) Project Strategy

- Spreading soil health techniques
- Supplying quality certified seeds to all paddy growing farmers.
- Popularizing SRI technology

(v) Project Components

- Seeds production by TANWABE / FIG
- Distribution of MN mixture / green manure / vermicompost / bio fertilizers
- Popularizing the SRI techniques
- Introducing newly innovative machineries
- Giving training to motivate farmers
- Giving wide publicity

(vi) Project Cost

The total cost of the project works out to Rs.173.20 lakhs for four years as detailed below.

Sl. No	Financial Year	Estimate
1	2008-09	30.40 lakhs
2	2009-10	47.60 lakhs
3	2010-11	47.60 lakhs
4	2011-12	47.60 lakhs
	Total	**173.20 lakhs**

6.2.3. Millets

6.2.3.1. Setting

In Thoothukudi District, the normal area under millet is about 45000 hectares. The productivity in millet is about 1495 kgs / hectare. Yield gap analysis indicated the potentials for increasing the yield in millet crop and hence the following project is planned.

Project - II

(i) Project Title : Increasing the Productivity of Millets

(ii) Project Aim

- To increase the productivity by the way of distributing high yielding variety seeds and hybrids to the farmers
- To popularize dry land technologies through demonstrations.

(iii) Project Rationale

The non-availability of suitable varieties & hybrids in department for dry land millet crop is the major problem in this district. To solve the above problem by increasing the production and productivity, maximizing the area by supply of inputs in proper season, motivating the farming community to adopt the technologies by demonstration.

(iv) Project Strategy

- Spreading soil health techniques
- Supplying quality high yielding varieties and hybrids to farmers
- Popularizing dry land technologies

(v) Project Components

- Hybrids and high yielding varieties distribution
- Distribution of Azospirillum and phosphobacteria
- Popularizing dry land techniques

(vi) Project Cost

The total cost of the project works out to Rs.22.40 lakhs for four years as detailed below.

Sl.No	Financial year	Estimate
1	2008-09	5.6
2	2009-10	5.6
3	2010-11	5.6
4	2011-12	5.6
	Total	**22.40**

6.2.4 Pulses

Project - III

(i) Project Title : Encouraging Farmers to Spray DAP 2 Percent on Pulse Crop.

(ii) Project Rationale

In general, pulse is the least-cared crop by the farmers. By applying the latest technologies, the yield of pulses can be increased considerably.

iii) Project Component

Encouraging farmers to spray DAP 20 per cent on pulse crop by extending a subsidy of Rs.200 per hectare.

iv) Budget

It has been targeted to cover 5500 hectares of pulse crop with DAP 2 per cent spray, with a budget outlay of Rs.11.00 lakhs, during the first year only, of the XI plan period under NADP in Thoothukudi district.

6.2.5. Oilseeds

6.2.5.1. Setting

In Thoothukudi District, the normal area under oilseeds is about 6000 hectares. The productivity in oilseeds is about 552 kgs / hectare. Yield gap analysis indicated the potentials for increasing the yield of oilseeds and hence the following project is planned.

Project III

(i) Project Title: Improving the Productivity in Oilseed Crops

(ii) Project Aim

The project aims to increase the productivity and production of oil seeds in Thoothukudi district

(iii) Project Rationale

The main problem in oil seeds development is non-availability of quality seeds to all areas of ground nut. This is due to non availability of sunflower hybrids in Agriculture Department and high cost of hybrids in private. Based on that the project rationale is increasing the production and productivity, maximizing the area by supply of inputs in proper season and motivate the farming community to adopt the technologies by demonstration

(iv) Project Strategy

- Spreading soil health techniques
- Supplying quality high yielding varieties and hybrids to farmers
- Popularizing dry land technologies

(v) Project Components

- Hybrids & high yielding varieties distribution
- Distribution of Azospirillum & phosphobacteria
- Popularizing dry land techniques

(vi) Project Cost

The total cost of the project works out to Rs.17.80 lakhs for four years as detailed below.

Sl.No	Financial year	Estimate
1	2008-09	4.45 lakhs
2	2009-10	4.45 lakhs
3	2010-11	4.45 lakhs
4	2011-12	4.45 lakhs
	Total	**17.80 lakhs**

The component wise detailed budget with the work plan for the period 2008-12 for the development of agriculture is presented in the Table 6.1 below.

6.2.6. Agricultural Extension

Project - IV

(i) Project Title: Educating the Farmers on the Latest Technologies for Adoption

(ii) Project Aim

To educate the farmers on latest agricultural technologies.

(iii) Project Rationale

Agricultural technologies are constantly changing and hence the farmers should be exposed to those changes to equip upto-date knowledge.

(iv) Project Component

a. Inter-state exposure visit

b. Intra-state exposure visit

c. Strengthening extension/Publicity/Propaganda aids

d. Farmers training through FTC

(v) Project Cost

The details of the project cost are as under, in Table 6.1.

Table 6.1. Activity-wise and Year-wise Budget Outlays

(Rs. in lakhs)

Sl. No	Activity	2008-09	2009-2010	2010-2011	2011-2012	Total
1	Inter-State exposure visit	1.80	1.80	1.80	1.80	7.20
2	Intra-State exposure visit	1.50	1.50	1.50	1.50	6.00
3	Strengthening extension/Publicity/Prop-aganda aids	2.00	2.00	2.00	2.00	8.00
4	Farmers training through FTC	2.00	2.00	2.00	2.00	8.00
	Total	**7.30**	**7.30**	**7.30**	**7.30**	**29.20**

The cost of the extension project works out to 29.20 lakhs.

6.2.7. Special and Innovative Project

Project - V

(i) Project Title : Special Project for Innovative Farm Technologies

(ii) Project Rationale

Gender empowerment and developmenting entrepreuenerial skill are the need of the hour. Popularisation of use of weedicides, distribution of combined harvester to entrepreueners and distribution of farm tool-kits to agricultural labourers are the requisites.

(iii) Project Aim

To popularise some of the innovative technologies among farmers

(iv) Project Components

1. Training of TANWABE Women on soil testing
2. Weedicide distribution
3. Farm Kits to agricultural labourers
4. Combined harvesters to farmers

(v) Project Cost

The total costs of various components under special project works out to Rs. 86.40 lakhs. The component-wise and Year-wise budget outlays are portrayed in table 6.2.

6.2.8. Total Budget for Agriculture Sector

The budget outlays for all the six proposed in Agricultural sector are displayed year-wise in Table 6.2, below.

Table 6.2 Action Plan - Agriculture

(Rs. in lakhs)

S. No	Component	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
I	**NADP – Rice**											
1	One time grant to TANWABE / FIG to take certified seed production and distribution @ Rs.50000/- per group for 23 disricts (30 MT / Annum)	Nos.	1.00	0.50	2.00	1.00	2.00	1.00	2.00	1.00	7.00	3.50
2	Incentive for seed production to Self Help Groups @ Rs.3 / kg. - TABWAVE Groups	MT	25	0.75	10	0.30	10	0.30	10	0.30	55.00	1.65
3	Seed distribution subsidy for the seeds produced by Self Help Groups @ Rs.5 / kg.	MT	0	0.00	10	0.50	10	0.50	10	0.50	30.00	1.50
4	Supply of Quality Certified seeds at nominal cost to enhance the SRR @ Rs.5/- per kg. (Public and Private seeds)	MT	30	1.50	30	1.50	30	1.50	30	1.50	120.00	6.00
5	Seed Minikit of new HYV @ Rs.100/- minikit	Nos.	0	0.00	300	0.30	300	0.30	300	0.30	900.00	0.90
6	Distribution of Soil Health Card @ Rs.100/- per card (Soil + Water testing)	Nos.	500	0.05	2000	0.20	2000	0.20	2000	0.20	6500.00	0.65
7	Distribution of Micro Nutrient Mixture @ Rs.500 / Ha.or 50 percent subsidy	L.Ha.	0.001	0.05	0.005	0.25	0.005	0.25	0.005	0.25	0.02	0.80

Table 6.2 contd…

(Rs. in lakhs)

S. No	Component	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
8	Massive Rat control campaign in village @ Rs.5000/village	Nos	10	0.50	10	0.50	10	0.50	10	0.50	40.00	2.00
9	Publicity & Training @ Rs.50000/- per district	Nos	1	0.50	1	0.50	1	0.50	1	0.50	4.00	2.00
10	Promotion of SRI Distribution of Marker, Cono weeder and other items @ Rs.3000 / Ha.	Ha.	100	3.00	100	3.00	100	3.00	100	3.00	400.00	12.00
11	Transplanter to TANWABE / FIG / farmers @ Rs.75000 each or 50 percent subsidy	Nos	5	3.75	5	3.75	5	3.75	5	3.75	20.00	15.00
12	Power Tiller @ Rs.65000/- each or 50 percent subsidy	Nos	10	6.50	10	6.50	10	6.50	10	6.50	40.00	26.00
13	Power Thrasher @ Rs.50000/- per No.or 50 percent subsidy	Nos	5	2.50	5	2.50	5	2.50	5	2.50	20.00	10.00
14	Village campaigns - Kharif / Rabi @ Rs.1000/- per campaign	Nos	100	1.00	100	1.00	100	1.00	100	1.00	400.00	4.00
15	Tarpaulin @ Rs.5000/- Nos. or 50 percent subsidy	Nos	100	5.00	100	5.00	100	5.00	100	5.00	400.00	20.00
16	Biofertilisers @ 50 percent subsidy @ Rs.3 per No.	L.Nos	0.1	0.30	0.1	0.30	0.1	0.30	0.1	0.30	0.40	1.20

Table 6.2 contd…

(Rs. in lakhs)

S. No	Component	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
17	Publicity / POL & Hiring of Vehicle @ Rs.50000/- per district	Nos	1	0.50	1	0.50	1	0.50	1	0.50	4.00	2.00
18	Community Thrashing floor @ Rs.2 lakhs/- per No. (20'x20')	Nos	2	4.00	10	20.00	10	20.00	10	20.00	32.00	64.00
	Total Rice			**30.40**		**47.60**		**47.60**		**47.60**		**173.20**
II	**Millet**											
1	HYV Seed distribution @50 percent Subsidy limited to Rs.8/Kg	MT	15	1.20	15	1.20	15	1.20	15	1.20	60.00	4.80
2	Technology Demonstration including minor millets Subsidy @ Rs.2000/Ha	Ha.	25	0.50	25	0.50	25	0.50	25	0.50	100.00	2.00
3	Distribution of Bio fertilizer @ 50 percent subsidy limited to Rs.3/pocket	L.No	0.05	0.15	0.05	0.15	0.05	0.15	0.05	0.15	**0.20**	**0.60**
4	**Maize (Rainfed)**											
	Hybrid seed distribution @50 percent subsidy limited to Rs.75/Kg	MT	5	3.75	5	3.75	5	3.75	5	3.75	**20.00**	**15.00**
	Total Millets			**5.60**		**5.60**		**5.60**		**5.60**	**20.00**	**22.40**
III	**Pulses 2 percent DAP Spray @Rs. 200/ha**	**Ha**	**5500**	**11.00**							**5500**	**11.00**
IV	**Oilseeds**											
a)	**Groundnut (Rainfed)**											
1	Seed Distribution subsidy @ 50 percent limited to Rs.12/Kg.	MT	5	0.60	5	0.60	5	0.60	5	0.60	**20.00**	**2.40**

Table 6.2 contd…

(Rs. in lakhs)

S. No	Component	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
2	MN Mixture distribution @ 50 percent cost limited to Rs.500/Ha.	Ha.	50	0.25	50	0.25	50	0.25	50	0.25	**200.00**	**1.00**
	Total Groundnut (Rainfed)			**0.85**		**0.85**		**0.85**		**0.85**		**3.40**
b)	**Gingelly**											
1	MN SO4 distribution @ 50 percent cost limited to Rs.100/Ha.	Ha.	100	0.10	100	0.10	100	0.10	100	0.10	**400.00**	**0.40**
	Total Gingelly		**100.00**	**0.10**	**100.00**	**0.10**	**100.00**	**0.10**	**100.00**	**0.10**	**400.00**	**0.40**
c)	**Sunflower**											
1	Hybrid seed distribution @ 50 percent subsidy limited to Rs.150/Kg.	Tonnes	2	3.00	2	3.00	2	3.00	2	3.00	**8.00**	**12.00**
2	Crop production technology demonstration @ 50 percent subsidy limited to Rs.5000/ha.	Nos.	10	0.50	10	0.50	10	0.50	10	0.50	**40.00**	**2.00**
	Total		**12.00**	**3.50**	**12.00**	**3.50**	**12.00**	**3.50**	**12.00**	**3.50**	**48.00**	**14.00**
	Total Oilseeds			**4.45**		**4.45**		**4.45**		**4.45**		**17.80**

Table 6.2 contd…

(Rs. in lakhs)

S. No	Component	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
V	**Extension Project**											
1	Exposure visit Inter state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh)	Nos.	1	1.80	1	1.80	1	1.80	1	1.80	**4.00**	**7.20**
2	Exposure visit Intra state @ 50 farmers/Tour, 5 days @ Rs.300/day/farmer (Rs.1.50 lakhs each)	Nos.	1	1.50	1	1.50	1	1.50	1	1.50	**4.00**	**6.00**
3	Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, Radio & other mass media @Rs.2.0 Lakh / district		1	2.00	1	2.00	1	2.00	1	2.00	**4.00**	**8.00**
4	Farmers Training through FTC @ 40 training (2 Days) / year @ 50 farmers / training . Rs.20000/ training		10	2.00	10	2.00	10	2.00	10	2.00	**40.00**	**8.00**
	Total			**7.30**	**13.00**	**7.30**	**13.00**	**7.30**	**13.00**	**7.30**	**52.00**	**29.20**

Table 6.2 contd…

(Rs. in lakhs)

S. No	Component	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
VI	**Special Project**											
1	Training to TANWABE women to test the soil by FTC, 25 women per batch @ Rs. 500 per head + contingencies		4	0.60	4	0.60	4	0.60	4	0.60	**16.00**	**2.40**
2	Weedicide distribution for all crops @ Rs.1000 per ha	L Ha	0.1	10.00	0.1	10.00	0.1	10.00	0.1	10.00	**0.40**	**40.00**
3	Distribution of Farm tool Kits to Agricultural Labourers to encourage them @ Rs. 1500 per kit with 90 percent subsidy	Nos	500	7.50	500	7.50	300	4.50	300	4.50	**1600.00**	**24.00**
4	Distribution of combined harvester @ Rs. 500000 per machine with 90 percent subsidy	Nos	1	5.00	1	5.00	1	5.00	1	5.00	**4.00**	**20.00**
	Total Special Project			**23.10**		**23.10**		**20.10**		**20.10**		**86.40**
	Grand Total			**81.85**		**88.05**		**85.05**		**85.05**		**340.00**

The total budget outlay of Rs.340.00 lakhs in required for the proposed projects in agriculture sector during eleventh plan period under NADP.

6.3. Seed Sector

6.3.1. Introduction

Seed the living embryo is considered as the basic and cheapest input in modern agriculture in enhancing and stabilizing the productivity. The cost of seed usually is usually negligible when compared to total production cost. Yet seed can affect the yield potential of a crop more than any other input factor. The quality seed is one with high physical purity, germinability, vigour, genetic purity and free of pest and diseases. Seed tests can provide information on pure seed, other crop seed and weed seed (by percentage and number per unit weight of different species), inert matter, normal and abnormal seedlings, fresh or hard seed, dead seed and moisture content.

(i) Project - I

(ii) Project Title: Establishment of Seed Testing Laboratory at Thoothukudi District

(iii) Objectives of Seed Testing

The main objective of Seed Testing in these laboratories will be to obtain accurate and reproducible results regarding the purity composition, moisture content, the occurrence of weed seeds and the percentage that of germination to produce normal seedlings under favorable conditions. In some instances such additional information such as the presence of seed borne diseases and pests and varietal purity is desired. Seed testing will be a guide to the person who will plant the seed and for seed quality control purposes. In all these cases, the ultimate purpose of making the test is to determine the value of the seeds for planting.

(iv) Role of Seed Testing Laboratories in Seed Quality Control

To safe guard the interests of farming community and to increase agricultural production in the district a strong seed production program and quality control mechanism plays a vital role. Seed testing plays a pivotal role in modern agriculture. It is being carried out to analyze the factors like germination, physical purity, moisture, seed health and admixture of other distinguishable varieties. Seed testing is carried out in the notified seed testing laboratories. The seed testing results are very important for the

successful implementation of seed certification and Seed Law Enforcement programs, certified seed samples, Official seed samples from quality control wing and the service samples sent by the farmers, seed dealers and seed producers are tested in the laboratories.

(v) Need for Establishing Seed Testing Laboratory

At present the certified seed samples from Seed Certification wing, Official seed samples from Seed Quality Control wing and Service samples from Seed Producers, Seed dealers and farmers are being sent to Tirunelveli district for analysis. This process results in the delay of results due to transportation of the seed from the place of sampling to the laboratory. To overcome this problem and render timely supply of quality seeds to the farming community, seed producers and seed dealers it is necessary to establish Seed Testing Laboratory at Thoothukudi district.

In order to meet the increasing demand of quality seeds and to ensure that the farmers, dealers, producers receive the results of Seed Testing Laboratories at correct time without delay it is proposed to establish new Seed Testing Laboratory at Thoothukudi district under National Agricultural Development Programme at a financial outlay of Rs.6.00 lakhs towards provision of laboratory equipments.

(vi) Activities Proposed

To establish a Seed Testing Laboratory to test moisture, purity, germination and ODV of the given seed sample the following equipments are necessary.

Requirement of Equipments for Establishing Seed Testing Laboratory

1. Mixing and Dividing Equipments

Seed samples entering a laboratory should be thoroughly mixed before they are divided for making a purity analysis. Soil type divider is proposed to be purchased as these mixers and dividers are faster and more accurate.

2. Moisture Testing Equipment

Moisture testing equipment for making rapid moisture determinations to provide quick moisture percentage on seed lots. Digital moisture meter is to be purchased.

3. Weighing Equipments

It is proposed to purchase Top loading weighing balance and Electronic Weighing balance (to weigh a minimum of 0.1 mg) for weighing the submitted samples and moisture determinations.

4. Purity Analysis Equipment

Purity analysis equipments are used to analyze the physical purity of submitted seed sample which is pre requisite for conducting germination test. The Illuminated purity work board is to be purchased for physical purity analysis.

5. Germination Equipment

Seed Germination in the laboratory should be made under ideal conditions. This necessitates controlled temperature and humidity. For conducting germination test under prescribed temperature and humidity for various agricultural and horticultural crop seed samples Cabinet germinator is very much required. Germination Trays, Petri dishes are necessary for conducting Germination Test. Germination paper, filter paper are the media that are to be purchased for the new Seed Testing Laboratory.

6. Storage Equipment

The Seeds received for testing should be stored at controlled conditions for future use. Hence it is proposed to purchase seed storage racks.

7. General

Thermometer, Hygrometer to measure temperature and humidity respectively are needed. Trolley (Movable) for transporting sand, Air Conditioner to maintain prescribed temperature is required. Work table and work chair are necessary for carrying out various works like germination, purity analysis and for working of equipments etc.

8. Computers with Accessories

Computer with accessories are needed for declaring the results in the internet and storing data on seed analysis.

(vii) Project Cost

The Seed Testing Laboratory that is to be established should have the following equipments for the purpose of analyzing seed samples for moisture, physical purity, germination and Other Distinguishable Varieties. The details of the cost components are furnished below, in Table 6.3.

Table 6.3 Cost of Equipments to Establish Seed Testing Laboratory

Sl. No.	Name of the Instrument/ Equipment	Approx. Qty req for 1 lab	Approx. Cost / unit Rs.	Aprox. Cost for 1 lab. Rs.
1	Weighing Balance-Top Loading	1	5000	5000
2	Illuminated purity Work board	1	4000	4000
3	Electronic Weighing balance (0.1 mg)	1	30000	30000
4	Soil type divider	1	7500	7500
5	Digital moisture meter with stabiliser	1	17500	17500
6	Germination trays	200	175	35000
7	Petri dishes	50	300	15000
8	Thermometer	1	300	300
9	Hygrometer	1	1500	1500
10	Cabinet Germinator (Double door) along with stabliser	1	225000	225000
11	Air Conditioner (split type) along with stabilizer	2	35000	70000
12	Work Table	5	4000	20000
13	Work Chair	4	2500	10000
14	Trolley(Movable)	1	5000	5000
15	Computer with accessories	1	60000	60000
16	Germination Paper (Roll towel) in Kgs	200	165	33000
17	Filter paper (Nos)	50	35	1750
18	Seed Storage Rack	2	6000	12000
19	Telephone Connection with Broad band	1	1250	1250
20	Miscellaneous items			46200
	Total			**600000**

(Rupees Six lakhs only)

Note: The above list of equipments is tentative. Based on the actual price of the equipments, the quantity and cost indicated for each of the above mentioned items may be altered and some of the equipments may be deleted so as to accommodate the purchase of equipments within the overall provision.

Thus a total budget outlay of Rs.6.00 lakhs is required for setting up of the seed testing laboratory at Thoothukudi under NADP during XIth five year plan period.

(viii) Operation and Maintenance Cost of the Running Laboratory

The staff pattern as proposed in the restructuring shall be accommodated. The recurring expenditure towards pay and allowances for the staffs proposed as per restructure proposal and the recurring expenditure towards other items shall be borne by the State Government.

(ix) Benefits

The Seed Testing laboratory is an important institution in carrying out the seed production and seed certification program. The accuracy and reproducibility in the analyzed results is of paramount importance to the seed producer, processor, certification and seed law enforcement officials. Establishment of seed testing laboratory at Thoothukudi district will help the farming community, seed dealers and producers in getting the results in time, in getting quality seeds at the sowing period and curtailing the sale of substandard seeds to the farmers well ahead of sowing so that agricultural production of the district is enhanced.

(x) Expected Date of Completion

The equipments for Seed Testing Laboratory are expected to be purchased during 2008-09.

(xi) Monitoring and Evaluation

Project shall be evaluated then and there by Department of Seed Certification.

6.4. Horticulture Sector

Project - I

(i) Project Title : Development of Horticulture Crops in Thoothukudi District under NADP

(ii) Project Rationale

- The productivity of Horticultural crops should be increased.
- Area expansion with High yielding varieties.
- Adopting drip Irrigation System.

(iii) Project Goals

- To Maximize the Production / Limit Area
- To Minimize the loss by post harvest management
- To provide Crop Protection measures in time proper
- To arrange exposure visits to the progressive farmers

(iv) Project Strategy

To increase the production of Fruits vegetables High Yielding varieties should be recommended Micro Irrigation should be adopted to expend the area with the available water.

(v) Project Components

- Plastics Crates for Vegetable handling and transport
- Promotion of Support system for Banana
- Promotion of Banana Corm injector
- Establishment of Sales outlet points
- Conduct of District Level Farmers Workshop
- Arranging Inter State Exposure visit for progressive farmers
- Inclusion of Banana / Amla in noon meal scheme (TANHOPE)
- Enterprising Farmers associations and
- Providing Support for Senna cultivation

(vi) Project Cost

Component / activity wise budget outlay for horticulture development during XI plan under NADP is given in Table 6.3.1 to 6.3.9. The consolidated component wise horticulture action plan is presented in Table 6.13. The horticulture development plan budget abstract is given below in Table 6.4.

Table 6.4 Horticulture Budget Abstract

Sl.No.	Component / Activity	2008-2009	2009-10	2010-11	2011-12	Total
1.	Plastics Crates for Vegetable handling and transport	0.375	0.375	0.625	0.625	2.00
2.	Promotion of Support system for Banana	56.25	67.50	112.50	135.00	371.25
3.	Promotion of Banana Corm injector	0.15	0.15	0.15	0.15	0.60
4.	Establishment of Sales outlet points	0.00	2.60	0.00	0.00	2.60
5.	Conduct of District Level Farmers Workshop	0.40	0.40	0.40	0.40	1.60
6.	Arranging Inter State Exposure visit for progressive farmers	2.50	2.50	2.50	2.50	10.00
7.	Inclusion of Banana / Amla in noon meal scheme (TANHOPE)	0.50	0.50	0.50	0.50	2.00
8.	Enterprising Farmers associations	0.25	0.25	0.25	0.25	1.00
9.	Establishment of Banana fibre industry	2.50	2.50	2.50	2.50	10.00
10.	Providing Support for Senna cultivation	3.75	7.5	7.5	7.5	26.25
Grand Total		**66.675**	**84.275**	**126.925**	**149.425**	**427.30**

Thus the budget requirement works out to Rs.427.30 lakhs under NADP for horticultural development in Thoothukudi district.

(vii) Project Implementation

The Implementation of the programme will be monitored and evaluated by Tamil Nadu Agricultural University at the end of the every year.

The action plans for Horticulture development for each of the project components, block-wise are given in Table 6.5.1 through 6.5.8.

Table 6.5.1 District Action Plan for 2008-2012

Name of the Component : Plastics Crates for Vegetable handling and transport @Rs. 250/- crate with 50 percent subsidy.

(Rs. in lakhs)

Sl.No	Name of the Block	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	Thoothukudi	50	0.063	50	0.063	80	0.100	80	0.100	260	0.326
2	Ottapidaram	50	0.062	50	0.062	85	0.106	85	0.106	270	0.336
3	Tiruchendur	-	-	-	-	-	-	-	-	-	-
4	Alwar Thirunagari	-	-	-	-	-	-	-	-	-	-
5	Kovilpatti	50	0.063	50	0.063	85	0.106	85	0.106	270	0.338
6	Kayathar	50	0.062	50	0.062	80	0.100	80	0.100	260	0.324
7	Vilathikulam	50	0.063	50	0.063	85	0.107	85	0.107	270	0.340
8	Pudur	50	0.062	50	0.062	85	0.106	85	0.106	270	0.336
9	Sathankulam	-	-	-	-	-	-	-	-	-	-
10	Udankudi	-	-	-	-	-	-	-	-	-	-
11	Srivaikundam	-	-	-	-	-	-	-	-	-	-
12	Karunkulam	-	-	-	-	-	-	-	-	-	-
Total		**300**	**0.375**	**300**	**0.375**	**500**	**0.625**	**500**	**0.625**	**1600**	**2.000**

Table 6.5.2 District Action Plan for 2008-2012

Name of the Component: Support system for Crops a) Banana @ Rs. 1.5 lakhs / ha @ 75 percent Subsidy **Area: Ha**

(Rs. in lakhs)

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Area	Amount	Area	Amount	Area	Amount	Area	Amount	Area	Amount
1	Thoothukudi	6	6.75	7	7.875	6	6.750	10	11.250	29	32.625
2	Ottapidaram	2	2.25	4	4.500	6	6.750	10	11.250	22	24.750
3	Tiruchendur	6	6.75	6	6.750	12	13.500	12	13.500	36	40.500
4	Alwar Thirunagari	6	6.75	6	6.750	12	13.500	12	13.500	36	40.500
5	Kovilpatti	0	0	0	0	0	0	0	0	0	0
6	Kayathar	0	0	0	0	0	0	0	0	0	0
7	Vilathikulam	0	0	0	0	0	0	0	0	0	0
8	Pudur	0	0	0	0	0	0	0	0	0	0
9	Sathankulam	3	3.375	4	4.500	8	9.000	8	9.000	23	25.875
10	Udankudi	2	2.250	3	3.375	6	6.750	8	9.000	19	21.375
11	Srivaikundam	12	13.500	15	16.875	25	28.125	30	33.750	82	92.250
12	Karunkulam	13	14.625	15	16.875	25	28.125	30	33.750	83	93.375
Total		**50**	**56.25**	**60**	**67.5**	**100**	**112.5**	**120**	**135.00**	**330**	**371.250**

Table 6.5.3 District Action Plan for 2008-2012

Name of the Component: Banana Corm injector @ Rs. 300/- No with 50 percent subsidy Unit in Nos.

(Rs. in lakhs)

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount
1	Thoothukudi	10	0.015	10	0.015	10	0.015	10	0.015	40	0.060
2	Ottapidaram	5	0.008	5	0.008	5	0.008	5	0.008	20	0.032
3	Tiruchendur	10	0.015	10	0.015	10	0.015	10	0.015	40	0.060
4	Alwar Thirunagari	10	0.015	10	0.015	10	0.015	10	0.015	40	0.060
5	Kovilpatti	-	-	-	-	-	-	-	-	-	-
6	Kayathar	-	-	-	-	-	-	-	-	-	-
7	Vilathikulam	-	-	-	-	-	-	-	-	-	-
8	Pudur	-	-	-	-	-	-	-	-	-	-
9	Sathankulam	8	0.012	8	0.012	8	0.012	8	0.012	32	0.048
10	Udankudi	7	0.010	7	0.010	7	0.010	7	0.010	28	0.040
11	Srivaikundam	25	0.037	25	0.037	25	0.037	25	0.037	100	0.148
12	Karunkulam	25	0.038	25	0.038	25	0.038	25	0.038	100	0.152
Total		**100**	**0.150**	**100**	**0.150**	**100**	**0.150**	**100**	**0.150**	**400**	**0.600**

Table 6.5.4 District Action Plan for 2008-2012

Name of the Component: Sales outlet points in districts (Rent and infrastructure) Unit in Nos

Rs. 2.60 lakhs / No **(Rs. in lakhs)**

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount
1	Thoothukudi	-	-	1	2.600	-	-	-	-	1	2.600
2	Ottapidaram	-	-	-	-	-	-	-	-	-	-
3	Tiruchendur	-	-	-	-	-	-	-	-	-	-
4	Alwar Thirunagari	-	-	-	-	-	-	-	-	-	-
5	Kovilpatti	-	-	-	-	-	-	-	-	-	-
6	Kayathar	-	-	-	-	-	-	-	-	-	-
7	Vilathikulam	-	-	-	-	-	-	-	-	-	-
8	Pudur	-	-	-	-	-	-	-	-	-	-
9	Sathankulam	-	-	-	-	-	-	-	-	-	-
10	Udankudi	-	-	-	-	-	-	-	-	-	-
11	Srivaikundam	-	-	-	-	-	-	-	-	-	-
12	Karunkulam	-	-	-	-	-	-	-	-	-	-
Total		**-**	**-**	**1**	**2.600**	**-**	**-**	**-**	**-**	**1**	**2.600**

Table 6.5.5 District Action Plan for 2008-2012

Name of the Component: District Level Farmers Workshop @ Rs. 400/- farmer / day Unit in Nos

(Rs. in lakhs)

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount
1	Thoothukudi	10	0.040	10	0.040	10	0.040	10	0.040	40	0.160
2	Ottapidaram	10	0.040	10	0.040	10	0.040	10	0.040	40	0.160
3	Tiruchendur	10	0.040	10	0.040	10	0.040	10	0.040	40	0.160
4	Alwar Thirunagari	10	0.040	10	0.040	10	0.040	10	0.040	40	0.160
5	Kovilpatti	8	0.032	8	0.032	8	0.032	8	0.032	32	0.128
6	Kayathar	8	0.032	8	0.032	8	0.032	8	0.032	32	0.128
7	Vilathikulam	8	0.032	8	0.032	8	0.032	8	0.032	32	0.128
8	Pudur	7	0.028	7	0.028	7	0.028	7	0.028	28	0.112
9	Sathankulam	8	0.032	8	0.032	8	0.032	8	0.032	32	0.128
10	Udankudi	6	0.024	6	0.024	6	0.024	6	0.024	24	0.096
11	Srivaikundam	7	0.027	7	0.027	7	0.027	7	0.027	28	0.112
12	Karunkulam	8	0.032	8	0.032	8	0.032	8	0.032	32	0.128
	Total	**100**	**0.400**	**100**	**0.400**	**100**	**0.400**	**100**	**0.400**	**400**	**1.600**

Table 6.5.6 District Action Plan for 2008-2012

Name of the Component: Inter State Exposure visit (5 days) @ Rs. 5000 / farmer Unit in Nos

(Rs. in lakhs)

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount
1	Thoothukudi	10	0.50	-	-	10	0.500	-	-	20	1.000
2	Ottapidaram	-	-	10	0.50	-	-	10	0.500	20	1.000
3	Tiruchendur	10	0.50	-	-	10	0.500	-	-	20	1.000
4	Alwar Thirunagari	-	-	10	0.50	-	-	10	0.500	20	1.000
5	Kovilpatti	-	-	10	0.500	-	-	5	0.250	15	0.750
6	Kayathar	10	0.50	-	-	-	-	5	0.250	15	0.750
7	Vilathikulam	-	-	-	-	10	0.500	-	-	10	0.500
8	Pudur	-	-	-	-	10	0.500	-	-	10	0.500
9	Sathankulam	10	0.500	-	-	-	-	10	0.500	20	1.000
10	Udankudi	-	-	10	0.500	-	-	5	0.250	15	0.750
11	Srivaikundam	-	-	10	0.500	-	-	5	0.250	15	0.750
12	Karunkulam	10	0.500	-	-	10	0.500	-	-	20	1.000
Total		**50**	**2.500**	**50**	**2.500**	**50**	**2.500**	**50**	**2.500**	**200**	**10.000**

Table 6.5.7 District Action Plan for 2008-2012

Name of the Component: Banana / Amla in noon meal scheme (TANHOPE) @ Rs. 50,000/-/ group / district Unit in No **(Rs. in lakhs)**

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		No	Amount	No	Amount	No	Amount	No	Amount	No	Amount
1	Thoothukudi	1	0.50	-	-	-	-	-	-	1	0.50
2	Ottapidaram	-	-	1	0.50	-	-	-	-	1	0.50
3	Tiruchendur	-	-	-	-	-	-	-	-	-	-
4	Alwar Thirunagari	-	-	-	-	-	-	-	-	-	-
5	Kovilpatti	-	-	-	-	-	-	-	-	-	-
6	Kayathar	-	-	-	-	-	-	-	-	-	-
7	Vilathikulam	-	-	-	-	-	-	-	-	-	-
8	Pudur	-	-	-	-	-	-	-	-	-	-
9	Sathankulam	-	-	-	-	-	-	-	-	-	-
10	Udankudi	-	-	-	-	-	-	-	-	-	-
11	Srivaikundam	-	-	-	-	1	0.50	-	-	1	0.50
12	Karunkulam	-	-	-	-	-	-	1	0.50	1	0.50
	Total	**1**	**0.50**	**1**	**0.50**	**1**	**0.50**	**1**	**0.50**	**4**	**2.000**

Table 6.5.8: District Action Plan for 2008-2012

Name of the Component: Enterprising Farmers associations @ Rs. 25.00 lakhs each Unit in Nos

(Rs. in lakhs)

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount	Nos	Amount
1	Thoothukudi	-	-	-	-	-	-	-	-	-	-
2	Ottapidaram	-	-	-	-	-	-	-	-	-	-
3	Tiruchendur	-	-	-	-	-	-	-	-	-	-
4	Alwar Thirunagari	-	-	1	0.250	-	-	-	-	1	0.250
5	Kovilpatti	-	-	-	-	-	-	-	-	-	-
6	Kayathar	-	-	-	-	-	-	-	-	-	-
7	Vilathikulam	-	-	-	-	1	0.250	-	-	1	0.250
8	Pudur	-	-	-	-	-	-	-	-	-	-
9	Sathankulam	-	-	-	-	-	-	-	-	-	-
10	Udankudi	-	-	-	-	-	-	1	0.250	1	0.250
11	Srivaikundam	1	0.250	-	-	-	-	-	-	1	0.250
12	Karunkulam	-	-	-	-	-	-	-	-	-	-
TOTAL		**1**	**0.250**	**1**	**0.250**	**1**	**0.250**	**1**	**0.250**	**4**	**1.000**

Table 6.5.9 District Action Plan for 2008-2012

Name of the Component: Support Senna cultivation @ Rs. 15000 / ha with 50 percent subsidy

Area: Ha

(Rs. in lakhs)

Sl.No	Name of the Block	2008-09		2009-10		2010-11		2011-12		Total	
		Area	Amount	Area	Amount	Area	Amount	Area	Amount	Area	Amount
1	Thoothukudi	-	-	-	-	-	-	-	-	-	-
2	Ottapidaram	10	0.750	20	1.500	20	1.500	20	1.500	70	5.250
3	Tiruchendur	-	-	-	-	-	-	-	-	-	-
4	Alwar Thirunagari	-	-	-	-	-	-	-	-	-	-
5	Kovilpatti	10	0.750	20	1.500	10	0.750	20	1.500	60	4.500
6	Kayathar	10	0.750	15	1.125	20	1.500	20	1.500	55	4.125
7	Vilathikulam	10	0.750	15	1.125	20	1.500	10	0.750	55	4.125
8	Pudur	-	-	-	-	-	-	-	-	-	-
9	Sathankulam	-	-	-	-	-	-	-	-	-	-
10	Udankudi	-	-	-	-	-	-	-	-	-	-
11	Srivaikundam	10	0.750	20	1.500	20	1.500	20	1.500	70	5.250
12	Karunkulam	-	-	20	1.500	10	0.750	10	0.750	40	3.000
Total		**50**	**3.750**	**100**	**7.500**	**100**	**7.500**	**100**	**7.500**	**350**	**26.250**

6.2 Total Budget for Horticulture Development

The total budget for the project proposed for horticulture development, component-wise and year-wise given below as action plan for horticulture in Table.6.6.

Table 6.6 Action Plan – Horticulture

(Rs. in lakhs)

S. No	Component	Unit	2008-09		2009-10		2010-11		2011-12		Financial 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	Plastics Crates for Vegetable handling and transport @ Rs. 250 / crate with 50 percent subsidy	Nos	300	0.38	300	0.38	500	0.63	500	0.63	1600	2.02
2	Support system for Banana @ Rs. 1.5 lakhs / ha @ 75 percent subsidy	ha	50	56.25	60	67.5	100	112.5	120	135	330	371.25
3	Banana Corm injector @ Rs. 300 / No. with 50 percent subsidy	Nos	100	0.15	100	0.15	100	0.15	100	0.15	400	0.6
4	Sales outlet points in districts (Rent and infrastructure) Rs. 2.60 lakhs / No.	Nos	0	0	1	2.6	0	0	0	0	1	2.6
5	District Level Farmers Workshop @ Rs. 400 / farmer / day	Nos	100	0.4	100	0.4	100	0.4	100	0.4	400	1.6
6	Inter State Exposure visit (5 days) @ Rs. 5,000 /farmer	Nos	50	2.5	50	2.5	50	2.5	50	2.5	200	10

Table 6.6 contd…

(Rs. in lakhs)

S. No	Component	Unit	2008-09		2009-10		2010-11		2011-12		Financial 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
7	Banana / Amla in noon meal scheme (TANHOPE) @ Rs. 50,000 / group / district	Nos	1	0.5	1	0.5	1	0.5	1	0.5	4	2
8	Enterprising framers associations @ Rs. 25.00 lakhs each	Nos	1	0.25	1	0.25	1	0.25	1	0.25	4	1.00
9	Establishment of Banana fibre industry @ 50 percent subsidy	Nos	1	2.5	1	2.5	1	2.5	1	2.5	4	10
10	Support senna cultivation @ Rs.15,000/ha with 50 percent subsidy	Ha	50	3.75	100	7.5	100	7.5	100	7.5	350	26.25
	Grand Total			**66.675**		**84.28**		**126.925**		**149.43**		**427.32**

As could be noted from Table 6.6, the total budget for horticulture development in Thoothukidi district works out to Rs.427.32 during eleventh plan period under NADP.

6.5. Agricultural Engineering Sector

6.5.1. Introduction

Scarcity of agricultural labours and irrigation water and sea water intrusion are the major constraints confronted by the farmers of this district. Therefore, the farm mechanization and water harvesting are considered as the thrust areas for development. Various new activities for development have been proposed under Stream I and similarly, for strengthening the existing schemes few more development activities have been proposed under Stream – II in the district.

6.5.2 Stream - I

The following are the major components planned for Stream-I under XI plan under NADP.

- Introduction of newly developed agricultural machineries / implements
- Promoting the concept of mechanized villages
- Innovative water harvesting structures and
- Prevention of sea water intrusion

Project-wise detailed activities and physical and financial targets year-wise under Stream I under the eleventh plan period are depicted in Table 6.7, below.

Table 6.7 Action Plan - Agricultural Engineering – Stream - I

(Rs. in lakhs)

S. No	Project Component	Unit Cost	Sub sidy percent	2008-09		2009-10		2010-11		2011-12		Total	
				Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost
	Stream : I												
I	**Introduction of Newly Developed Agrl. Machinery / Implements**												
1	Mini combined Harvester TNAU model	2.50	50 percent									0	0
2	Multi crop Thrasher (High capacity)	2.10	50 percent									0	0
3	Power weeder with attachment (all models)	1.00	50 percent	2	1	2	1	2	1	2	1	8	4.00
4	Power Thrasher	1.00	50 percent	2	1	2	1	2	1	2	1	8	4.00
5	Paddy Transplanter	1.40	50 percent	2	1.4	2	1.4	2	1.4	2	1.4	8	5.60
6	Post hole digger	0.85	50 percent	3	1.3	3	1.3	3	1.3	3	1.3	12	5.20
7	Shredder (Heavy)	1.00	50 percent	1	0.5	1	0.5	1	0.5	1	0.5	4	2.00
8	Shredder (Medium)	0.40	50 percent	1	0.2	1	0.2	1	0.2	1	0.2	4	0.80
9	Maize Husker Sheller	0.90	50 percent	1	0.45	1	0.45	1	0.45	1	0.45	4	1.80
10	Coconut De- husker	0.60	50 percent	2	0.6	2	0.6	2	0.6	2	0.6	8	2.40
11	Ground nut decordicator	0.35	50 percent	1	0.18	1	0.18	1	0.18	1	0.18	4	0.72

Table 6.7 contd…

(Rs. in lakhs)

S. No	Project Component	Unit Cost	Sub sidy percent	2008-09		2009-10		2010-11		2011-12		Total	
				Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost
12	Chisel plough	0.12	50 percent									0	0
13	Power Weeder - Oleo mac	0.65	50 percent	1	0.33	1	0.33	1	0.33	1	0.33	4	1.32
14	Ratoon Manager	1.00	50 percent									0	0
15	Multi crop Thrasher (Tractor PTO)	1.25	50 percent	1	0.63	1	0.63	1	0.63	1	0.63	4	2.52
16	Knapsac Power operated Hydraulic Sprayer	0.20	50 percent	1	0.1	1	0.1	1	0.1	1	0.1	4	0.40
17	Shredder (Tractor PTO Operated)	0.85	50 percent									0	0
18	Power Operated Chaff Cutter	0.30	50 percent	1	0.15	1	0.15	1	0.15	1	0.15	4	0.60
19	Jappanese Yanmar 6 - row transplanter with nursery raising system	7.50	50 percent									0	0
20	Jappanese Yanmar 8 - row transplanter with nursery raising system	10.50	50 percent									0	0
21	Korean 4 - row walk behind transplanter	2.00	50 percent	1	1.00	1	1.00	1	1.00	1	1.00	4	4.00

Table 6.7 contd…

(Rs. in lakhs)

S. No	Project Component	Unit Cost	Sub sidy percent	2008-09		2009-10		2010-11		2011-12		Total	
				Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost
22	Combine harvester - Tractor operated	12.00	50 percent	1	6.00	1	6.00	1	6.00	1	6.00	4	24.00
23	Combine harvester - Self propelled	16.00	50 percent	2	16.00	2	16.00	2	16.00	2	16.00	8	64.00
24	Maize combine harvester	16.00	50 percent									0	0.00
25	Gender friendly equipments	0.08	75 percent	20	0.4	20	0.4	20	0.4	20	0.4	80	1.60
	Total				**31.24**		**31.24**		**31.24**		**31.24**		**124.96**
II	**Innovative Water Harvesting Structures**												
1	Lined farm pond with mobile sprinkler	3.00	90 percent	3	8.1	3	8.1	3	8.1	3	8.1	12	32.40
2	Rejuvenation of percolation ponds with 2 recharge shafts	1.00	100 percent	10	10	10	10	10	10	10	10	40	40.00
	Total				**18.1**		**18.1**		**18.1**		**18.1**		**72.4**
III	**Control of Sea Water Intrusion**												
1	Recharge shafts to prevent sea water intrusion in coastal areas	0.50	100 percent	6	**0.5**	6	**0.5**	6	**0.5**	6	**0.5**	24	**2.00**

Table 6.7 contd…

(Rs. in lakhs)

S. No	Project Component	Unit Cost	Sub sidy percent	2008-09		2009-10		2010-11		2011-12		Total	
				Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost
IV	**Promoting the concept of Mechanized villages**												
1	Distribution of crop based package of Agrl. Machinery on cluster basis in the adopted villages	varied	75 percent									0	0
	1. Paddy			1	3.2	1	3.2	1	3.2	1	3.2	4	12.80
	2. Groundnut											0	0
	3. Maize											0	0
	Total				**3.2**		**3.2**		**3.2**		**3.2**		**12.80**
V	**IEC Components**												
	Publicity and training	1.00		1	1	1	1	1	1	1	1	4	4
	Exposure visit - interstate	1.80		1	1.8	1	1.8	1	1.8	1	1.8	4	7.2
	Exposure visit - intrastate	1.50		1	1.5	1	1.5	1	1.5	1	1.5	4	6
	District level workshop	0.50		1	0.5	1	0.5	1	0.5	1	0.5	4	2
	Total				**4.8**		**4.8**		**4.8**		**4.8**		**19.2**
	Grand Total				**57.84**		**57.84**		**57.84**		**57.84**		**231.36**

The total budget outlay for the project components proposed under Stream I works out to Rs.231.36 for XI plan period under NADP as could be evidenced from the table above.

6.5.3 Stream - II

With a view to strengthen the project based activities, the project components, under Stream II have been proposed and the major project components involved are:

- Popularization of Agricultural machineries through Conventional Machinery /Equipments
- Water Harvesting Structures
- Soil Conservation works
- Water Management works

The names of the projects, the components under each project and the physical and financial targets, year-wise are exhibited in Table 6.8, below.

Table 6.8 Action Plan - Agricultural Engineering – Stream -II

(Rs. in lakhs)

S.No.	Project Component	Unit Cost	Subsidy percent	2008-09		2009-10		2010-11		2011-12		Total	
				Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost
	Stream: II												
1	**Popularization of Agricultural Mechanization through Conventional Machinery /Equipments**												
a	Power Tiller	1.16	25 percent	21	6.09	21	6.09	21	6.09	21	6.09	84	24.36
b	Rotavator	0.90	25 percent	2	0.45	3	0.68	3	0.68	3	0.68	11	2.49
c	Cultivator	0.16	25 percent	4	0.16	5	0.20	5	0.20	5	0.20	19	0.76
d	Off-set Disc Harrow	0.47	25 percent	2	0.23	2	0.24	2	0.23	2	0.24	8	0.94
e	Disc Plough	0.35	25 percent	8	0.70	9	0.79	10	0.88	12	1.05	39	3.42
	Total				**7.63**		**8**		**8.08**		**8.26**		**31.97**
2	**Water Harvesting Structures**												
a	Farm Pond -Unlined	0.50	90 percent	7	3.19	7	3.15	7	3.15	7	3.15	28	12.64
b	Checkdam – Minor	0.30	100 percent	3	0.90	3	0.90	4	1.20	4	1.20	14	4.2
c	Checkdam - Medium	0.75	100 percent	14	10.50	15	11.25	16	12.00	16	12.00	61	45.75
d	Checkdam – Major	1.00	100 percent	2	2.00	2	2.00	2	2.00	2	2.00	8	8
e	Percolation Pond	3.25	100 percent	1	3.25	1	3.25	1	3.25	1	3.25	4	13
f	Recharge Shaft	0.30	100 percent	5	1.50	5	1.50	5	1.50	5	1.50	20	6

Table 6.8 contd…

(Rs. in lakhs)

S.No.	Project Component	Unit Cost	Subsidy percent	2008-09		2009-10		2010-11		2011-12		Total	
				Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost	Nos.	Cost
g	New Village Tank	1.50	100 percent	2	3.00	2	3.00	2	3.00	2	3.00	8	12
h	Collection Well	0.40	90 percent	5	1.80	5	1.80	5	1.80	5	1.80	20	7.2
	Total				**26.14**		**26.85**		**27.9**		**27.9**		**108.79**
3	**Soil Conservation works**												
a	Compartmental bunding	0.03	90 percent	200	5.40	225	6.08	250	6.75	275	7.43	950	25.66
b	Land Shaping	0.10	90 percent	20	1.80	20	1.80	30	2.70	30	2.70	100	9
c	Terrace Support Wall	0.30	90 percent	0	0.30	0	0.30	0	0.00	0	0.00	0	0.6
	Total				**7.5**		**8.18**		**9.45**		**10.13**		**35.26**
4	**Water Management works**												
a	PVC Pipe laying	0.15	90 percent	12	1.62	12	1.62	15	2.03	15	2.03	54	7.3
b	Ground level Reservoir	0.80	90 percent	5	3.60	5	3.60	5	3.60	5	3.60	20	14.4
c	Fertigation Assembly	0.12	50 percent	0	0.00	0	0.00	0	0.00	0	0.00	0	0
d	Field drains	0.04	100 percent	2750	110.00	2750	110.00	2750	110.00	2750	110.00	11000	440
	Total				**115.22**		**115.22**		**115.63**		**115.63**		**461.7**
	Grand Total			**3063**	**156.49**	**3092**	**158.25**	**3133**	**161.06**	**3160**	**161.92**	**12448**	**637.72**

The total plan outlay for the projects planned for under stream II in total works out to Rs.637.72 lakhs, as could be noted from the table above.

Budget Summary

The stream wise and project wise budget outlay is summarized below:

Table 6.9 Summary of Year-wise Budget Outlays under Stream I and II

Sl. No.	Project Components	2008-09	2009-10	2010-11	2011-12	Total
	Stream I					
1	Introduction of Newly Developed Agrl. Machinery / Implements	31.24	31.24	31.24	31.24	124.96
2	Innovative water harvesting structures	18.1	18.1	18.1	18.1	72.40
3	Control of Sea Water Intrusion	0.5	0.5	0.5	0.5	2.0
4	Promoting the concept of Mechanized villages	3.2	3.2	3.2	3.2	12.80
5	IEC Components	4.8	4.8	4.8	4.8	19.20
	Total	**57.84**	**57.84**	**57.84**	**57.84**	**231.36**
	Stream II					
1	Popularization of Agricultural Mechanization through Conventional Machinery /Equipments	7.63	8.00	8.08	8.26	31.97
2	Water Harvesting Structures	26.14	26.85	27.9	27.9	108.79
3	Soil Conservation works	7.5	8.18	9.45	10.13	35.26
4	Water Management works	115.22	115.22	115.63	115.63	461.7
	Total	**156.49**	**158.25**	**161.06**	**161.92**	**637.72**
	Grand Total	**214.33**	**216.09**	**218.9**	**219.76**	**869.08**

The cost of the projects under Stream I totals up to Rs. 231.36 lakhs, while for the project components under Stream II it works out to Rs.637.72 lakhs for the development of Agricultural Engineering activities, as could be observed from the above table.

6.6. Animal Husbandry

Project I

(i) Project Title : Feed and Fodder Development

(ii) Project Abstract (Summary of the Project)

Intensive fodder production activity will be taken up by the Department of Animal Husbandry, and Dairy Development Department, Thoothukudi district. Subsidy will be given for cultivation of 10 acre of green fodder in each block per year to SHG women in all the 12 blocks by Department of Animal Husbandry for 4 years to encourage fodder cultivation. Subsidy will be given for cultivation of fodder in IDF villages and farmers field to 215 farmers (ie., 215 acres) in 4 years by Dairy Development Department. The SHG beneficiaries will be given 2 days training on fodder cultivation.

Mineral mixture will be supplied to dairy cows @ 1kg per cow per month for one year for 5000 cows per year by Department of Animal Husbandry for 4years. Dairy Development Department will supply mineral mixture to the milch animals at subsidized cost (50 percent) @ 18 KG/ year for 875 milch animals per year for 4 years.

Dairy Development Department will supply By-Pass protein feed to milch animals @ 360 kg per animal per year @ 50 percent subsidized cost for 500 animals per year for 4 years.

Supply of hand operated small type Chaff cutter to 50 elite farmers in 4 years by the Dairy Development Department. This department will also supply 10 mechanized chaff cutters for IDF villages on community basis during the second year of the project. The total cost of the project is Rs.383.86 lakhs.

(iii) Project Background / Problem Focus

The green fodder to feed the high yielding animals is in short supply in the district. The district is 74.2 percent deficit in green fodder. Many farmers do not

supplement minerals in the feed of dairy cattle due to lack of awareness. By-pass protein feeding is a newer technology in dairy nutrition. It enhances milk production and nutrient utilization with an overall improvement in production and productivity in dairy cows further the cost of concentrate feed is very high. Animals are maintained in poor plane of nutrition. The plane of nutrition and vis-à-vis milk production of these animals could be improved by green fodder and mineral supplementation.

(iv) Project Rationale

Though several strains of new fodder varieties are released from time to time, the adoption rate among farmers is very poor which is reflected on the huge green fodder deficiency in the district. The possible reasons could be the hesitation on the part of farmers to cultivate fodder in preference to cash crops.

Hence there is a need to take a holistic approach to nullify the hurdles listed above by motivating and encouraging the land holding farmers for intensive cultivation of green fodder by giving subsidy . Farmers will be motivated to produce fodder in their land and supply fodder to other members also. Supplementation of by-pass protein feed to dairy cows is not a common practice and sensitization of the farmers through supply of mineral mixture for their cows will help them to realize their importance. Chopping of fodder will help in the effective utilization of nutrients.

(v) Project Strategy

- Subsidy for cultivation of 10 acre of green fodder in each block per year for 4 years to SHG women by Department of Animal Husbandry to encourage fodder cultivation.
- Subsidy for cultivation of fodder in IDF villages and farmers' field to 55 farmers per year in 1st, 3rd and 4th years and 50 farmers in the 2nd year of the project by Department of Dairy Development.
- Subsidy for small type Chaff cutter to 15 elite farmers per year in the 1st and 2nd years and to 10 elite farmers per year in the 3rd and 4th years by Department of Dairy Development.

- Supply of 10 mechanized chaff cutters for IDF villages on community basis during the second year of the project by Department of Dairy Development.
- Supply of mineral mixture to dairy cows @ 1kg per cow per month for one year for 5000 cows per year for 4 years by Department of Animal Husbandry.
- Supply of mineral mixture to the milch animals at subsidized cost (50 percent) @ 18 KG/ year for 875 milch animals per year for 4 years by Department of Dairy Development.
- Supply of By-Pass protein feed 500 milch animals per year for 4 years @ 360 kg per animal per year @ 50 percent subsidized cost by Department of Dairy Development.

(vi) Project Goals

1. Augmentation of fodder production to meet the fodder shortage.
2. Supplementation of mineral mixture to dairy cows to enhance production and fertility.
3. Enhancement of nutrient utilization in fodder by use of hand-operated and mechanized chaff cutters to enhance the nutrient utilization.
4. Supply of by-pass protein to milch animals to enhance production.
5. Subsidized concentrate feed to heifers and goat units to minimize expenditure towards feed.

(vii) Project Components

- Subsidy for cultivation of 10 acre of green fodder in each block per year to SHG women by Department of Animal Husbandry to encourage fodder cultivation.
  (10 acre x 12 blocks = 120 acres/yr x 4 yrs = 480 acres)

- Subsidy for cultivation of fodder in IDF villages and farmers' field to 55 farmers per year in 1st, 3rd and 4th years and 50 farmers in the 2nd year of the project by Department of Dairy Development.
  (1st,3rd and 4th years - 1 acre x 55 farmers/yr = 165 acres
  2nd year – 1 acre x 50 farmers = 50acres. Totally 215 acres)

- Subsidy for small type Chaff cutter to 15 elite farmers per year in the 1st and 2nd years and to 10 elite farmers per year in the 3rd and 4th year by Department of Dairy Development.
  (1st and 2nd years- 1 chaff cutter x 15 farmers / yr= 30 cutters
  3rd and 4th year- 1 chaff cutter x 10 farmers / yr = 20 cutters. Totally 50 cutters)

- Supply of 10 mechanized chaff cutters for IDF villages on community basis during the second year of the project by Department of Dairy Development.

- Supply of mineral mixture to dairy cows @ 1kg per cow per month for one year for 5000 cows per year by Department of Animal Husbandry. (1kg/cow/month for 1 year=12kg. 5000 cows/yr x 4yrs = 20000 cows x12kgs = 240000 kgs)

- Supply of mineral mixture to the milch animals at subsidized cost (50 percent) @ 18 KG/ year for 875 milch animals per year by Department of Dairy Development.
  (18kg/yr/animal x 875 animals/yr=15750 kgs/yr. x 4 yrs = 18kg x3500 animals = 63000 kgs)

- Supply of By-Pass protein feed to 500 milch animals per year @ 360 kg per animal per year @ 50 percent subsidized cost by Department of Dairy Development.
  (360kg/animal/yr x 500 animals/yr =180000 kg/yr x 4yrs = 360kg x 2000 animals = 720000 kgs).

(viii) Project Cost

S. No	Scheme component	Unit Cost	No of Units / year	2008 -09	2009 -10	2010 -11	2011 -12	Total units	Total cost
1	Subsidy to SHG for fodder cultivation.10 acre/block/yr								
	1.subsidy for fodder cultivation work	0.20	120	4.00	24.00	24.00	24.00	480	96.00
	2.Training cost:								
	a. Incentive @ Rs.100/person/day for 2 days for 15 members.	0.03							
	b. Refreshment @ Rs.10/day/person for 15 members.	0.003							
	c. study material – scribbling pad,pen @ Rs.15/person for 15 members	0.00225							
	Total Training cost/SHG	0.035	120	4.20	4.20	4.20	4.20	480	16.80
	TOTAL	**0.235**	**120**	**28.20**	**28.20**	**28.20**	**28.20**	**480**	**112.80**
2	Subsidy for fodder cultivation in IDF villages & farmers field:								
	1.subsidy for fodder cultivation work	0.20		11.00 (55 units)	10.00 (50 units)	11.00 (55 units)	11.00 (55 units)		43.00
	2.Training cost:								
	a. Incentive @ Rs.100/person/day for 2 days for 15 members.	0.03		1.93	1.75			215	
	b. Refreshment @ Rs.10/day/person for 15 members.	0.003							
	c. study material – scribbling pad, pen @ Rs.15/person for 15 members	0.00225							
	Total Training cost/SHG	0.035				1.93	1.93	215	7.54
	TOTAL	**0.235**		**12.93**	**11.75**	**12.93**	**12.93**	**215**	**50.53**

3	Subsidy for small type Chaff cutter to Elite Farmers (15/yr for 1st & 2nd yrs. 10/yr for 3rd & 4th yrs	0.20		3.00	3.00	2.00	2.00	50	10.00
4	Supply of Chaff cutters for IDF villages on community basis (10 cutters in 2nd year only)	0.70		-	7.00	-	-	10	7.00
5	Supply of mineral mixt to dairy cows @ 1kg p month for one year. 12 kg/cow/yr	0.006	5000	30.00	30.00	30.00	30.00	20000	120.00
6	Supply of mineral mixture to the milch animals at subsidized cost (50 percent) @ 18 year	0.005	875	4.38	4.38	4.38	4.38	3500	17.52
7	Supply of By-Pass protein feed to milch animals @ 360 kg per animal per year @ 50 p subsidized cost	0.033	500	16.50	16.50	16.50	16.50	2000	66.00
Grand Total				**95.01**	**100.83**	**94.01**	**94.01**		**383.86**

As could visualised from the table above, the total cost of the project works out to Rs.383.86 lakhs during XI plan under NADP, in Thoothukidi district.

(ix) Project Implementation Chart

S. No	Action Plan	2008-09	2009-10	2010-11	2011-12
1	Subsidy to SHG women for fodder cultivation.10acre/block/yr.12blocks/ yr. and conducting training on fodder cultivation.	●	●	●	●
2	Subsidy for cultivation of fodder in IDF villages and farmers field and conducting training on fodder cultivation.	● (55)	● (50)	● (55)	● (55)

3	Subsidy for small type Chaff cutter t Farmers.	● (15)	● (15)	● (10)	● (10)
4	Supply of Chaff cutters for IDF villages on community basis (10 cutters in 2nd year only)		●		
5	Supply of mineral mixture to dairy c per cow per month for one year 5000 cows/yr	●	●	●	●
6	Supply of mineral mixture to the milch animals at subsidized cost (50 percent) @ 18 G/animal/year. 875 animals/yr.	●	●	●	●
7	Supply of By-Pass protein feed to milch animals @ 360 kg per animal per year @ 50 percent subsidized cost.500 animals/yr.	●	●	●	●

(x) Reporting

Monthly progress report will be submitted to the concerned higher authorities.

Project - II

(i) Project Title: Genetic Upgradation

(ii) Abstract

It is proposed that 80,300 breedable female bovines are to be identified by ear tag with plastic (polyurethane) tags with laser printed unique numbers. Also, to provide a detail pass book with animals and owner details for the animals brought to the AI centers for AI and AI done by AI workers to enable unique identification and collection of data. The project will be jointly implemented by the Department of Animal Husbandry, and Dairy Development Department of Thoothukudi district.

To improve conception rate, programmed breeding will be undertaken by Dairy Development Department. Estrus synchronization will be carried out in 500 numbers of buffaloes per year to increase the conception rate.

To improve meat production in the district, during the project period of four years, every year 1 SHG women will be selected from each block by the Department of Animal husbandry and each will be given subsidy for intensive system of Goat (20+1) rearing and one farmer will be selected from each block by the Department of Animal husbandry and each will be given subsidy for sheep (20+1) rearing.

To promote backyard poultry rearing to improve meat and egg production and socio economic status of rural women in the district, during the project period of four years, every year 100 SHG women will be selected from each block by the Department of Animal Husbandry in all the 12 blocks and each will be given Nandhanam B2 chicken (9+1) backyard unit.

To promote piggery farming in the district, during the project period of four years, every year 2 farmers will be selected from each block by the Department of Animal Husbandry in all the 12 blocks and each will be given (3+1) piggery unit. The budget requirement is Rs.167.34 lakhs.

(iii) Background / Problem focus

It is estimated that the district has a total number of 80,300 breedable bovine populations. Tracking the breedable bovines with an ear tag and a passbook will help to follow the animals and will be the first step in the registration of bovines with accurate details about the animal, its health status etc.

Estrus synchronization will be planned in buffaloes to increase conception rate. Buffaloes exhibit silent heat and hence become difficult to inseminate them for conception.

There is always heavy demand for milk, meat and egg consumption in the district. Poultry are the main source of nutrition and family income in rural areas of the state. The backyard poultry still accounts for 10-20 percent of the total poultry production. Sheep and Goat rearing are important means of livelihood in the rural areas. While supporting agricultural activities, it provides supplementary employment and income to rural communities. Piggery is developing in the district as there is demand in the neighboring state.

(iv) Project Rationale

To promote livestock sector and to tap the potential for rural employment generation, the Government (state and Government of India) is implementing various schemes. Along with ensuring more effective disease control measures and improving the genetic quality of animals, a mechanism of assured protection to the livestock owners needs to be provided against eventual losses of such animals for which identification of livestock is a must.

The Identification of Bovine is Essential

- For collection of accurate data of animals
- For tracking of sales, transfers and death of animals
- For monitoring and maintenance of general health and reproductive health of animals
- For assessing the utility and success of Programmes implemented
- To design new programmes for economic animal husbandry practices
- To monitor AI, verify pregnancy and calf birth of the bovine population
- For helping the genuine farmers during natural calamities and disasters

- For the purpose of insuring the animals
- For identifying beneficiaries for the different schemes of the Government and other organizations
- To identify repeat breeding animals for further treatment.

The software that is being developed for the monitoring of breeding activities has the breedable females identify as the critical input and the software cannot be made operational without unique identification of the animals. Hence, the identification of animal is very essential.

Buffaloes exhibit silent heat and it becomes difficult to provide timely insemination services leading to huge economic losses. Because of this reason, the farmers are reluctant to rear buffaloes. Estrus synchronization will bring all the animals to heat at a specific time and will help to provide timely insemination.

There is always good marketing price and marketing potential available in the district. Sheep and Goat rearing as an intensive activity can, therefore, provide the much needed diversification to the rural economy; create sustainable employment and income opportunities, particularly women. It is now well documented that livestock activities can improve family nutrition, be an important and growing source of alternative income and form an important means of accumulating savings under the direct control of women.

It is a well known fact that a fairly significant proportion of the landless and marginal farmers earn their living from poultry and other small ruminants. Backyard poultry requiring hardly any infrastructure set-up is a potent tool for upliftment of the rural poor. Besides income generation, rural backyard poultry provides nutrition supplementation in the form of valuable animal protein and empowers women. There is always heavy demand for poultry meat and egg in this district. Marketing price is also good. Motivating the rural self help group women to rear back yard poultry will improve their socio economic status.

There is always heavy demand for pork in the district and the neighboring state Kerala. Marketing price is also good. Motivating the rural youth and farmers to venture into piggery farming will provide employment opportunity and improve their socio economic status.

(v) Project Strategy

1. The identification system will record

- All breeding related details of the individual Animal
- The disease status / health status.
- Vaccination status
- Deworming details
- Details of previous illnesses
- The status of insurance (if insured) and the scheme in which the animal is covered will be mentioned
- Name and address of owner/ owners
- Physical identification markings of the animal (including tag nos.)
- Any other relevant detail

To enable the unique identification of breedable female bovine, it is proposed to ear tag the animals with plastic (polyurethane) tags with laser printed unique numbers and provide a detailed pass book with animals and owner details to all the animals brought to the AI centers for AI and AI done by AI workers. This work will be undertaken by the Department of Animal husbandry and Dairy development department and will be completed in the first year of the project period.

2. Programmed breeding will be undertaken by Dairy Development Department. Estrus Synchronization will be carried out in 500 numbers of buffaloes per year to increase the conception rate.

3. During the project period of four years, every year 1 SHG woman will be selected from each block by the Department of Animal husbandry and each will be given subsidy for intensive system of Goat (20+1) rearing in all the 12 blocks to improve meat production in the district.

4. During the project period of four years, every year 1 farmer will be selected from each block by the Department of Animal husbandry and each will be given subsidy for sheep (20+1) rearing in all the 12 blocks to improve meat production in the district.

6. During the project period of four years, 100 SHG women will be selected from each block per year by the Department of Animal husbandry and Nandhanam B2 chicken (9+1) backyard unit will be supplied to each beneficiary in the 12 blocks.

7. During the project period of four years, 2 farmers will be selected from each block per year and 3+1 piggery unit will be supplied to each beneficiary in the 12 blocks.

(vi) Project Goals

1. To provide animal health officials with the capability to identify all animals and premises that has had a direct contact with a disease of concern.
2. Identify beneficiaries for implementing various schemes.
3. Selection of elite animals from the field for field based "Progeny testing scheme".
4. Selection of animals for breeding strategy. Thus, the Animal identification system will track animal movements from birth to death and for the purpose of disease tracking and other purposes.

Animal Identification and providing animal passbook to all the breedable females coming under AI coverage is the aim of the project. The success of any programme is dependant on the collection of data and the quality of data collected. Any data collected

should be unique and mutually exclusive for maximum utility. One of the major deficiencies in collecting data on bovine breeding is lack of unique identification of animals.

5. To increase conception rate in buffalo.
6. To enhance milk, meat and egg production to meet the heavy demand in the district and to improve the economic status of livestock farmers, and rural women in the district.

(vii) Project Components

It is proposed that female bovines brought to the AI center, or female bovines that are inseminated at the farmers doorstep shall be tagged with a tag having unique computer generated number which shall be a multipurpose identification device and the animal owner shall be issued a pass book after filling the details of the animals and this shall be used for all follow up and other related activities.

The identification of the animal is the key for monitoring of bovine breeding activities It is proposed that 80,300 breedable female bovines are to be identified by ear tag with plastic (polyurethane) tags with laser printed unique numbers. Also, to provide a detail pass book with animals and owner details for the animals brought to the AI centers for AI and AI done by AI workers to enable unique identification and collection of data. The programme is to be implemented through the Department of Animal Husbandry and Dairy Development Department.

- During the period of 4 years, every year estrus synchronization will be done in 500 buffaloes by Dairy development department to improve conception rate in buffaloes (500 buffalo / year x 4 years = 2000 buffaloes)

- During the project period of four years, every year 1 SHG woman will be selected from each block by the Department of Animal husbandry and each will be given

subsidy for intensive system of Goat (20+1) rearing to improve meat production in the district.

(1 SHG Woman × 12 blocks = 12 SHG women / year x 4 years = 48 SHG women in 4 years. Each beneficiary will be given 20+1 goat unit).

- During the project period of four years, every year 1 farmer will be selected from each block by the Department of Animal husbandry and each will be given subsidy for sheep (20+1) rearing to improve meat production in the district.
  (1 farmer × 12 blocks = 12 farmers / year x 4 years = 48 farmers in 4 years. Each beneficiary will be given 20+1 sheep unit)

- Selection of 100 beneficiaries (self help group women) from each block in Kanyakumari district by the Department of Animal husbandry. Each beneficiary will be given 9 +1 Nandhanam B2 chicken backyard unit.
  (100 SHG Women × 12 blocks = 1200 SHG women / year . Totally 4800 SHG women in 4 years = 4800 units).

- During the project period of four years, 2 farmers will be selected from each block per year and 3+1 piggery unit will be supplied to each beneficiary.
  (2 farmers x12 blocks = 24 farmers / year x 4 years = 96 farmers).

(viii) Project Cost

S. No	Scheme component	Unit cost	No of Units / year	2008-09	2009-10	2010-11	2011-12	Total Units	Total Cost
1	Identification & traceability of breedable bovines	0.0002							
2	Programmed breeding of buffalo to increase conception rate	0.007							
3	Subsidy to SHGwomen for intensive system of Goat (20+1) rearing. 1 unit / block/yr. 48 units in 4yrs.Rs.2000/goat. Rs.42000/unit.							48	20.16
4	Subsidy to SHGwomen for sheep (20+1) rearing. 1 unit / block/yr. 48 units in 4yrs.Rs.2000/sheep. Rs.42000/unit.							48	20.16
5	Supply of Nandanam B2 chicken (9+1) backyard units to SHG women, @ Rs. 500/unit, 100 units/ block/year, 4800 units for 4 years								
6	Supply of piggery units (3+1 unit) to farmers @ Rs.0.76 Lakhs/unit, 2 units/ block/year, 24 units/year, 96 units in 4 years								
Grand Total									

Total cost of this project works out to **Rs.167.34 lakhs** during XI plan under NADP

(ix) Implementing Chart of the Project

S. No	Action Plan	2008-09	2009-10	2010-11	2011-12
1	Identification & traceability of breedable bovines	●			
2	Programmed breeding of buffalo to increase conception rate	●	●	●	●
3	Subsidy to SHGwomen for intensive system of Goat (20+1) rearing. 1 unit/block/yr	●	●	●	●
4	Subsidy to farmers for sheep (20+1) rearing. 1 unit/block/year	●	●	●	●
6	Supply of Nandanam B2 chicken (9+1)backyard units to SHG women, @ Rs.500/unit, 100 units/ block/year,	●	●	●	●
6	Supply of piggery units (3+1) to 2 farmers/block /yr	●	●	●	●

(x) Reporting

Monthly progress report will be submitted to the concerned higher authorities.

Project -III

(i) Project Title : Improvement of Livestock health

(ii) Project Abstract

The following schemes are proposed to improve livestock and poultry health in Thoothukudi district. The Department of Animal husbandry will establish Mobile Veterinary units in 7 taluks in Thoothukudi district to facilitate door step insemination,

vaccination, deworming and treatment, establish Mobile Animal Disease Diagnostic Lab for disease investigation and surveillance, Strengthening infrastructure facilities in 23 veterinary institutions in Thoothukudi district with basic facilities like fencing, bore wells, water trough, repairs etc, Disaster management system for livestock. The department will provide health cover to livestock by controlling parasitic diseases through treatment to enhance vaccine response. It will provide health care to Desi chicken by giving vaccination and deworming of 1 lakh Desi birds per year for 4 years. The budget requirement is Rs. 321.02 lakhs

(iii) Project Background / Problem Focus

Infertility and mastitis are the major problems among crossbred cattle in the district. This might be due to delayed or untimely insemination and inadequate treatment. Animals in some remote places do not get timely attention. There is no Animal disease diagnostic unit in the district. Most of the veterinary institutions in the district require infrastructure facilities like fencing, bore wells, repair works etc. As and when the state experienced various calamities viz., flood, drought, tsunami, etc, the government, through the State Department of Animal Husbandry and Veterinary Services undertook relief measures by providing fodder, compensation for livestock lost and disease control measures by vaccinating the susceptible livestock. Adequate attention is not given to eradicate parasitic diseases which inhibit vaccine response. Poultry mortality among desi birds is mainly due to Ranikhet disease. Worm infestation causes drop in egg production.

(iv) Project Rationale

Infertility and mastitis are the major problems among crossbred cattle in the district. Untimely or delayed insemination is one of the reasons for infertility. Because of peoples involvement in other activities, adequate and timely veterinary aid is not given to the animals. Infertility and mastitis are major causes for reduction in milk production.

Even though veterinary dispensaries and sub centres are located in rural and semi urban areas there are still villages which are beyond the reach of veterinary services. Moreover, in some areas, the geographical terrain makes it difficult for the farmers to

reach the nearest institution. The landless agricultural laborers and small farmers who own the cattle are unable to take their livestock to the nearest veterinary institution as they are pre-occupied in agricultural work. Further, the agricultural laborers have to forego half a day work in bringing their livestock to the veterinary institution /sub centres for treatment or artificial insemination.

In order to avoid such suffering and loss to the farmers and to provide veterinary services and breeding support in time at the doorsteps of the farmers, Mobile Veterinary Clinics are proposed in 7 taluks of the district.

Diseases cause huge economic loss to the farming community by way of Livestock mortality and decreased productivity which has a direct impact on food security and rural economy. Control and eradication of many diseases is a must not only for profitable Livestock production but also essential to make our Livestock & Livestock products globally acceptable. Systematic control of diseases will progressively lead to its containment first and eradication ultimately.

At present there is no Animal disease diagnostic unit in the district.. This results in delay in reaching to the places of outbreaks in times of emergencies and hence there is a need to start new Mobile Animal Disease diagnostic lab in the district. 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.. This will help in identification of the pathogens quickly and thus undertake disease control measures without wastage of time Most of the veterinary institutions in the district require infrastructure facilities like fencing, bore wells, water trough, repair works etc.

Apart from death of livestock and the injuries they sustain, any disaster leads to problems in terms of extrication of animals that are caught in calamities, transporting the livestock to safer places, disposal of dead bodies of animals, hospitalization and care of survived animals etc.

The other indirect effects due to animal suffering from disaster include

1. Owners management inability
2. Scarcity of feed
3. Spread of disease due to change in environment
4. Stress / shock

This project of Disaster management scheme is proposed to strengthen the Animal husbandry department to act immediately and provide the necessary requirements in case of emergency due to natural calamities.

Various parasitic diseases in animals reduce vaccine response .It is necessary to control parasitic diseases through effective treatment to enhance vaccine response.

As the poultry mortality is occurred mainly due to Ranikhet disease, regular vaccination of desi poultry is required. Deworming of desi poultry is required to improve egg yield.

(v) Project Strategy

Mobile Veterinary Unit

1. Mobile Veterinary Unit will be established in 7 taluks in the district, each will be under the control of Veterinary Assistant surgeon.
2. The mobile veterinary unit will cover even the remote villages in the taluk regularly and facilitate door step insemination, vaccination, deworming and treatment.
3. Each unit will consist of one Veterinary Assistant Surgeon, and 1 driver. The staff for the Mobile Veterinary Clinic will be sourced from the available staff in the department.
4. One Veterinary Assistant Surgeon will be in charge of the vehicle. The vehicle will cover the remote and inaccessible villages on a scheduled programme of operation and render Veterinary Services.
5. The unit will be provided with one vehicle at a cost of Rs.4.75 lakh.

6. Medicines will be sourced from the Veterinary institutions available in the block itself and thus no additional funds are required to each unit to carryout treatment, deworming, vaccination etc.
7. Necessary equipments like mouth gags, scalpels scissors, suture needles, forceps, AI guns, etc apart from LN2 containers sheath will be provided to each unit.
8. Diesel worth Rs.43,200/- will be provided per year (90 litres/unit/year) to each unit for running the vehicle.
9. The unit will prepare a scheduled tour programme on 6 days a week basis mentioning the villages that are being covered on each day about which the farmers will be intimated well in advance.
10. The units will go around the area of operation as per the programme and carryout the activities providing breeding support and veterinary health care.

Mobile Animal Disease Diagnostic Lab

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

Infrastructure Facilities in Veterinary Institutions

1. Construction of fence
2. Digging of bore wells
3. Construction of water trough
4. Maintenance and other repair works etc.

Disaster Management

Based on the past experience, a strategy for effective preparedness towards management of livestock during disaster, need to be implemented.

1. Training

The Veterinarians have to be exposed to the mechanisms of various natural calamities and prepared to meet the contingencies due to the effects of calamities. On the basis of the disaster experienced one has to improve or modify the preparedness. The objectives should be to train the personnel in-charge with contingencies that arise in the wake of calamities. Hence all the Veterinarians in the state need to be trained.

It is proposed to train all the 35 Veterinary Assistant Surgeons who will be the field work force at times of emergencies on various aspects of disaster mitigation at reputed training institutes. The training will include preparedness for calamities, arranging of logistics, Relief and rescue operations etc as a part of training module.

A provision of Rs. 3000/- per veterinarian is provided which will include cost of training, study materials etc. The cost for training of Veterinarians works out to Rs.1.05 lakh.

2. Networking and Communication Facilities

Reliable communication is fundamental to identify immediate source of help and where help will be needed most. Telephone and Internet connectivity are the minimum requirement for effective communication during calamities. Hence the office of the Assistant Director (A.H.) in the district must be well connected for seeking and providing information. Emphasis should be on wireless connectivity. The local government authorities may be requested to train and equip at least one youth per block in HAM radio operation.

All the Assistant Directors have been provided with mobile phones. All the 35 Veterinary Dispensaries will be provided with mobile phones for quick communication. The cost for providing one mobile phone instrument works out to Rs. 2000/- and the cost of connectivity works out to Rs.225/- per connection. This work will be undertaken during the first year itself.

4. Provision of Feed and Fodder

During calamities, there is every chance that livestock are deprived of feed and fodder. In order to tackle the shortage of feed and fodder, it is necessary to arrange availability of feed and fodder. The provision of feed will be of use during severe flood and drought. It is already proposed to establish fodder banks in the Government farms and hence funds are not required under this component.

5. Protection of Livestock Against Diseases

The most serious problem arising in the wake of floods and cyclones is the outbreak of diseases among animals. It is important to prevent spread of diseases especially that of FMD, HS and BQ. Hence vaccination should be taken up to protect the animals against these diseases. One of the natural calamities is an epidemic. To overcome this there should be enough stock of vaccines and facilities for rapid communication, mobilization of vaccines and personnel. One of the means for making available and mobilization of vaccine is by having a communication network and delegation of powers to use office vehicles to transport vaccine at short notice. Hence it is proposed to keep a stock of 20 percent of the vaccine requirement in the districts . In the state, FMD vaccine and PPR vaccine are purchased from outside sources. The cost of FMD vaccine is roughly Rs.8.00 per dose. FMD vaccine is purchased only for the cross bred population of 1,02,477 animals. The population that is to be protected is 20 percent of the total population (ie) 20,495 and the cost of purchase of vaccine works out to Rs. 1.64 lakh per year. The population of Goats that are prone for PPR disease is 3,42,180 and the population to be covered by PPR vaccine is 68,436 and the cost of vaccine is Rs.0.684 lakh per year@ Re.1 per dose.

6. Providing Animal Shelters for Livestock

In times of floods the affected people are moved to safe places a part of relief measures whereas their livestock are left to the mercy of elements. This results in losses to the farmers as their livelihood is dependent on the livestock. There is loss of production, sometimes deaths of livestock since they are orphaned. Hence it is proposed

to construct and provide animal shelters in such districts that are frequently affected by floods. The plan for construction of shelters will also include provision for water storage.

It is proposed to provide shelter for Livestock @ Rs.300 per sq.ft for 500 animals per district , since the district experience floods in times of heavy monsoon and flooding. The shelters will be constructed in selected Veterinary Institutions in the districts so that land required for construction will be available and monitoring the animals is easy. Further, the animals will be under constant supervision. The floor space requirement for one animal will be 70 sq. ft. per animal. It is proposed to construct cattle sheds to accommodate about 100 animals in each institution. Five such shelters will be constructed in each district. The type design will be provided by the Animal Husbandry department and the works will be executed by the PWD.

Cost of construction of shelter to accommodate 100 animals in one Veterinary institution @ Rs.300/- per sq.ft works out to Rs.21.00 lakh.

The cost for construction of 5 shelters to accommodate 500 animals in one district works out to Rs.105.00 lakh

Plan for Logistic

The local Veterinarian shall be made member of the disaster management setup by the local government and may be provided with the information as to the logistic arrangements that are in place for evacuation of animals, to transport potable water, feed and fodder in emergency situation. Preventive evacuation of the livestock should be included in any plan for the block. The veterinarian shall keep the farmers informed with regard to exigency plans for the transport of animals during calamities.

Control of Parasitic Diseases

The sheep, goats and calves below one year of age will be dewormed 4 times in a year before vaccinating them to enhance the vaccine response in them. The

cost of deworming will be Rs.1/- per sheep or goat and Rs. 3 /- for a calf below 1 year of age. The total cost of the project will be Rs.8.21 Lakhs per year. The total cost will be Rs. 32.84 Lakhs for 4 years. The project will be implemented by the Department of Animal Husbandry.

Health Care for Desi Poultry

To provide health care to desi poultry, vaccination and deworming will be done to 1 lakh birds per year for 4 years.

(vi) Project Goals

1. To facilitate door step insemination, vaccination, deworming and treatment even in remote places to improve animal health and production in the district.
2. To provide facilities for disease investigation and surveillance.
3. To provide health care for livestock and poultry.
4. Caring of animals during natural calamities and effective disaster management.

(vii) Project Components

- Mobile Veterinary unit will be established 7 taluks in Thoothukudi district by the
- Department of Animal husbandry to facilitate door step insemination, vaccination,
- deworming and treatment.
- Establishment of one Mobile Animal Disease Diagnostic Lab
- Strengthening of infrastructure facilities in 23 veterinary institutions in Thoothukudi
- district with basic facilities like fencing, bore wells, water trough, repairs etc.
- Disaster management system for livestock.

  Control of parasitic diseases through treatment to enhance vaccine response.
- Health coverage for Desi poultry.

(viii) Project **(Rs. in lakhs)**

S. No	Scheme component	Unit Cost	No of Units/ year	2008-09	2009 -10	2010-11	2011-12	Total units	Total cost
1	Mobile Veterinary unit in 7 taluks.								
	Equipment	0.30	7	2.10	-	-	-	7	2.10
	LN2 container (big)	0.30	7	2.10	-	-	-	7	2.10
	LN2 container (small)	0.05	7	0.35	-	-	-	7	0.35
	Bolero Jeep	4.75	7	33.25	-	-	-	7	33.25
	Diesel	0.432	7	3.024	-	-	-	7	3.024.
	Total	**5.832**	**7**	**40.824**	**-**	**-**	**-**	**7**	**40.824**
2	Establishment of Mobile Animal Disease Diagnostic *Lab:*								
	1.Vehicle	11.00	1	11.00	-	-	-	1	11.00
	2.Microscope	0.50	1	0.50	-	-	-	1	0.50
	3.Centrifuge	0.15	1	0.15	-	-	-	1	0.15
	4..Refrigerator	0.25	1	0.25	-	-	-	1	0.25
	4.Postmortem kit, chemicals	0.10		0.15	-	-	-	-	0.10
	Total	**12.00**		**12.00**	-	-	-		**12.00**
3	Strengthening of infrastructure facilities in veterinary institutions	5.0	23	115.0	-	-	-	23	**115.0**
4	Disaster management								
	1.Training for VAS	0.03	35	1.05				35	1.05
	2.Mobile phone at veterinary institutions	0.02	35	0.70				35	0.70
	3.Mobile phone connectivity charges	0.009	35	0.315				35	0.315
	4.Cost of vaccine	9.30		9.30					9.30
	5.Animal shelter	21.0	5	105.0					105.0
	Total			**116.36**					**116.36**
5	Control of parasitic diseases through treatment to enhance vaccine response. 4 times /yr. for 4 years.	Rs 1/- per sheep and goat . Rs 3/ for calf		8.21	8.21	8.21	8.21		**32.84**
6	Health care for desi birds. (vaccination and deworming), 1 lakh birds,/yr. Rs.1/year/bird, for 4 years	0.00001	1 lakh	1.0	1.0	1.0	1.0	4 lakh	**4.00**
Grand Total				**293.39**	**9.21**	**9.21**	**9.21**		**321.02**

Total cost of this project works out to **Rs.321.02 lakhs** during XI plan under NADP

(ix) Project Implementation Chart

S. No	Action Plan	2008-09	2009-10	2010-11	2011-12
1	Establishment of Mobile Veterinary Unit in 7 taluks	●			
2	Establishment of Mobile Animal Disease Diagnostic Lab	●			
3	Strengthening of infrastructu facilities in 23 veterinary institutions	●			
4	Disaster management	●			
5	Control of parasitic diseases through treatment to enhance vaccine response	●	●	●	●
6	Health care for desi birds (vaccination and deworming)	●	●	●	●

(x) Reporting

Monthly progress report will be submitted to the concerned higher authorities.

Project - IV

(i) Project Title : Processing Facilities

(ii) Project Abstract

To improve processing facilities, the Dairy Development Department will Supply portable Milking machines to 50 dairy farmers in 4 years to favour clean milk production and reduce labour cost. It will also supply 10 advanced milking machines to ID farms during the 2nd year of the project. The Dairy Development Department will establish one Bulk milk cooler, 2 Walk-in coolers, 2 manufacturing units for milk khoa, and 1 manufacturing unit for ice cream. Ten dormant Milk producers Co-operative Societies will be revived during the 4 years. Milk weighing machines will be supplied to 10 Milk

producers' co operative societies during the period of 4 years. Thirteen P.C based automatic milk collection stations will be established in the district in 4 years. The budget requirement is Rs.146.11 lakhs.

(iii) Background/Problem Focus

At present, in the majority of the dairy farms milking is done manually, which results in higher labour cost. Bulk milk cooler and walk-in cooler facilities to maintain the quality of milk are not available at present. Manufacturing facilities are required for milk khoa, and ice cream. Modern Milk weighing machines to measure the quantity of milk are not available in majority of Milk producers' co operative societies. Labour problem in milk collection centres. Some of the MPCS are dormant and need to be revived.

(iv) Project Rationale

In the majority of the dairy farms milking is done manually, which results in high labour cost. Supply of milking machines to dairy farmers and ID farms will favour clean milk production and reduce labour cost. To preserve the keeping quality of milk, bulk milk cooler and walk in coolers are required .Manufacturing facilities for milk khoa and ice cream are required to promote value added milk products. To measure daily milk procurement, advanced milk weighing machines are required in Milk producers' co-operative societies. P.C.based automatic milk collection stations will reduce labour problem. Some of the MPCS are dormant and need to be revived.

(v) Project Strategy

- Distribution of portable milking machine to 15 dairy farmers per year for 1st and 2nd year and to 10 farmers per year during 3rd and 4th years.(Total=50)
- Supply of 10 advanced automatic milking machines to ID farms during the 2nd year.
- Establishment of one Bulk milk cooler.
- Establishment of two Walk –in coolers, one in the first year and one in the 2nd year.

- Establishment of 1 manufacturing unit of milk khoa per year for the first 2 years. (Totally 2 units).
- Establishment of 1 manufacturing unit of Ice cream in the first year.
- Revival of 4 dormant MPCS in the first year and 2 per year in the remaining 3 years (Totally 10 MPCS)
- Supply of Milk weighing machine to 4 MPCS in the first year and 2 machines per year in the remaining 3 years. (Totally 10 machines)
- Establishment of 10 P.C based automatic milk collection stations in the 2nd year and one station per year during the remaining 3 years. (Totally 13 stations).

(vi) Project Goals

- To reduce labour cost for profitable dairy farming.
- To facilitate clean milk production.
- To increase milk production.
- To preserve keeping quality of milk.
- To promote value added milk products.
- To revive dormant MPCS

(vii) Project Components

- Supply of potrable Milking machines to 50 dairy farmers in 4 years by Dairy Development Department to favour clean milk production and reduce labour cost.
- Supply of 10 advanced automatic milking machines to ID farms during the 2nd year.
- Establishment of one Bulk milk cooler by Dairy Development Department.
- Establishment of 2 Walk – in cooler in Dairy Development Department
- Establishment of 2 manufacturing facilities for milk khoa by Dairy Development Department.
- Establishment of one manufacturing facilities for ice cream by Dairy Development Department.
- Revival of 10 dormant MPCS by the Dairy Development Department.
- Supply of Milk weighing machines to 10 Milk producers co operative societies.
- Establishment of 13 P.C based automatic milk collection stations by Dairy Development Department.

(viii) Project Cost **(Rs. in lakhs)**

S. No	Scheme component	Unit Cost	No Units / year	2008-09	2009-10	2010-11	2011-12	Total units	Total cost
1	Supply of portable milking machines to farmers. 15/yr in 1st & 2nd yrs, 10/yr in 3rd & 4th yr.	0.18		2.70	2.70	1.80	1.80	50	9.00
2	Supply of automatic milking machines to ID farms (2nd year only)	1.00	10	-	10.00	-	-	10	10.00
3	Establishment of Bulk milk cooler	30.0	1	30.0	-	-	-	1	30.00
4	Establishment of Walk-in cooler	30.0	1	30.0	30.0	-	-	2	60.00
5	Establishment of manufacturing facilities for milk khoa	0.77	1	0.77	0.77	-	-	2	1.54
6	Establishment of manufacturing facilities for ice cream	1.12	1	1.12	-	-	-	1	1.12
7	Revival of dormant MPCS. (4 in the 1st yr & 2 per yr in the remaining 3 years)	1.00		4.00	2.00	2.00	2.00	10	10.00
8	Supply of Milk weighing machines to MPCS (4 in the 1st yr & 2 per yr in the remaining 3 years)	0.17		0.68	0.34	0.34	0.34	10	1.70
9	Establishment of P.C based automatic milk collection stations(10 in the 2nd year & 1 per year in the remaining 3 years.	1.75		1.75	17.50	1.75	1.75	13	22.75
Grand Total				**71.02**	**63.31**	**5.89**	**5.89**		**146.11**

Total cost of this project works out to **Rs.146.11 lakhs** during XI plan under NADP

(ix) Project Implementing Chart

S. No	Action Plan	2008-09	2009-10	2010-11	2011-12
1	Supply of portable milking machines to farmers. 15/yr in 1st & 2nd yrs, 10/yr in 3rd & 4th yr.	● (15)	● (15)	● (10)	● (10)
2	Supply of 10 automatic milking machines to ID farms (2nd year only)		●		
3	Establishment of Bulk milk cooler	●			
4	Establishment of walk in cooler	●	●		
5	Establishment of manufacturing facilities for milk khoa	●	●		
6	Establishment of manufacturing facilities for ice cream	●			
7	Revival of dormant MPCS. (4 in the 1st yr & 2 per yr in the remaining 3 years)	●(4)	● (2)	●(2)	●(2)
8	Supply of Milk weighing machines to MPCS. (4 in the 1st yr & 2 per yr in the remaining 3 years)	●(4)	● (2)	●(2)	●(2)
9	Establishment of P.C based automatic milk collection stations(10 in the 2nd year & 1 per year in the remaining 3 years.)	●(1)	●(10)	●(1)	●(1)

(x) Reporting

Monthly progress report will be submitted to the concerned higher authorities.

Project -V

(i) Project Title Extension Facilities (Training)

(ii) Abstract

The Dairy Development Department.will conduct 4 Orientation training / workshop per year for milk producers at society level for 4 years. Dairy Development Department will under take Farmers study tour during every year of the project benefiting 150 farmers in 4 years. The budget requirement is Rs.10.70 lakhs

(iii) Project Background / Problem Focus

Farmers are lacking scientific knowledge on modern technologies in profitable milch animal rearing and lacking exposure to modern dairy farms.

(iv) Project Rationale

In order to educate the farmers 4 Orientation training/workshop will be conducted every year for the 4 years for milk producers at society level. Farmers study tour is proposed to provide opportunities to farmers to visit various dairy industries.

(v) Project Strategy

- 4 Orientation training / workshop per year for milk producers at society level by Dairy Development Department. Totally 16 programmes in 4 years.
- Farmers study tour to different modern dairy farms and institutions by Dairy Development Department. 40 farmers per year for the first 3 years and 30 farmers for the fourth year. Totally 150 farmers in 4 years.

(vi) Project Goals

Capacity building in the areas of dairy farming and latest developments in the dairy industry through training programmes/workshops and study tours.

(vii) Project Components

a) Orientation training / workshop for milk producers at society level by Department of Dairy Development.
(4 programmes per year x 4 yrs = 16 programmes).

b) Farmers study tour to different model dairy farms and institutions(DDD).
(40 farmers per year for the first 3 years and 30 farmers for the fourth year. Total =150 farmers).

(viii) Project Cost **(Rs. in lakhs)**

S. No	Scheme Component	Unit cost	No of Units /year	2008-09	2009-10	2010-11	2011-12	Total units	Total cost
1	Orientation training / workshop for milk producers at society level	0.20	4	0.80	0.80	0.80	0.80	16	3.20
2	Farmers study tour (DDD) 40 farmers/yr for the first 3 yrs and 30 farmers in the 4th year. Totally 150 farmers.	0.05	1	2.00	2.00	2.00	1.50	150	7.50
Grand Total				**2.80**	**2.80**	**2.80**	**2.30**		**10.70**

Total cost of this project works out to **Rs.10.70 lakhs** during XI plan under NADP

(ix) Project Implementation Chart

S.No	Action Plan	2008-09	2009-10	2010-11	2011-12
1	Orientation training / workshop for milk producers at society level (DDD)	●	●	●	●
2	Farmers study tour (DDD)	●	●	●	●

(x) Reporting

Monthly progress report will be submitted to the concerned higher authorities.

In sum, the project wise activities with physical and financial targets for the first year 2008-09 and subsequent three years (2009-12) are portrayed in Table 6.10. The total cost of the projects is Rs.1029.00 lakhs, as could be observed from Table 6.10.

Table 6.10 Action Plan - Animal Husbandry Sector

IV . Annexure (Proposed Plan for the Year 2008-2012)

Thoothukudi District – 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 and Buffalo**											
I	**Feed and Fodder Development**											
1	Augmentation of fodder production through SHGs/women entrepreneurs, Rs. 0.235 Lakh/acre, 10 acres / Block /year for 4 years, 120 acres /year, 480 acres / 4 years (D.A.H)	0.235	120	28.2	120	28.2	120	28.2	120	28.2	480	112.80
2	Fodder development activities (in IDF villages & farmers field (DDD)	0.235	55	12.925	50	11.75	55	12.925	55	12.925	215	50.525
3	Chaff cutters for elite farmers (small type) @Rs.20,000 as 100 percent Grant (DDD)	0.20	15	3.00	15	3.00	10	2.00	10	2.00	50	10.00
4	Chaff cutters for IDF villages on community basis (Mechanised) (DDD)	0.70	0	0.00	10	7.00	0	0.00	0	0.00	10	7.00

Table 6.10 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	Supply of mineral mixture to dairy cows @ Rs.600/cow/year, 1 kg / cow / month @ Rs.50/kg,12 kg/year, 5000 cows/year, 20,000 cows/4years (DAH)	0.006	5000	30.00	5000	30.00	5000	30.00	5000	30.00	20000	120.00
6	Supply of mineral mixture to the milch animals at subsidised cost (50 percent) @ 18 Kg/ year (DDD)	0.005	875	4.375	875	4.375	875	4.375	875	4.375	3500	17.50
7	Supply of By-pass protein feed to the milch animals (360Kgs/ year/animal @ 50 percent subsidised cost of Rs.9/- per kg.) (DDD)	0.033	500	16.50	500	16.50	500	16.50	500	16.50	2000	66.00
II	**Genetic Upgradation**											
1	Identification and traceability of breedable bovines @ Rs.20/animal, for 80,300 animals (DAH)	0.0002	80300	16.06	0	0.00	0	0.00	0	0.00	80300	16.06
2	Programmed breeding indigenous cattle & buffalo to increase conception rate (DDD)	0.007	500	3.50	500	3.50	500	3.50	500	3.50	2000	14.00
III	**Improvement of Livestock Health**											

Table 6.10 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
1	Establishment of mobile veterinary clinics in each taluk @ Rs.5.832 Lakhs/unit, for 7 units, (DAH)	5.832	7	40.82	0	0.00	0	0.00	0	0.00	7	40.82
2	Mobile Animal Disease Diagnostic Lab (DAH)	12	1	12.00	0	0.00	0	0.00	0	0.00	1	12.00
3	Institutional Development-Strengthening of veterinary institutions with basic facilities like fencing, bore-wells, water troughs, repairs etc. @ Rs.5.0 Lakh /Institution, for 23 unit (DAH)	5	23	115.00	0	0.00	0	0.00	0	0.00	23	115.00
4	Disaster management (5 shelters to accommodate 100 animals each, Training & mobile phones for 56 VAS & Vaccines. (DAH)			116.36	0	0	0	0	0	0		116.36
5	Control of parasitic diseases through treatment to enhance vaccine response (DAH)			8.21		8.21		8.21		8.21		32.84
IV	**Processing Facilities**											
1	Portable Milking machines for farmers (DDD)	0.18	15	2.70	15	2.70	10	1.80	10	1.80	50	9.00
2	Milking machines for ID Farms (DDD)	1.00	0	0.00	10	10.00	0	0.00	0	0.00	10	10.00

Table 6.10 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
3	Bulk milk cooler (DDD)	30.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
4	Walk-in Coolers (DDD)	30.00	1	30.00	1	30.00	0	0.00	0	0.00	2	60.00
5	Manufacturing facilities for milk khoa (DDD)	0.77	1	0.77	1	0.77	0	0.00	0	0.00	2	1.54
6	Manufacturing facilities for Ice cream(DDD)	1.12	1	1.12	0	0.00	0	0.00	0	0.00	1	1.12
7	Revival of dormant MPCS (DDD)	1.00	4	4.00	2	2.00	2	2.00	2	2.00	10	10.00
8	Milk weighing machine for milk producers co-op.societies (DDD)	0.17	4	0.68	2	0.34	2	0.34	2	0.34	10	1.70
9	P.C.based automatic milk collection stations to IDF villages milk producers cooperative societies (DDD)	1.75	1	1.75	10	17.50	1	1.75	1	1.75	13	22.75
V	**Extension Facilities**											
1	Orientation training / workshop for milk producers at society level (DDD)	0.20	4	0.80	4	0.8	4	0.8	4	0.8	16	3.20
2	Farmers study tour @ Rs.5000/- per farmer (DDD)	0.05	40	2.00	40	2.00	40	2.00	30	1.5	150	7.50
2	**Sheep and Goat**											
II	**Genetic Upgradation**											
1	Subsidy to SHG women for intensive system of Goat (20+1) rearing. 1 unit / block/yr. 48 units in 4 yrs. Rs.2000/goat. Rs.42000/unit. (DAH)	0.42	12	5.04	12	5.04	12	5.04	12	5.04	48	20.16

Table 6.10 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
2	Subsidy to farmers for Sheep (20+1) rearing. 1 unit / block/yr. 48 units in 4 yrs.Rs.2000/sheep. Rs.42000/unit. (DAH)	0.42	12	5.04	12	5.04	12	5.04	12	5.04	48	20.16
3	**Poultry**											
I	**Genetic Upgradation**											
1	Supply of Nandanam B2 chicken (9+1)backyard units toSHG women, @ Rs. 500/unit, 100 units / block / year, 4800 units for 4 years (DAH)	0.005	1200	6.00	1200	6.00	1200	6.00	1200	6.00	4800	24.00
II	**Improvement of Health**											
1	Health care for desi birds (vaccination and deworming), 1 lakh birds/yr, Rs.1/year/bird, for 4 years (DAH)	0.00001	100000	1.00	100000	1.00	100000	1.00	100000	1.00	400000	4.00
4	**Others (PIG)**											
I	**Genetic Upgradation**											
1	Supply of piggery units (3+1 unit) to farmers @ Rs.0.76 Lakhs/unit, 2 units/ block/year, 24 units/year, 96 units in 4 years (DAH)	0.76	24	18.24	24	18.24	24	18.24	24	18.24	96	72.96
	Total			**516.091**		**213.97**		**149.72**		**149.22**		**1029.001**

6.7 Fisheries Sector

6.7.1. Introduction

Thoothukudi district has got a coastal length of 164 kms and this provides ample scope for developing marine fishing. The potential of inland fishing is also vast. Sizable fishermen population earns their livelihood income through fishing. Therefore, following are the major components planned for the XI plan period under NADP.

- Modernization of mechanized fishing
- Modernization of traditional fishing vessels
- Pre-processing and chill room facilities
- Establishment of multiplication hatchery
- Development of artificial reefs
- Setting up of retail outlets
- Subsidy for the provision of two wheeler with carriers
- Sea ranching for stock enhancement
- Strengthening of research activities in the fisheries college under TANUVAS

Project - I

(i) Project Title: Modernization of Mechanized Fishing Vessels (50 Percent Subsidy)

(ii) Project Abstract

The fishermen of Thoothukudi are mostly using gillnets and travel nets in the motorized country craft and travel boats, respectively. The trawling method of fishing over the years has led to the depletion of the fishing resources and destruction of the grounds. Tuna is one of the important species left unexploited in the open sea. Hence encouraging the fishermen to venture into eco-friendly tuna long lining, squid jigging methods will lead to improved realisation of revenue and better exploitation of the export markets. This will indirectly reduce the damages done to the natural sea environment by trawling and help solved the problems between the trawling fishermen and the gill netting fishermen that is predominant in this district. The budget requirement is Rs. 137.50 lakhs

(ii) Project Background / Problem Focus

Fishery Survey of India has conducted experimental long line fishing to explore the magnitude of tuna resources in Indian seas. The share of tuna in the long line catch from Arabian sea has been reported to be 45.6 percent which give a positive sign for the extensive long line operations in the off shore regions of Arabian sea. Commercial tuna long lining in Tamilnadu waters is suggested that a multipurpose fishing vessel would be more suitable and profitable due to restricted fishing season for yellow fin tuna operations. Indian flat-round-bent hooks have been found effective as Norwegian round-bent hooks of size 0/4. The results of long line survey operation with semi-automated systems by FSI and Central Institute of Fisheries Nautical Engineering and Training vessels along lower east coast of India have revealed the presence of good shark resources. Efforts have been taken by the CIFNET to locate tuna fishing grounds and propagating tuna fishing methods to fishermen through training.

(iii) Project Rationale

Tuna fishery is yet to gain popularity for catch using long line fitted in the vessel. Equipping the fishing vessel with suitable long line could help catching tuna with prime quality for export. With onboard preservation & pole & line catching tuna fishery can be enhanced.

(iv) Project Strategy

- Tamilnadu has only few tuna fishing vessels
- Fish caught through trawl net does not keep quality
- Fishermen do not have adequate knowledge on tuna capture by pole & line
- At present non availability of specific live feed to serve as bait for tuna capture
- Long line method is the best and helps in the instant killing
- Body size of tuna (width of tuna is more than 1 foot) is large &
- immediate chilling to the center bone is must to retain the export quality i.e. color and without any deterioration

Any temperature abuse result in histamine poisoning (above + 4^0 C) since the tuna meat is consumed fresh as such without cooking and this quality meat is graded as "Sashumi" which fetches 10 –12 USD / Kg therefore onboard preservation is a must to meet export standard

- Live bait is necessary for aggregating the tuna to use pole and line
- Tuna catch requires specially built tuna fishing vessels

(v) Project Goals

- To procure specially built tuna vessels with onboard processing & rapid chilling
- To train fishermen on tuna catching using lone line
- To train Q.C. personnel on quick processing, rapid chilling & packing (below + 4^0 C)

(vi) Project Components

- Creation of winch facility in the boat
- Purchase of long line
- Selection and stocking of suitable live food to serve as bait to tuna
- Onboard chilling facility

(vii) Project Cost

Initially 5 units at a cost of Rs.27.50 lakhs each will be provided. Total cost is Rs.137.50 lakhs

S.No.	Particulars of basic modernization	Rs. in lakhs
1.	Winch fittings	3.00
2.	Long line and installation in boat	2.00
3.	Onboard refrigeration and preprocessing (chilling facilit	15.00
4.	Live food maintenance in cages floated in the sea	5.00
5.	Training to fishermen in long line operation	2.50
Total		**27.50**

(viii) Implementation Chart of the Project (2008-2012)

S. No.	Particulars	I Qtr	II Qtr	III Qtr	IV Qtr
1	Winch	√	√		
2	Long line	√	√		
3	Onboard refrigeration	√	√		
4	Live food maintenance in cages floated in the sea	√	√	√	√
5	Training to fishermen in long line operation	√	√	√	√

(ix) Reporting

The efficiency of lone line and the quality of fish caught using long line will be assessed by SFD and TANUVAS periodically

Project II

(i) Project Title: Modernization of Traditional Fishing Vessels (50 Percent Subsidy)

(ii) Project Abstract

In Thoothukudi all FRP/wooden vallams and catamarans are motorized and totally there are about 4200 traditional crafts altogether. The fishing methods followed is mostly gill netting only. To diversify the fishing methods employed by the traditional fishermen it is better to encourage some of these fishermen to undertake line fishing methods like long lining, squid jigging, usage of Trolling lines etc. The budget requirement is Rs 100.00 lakhs

(iii) Project Background / Problem Focus

The traditional fishing crafts are to be equipped with modern equipments for efficient fishing activities by the fishermen.

(iv) Project Rationale

Equipping the fishing vessels used by traditional fishermen with modern equipments.

(v) Project Strategy

- Increasing fish production
- Better safety to fishermen
- Sustained livelihood

(vi) Project Goals

To improve the traditional fishing vessels with modern equipments.

(vii) Project components

50 existing fishing vessels fitted with modern equipments and gears.

(viii) Project Cost

a.	Subsidy for the purchase of lines for fitting in fishing vessels	:	Rs.1.50 lakhs
b.	Vessel maintenance		Rs.0.50 lakhs
	Total	**:**	**Rs.2.00 lakhs**

Project cost	:	Rs. 100.00 lakhs
Financing	:	NADP

(ix) Implementation Chart of the Project

The project will be implemented by the Fisheries Department at 15 vessels each year 2008-2009, 2009-2010 and 2010-2011 and 5 vessels during 2011-2012.

(x) Reporting

The progress of the project will be assessed by SFD.

Project III

(i) Project Title: Establishment of Multi- Species Hatchery

(ii) Abstract

Thoothukudi consists of a vast coastline of 164 km and a multispecies breeding hatchery could be established at Tharuvaikulam. The purpose of the hatchery is to produce the fish/shrimp seeds continuously for ranching into the sea and good quality seeds could be supplied to the farmers for coastal aquaculture, if possible it could be used for inland fisheries(like scampi, sea bass).This hatchery could be also utilised for the breeding of marine ornamental fishes.

(iii) Budget: Rs. 200.00 lakhs

(iv) Project cost

a.	Cost of hatchery shed – 10 x 30 m – 300 m^2	:	Rs.60.00 lakhs
b.	Maturation tanks, spawning tanks, recovery systems	:	Rs.30.00 lakhs
c.	Back-up-power, electronic fittings, accessories	:	Rs.25.00 lakhs
d.	Blowers, air tine systems, water line pumps etc	:	Rs.35.00 lakhs
e.	Outdoor algalculture unit with laboratory	:	Rs.25.00 lakhs
f.	Contingent grant for running capital (for 4 yrs)	:	Rs.25.00 lakhs
	Total	**:**	**Rs.200.00 lakhs**

(v) Implementation chart

The hatchery will be established during 2008-2009

(vi) Reporting

The project will be implemented by Department of Fisheries in co-ordination with Fisheries College and Research Institute of TANUVAS.

Project - IV

(i) Project Title: Pre-processing and Chill Room Facilities

(ii) Project Abstract

Thoothukudi being a major export hub consists of one major port and fishing harbour. The fish landings consists of important fishes like seer fish, lobsters, prawns, snappers, groupers etc., which are considered to be export varieties. The present day infrastructure in the fishing harbour as well as other fish landing centres do not provide the pre processing and chill room facilities which are important in the context of preservation and hygienic handling of fishes. Such facilities by preventing the spoilage of fishes attracts better pricing for the fishes, thereby increasing the profit of the poor fishermen. It is proposed to setup chill room and pre processing facilities at Thoothukudi fishing harbour and Tharuvaikulam.

(iii) Project Cost

a.	Equipping the present storage facility with refrigeration and cold store equipment	:	Rs.	20.00 lakhs
b.	Repair and renovation in the ice plant, flooring and pest control facilities.	:	Rs.	20.00 lakhs
	Total	**:**	**Rs.**	**40.00 lakhs**

(iv) Budget : Rs. 80.00 lakhs

Unit cost	:	Rs. 40 lakhs (100 percent grant)
No. of units	:	2
Total cost	:	80 lakhs
Duration	:	2 years
Area of Implementation	:	Thoothukudi fishing harbour and Tharuvaikulam.

Implementing Agency	:	TamilNadu Fisheries DevelopmentCorporation.
Mode of Implementation	:	Renovation of existing building for the pre processing and chill room.
Plan of Action	:	First two years facilities in Fishing harbour, Thoothukudi. Next two years facilities at Tharuvaikulam.
Benefit	:	Better quality fish and better price for the fishermen.

(v) Reporting

The project will be implemented by TNFDC and evaluated by State Fisheries Department

Project - V

(i) Project Title : Setting up of Retail Outlets @ 50 Percent Subsidy

(ii) Project Abstract

In Thoothukudi district, the large fish production from the wild could be hygienically maintained and marketed in retail outlets by providing subsidy to the entrepreneurs (50 percent subsidy) for fish stalls as well. So far such types of hygienic fish stalls have not been established. This could give immense scope for the improvement of the local markets for the fishermen and the fishery products.

(iii) Budget : Rs. 12.00 lakhs

(iv) Project 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.

(v) Project Rationale

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

(vi) Project strategy

The retail market will be located in 4 difference places of Thoothukudi district based on the marketing potential.

(vii) Project Goals

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

(viii) Project components

Fish retail outlet

(ix) Project cost

a.	Renovation of existing falls	:	Rs.2.00 lakhs
b.	Electronic balance, drawing knives, water lines, water disposal etc.	:	Rs.1.00 lakhs
	Total cost per unit	:	**Rs.3.00 lakhs**

(x) Implementation Chart of the Project

The retail markets will be implemented in the 4 selected districts in first year itself.

Project Implementation Chart

S. No	Particulars	2008-2009	2009-10	2010-11	2011-12
1.	Selection of place	√			
2.	Construction of fish retail outlet in 4 difference places of Thoothukudi districts		√	√	√

(xi) Reporting

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

Project -VI

(i) Project Title : Deployment of Artificial Reefs

(ii) Project Abstract

The introduction of artificial reefs in Thoothukudi district in the yester years have fetched good results especially better accumulation of algae, bacteria and micro organisms over the reefs which form good natural food for the fishes. It helps as feeding grounds and breeding grounds for the fishes. It helps to extend the food chain in the sea there by forming a complex food web inside helping to sustain various species of fishes. This results in good multiplication and congregation of fishes around the artificial reef areas.

(iii) Budget : Rs. 150.00 lakhs

(iv) Project Background / Problem Focus

In view of depleting fish stock and diversified biodiversity, FAD has to be strengthened. Fish species are at the verge of stock depletion has to be governed through FADs. Tamilnadu with an extended coastal length attracts immediate attention to revive the stock by special means like FADs. FADs with community involvement especially in the coastal region would help implementing the programme in a successful way.

(v) Project Rationale

- To enrich the inshore waters with diversified fish species
- To help the fishermen for good catch of fish
- To provide a protected ground for various fauna and flora
- To retain the semi natural ecosystem

(vi) Project Strategy

To implement the programme of community FADs in all the coastal districts to support marine fishery and stock retention.

(vii) Project Goals

- To identify suitable ground along the coast to install FADs like concrete structures, boulders, and other fibre reinforced structures without polluting the coastal ecosystem.
- To give awareness to the fishermen and coastal fisher folk about the value of FADs to implement the programme with fishermen participation for community development.

(viii) Project Components

Installation of FADs of various shapes and with different components like stone pitchments, barrels, tyres, hollow material and dead corals

(ix) Project Cost.

S. No.	Components	Rs in lakhs
1.	An FAD of 10 metre diameter and 5 mt.height made up of concrete or FRP materials	5.00
2.	Anchorage	5.00
3.	Floor mast	1.50
4.	Training fisher folk	1.00
5.	Management cost (coolie wages, fuel, miscellaneous cost)	1.50
	Total	**15.00**
	Total cost 10 units x 15 lakhs	**150 lakhs**

(x) Project Implementation Chart

S.No.	Particulars	2008-2009	2009-10	2010 -11	2011-12
1.	Identification of suitable coastal site for installation	√			
2.	Design and fabrication of FADs		√		
3.	Installation			√	
4.	Training			√	√
5.	Sampling and fish catch		√	√	√

(xi) Reporting

The efficiency of FADs kept installed in the coast will be periodically monitored and aggregation of fish species will be observed and reported the same to the authorities through fisher folk with community involvement.

Project -VII

(i) Project Title: Subsidy for the Provision of Two wheeler with Ice Box at 50 Percent Subsidy

(ii) Abstract

In Thoothukudi district the fish caught in the coastline, reach the market and to the consumers in poor quality. To add value and quality to the landings, it is necessary to provide them with mopeds with ice boxes to reach the markets faster.

(iii) Budget : Rs. 7.50 lakhs

(iv) Project Background / Problem focus

For transporting and marketing fish hygienically.

(v) 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

(vi) Project Components

Supply of 50 units of mopeds with ice box at 50 percent subsidy

(vii) Project Cost Subsidy for

1. Cost of moped	:	Rs.12,500
2. Cost of ice box	:	Rs.2,500
Total Cost	**:**	**Rs.15,000**

Rs. 0.15 lakh for 50units

(viii) Implementation Chart of the Project

Sl. No.	Particulars	I Qtr	II Qtr	III Qtr	IV Qtr
1.	Supply of moped with ice box	√	√	√	√

(ix) Reporting

To the State Fisheries Department

Project -VIII

(i) Project Title : Sea Ranching for Stock Enhancement

(ii) Project Abstract

In the Gulf of Mannar sea to replenish the wild stock it is essential to introduce the hatchery reared juveniles of the various shrimps and fishes into the open sea through

the process of sea ranching. Thoothukudi region has already implemented such sea ranching programmes successfully. The rearing of 1 million seeds could be carried out at a time in nursery cages for 45 days or until the species reaches juvenile stage and then released into the open sea.(1 unit = 1 million; costing Rs140.00lakhs including seed cost ,rearing cost, feed cost, labour cost etc.)

(iii) Budget : Rs. 140.00 lakhs

(iv) Project Background / Problem Focus

In view of depleting fish and shrimp stock in this region, sea ranching of juveniles has to be done for enhancing its present stock. Sea ranching of these species with community involvement especially in the coastal region would help implementing the stock enhancement programme in a successful way.

(v) Project Rationale

- To enhance the stock of fishes through sustainable fisheries management.
- Involvement of fisherfolk in improving the present stock through their active participation.

(vi) Project Strategy

To implement the programme of sea ranching involving local communities in all the coastal blocks to support marine fishery and stock retention.

(vii) Project Goals

To give awareness to the fishermen and coastal fisher folk about the value of sea ranching to implement the programme with fishermen participation for community development.

(viii) Project Components

Sea ranching of various fish species.

(ix) Project Cost

The project cost of 140.00 lakhs, 100 percent financing will be done by NADP

(x) Project Implementation Chart

S.No.	Particulars	I Qtr	II Qtr	III Qtr	IV Qtr
1.	Identification of suitable coastal site for sea ranching	√			
2.	sea ranching of various fish species		√	√	√
3.	Community participation		√	√	√

(xi) Reporting

The efficiency of Sea ranching kept installed in the coast will be periodically monitored and aggregation of fish species will be observed and reported the same to the authorities through fisher folk with community involvement.

Project -IX

(i) Project Title: Development of Feeds and Feed Additives for Marine Fin Fishes

(ii) Abstract

Culture of marine fishes like the Groupers, Sea bass, etc. is gaining momentum. The culture is carried out in culture ponds, cages, pens etc. The potential for marine fin fish culture is immense considering the vast extent of continental shelf area available in India. Feed forms 60 percent of the total cost of production in aquaculture. Development of suitable feed providing better average daily growth, reduced days of culture with good food conversion ratio is inevitable. In today's scenario most of the aqua feeds are imported from other countries only. Hence to develop a low cost efficient feed according to the local needs and the behavioural feeding habits of the cultured fish species is essential to reduce the cost of production of the cultured fish.

(iii) Budget : Rs. 50.00 lakhs

(iv) Background

Successful seed production and farming of grouper, cobia, seabass depend on the formulated feeds. Feed development for the above species are in infancy stage and hence farming of these fishes could not come up in India.

(v) Project Rationale

Development of feeds to develop brood stock, enhance larval survival and farming of cobia, grouper and sea bass will enhance adoption of seed production and farming by farmers and thereby enhancing marine fish production.

(vi) Project Strategy

Feeds and feed additives are backbone of any aquaculture activity. In this project, feeds and feed additives for commercially important fishes like cobia, seabass and grouper will be developed and assessed for their quality. TANUVAS will implement the programme at Thoothukudi coast.

(vii) Brood Stock Diet

Feeds with required polyunsaturated fatty acids will be prepared and the gonad development of female will be evaluated in cobia, sea bass and grouper.

(viii) Larval Diet

Micro feeds will be developed according to the requirements of larvae of cobia, seabass and grouper. The suitability of the feed will be studied based on the survival and growth of larvae.

(ix) Grow-out Feeds

The major operational cost for fish farming is feed. Appropriate feeds will be developed and the growth of cobia, grouper and sea bass will be assessed.

(x) Project Goals

- ❖ To develop brood stock, larval and grow out feeds for cobia, sea bass and grouper.
- ❖ To assess the growth of above fishes.
- ❖ To develop feed products like, immuno -stimulants, probiotics, prebiotics for the above fishes and their evaluation.

(xi) Project Components

- ❖ Broodstock feed development
- ❖ larval feed development
- ❖ Grow out feeds
- ❖ Feed additives.

(xii) Project Cost

a. Equipping lab as a feel analytical lab with all modern equipments for feed analysis : Rs. 30.00 lakhs

b. Extracted for making microbound and micro coated feed : Rs. 20.00 lakhs

Total : Rs. 50.00 lakhs

xiii) Implementation Chart

S. No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IVQtr
1.	Development of brood stock feeds and their evaluation	√	√		
2.	Development of larval feeds and their evaluation		√	√	
3.	Development of grow out feeds and their evaluation			√	
4.	Development of feed additives and their evaluation				√

(xiv) Reporting

Half yearly report will be submitted and the progress of the work will be reviewed by University authorities.

Project -X

(i) Project Title: Development of e-Extension Facility for Stakeholder

(ii) Project Abstract

The development of e-extension facility would expand learning choices for stakeholders in support of anytime-anywhere learning by providing technological information through national electronic outreach network. The E-extension provides information to the stakeholders in multiple ways and can take advantages of current intellectual and other resources that will allow for continuous change and improvement in the stakeholders knowledge.

(iii) Budget: Rs. 150 lakhs

(iv) Background / Problem Focus

More than 70 percent of the Indian population is living in the villages. Since independence, the Central and State Governments have implemented several rural development programmes for the benefit of farming communities. But they have not made much significant improvement in their socioeconomic status. It can be mainly attributed to the non- availability of information on the emerging technologies in agriculture and its allied fields. Therefore, transfer of new fisheries technologies to the rural communities, especially for the stakeholders, through e-extension has become essential for the development of fisheries.

(v) Project Rationale

- Increased user access and awareness of new technologies and its information.
- Improved efficiency and cost-effectiveness in knowing the latest technological information.

- ❖ Improved marketing and thereby increasing the socioeconomic status of fishing communities.
- ❖ Empowers extension workers and farmers by creating access to knowledge banks, distance learning opportunities and an open environment that links various stakeholders.

(vi) Project strategy

Developing e-extension facilities for fisheries technologies will increase the access of stakeholders so that they could adopt them as soon as they came to know about the new technologies or improvements in the existing technologies. All the proven technological information could be uploaded in the nationwide information network system so that it could be available to the stakeholders immediately than the traditional methods.

(vii) Project Goals

- ❖ To re-establish extension's foundation, vision and purpose and to satisfy the fisheries stakeholders base and societal needs.
- ❖ To plan and begin implementation of a national web-based information and education network for extension clientele and stakeholders.
- ❖ To develop strong "top-down" approach for e-extension and using information technology to bring trusted and valued fisheries related information to the stakeholders.
- ❖ To develop Information networking for stakeholders and stakeholder's groups.

(viii) Project Cost

- ❖ Equipments and machineries for e-extension
- ❖ Nationwide net working facility for information interchange
- ❖ Development of e- extension for various fisheries technologies
- ❖ Remuneration/ salaries for staff
- ❖ Infrastructure facilities

S.No.	Particulars	Amount (Rs. in lakhs)
1.	Equipments and machineries for e-extension	40.00
2.	Nationwide net working facility for information interchange	30.00
3.	Development of e- extension for various fisheries technologies	30.00
4.	Remuneration/ salaries for staff	20.00
5.	Infrastructure facilities	30.00
Total		**150.00**

(ix) Project Implementation Chart

S. No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Equipments and machineries for e-extension	√	√		
2.	Nationwide net working facility for information interchange			√	√
3.	Development of e- extension for various fisheries technologies			√	√
4.	Remuneration/ salaries for staff			√	√
5.	Infrastructure facilities			√	√

(x) Reporting

Quarterly progress reports and Annual reports will be prepared and submitted to review the project along with State Fisheries Department.

Project -XI

(i) Project Title: Development of Sperm Bank for Production of Quality Seeds

(ii) Project Abstract

Quality seeds of cultivable fishes are the base for increasing fish production from aquaculture. Over the years in aqua hatcheries due to inbreeding and closed circle breeding, there has been a clear genetic depression which is evident from the slow growth of carps in the farm ponds. In order to rectify this genetic depression, cross breeding and hybridization and selective breeding have been recommended. However, the brood stock maintenance and transportation for the effective selective breeding is a real challenge. Considering this bottle neck in the seed farms, it is felt that application of cryopreserved spermatozoa for the breeding of carps will pave way for the production of quality fish seeds for stocking.

Cryopreservation offers vide scope for the better breeding and good quality seeds. One cryo lab is already available in Fisheries College & Research Institute where the cryopreservation protocol for different carps, were already standardized. Further continuous research on other species is also under way for the collection and preservation of the spermatozoa from carps of different localities. Sperm bank can be developed along with the cryo lab in FC&RI, Thoothukudi, in which spermatozoa of carps from quality breeders can be stored for fuse by the hatchery operators. This technology can help in the development of good quality seeds and brood stock for further breeding work.

(iii) Budget : Rs. 50.00 lakhs

(iv) Background

Selective breeding and hybridization (intra-species) are considered as best tools to improve the quality of seeds and further development of a good quality brood stock. The problem of maintaining a huge number of brood stock often felt as cumbersome for the seed farms. Asynchronization in the maturity of the brooders (delayed or absence of maturation of male or female brooders) greatly affects the seed production and

availability of required number of seeds. Further poor quality brooders also do not perform well during the breeding season and thereby the availability of seeds is restricted within the season itself.

Tamil Nadu has 0.37 million ha of freshwater resources. About 8 districts are blessed with good water resources and the scope for culture in the long and short term seasonal ponds and tanks and irrigation tanks is promising. In mos tof the times, the non-availability of seeds is attributed as the reson for the no stocking and poor quality seeds is attributed for the low level production in the culture tanks.

(v) Project Rationale

The rationale behind the Sperm Bank is to develop a supply centre for the quality male genetic material (spermatozoa) for the breeding of the fishes in commercial hatcheries. The spermatozoa will be collected from different regions for all the cultivable carps and maintained under cryopreserved stage. This cryopreserved spermatozoa will be supplied to the hatcheries as and when demanded.

(vi) Project Strategy

- Establishment of Sperm Bank in FCRI, Thoothukudi
- Technical training to the hatchery operators (Govt. and Private) in using the cryopreserved spermatozoa
- Production of quality seeds by the cross breeding with the same stock from different regions.
- Development of brood stock from the seeds produced for the future seed production.
- Strengthening of the sperm bank with the new stock so that the process can be continued.

(vii) Project Goals

- To establish a Sperm Bank catering to the needs of the hatchery owners.
- To train the hatchery operators for developing good brood stock for the carps
- To produce good quality seeds for enhancing production from the culture ponds.

(viii) Project Components

- Sperm Bank with all the accessories.
- Strengthened cryo lab for the cryopreservation work
- Cryopreserved spermatozoa of all fishes for further breeding programmes.

(ix) Project Cost

a.	Cost of LN2 storage tank with valves and disbursing units	-	Rs.10.00 lakhs
b.	Cost of LN2 cans for sperm stand storage	-	Rs.10.00 lakhs
c.	Lab consumables for the year	-	Rs.10.00 lakhs
d.	Travel contingency, coolie wages, fuel and electricity	-	Rs.10.00 lakhs
e.	Repairs and renovation and extroversion	-	Rs.10.00 lakhs
	Total	-	**Rs.50.00 lakhs**

(x) Implementation Chart

Sl. No	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Establishment of the farms in 2 districts and operation for production	√			
2.	Training to the farmers in the existing units and to develops 4 more units in other districts	√			
3.	Mass training to the farmers and continuous production of prawns in the existing units and formation of farming units in 2 more districts.		√		
4.	Monitoring the farming done by the farmer, coordinating the marketing and regulating the supply of inputs like seed and feed.			√	√

(xi) Reporting

Quarterly progress will be reported to TANUVAS based on which the project can be reviewed and analysed.

Project -XII

(i) Project Title: Production of Transgenic Fish

(ii) Abstract

The production of different species of transgenic fish is gaining importance among the aquaculture scientists the world over as it has the potential for tackling a range of problems such as malnutrition. Although more than 15 countries have successfully produced transgenic fish, in India, with a long and potential coast line of 7000 kms the success in this area of research is still lagging. The transgenicity in fish with homologous as well as heterologous gene insertions is capable of improving growth and feed efficiency and producing extraneous protein of human therapeutic or economic importance. The present project envisages establishment of transgenic technique in common carp and Indian major carps to improve its growth rate and in turn, economics of its aquaculture.

(iii) Budget (Rs. In lakhs)

i) Equipments for transgenic fish production	-	Rs.82.30 lakhs
ii) Recurring including chemicals	-	Rs. 8.70 lakhs
Total	-	**Rs. 90.00 lakhs**

(iv) Background / Problem Focus

Increasing efforts were made for developing improved strains of fishes by way of selective breeding. The conventional methods of genetic improvement such as domestication, inbreeding, cross breeding, hybridization, chromosome manipulation is time consuming and if at all, not selective to production traits alone. The transgenic technology is widely used in biotechnology, from generation of genetically modified

(GM) foods to production of pharmaceutical proteins. Using exogenously introduced growth hormone gene, this technology has been successfully used to develop fast-growing super-fish stocks for aquaculture. So far, fast-growing fish by transferring a growth hormone gene have been developed for several fish species. Scientists have demonstrated that the fish muscle have a high capacity of expressing recombinant proteins without negative effect and thus fish may become another transgenic bioreactor system. The research on fish transgenics in India is relatively recent and the Indian scientists have produced transgenic zebrafish, catfish, catla and rohu.

(v) Project Rationale

Transgenic fish are appealing because attainment of desired traits is generally more effective, direct, and selective than traditional breeding, and could prove to be an economic benefit for improvement of production efficiency in aquaculture worldwide. Many fish species including tilapia, common carp, Indian major carp, goldfish, catfish and zebrafish have been genetically modified to produce select traits such as increased growth, increased feed conversion efficiency, cold tolerance, and disease resistance. In 2003, carps and other cyprinids were the top species group produced worldwide in aquaculture, contributing 17.2 million tons to the global food supply (Johnson, 2005). Use of transgenic technology in carp aquaculture could prove to be highly beneficial to the industry and further increase the availability of theses fish.

(vi) Project Strategy

- Selection of fish species, induced breeding and in vitro fertilization.
- Choosing the desirable gene (growth hormone gene) and making transgenic construct and cloning the gene.
- A DNA construct containing genes for the desired trait(s) along with a promoter sequence is introduced into the pronuclei of fertilized eggs using methods such as microinjection and electroporation
- Detection of transgenic using PCR based assay and southern blot analysis.

- Once transgenic have become integrated into a host organism's DNA, they can be passed on to future generations, with the possibility of 100 percent transmission using stable isogenic transgenic lines.

(vii) Project Goals

The production of transgenic fish will definitely have an important role to play in the future for increasing aquaculture productivity and would help in reducing the fishing pressure on natural resources. In Indian context, transgenic fishes would be a boon and the increases in fish production will improve the nutritional standard of the people. The economy will be diversified raising employment opportunities.

(viii) Project Cost

S. No	Items	Rs.
1.	Refrigerated micro centrifuge	4,50,000
2.	Micropipettes	75,000
3.	Deep Freezer (-80ºC)	4,00,000
4.	Real time PCR	18,00,000
5.	Gel Documentation system with software	5,00,000
6.	Mini Electrophoresis kit with power pack	50,000
7.	Micromanipulator and accessories	25,00,000
8.	Gel dryer with vaccum pump	3,00,000
9.	Electronic balance	80,000
10.	Millipore water filter system	5,00,000
11.	UPS On line 5KVA	1,00,000
12.	Electroporator	4,00,000
13.	Environmental incubator shaker	4,00,000
14.	Hybridization oven	3,25,000
15.	CO_2 incubator	3,50,000
	Total	**82,30,000**
16.	Miscellaneous	7,70,000
	Total	**90,00,000**

(ix) Implementation chart of the project

The technology for the production of transgenic fish will be carried out by the FC&RI, TANUVAS and the rearing, development of transgenic broodstock, breeding of transgenic fish, supplying superfish seeds to farmers for production will be carried out by the Department of Fisheries, Government of Tamil Nadu. TANUVAS will implement the programme during 2008-2009.

(x) Reporting

Half yearly review will be conducted by the concerned University authority and progress will be assessed for improvement and implementation.

Project -XIII

(i) Project Title : Scampi farming Demo Unit

(ii) Project Abstract

Freshwater prawns (*Macrobrachium rosenbergii* and *M. malcolmsonii*) are the best suitable cultivable species. Among the 31 districts, about 8 districts have enough freshwater resources to take up freshwater prawn farming in semi intensive scale. This ensures an increase in the production of freshwater prawns upto 500 tons Annually in the beginning, which can touch as high as 3000 tons in the years to come. Cumulative enhancements in the production together with revenue to the fish farmers make this enterprise an acceptable and promising venture for Tamil Nadu.

About 500 ha of water spread, including community tanks, dug out ponds, large tanks and pools can be brought into freshwater prawn production immediately with low stocking through moderate culture practice. This aims at producing about 500 tons Annually (1 ton/ha), which can gradually improve to increase the culture area and culture intensity in the following years.

(iii) Budget : Rs. 5.00 lakhs

(iv) Background

Freshwater prawns enjoy great demand in the international market, that is evident from the high price they fetch in the consumer market. The demand supply gap is widening year after year due to the rise in the consumption worldwide. Therefore there is a scope for the constant revenue for the freshwater prawn producers. The tropical climate in the State also favours the growth of the prawns.

Tamil Nadu has 0.37 million ha of freshwater resources. About 8 districts are blessed with good water resources including low saline waters. However, the production of prawns from the state remains at very low figures. This can be attributed to the low level of technology adoption in aquaculture in the state along with the low percentage of people participating in the farming of prawns voluntarily. Large scale adoption of the technology and extensions of technical support to the farmers may bring in changes in the mindset of the people, especially inland fish farmers. Keeping this in mind the demo and practical production units in the districts with potential water bodies are proposed.

(v) Project Rationale

The rationale behind this Project is to develop demonstration units for the freshwater prawn farming, that can be operated by State Fisheries Department, which can train and empower the farmers to take up freshwater prawn farming in large scale in the production ponds. Also these projects will serve as the real production units to enhance total production of freshwater prawns in the State.

(vi) Project Strategy

- Establishment of freshwater prawn production units in different districts.
- Preparation of ponds, stocking, feeding, sampling and stock management to ensure production of freshwater prawn.

- ❖ Training the farmers to take up large scale farming of freshwater prawn.
- ❖ Co-ordinating different production units for regularised marketing of prawns to maximize the revenue to the farmers.

(vii) Project Goals

- ❖ To establish farming units for prawns to enhance production and revenue.
- ❖ To train the farmers en masse to adopt the farming in large scale.
- ❖ To develop and function demo units for freshwater prawn farming in the state.

(viii) Project Components

- ❖ Production ponds of 2000 m^2 each formed as a prawn farms in an ideal location.
- ❖ Training to the farmers.
- ❖ Production and marketing of prawns.

(ix) Project Cost and Financing

a.	Cost of formats of demo pards (400 m2)	-	Rs.3.00 lakhs
b.	Cost of pumps & motor, waterline accessories	-	Rs.1.00 lakh
c.	Contingent grant (coolie wages, misc. cost etc)	-	Rs.1.00 lakhs
	Total	-	**Rs.5.00 lakhs**

(x) Implementation Chart

Sl. No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Establishment of the farms in and operation for production	√	√		
2.	Training to the farmers in the existing units		√	√	
3.	Mass training to the farmers and continuous production of prawns in the existing units and formation of farming units			√	
4.	Monitoring the farming done by the farmer, co-ordinating the marketing and regulating the supply of inputs like seed and feed				√

(xi) Reporting

Quarterly progress will be reported to the monitoring Agency TANUVAS Directorate by the implementing Agency.

Project - XIV

(i) Project Title: Fisheries Bio-diversity Reference Unit for Conservation

(ii) Project Abstract

India is in the central part of warm tropical region of Indian Ocean with extensive coral reefs occur in its marine territories. Coral reef ecosystem is one of most ancient and dynamic ecosystem in nature. The coral reefs provide a wonderful niche for a variety of marine life and further it protects the coastline of India from erosion. All the three major reef types such as atolls, fringing and barrier reef occur along the east and west coast of India. In India, the total area of coral reefs is estimated around 2375 sq.km. The coral reef ecosystem includes the fauna and flora belonging to 32 phyla out of 34 phyla occurs in the nature. Presently coral reef ecosystem has been much exploited because of commercial fishing and subsistence living. The degradation of marine ecosystem is mainly due to i) the natural threats like cyclones, tsunami waves, terrestrial run off and siltation. ii) Human impacts like destructive fishing methods, over exploitation, industry, mining, population and oil pollution. Climate change has become an additional major problem and the rising temperate will have great impact on the world oceans. In this regard, the conservation of fisheries biodiversity becomes very important and need of the hour.

(iii) Budget : Rs.100.00 lakhs

(iv) Project cost

S. No.	Items	Amount Rs. in lakhs
1	Building for Fisheries Biodiversity Reference Unit for conservation (5000 sq.ft)	65.00
2	PCR (Thermocycler)	5.00
3	Gel documentation unit	3.00
4	Iso-electric focusing cell	3.50
5	Computer with printer – 1 No. with image capture and analyzer	1.20
Total		**77.70**

(v) Recurring

S. No.	Items	Amount Rs. In lakhs
1	Display chambers (30 Nos. @Rs.15000 each)	4.50
2	Jars Rs.300 x 1000 Nos.	3.00
3	Molding of specimen (300 specimens @Rs.3000each)	9.00
4	Chemicals (for fixative, molecular characterizing chemicals and others)	5.00
5	Specimens	0.80
Total		**22.30**

(vi) Budget abstract

Non-Recurring	-	Rs. 77,70,000.00
Recurring	-	Rs. 22,30,000.00
Total	**-**	**Rs.100,00,000.00**

(vii) Project Background/Problem Focus

Gulf of Mannar biosphere area which is known for its diversified fisheries resources including valuable and threatened organisms such as coral, reef fishes, turtles, sea cows, seahorses, dolphins etc. The proposed fisheries biodiversity unit for conservation would also serve as a Biodiversity Conclave for depositing the endangered and threatened marine fauna of this region. It would be possible to preserve more than 3000 species of fauna and flora including skeletons of whales and dolphins and alizarin treated fish skeletons of Gulf of MAnnaar and of the nearby freshwater bodies. By this way the proposed fisheries biodiversity unit for conservation with its fauna and flora would focus the biodiversity and biotic wealth of aquatic habitats. Development of a fisheries biodiversity unit for conservation is essential for any Fisheries Institute dealing with education, research and extension. Students and researchers of other educational institutions all over India could visit the proposed unit for conservation in connection with their education and research programmes, since this would be the full-fledged museum in the Gulf of MAnnaar biosphere area.

(viii) Project Rationale

Gulf of MAnnaar Biosphere (8o 47'N Lat 78o 12'E long and 9o15'N Lat 79o 14'E Long) is one of the ecosystems possessing 21 islands and which have high biodiversity representing almost all phyla of plant and animal Kingdoms. About 3600 species of fauna identified from this region and this marine biosphere occupies an area of 10,500 sq.km. The human activity is very high which leads to generate more pressure on fauna and flora of this productive zone. The present day diversity is the result of the combined effect of speciation and extinction. The potential of a species to respond to novel environments and to disturbances caused by human activities depends on the extent of diversity and kind of diversity that is available. Thus conservation of Fisheries Biodiversity becomes inevitable.

(ix) Project Strategy

This facility would definitely attract the public, researcher, experts and a nominal entry fee may also fixed for visitors.

The following marine organisms will be displayed in the conservation unit.

Hard corals	-	104	Sea grass	-	13
Marine algae	-	147	Fin fishes	-	450
Crustacean	-	79	Sponges	-	108
Molluscs	-	260	Echinoderms	-	99

(x) Project Goals

- To establish a Fisheries Biodiversity Reference unit for conservation.
- To prepare a catalogue of aquatic plants and animals of freshwater bodies, brackish water and coastal biotopes

(xi) Project Components

- Building for Fisheries Biodiversity Reference Unit for conservation
- Thermocycler
- Gel documentation unit
- Iso-electric focusing cell
- Computer with printer
- display chambers
- Jars
- Molding of specimen
- Chemicals
- Specimens

(xii) Project Cost

Total cost	-	Rs.100.00 lakhs
Financing	-	100 percent by NATP
Implemented by	-	TANUVAS

(xiii) Implemented Chart of the Project

S.No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Construction of Conservation unit	√			
2.	Purchase of display chambers, jars and consumables		√		
3.	Purchase and preparation of specimens			√	√

(xiv) Reporting

The progress of work will be assessed by the expert scientists of FCRI and State Fisheries Department and intimated once in 3 months to the reporting authority.

Project - XV

(i) Project Title: Growth Characterization of Alternative Species for Aqua Farming

(ii) Project Abstract

Nearly 800 species are found all along the coast of India. Most of the species are having better growth rate than the species which are now cultivated. Species like shrimps, seabass, milk fish and mullet have been cultivated in the coastal areas. It is estimated that 50,000 ha is available for coastal aquaculture development in the state. It is recommended that the rich species diversity has to be effectively used for the benefit of human kind. To sustain the aquafarming diversifying the culture is also important. Under coastal resource regeneration plan, it is proposed to introduce sea ranching programme. The species like *Siganus, Lutjanus* and *Lethrinus* exhibited good market and growth potential. Under this research growth characterization of *Siganus, Lutjanus* and *Lethrinus* will be done.

(iii) Budget : Rs.25.00 lakhs

(iv) Project Rationale

Cultures of alternate marine species are picking up through out the world. Species like *Siganus, Lutjanus* and *Lethrinus* have been introduced as a candidate species for

aquafarming. The bio-diversity of these fish groups in the coastal areas of Tamilnadu is high. *Siganus* are commonly called as rabbit fishes and are represented with nine species in Gulf of MAnnaar. *Siganus javus, S. canaliculatus* and *S. lineatus* are frequently caught from this region.

The snappers are mostly neritic and inhabit in hard bottoms. They belongs to the family Lutjanidae comprises the following genus *Aphareus, Etelis, Aprion, Lutjanus, Lipochelius, Macolor, PInjalo and Paracaesio*. Of this *Lutjanus* is represented with 25 species. Culture of snappers also picking up in several parts of the World particularly in Australia, New Zealand and Japan. In Japan, where snapper are known as red sea bream, the species has been reared experimentally since the beginning of this century and successfully commercially farmed since 1965. The Lethrinids represented with 19 species.

All these fishes are tastiest fishes harvested from Gulf of Mannar. Growth standardization of any two species will be studied. Demonstration of such a unit will induce the farmers to take up culture activity in the barren coastal areas. As these animals are in the lower food chain there is a possibility of effectively use the non conventional feed for growing these animals.

(v) Project Goals

a. Survey on availability of *Siganus, Lutjanus* and *Lethrinus* in the regions of Gulf of mAnnaar.
b. Transportation of juveniles and brooders from various places of availability and maintenance of stock in a bio-secured condition.
c. Conducting growth trials in sea cages and land based culture tanks.
d. Breeding trials using induced and natural methods.
e. Larval rearing system designing, construction and bio-secured management
f. Nursery rearing of seeds in floating net cages at near shore waters .
g. Formulation of micro larval feeds for larval rearing.
h. Train the coastal fish farmers about the culture of alternate fish species.

(vi) Project Strategy

Breeder selection, transportation, acclimation and management; Breeder management in culture systems; induced breeding protocol (Hormone based induced mechanism) to produce *Lutjanus, Lethrinus* and *Siganus* seeds – manipulation of water quality parameters like temperature, photoperiod for induced breeding; spawning systems –creation of larval rearing systems and nursery facilities; farming of *Lutjanus, Lethrinus* and *Siganus* in sea cages and tank systems. Conducting training for the coastal fish farmers of various districts of Tamilnadu.

(vii) Project Cost (for Three years) **Rs. in lakhs**

1.	Collection of brood stock of *Lutjanus, Lethrinus* and *Siganus*	-	1.00
2.	Live feed, feed and other ingredients for feeding larvae	-	1.00
3.	Chemicals, Hormones and glass wares	-	2.00
4.	Generator, fuel etc	-	3.00
5.	Contractual labours (3 nos) at Rs. 5000 / month for assisting in the farm related works and hatchery for 3 years	-	5.40
6.	Fishermen/ causal labour @ 3000/ month for 3 yrs	-	1.10
7.	Floating sea cages to grow fishes in sea condition	-	4.00
8.	Cement cisterns of 3 ton capacity - 6 tanks	-	1.50
9.	Hiring of boat	-	1.00
10.	Consultancy charges	-	1.00
11.	Aeration facility with accessories	-	1.00
12.	Pumping facility with accessories	-	1.00
13.	Office contingencies	-	1.00
14.	Other Recurring expenditure	-	1.00
	Total	**-**	**25.00**

The entire project will be implemented with the funding assistance form National Agricultural Development.

(viii) Implementation Chart

Sl. No.	Activities	I Qtr	II Qtr	III Qtr	IV Qtr
1.	Survey on availability of *Siganus, Lutjanus* and *Lethrinus* in the regions of Gulf of Mannar.	√			
2.	Conducting growth trials in sea cages and land based culture tanks.	√			
3.	Broodstock collection & maintenance ; Sea Cage fabrications		√		
4.	Conducting larval rearing trials		√	√	
5.	Land based rearing units		√	√	
6.	Induced breeding with hormones Induced breeding with change in temperature/salinity				
7.	Seed production and rearing			√	
8.	Sea ranching of the seeds				√
9.	Training the farmers.				√

(ix) Reporting

The execution of sea cage installation, brood stock collection, growth studies and maintenance of the stock will be supervised by the experts of FC & RI, TANUVAS and State Fisheries Department. Seed production will be done by FC & RI, TANUVAS.

Project XVI

(i) Project Title: Establishment of water and soil testing laboratory

(ii) Project Abstract

Establishment of a disease diagnostic and water quality testing laboratory is highly essential.

(iii) Budget : Rs. 30.00 lakhs

(iv) Background / Problem Focus

The success of the fish culture activity is mainly depends upon the water quality management aspects. Hence the establishment of water quality testing laboratory is the need of the hour for increasing fish field. Also, the farmers of the Tanjavur district will be able to test their farm water and soil samples by using this facility and will be able to produce more fish in their farms through scientific farming.

(v) Project Rationale

The farmers can bring their water sample and get them analysed in the nearby places instead taking them to the far of places for testing. The establishment of this laboratory will save lot of time and money for the purpose of analyzing the samples.

(vi) Project Strategy

The establishment of this Water quality Testing Laboratory will help the fish farmers to maintain water quality aspects in fish ponds for better management for better fish production

(vii) Project Goals

- The enhance the fish production through proper water quality management aspects.
- To extend better facility and convenience to the farmers to test the water samples from their farm components
- To make the fish farmers and entrepreneurs to maintain water quality aspects for better production and also to maintain pollution free environment.

(viii) Project Components

- Establishment of water quality fishing laboratory
- This involves the setting up of water equality laboratory by procuring various lab equipments.
- Procurement of mobile water quality testing laboratory

(ix) Project Cost

a. Equipping the laboratory with sail and water territory equipment - Rs.15.00 lakhs

b. Contingent grant for chemical, glasswares coolie wages, travel and fuel and electricity - Rs.10.00 lakhs

Total - Rs.25.00 lakhs

Rs. 15,23,000/-. 100 percent through NADP funding.

(x) Implementation of the Project

The project will be implemented by TANUVAS during 2008-2009 itself.

(xi) Implementation Chart

Sl. No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Selection / construction of Laboratory Building		√	√	
2.	Purchase of basic equipments for water quality analysis		√		
3.	Equiping and testing the samples for the benfit fish culturists			√	√

(xii) Reporting

Quarterly progress will be reported based on which the project can be reviewed and analysed.

Project - XVII

(i) Project Title: Resource Mapping of Marine & Inland Fishes Using Remote Sensing

(ii) Abstract

Tamilnadu is having a coast line of 1076kms with a continental shelf area of 41412 sq.kms. The inland water bodies, mostly reservoirs cover an area of 52,000 ha.

This marine and inland water ecosystem provides livelihood for 10, 01,883 number of coastal fisherfolk population. About 3600 species of fauna identified from this region and the human activity is very high which leads to generate more pressure on fauna and flora of this productive zone. Biodiversity includes the genetic variation in the species, both among geographically separated population and among individuals within single population. On a wider scale, biodiversity includes variation in the biological communities in which species live, the ecosystems in which communities exist and the interactions among these levels. Species and their population are in continuous evolutionary change. The present day diversity is the result of the combined effect of speciation and extinction. The potential of a species to respond to novel environments and to disturbances caused by human activities depends on the extent of diversity and kind of diversity that is available. Further, the actual and correct biodiversity estimation of aquatic fauna with proper indices are not assessed in this province. Of late, the coral reefs of these regions are destroyed to a larger extend by antisocial elements through clandestine quarrying and to a considerable extend by factory wastes and from oil tankers and ships and siltation by dredging. Hence, it is essential to map and quantify the fauna and flora of our aquatic ecosystem to protect the sustainable yield of commercially important fishery resources for our fisherfolk who rely entirely on this ecosystem which is the need of the hour.

(iii) Budget : Rs.150.00 lakhs

(iv) Background/Problem Focus

Space Remote Sensing is contributing significantly through its capability for periodical and accurate monitoring of the resources. India has made significant progress in operational utilization of Remote Sensing in various resource sectors. Space Remote Sensing in India has established beyond doubt its potential and important role in providing vital inputs towards monitoring agricultural crops, forests, water resources, minerals, wastelands, ocean and marine resources, besides aiding drought and flood management. The availability of active microwave Remote Sensing data recently has

provided further impetus to the use of Remote Sensing especially in areas such as oceanic studies in view of its additional advantages of all weather capability. Sensors are used for oceanographic observation to predict the sea surface temperature, salinity, current conditions etc. to solve the effects of sea conditions on biological production. Fish detection depends on the relationship between sea surface temperature and suspended particles such as algae and suspended sediments. Oceanographic data that could be obtained from satellite includes: Sea surface temperature, Ocean formations such as eddies, plums and internal waves, salinity, sea colour and red tides. Advantages of remote sensing to fisheries are 1) To image large areas at once, 2) To discreetly observe a range of scales, 3) To repeat observations frequently and 4) To make observations independent of weather.

(v) Project Rationale

Resource Mapping of Marine and inland ecosystems using Remote sensing and subsequent ground truthing will be conducted. Collection of detailed biological, ecological and economic data on marine and inland flora and fauna of Tamilnadu Marine and Inland aquatic ecosystem will be made in entire coast and inland riverine and reservoir water spread area of Tamilnadu. The biodiversity estimates will be made by using various indices like relative numerical abundance, richness as number of species, Simpson's index, Rare fraction estimates, Margalef richness, Menhinick richness, ShAnnaon Weaver index, Hill's numbers and Evenness prevailing among the fauna and flora of all inland and marine aquatic ecosystem of Tamilnadu. The ground truthing will be done with the help of underwater biodiversity survey will be carried out. Final the resource maps will be prepared based on the collected data on various inland and marine aquatic fauna and flora.

(vi) Project Strategy

This project will bring out the entire marine and inland fisheries resource map of Tamilnadu and which will help the Policy makers, stakeholders, research scholars,

students to plan the sustainable utilization of the valuable resource and we will restore the entire ecosystem for the future.

(vii) Project Goals

- ❖ To prepare resource map of marine and inland fishes of Tamil Nadu using Remote sensing data.
- ❖ To make ground truthing of the remote sensing data using under water biodiversity survey.

(viii) Project Components

- Underwater Remotely Operated Vehicle
- Scuba diving equipment
- Computer with printer
- Satellite images
- Scuba diving charges
- Boat hiring charges
- Chemical / glasswares
- Travelling allowance
- Monograph preparation

(ix) Project cost

S. No.	Items	Amount (in Rs.)
1	Underwater Remotely Operated Vehicle	65,00,000
2	Scuba diving equipment and accessories 10 units	15,00,000
3	Computer with printer – 1 No. with image capture and analyzer	2,00,000
Total		**82,00,000**

(x) Recurring

S. No.	Items	Amount (in Rs.)
1	Satellite images	20,000,00
2	Scuba diving for ground truthing Marine - 100 diving x 3times x 4000 Inland reservoirs and river 100 diving x 3 times x 4000	 12,00,000 12,00,000
3	Boat hiring charges 800 x 2000	16,00,000
4	Chemical / glassware	1,00,000
5.	Traveling allowance	5,00,000
6.	Monograph and final report preparation	2,00,000
Total		**68,00,000**

S. No.	Particulars	2008-2009			
		I Qtr	II Qtr	III Qtr	IV Qtr
1.	Purchase of Underwater Remotely Operated Vehicle Scuba diving equipment and Satellite images		√		
2.	Purchase of display chambers, jars and consumables		√		
3.	Conduct of Underwater biodiversity survey			√	

(xi) Reports

TANUVAS will undertake the programme through the scientists of FCRI and State Fisheries Department and the work will be evaluated by TANUVAS.

6.7.2. Total Budget

The total cost of the projects under fisheries sector along with the components, year-wise is presented below.

Table 6.11 Action Plan – Fisheries Sector Thoothukudi District

(Rs.in lakhs)

Sl. No.	Components	Implementing Agency	Unit cost	Total units	2008-09		2009-10		2010-11		2011-12		Total cost
					Units	Cost	Units	Cost	Units	Cost	Units	Cost	
1	Modernization of Mechanized Fishing Vessels (50 percent subsidy)	Fisheries Department	2750	5	2	55.00	2	55.00	1	27.50			137.50
2	Modernization of Traditional Fishing Vessels (50 percent subsidy)	Fisheries Department	2.00	50	15	30.00	15	30.00	15	30.00	5	10.00	100.00
3	Pre processing and chill room facilities	TAFDC	40.00	2	1	40.00	1	40.00					80.00
5	Establishment of multi species hatchery	Fisheries Department	200.00	1	1	200.00							200.00
6	Deployment of Artificial reefs	TAFCOFED	15.00	10	3	45.00	3	45.00	3	45.00	1	15.00	150.00
7	Setting up of retail outlets @ 50 percent subsidy	TNFDC	3.00	4	1	3.00	1	3.00	1	3.00	1	3.00	12.00
8	Subsidy for the provision of Two wheeler with Ice Box @ 50 percent subsidy	TAFCOFED	0.15	50	15	2.25	15	2.25	15	2.25	5	0.75	7.50
	Fisheries Total					**375.25**		**175.25**		**107.75**		**28.75**	**687.00**
1	Sea ranching for stock enhancement	TANUVAS	7.00	20	5	35.00	5	35.00	5	35.00	5	35.00	140.00

Table 6.11 contd…

(Rs.in lakhs)

Sl. No.	Components	Implementing Agency	Unit cost	Total units	2008-09		2009-10		2010-11		2011-12		Total cost
					Units	Cost	Units	Cost	Units	Cost	Units	Cost	
2	Development of feeds and feed additives for fin fishes	TANUVAS	50.00	1	1	50.00							50.00
3	Development of E-Extension facility for stakeholder	TANUVAS	150.00	1	1	150.00							150.00
4	Development of Sperm bank for production of quality fish seeds	TANUVAS	50.00	1	1	50.00							50.00
5	Production of Transgenic fish	TANUVAS	90.00	1	1	90.00							90.00
6	Scampi farming Demo unit	TANUVAS	5.00	1	1	5.00							5.00
7	Fisheries Bio-diversity reference unit for conservation	TANUVAS	100.00	1	1	100.00							100.00
8	Growth characterization of alternative species for aqua farming	TANUVAS	25.00	1	1	25.00							25.00
9	Establishment of water and soil testing laboratory	TANUVAS	30.00	1	1	30.00							30.00
10	Resource mapping of Marine & Inland fishes using remote sensing	TANUVAS	150.00	1	1	150.00							150.00
	TANUVAS - Total					**685.00**		**35.00**		**35.00**		**35.00**	**790.00**
	Grand Total					**1060.25**		**210.25**		**142.75**		**63.75**	**1477.00**

The total cost of the projects under fisheries sector, as could be observed from the table above works out to Rs.1477 lakhs

6. 8 Agricultural Marketing and Agribusiness

6.8.1 Introduction

The regulated markets and uzhavar shandies are functioning in this district. In addition, the agribusiness units mostly dealing with agri-inputs and agri-processing are also functioning under private and co-operative sectors. With a view to strengthern the marketing system in Thoothukudi district, the following eleven projects have been proposed for the eleventh plan period under NADP.

Project - I

(i) Project Title: Establishment/ Organization of Commodity Groups for Marketing in the State with Financial Assistance from NADP

(ii) Project Rationale

According to Government sources, the inefficient marketing system leads to an avoidable waste of around Rs 50,127 crore. 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.

(iii) Project Strategy

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

(iv) Project Goals

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

(v) Project Components

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

(vi) 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 an amount of Rs.20000/= is provided per group.

In this project it is proposed to organize 72 commodity groups in six commodities for marketing of agricultural commodities in Thoothukudi district over the period of four years. This will require resources of Rs 16.56 Lakhs for the period of four years.

(vii) 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)

Project - II

(i) Project Title: Facilitation of Contract Farming between Farmers and Bulk Buyers in the State with Financial Assistance from NADP

(ii) 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 marketed surplus and do no 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 the last 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.

(iii) Project Strategy

Facilitation contract farming between the traders and producer by organizing buyers and sellers meet in the block levels

(iv) Project Components

1. Organizing meeting with farmers, large scale buying firms, crop insurance companies and banks.
2. Identification of willing / co operating Farmers/ commodity clusters
3. Organising the willing farmers in to groups

4. Arranging the Groups to have contract/agreement with select large scale buyers, banks and crop insurance firms.
5. Periodical watching of contracts and conflict management.

(v) Project Cost

Arranging / organising Commodity Groups involve several rounds of meeting with large number of farmers and traders, train them 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 Thoothukudi district for marketing of agricultural commodities in Tamil Nadu over the period of four years. This will require resources of Rs 8.28 lakhs for the period of four years.

(vi) 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)

Project - III

(i) Poject Title: Dissemination of Market Intelligence

(ii) 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 with 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.

(iii) 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.

(iv) Project Components

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

(v) 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 Thoothukudi district over the period of four years. This will require resources of Rs. 2.34 Lakhs for the period of four years.

(vi) 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)

Project - IV

(i) Project Title: Arrangement of Buyers - Sellers Meet

(ii) 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 good 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.

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.

(iii) Project Cost

In this project it is proposed to arrange for 12 buyers sellers meet in Thoothukudi district over the period of four years. This will require resources of Rs. 2.76 Lakhs for the period of four years.

Project - V

(i) Project Title

Organizing the exposure visits to important markets with in the state and out side the state by commodity groups / farmers and extension functionaries.

(ii) Project Rationale

The goal of 4 percent 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 4 percent 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 of other areas, where new technologies are implementing 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 with in the state and out side 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.

(iii) Project Strategy

Organizing the exposure visits to important markets with in the state and out side the state by commodity groups / farmers and extension functionaries.

(iv) Project Goals

Organizing the exposure visit to important markets with in the state and out side 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.

(v) Project Components

1. Organizing the exposure visit to important markets with in the state by commodity groups / farmers
2. Organizing the exposure visit to important markets out side the state by commodity groups / farmers
3. Organizing the exposure visit to important markets with in the state and out side the state by extension functionaries

(vi) Project Cost

Visit of important markets, where new opportunity for marketing of the commodity and consumer preference i.e., exposure visits 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. 15.14 Lakhs for the period of four years.

(vii) 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).

Project - VI

(i) Project Title

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

(ii) 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 a urgent need to strengthening of market extension centre at each district/ block level with LCD projectors and lap top computer including internet facilities.

(iii) Project Strategy

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

(iv) 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.

(v) Project Components

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

(vi) Project Cost

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 Thoothukudi district over the period of four years. This will require resources of Rs. 11.50 Lakhs for the period of four years.

(vii) 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).

Project - VII

(i) Project Title : Capacity Building of Farmer's Skill

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 reached the intended target groups adequately. 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 increased 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. 6.44 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 and
- Training on selected commodities for Export Promotion.

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.

Project Components

Organising training to farmers / commodity groups on Warehousing and storage, Grading, Market intelligence, Post Harvest Management of selected commodities and awareness programme is to demystify the commodity futures markets and enable the farmers to enter into futures contract so as to insure their price risk.

Project Cost and Financing

In this project it is proposed to organize about 100 trainings under Capacity Building of Farmers Skill titles for marketing of agricultural commodities in Tamil Nadu over a period of five years. This will require Rs. 6.44 lakhs for the period of four years.

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 and

2. Periodical Inspection undertaken by the Deputy Director (Agricultural Marketing and Agri Business)

Project - VIII

(i) Project Title

Strengthening of selected Market Infrastructure (equipments) through NADP Funding.

(ii) 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 in the Table reflected the need for improvement in the market infrastructure in coming years.

Estimates of Marketed Surpluses of Various Commodities

Commodity	Marketed Surplus Ratio (Percent)
Rice	51.9
Wheat	53.8
Jowar	39.7
Bajra	45.4
Maize	46.2
Other Coarse Cereals	57.1
Pulses	53.9
Food grains	
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).

(iii) Project Components

1. Purchasing and Establishing price display board and mobile controlled display board
2. Purchasing and Establishing collection centres
3. Purchasing and Establishing chilli dryers
4. Purchasing and Establishing cool Chambers/cold storage
5. Purchasing and Establishing Price Display Mechanism and Electronic Weighing Machines
6. Purchasing and establishing moisture meter
7. Purchasing and Distribution of Tarpaulins, Plastic crates and storage pins

(iv) Project Cost and Financing

In this project it is proposed to strengthen market infrastructure in Thoothukudi district over the period of four years. This will require resources of RS. 68.41 Lakhs for the period of four years.

(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)

Project - IX

(i) Project Title: Establishment of Price surveillance mechanism through NADP Funding

(ii) Project Rationale

Collection of real time data in the open markets for major agricultural commodities and further analysis is essential for forecasting of prices well in advance of the sowing season so that farmers can take their sowing decisions on a scientific basis. This will enhance the income of the farmers which is one of the objectives of the project.

(iii) Project Components

This involves collection of data on prices of different commodities in the unregulated markets in the notified area. This entails collection of time series and current/real time data which will be sent to Domestic and Export Market Intelligence Cell of Tamil Nadu Agricultural University, for processing and further analysis to forecast prices of major agricultural commodities.

(iv) Project cost

In this project it is proposed to collect data at a minimum interval of one month from major assembly markets on a continuous basis in Thoothukudi district over the period of four years. This will require resources of Rs. 5.52 Lakhs for the period of four years.

(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)

Project - X

(i) Project Title: Strengthening of Regulated Market and *Uzhavar Shandies* Publicity Through NADP Funding

(ii) Project Rationale

Arrivals to market yards of regulated markets are only about 15 percent 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

(iii) Project Components

Hoardings, publicity through F.M. radio, posters, folders, wall paintings and village cultural programmes will form the components.

(iv) Project Cost

In this project it is proposed to have the publicity programmes with the above components in this district with a financial outlay of Rs. 23 Lakhs over the period of four years. The Details are presented in Annexure I & II.

(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)

(vi) Project Cost

The total cost for development of agricultural marketing so as to increase the profitability of farmers would be Rs. 867.67 Lakhs for this district for the eleventh plan period.

(vii) 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.

6.8.2 Project Performance Monitoring System

Outcomes of the projects 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.

6.8.3 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 better able to adapt to 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.

In sum the details on the components planned for the development of Agricultural Marketing and Agribusiness systems in Thoothukudi district and the associated physical and financial targets are expositioned in Table 6.12 A.

As could be observed from table 6.18, the over all cost of the projects planned for works out to Rs.16.00 lakhs during XI plan period under NADP. The major component wise plan outlay is summarized below:

6.8.4. Total Budget

The year-wise budget allocation for the ten projects proposed for the development of agriultural marketing and agribusiness in Thoothukudi district, are furnished below in Table.6.12 A.

Table 6.12 A. Original Project Proposals for Agricultural Marketing and Agri-Business

(Rs. in lakhs)

S. No	Components	2009			2010			2011			2012			Total
		Unit cost	Phy	Fin	Unit cost	Phy	Fin	Unit cost	Phy	Fin	Unit cost	Phy	Fin	
1	Commodity group formation													
	Paddy	20000	4	80000	22000	4	88000	24000	4	96000	26000	4	104000	**368000**
	Pulses	20000	4	80000	22000	4	88000	24000	4	96000	26000	4	104000	**368000**
	Chillies	20000	4	80000	22000	4	88000	24000	4	96000	26000	4	104000	**368000**
	Maize	20000	4	80000	22000	4	88000	24000	4	96000	26000	4	104000	**368000**
	Coriander	20000	1	20000	22000	1	22000	24000	1	24000	26000	1	26000	**92000**
	Vegetables	20000	1	20000	22000	1	22000	24000	1	24000	26000	1	26000	**92000**
	Total		**18**	**360000**	**132000**	**18**	**396000**	**144000**	**18**	**432000**	**156000**	**18**	**468000**	**1656000**
2	Facilitation of contract farming	15000	12	180000	16500	12	198000	18000	12	216000	19500	12	234000	**828000**
3	Market Intelligence dissemination													
	Touch Screen	10000	0	0	11000		0	12000	9	108000	13000		0	**108000**
	Display Board	10000	8	80000	11000	0	0	12000	0	0	13000	0	0	**80000**
	Purchase of marketing materials	10000	1	10000	11000	1	11000	12000	1	12000	13000	1	13000	**46000**
	Total		**9**	**90000**	**33000**	**1**	**11000**	**36000**	**10**	**120000**	**39000**	**1**	**13000**	**234000**
4	Arrangement of buyer seller meetings	20000	3	60000	22000	3	66000	24000	3	72000	26000	3	78000	**276000**

Table 6.12 A. contd…

(Rs. in lakhs)

S. No	Components	2009			2010			2011			2012			
		Unit cost	Phy	Fin	Unit cost	Phy	Fin	Unit cost	Phy	Fin	Unit cost	Phy	Fin	Total
5	Exposure visit to markets													
	Expo Within Sta	20000	1	20000	22000	1	22000	24000	1	24000	26000	1	26000	**92000**
	Out side state	75000	1	75000	82500	1	82500	90000	1	90000	97500	1	97500	**345000**
	Visit to national market	150000	1	150000	165000	1	165000	181500	2	363000	199650	2	399300	**1077300**
	Total		3	245000	269500	3	269500	295500	4	477000	323150	4	522800	1514300
6	Streng. Of market extension centre	250000	1	250000	275000	1	275000	300000	1	300000	325000	1	325000	**1150000**
7	Trainings on													
	Warehousing and Storage	10000	2	20000	11000	2	22000	12000	2	24000	13000	2	26000	**92000**
	Grading	10000	2	20000	11000	2	22000	12000	2	24000	13000	2	26000	**92000**
	Market Intelligence	10000	2	20000	11000	2	22000	12000	2	24000	13000	2	26000	**92000**
	Post Harvest	10000	2	20000	11000	2	22000	12000	2	24000	13000	2	26000	**92000**
	Commodity Markets	10000	2	20000	11000	2	22000	12000	2	24000	13000	2	26000	**92000**
	Export promotion	10000	4	40000	11000	4	44000	12000	4	48000	13000	4	52000	**184000**
	Total		**14**	**140000**	**66000**	**14**	**154000**	**72000**	**14**	**168000**	**78000**	**14**	**182000**	**644000**

Table 6.12 A. contd...

(Rs. in lakhs)

S. No	Components	2009			2010			2011			2012			
		Unit cost	Phy	Fin	Unit cost	Phy	Fin	Unit cost	Phy	Fin	Unit cost	Phy	Fin	Total
8	Market Infrastructure activities													
	Plastic Crates	10000	36	360000	11000	36	396000	12000	35	420000	13000	35	455000	**1631000**
	Tarpaulin	10000	35	350000	11000	35	385000	12000	35	420000	13000	35	455000	**1610000**
	Paddy Har	1700000	2	3400000	0		0			0			0	**3400000**
	Value addition	200000	1	200000	11000		0	12000		0	13000		0	**200000**
	Total		74	4310000	33000	71	781000	36000	70	840000	39000	70	910000	6841000
			147	**6255000**	**1408000**	**136**	**2832500**	**1537500**	**145**	**3369000**	**1668650**	**136**	**3538800**	**15995300**
9	Market price surveillance	10000	12	120000	11000	12	132000	12000	12	144000	13000	12	156000	**552000**
10	Publicity - regulated market	500000	1	500000	550000	1	550000	600000	1	600000	650000	1	650000	**2300000**
	Total			**68.75**			**35.145**			**41.130**			**43.448**	**188.473**

Table 6.12 B. Additional Project Proposals for Agricultural Marketing and Agri-Business DDA(AB)

Rs.in lakhs

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-2012		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I.	**Infrastructure**								
1	Construction of rural godowns in the premises of the regulated markets	2	50.00	1	30.00	1	30.00	4	110.00
2	Storage godowns for stor ing produce under lock and key for few days	12	72.00	12	72.00	12	72.00	36	216.00
3	Construction of new drying yards/renovation of dilapidated ones	12	36.00	12	36.00	12	36.00	36	108.00
4	Construction of new auction halls/modernizing the existing ones	0	0.00	0	0.00	0	0.00	0	0.00
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	0	0.00	0	0.00	0	0.00	0	0.00
7	Installation of processing units/purchase of new instruments in the premises of the regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
	(i) Mechanical drier	0	0.00	0	0.00	0	0.00	0	0.00
	(ii) Mechanical winnower	0	0.00	0	0.00	0	0.00	0	0.00
	(iii) Groundnut decorticator	0	0.00	0	0.00	0	0.00	0	0.00
	(iv) Sieving machine	0	0.00	0	0.00	0	0.00	0	0.00
	(v) Cotton Ginning Unit / Pressing Unit	0	0.00	0	0.00	0	0.00	0	0.00
	(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	0	0.00	0	0.00	0	0.00	0	0.00

Table 6.12B Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-2012		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
8	Strengthening the State Ghee and Oil Grading Laboratories	0	0.00	0	0.00	0	0.00	0	0.00
9	Strengthening the Commercial Grading Centres with Laboratory facilities (more numbers can also be included)	0	0.00	0	0.00	0	0.00	0	0.00
10	Strengthening the infrastructure facilities in the Uzhavar Shandies (Farmers stay room cum Training Centre)	1	20.00	0	0.00	0	0.00	1	20.00
11	Construction of cold storage facilities in Uzhavar Shandies and in rural godowns	0	0.00	1	7.15	0	0.00	1	7.15
12	Office automation with computer facility for billing etc. in regulated markets	2	2.00	2	2.00	2	2.00	6	6.00
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 - Electronic AB-3 & Agmark-1	4	0.80	0	0.00	0	0.00	4	0.80
15	Provision of Oil testing machines -AB-3 &Agmark-1	4	1.00	0	0.00	0	0.00	4	1.00
16	Provision of Electronic weighing machines - 100 kg. - 1 & 5 Kg. – 1	2	0.35	0	0.00	0	0.00	2	0.35
17	Others if any (Specify) Computer with Internet -2 & Printer – 2	4	0.90	0	0.00	0	0.00	4	0.90
II.	**Publicity and Propaganda**								
1	Market committee-wise strengthening of the Publicity and Propaganda units -25000/- campaign	0	0.00	0	0.00	0	0.00	0	0.00

Table 6.12B Contd.,

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-2012		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
II.	**Publicity and Propaganda**								
1	Market committee-wise strengthening of the Publicity and Propaganda units -25000/- campaign	0	0.00	0	0.00	0	0.00	0	0.00
2	Market committee-wise purchase of extension education aids	0	0.00	0	0.00	0	0.00	0	0.00
3	Strengthening the regional Publicity and Propaganda wings of the Marketing Board and establishing more regional units	0	0.00	0	0.00	0	0.00	0	0.00
4	Pre-harvest campaigns on large scale 25000/- campaign	12	3.00	12	3.00	12	3.00	36	9.00
5	Others if any (Specify) Electronic display board	1	1.00	1	1.00	0	0.00	2	2.00
III.	**Public relations**	0	0.00	0	0.00	0	0.00	0	0.00
1	Construction of bus-stop shed un front of the regulated markets and in selected villages	2	2.00	2	2.00	2	2.00	6	6.00
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	12	36.00	12	36.00	12	36.00	36	108.00
4	Construction of village common discussion (Chavadi) hall	0	0.00	0	0.00	0	0.00	0	0.00
5	Distribution of tarpaulins to small and marginal farmers - 25 tarpaulins with 50% subsidy/block	0	0.00	300	15.00	300	15.00	600	30.00
6	Installation of electric light facilities including solar lights in the community threshing floors	12	3.00	12	3.00	12	3.00	36	9.00
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

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-2012		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
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	3.00	0	3.00	0	3.00	0	9.00
10	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00
IV.	**Facilities to farmers / Stakeholders**	0	0.00	0	0.00	0	0.00	0	0.00
1	Construction of rest/stay rooms for farmers I regulated markets	1	10.00	1	10.00	1	10.00	3	30.00
2	Construction/modernization of the common toiletry facilities in the regulated markets	2	2.00	2	2.00	2	2.00	6	6.00
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)	0	0.00	0	0.00	0	0.00	0	0.00
V.	**Any other innovative interventions (specify)**	0	0.00	0	0.00	0	0.00	0	0.00
	Grand Total	**85**	**243.05**	**370**	**222.15**	**368**	**214.00**	**823**	**679.20**

Budget Abstract

(Rs.in lakhs)

Sl.No.	Particulars	2008-09	2009-10	2010-11	2011-12	Total
A.	Original Project	68.750	35.145	41.130	43.448	188.473
B.	Additional Project DDA(AB)	-	243.05	222.15	214.00	679.20
	Grand Total	**68.75**	**278.20**	**263.28**	**257.45**	**867.67**

6.9. Water Resources Organization / PWD

There are two major river basins managed by PWD in this district. They are

i. Thamirabarani basin
ii. Koram pallam basin

The rivers and water ways and the respective irrigation structures are managed by State Public Works Department. Silting of waterways, dilapidated irrigation structures and the devices are the major problems handled by the PWD, in addition to arranging for orderly flow of irrigation water through the channels to the cultivable fields. Water inundation in low lying areas especially during rainy seasons is the other problem confronted by the PWD in the district.

Rehabilitation of the system and non-system tanks in the two river basins is the major component planned under XI plan under NADP. The detailed action plan with budget is depicted in Table 6.13.

Table 6.13 Action Plan – PWD

(Rs. in lakhs)

S. No	Component	2008-09		2009-10		2010-11		2011-12		Total	
		No. of Unit	Total Cost	No. of Unit	Total Cost	No. of Units	Total Cost	No. of Unit	Total Cost	No. of Unit	Total Cost
I	**PWD Thamirabarani Basin Division Tirunelveli**										
1	Rehabilitation of system tanks	6.00	1000.0	14.0	500.00	2.00	500.0	7.00	515.0	29.0	2515.0
II	**PWD Koram Pallam Basin Division Thoothukudi**										
1	Rehabilitation of NON system tanks	7	79.50	10	100.00	10	100.0	10	120.5	37.0	400.00
	Total	**13.0**	**1079.5**	**24.0**	**600.0**	**12.0**	**600.0**	**17.0**	**635.5**	**66.0**	**2915.0**

As could be noted from Table 6.13, the total budget outlay during the XI plan period works out to Rs.2915 lakhs under NADP for irrigation system development (PWD) in Thoothukudi district.

6.10. Strengthening of Agricultural Research

The Agricultural Research Station at Kovilpatti under the control of Tamil Nadu Agricultural University does yeomen service to the farming community of this tract. With a view to strengthen some of the research activities relating to rain fed agriculture pertinent to this tract have also been planned for the inclusion under District Agriculture Plan. The details of the components planned, the physical and financial targets are exhibited in Table 6.14. The total budget cost earmarked is Rs.257 lakhs for the whole XI plan period under NADP.

Table 6.14 Action Plan - Agricultural Research Station – Kovilpatti

S. No	Component	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	Establishment of Krishi kiosks for weather based farming in rainfed agro eco system	Nos	2	4.00	1	2.00	1	2.00	2	4.00	6	12.00
2	Establishment of land resource inventory centre in rain fed agro eco system	Nos	1	30.00		10.00		10.00		10.00	1	60.00
3	Plant clinic centres on wheels	Nos	1	25.00	1	25.00					2	50.00
4	Capacity building for stake holders in rainfed farming	Nos	20	5.00	20	5.00	20	5.00	20	5.00	80	20.00
5	Establishment of surveilance centre for pests of crops under rainfed agro eco system	Nos	1	25.00		5.00		5.00		5.00	1	40.00
6	Establishment of rainfed farming training centre	Nos			1	75.00					1	75.00
	Total ARS Kovilpatti		**25**	**89**	**23**	**122**	**21**	**22**	**22**	**24**	**91**	**257.00**

6.11. Overall Budget

The sector wise, year wise and overall budget outlays for the development of agriculture and allied sectors in Thoothukudi district and summarized below in Table.

Table 6.15 Sector-wise Budget outlay for XI plan under NADP in Thoothukudi District

(Rs. in lakhs)

S.No.	Sector	2008-09	2009-10	2010-11	2011-12	Total
1.	Agricultural	87.850	88.050	85.050	85.050	346.000
2.	Horticulture	66.675	84.275	126.925	149.425	427.305
3.	Animal Husbandry	516.091	213.970	149.720	149.220	1029.002
4.	Fisheries	1060.250	210.250	142.750	63.750	1477.000
5.	Agrl. Engineering	214.330	216.090	218.900	219.760	869.080
6.	Agricultural Marketing	68.75	278.20	263.28	257.45	867.67
7.	Public Works Department	1079.500	600.000	600.000	635.500	2915.000
8.	Agricultural Research	89.000	122.000	22.000	24.000	257.000
	Total	**3182.45**	**1812.84**	**1608.63**	**1584.16**	**8188.06**

In sum, an overall budget outlay of Rs.7480.34 is required during XI plan under NADP for the development agriculture and allied sectors in Thoothukudi district as could be seen from the table below.

DISTRICT AGRICULTURE PLAN MEETING PROCEEDINGS

The District level NADP plan preparation meeting was held on 17.06.08 under the chairmanship of Th.P.Anbarasu, District Revenue Officer, Thoothukudi District at the collectorate complex. The DRO gave a brief introduction about the meeting. Th.M.Chandrakumar and Ms.S.Selvanayaki, Assistant Professors from Tamil Nadu Agricultural University explained the purpose and importance of the meeting and also the role of Tamil Nadu Agricultural University in preparing the District and State Agriculture plan under NADP. Th.Alloy Fernando, Agricultural Officer coordinated the meeting and the discussion. A detailed discussion was held on the plans given by different line departments. The line department officials, including Agriculture, Horticulture, Animal Husbandry, Forestry, Fisheries, Agricultural Engineering, Public Works Department and Scientists from Agricultural Research Station, Kovilpatti, Panchayat union Chairmen participated in the meeting. The PA to Collector (Agriculture) guided to prepare the plans and compilation. After the discussion the final plan was prepared for Rs.7480.34 lakhs for the plan period 2008-2012.

The DRO addressing the Participants

TNAU Scientists presenting the Report

Discussion between Line Department Officials

Agricultural Officer Coordinating with TNAU Scientists in the Preparation of DAP

Participation of Panchayat Presidents

A View of Participants

Thoothukkudi district soil legend