NATIONAL AGRICULTURAL DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

THANJAVUR DISTRICT

Centre for Agricultural and Rural Development Studies (CARDS)
Tamil Nadu Agricultural University
Coimbatore – 641 003

2008

NATIONAL AGRICULTURE DEVELOPMENT PROJECT
DISTRICT AGRICULTURE PLAN

PROJECT TEAM

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COIMBATORE-641 003
TAMIL NADU
INDIA.

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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Dr. K. Palanisami
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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)

Executive Summary

1.1: A Brief Introduction to the District, its Location, Features, etc.

Thanjavur being the foremost district of the cauvery delta, occupies an important position in the agricultural map of Tamil Nadu. Since its formation, the district is called as the rice bowl of Tamil Nadu. It was bifurcated and a new district named Nagapattinam was formed during 1993. Nagapattinam district was also bifurcated into Nagapattinam and Thiruvarur districts during 1997. Thus the erstwhile district of Thanjavur had been trifurcated into Thanjavur, Nagapattinam and Thiruvarur.

The District is bounded on the north by the Coleroon which separates it from Perambalur and Tiruchirapalli district, and on the East it is bounded by the Thiruvarur and Nagapattinam districts and on the South by the Palk Strait and Pudukottai district and on the West by Pudukottai and Tiruchirapalli districts.

The geological formation of Thanjavur district is made up of cretaceous, Tertiary and Alluvial deposits and the major area is occupied by the Alluvial and Tertiary deposits. The cretaceous formations occur as a small patch in West and South-West of Vallam. These formations have a very thick lateritic cap consisting of impure lime stones and sand stones of silt, clay calcarious and argillaceous variety. In the coast, these formations are over laid by Cuddalore sand stone of tertiary age.

The agricultural occupation of the district was well supported by the river Cauvery and its tributaries. Cauvery is considered to be the best of the river that drain the Southern Peninsula of India. Thanjavur district consists of 8 Taluks with an area of 3397 Sq.km viz., Kumbakonam, Orathanadu, Papanasam, Pattukkottai, Peravurani, Thanjavur, Thiruvaiyaru and Thiruvidaimarudur.The district has a population of 22.16 lakhs (2001 Census). It is further sub - divided into 14 community development blocks. The district is having 59 town panchayats and 906 revenue villages.

1.2: Main points of SWOT of the District

Strengths

- The farmers in the district are very progressive and innovative in adopting modern technologies and crop varieties.
- The district is one of the leading districts in the state in terms of production of many crops such as paddy, sugarcane, pulses and coconut.
- Presence of Tamil Nadu Rice research Institute, Livestock Research Station and Paddy Processing Research Center
- In view of high level of urbanization with about 34 per cent of the total population in the district living in urban areas, the district has a good local market for its agricultural commodities especially fruits and vegetables.

Weaknesses

- Irrigation needs fulfilled by River Cauvery, which is a centre of long standing dispute between the riparian states of Tamil Nadu and Karnataka
- Limited availability of groundwater.
- Increasing scarcity of labour due to sharp increase in migration from rural to urban areas.
- Mono - cropping of paddy, which has rapidly deteriorated the soil health
- Sub divided and fragmented holdings limit the farm mechanization process.
- Siltation of canal systems.

Opportunities

- Opportunities to promote new crop varieties and new technologies such as System of Rice Intensification and precision farming.
- Opportunities to introduce water-saving technologies under canal irrigation systems
- Further expansion of area under Palm oil trees, Maize and medicinal plants.
- Dry land agriculture has a good potential in this district by appropriate combination of crops, tree crops and livestock enterprises.

- The traditional sylvipasture system that combines sheep rearing with naturally growing trees such as Subabul could be further improved with a range of quick-growing tree species and sheep breeds.

Threats

- River water disputes
- Increasing scarcity of groundwater is a major threat to expansion of irrigated agricultural production.
- The traditional animal breed known as "Umbalachery bulls" native to this district and known for their draught power is on the decline, which is a major threat to the sustainable farming systems in the district.
- Declining interest among farmers in continuing with agriculture profession due to increasing employment opportunities in non-agricultural sector and increasing risk in crop production coupled with stagnation in productivity and profitability of many crops.

1.3: Areas / Sectors, which need to be addressed in the District

Agricultural and allied sectors such as agricultural marketing, horticulture, agricultural engineering, animal husbandry, and fisheries are the sectors to be covered under NADP. Besides these, special programmes for water conservation and repair and maintenance of canal, tank and small irrigation structures are also proposed to be taken up under the NADP. The main focus will be on repairing the canal irrigation systems to prevent seepage loss of water, soil conservation work, water management and water harvesting works are given much importance in the district.

1.4: Various on-going programmes in the district – a brief contextual gist

The Agriculture Department is implementing various schemes to increase the production and productivity of a wide range of crops, cultivated in the district. The schemes implemented in the district are Integrated Cereal Production Scheme, Sugarcane development programme, TANWABE, National Pulses Development Scheme, Integrated Cotton Development Scheme, Oilseed Production Programme, Oilseed Production scheme, Oil palm promotion scheme, Seed Production Scheme, Farmers' Training Centre, Crop Productivity Competitions, Part II Plan Schemes, Supply of tarpaulins to

Agricultural Extension Centers, Revamping Agricultural Extension Centers, Coconut Development Scheme, Sugarcane Development Scheme, and Seed village scheme. In addition the Department of Horticulture is implementing National Horticulture Mission, Precision Farming and Integrated Horticulture Development Scheme. There is a lot of scope to further strengthen these schemes and dovetail them with the schemes under NADP.

1.5 The District Plan at a Glance

The district plan covers a range of activities involving crop-specific as well as non-crop-specific development activities. Allied sectors such as horticulture, agricultural engineering, agricultural marketing, animal husbandry, sericulture and fisheries are proposed to be developed under the NADP with investments on popularization of latest technologies, strengthening extension support, farmers training as well as strengthening the required infrastructure facilities needed to spur growth in agricultural and rural sectors. The Agricultural Engineering Department has submitted proposals to conserve water and improve water conveyance efficiency under various canal irrigation projects in the district. The sector-wise and year-wise budget outlay is summarized below.

Abstract of Sector-wise and Year-wise Budget Outlay

(Rs. in lakhs)

Sl. No.	Name of Department	Financial Proposal for N.A.D.P				
		2008-09	2009-10	2010-11	2011-12	Total
1	Agriculture	445.350	455.800	547.450	607.160	2055.760
2	Horticulture	32.200	32.200	32.200	32.200	128.800
3	Animal Husbandry	1024.438	528.358	306.170	95.905	1954.871
4	Fisheries	434.600	340.850	256.600	221.600	1253.650
5	Agricultural Engineering	1863.200	1960.920	2153.820	2509.240	8487.180
6	Agricultural Marketing	40.450	313.26	282.31	294.46	930.48
	Total	**3840.24**	**3631.39**	**3578.55**	**3760.57**	**14810.74**

1.6 Public Private Partnerships that can be envisaged in the proposed plan

Public-private partnership can be envisaged in developing agricultural infrastructure such as revamping marketing infrastructure, value addition, cold storage, strengthening seed production, parasite production, soil testing, precision farming, micro irrigation and custom-hiring of farm implements and machineries.

1.7 Expected outcomes as a result of implementation of the plan

The implementation of the plan will ensure four per cent growth rate in agricultural sector in the district. Besides, it will substantially improve the rural employment and income of farmers as well as agricultural labour households. By developing allied sectors such as animal husbandry, sericulture, and fisheries, it will ensure additional rural income and nutritional security and help in enhancing the overall standard of living of the rural communities in a sustained way.

CHAPTER I
INTRODUCTION

Though the world is revolving around various professions, it always rallies behind Agriculture. Hence, Agriculture is the lead profession in spite of various difficulties.

- Dr. Kalaignar's Kuraloviam

Concerned by the slow growth in the Agriculture and allied sectors, the National Development Council (NDC), resolved that a special Additional Central Assistance Scheme, named National Agriculture Development Programme (NADP/RKVY) be launched. The NDC also felt that Agriculture Development strategies must be reoriented to meet the needs of farmers and called upon the Central and State governments to evolve a strategy to rejuvenate agriculture with a commitment to achieve four per cent annual growth in the agricultural sector during the 11th plan. To implement this, formulation of action plans by means of developing District Agriculture Plans (DAP) is recommended. It is of the view that such plans would also reflect the felt needs of the farmers and other 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 exercise of preparation of District level agriculture planning 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 the scientists from TANUVAS and officials from Department of Agriculture, Horticulture, Agricultural Engineering, Marketing, Animal Husbandry Fisheries etc. the task is fulfilled. In what follows, the procedure adopted in preparing the plan is outlined.

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 Thanjavur district 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 performances and finally converged as the plan under National Agriculture Development Programme.

Formation of District Planning Unit

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

a) Professor and Head, Soil and Water Management Institute, Kattuthottam, Thanjavur and one economist from the institute.
b) One Coordinating staff from Directorate of Centre for Agricultural and Rural Development Studies, TNAU, to represent Thanjavur district
c) Officials of Line Departments from Agriculture, Horticulture, Agricultural Engineering, Marketing, Animal Husbandry and Fisheries, Seed certification, Public Works Department etc.

Sensitization Workshop

A series of Sensitization Workshops were 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 Tamil Nadu 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 are the preparation of District Agriculture Plans, State Agriculture Plan and formulation of Project proposals under stream-I and stream-II and hence the same were discussed in the workshop.

Preparation of draft action plan and presentation in the District Collector's Meeting

Based on the baseline information and proposals received from the line departments, draft agricultural plan for the district was prepared and presented in the District Collector's Meeting held on ***15.05.08*** under the chairmanship of District Collector, Thanjavur. This meeting was attended by the scientists from TNAU, officials from line departments and the representatives of local bodies. Further, wide coverage was also given in the media.

Finalization

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

CHAPTER - II
GENERAL DESCRIPTION OF THE DISTRICT

2.1 Introduction

Thanjavur being the foremost district of the cauvery delta occupies an important position in the agricultural map of Tamil Nadu state. Since its formation, the district is called as the rice bowl of Tamil Nadu. It was bifurcated and a new district named Nagapattinam was formed during 1993. Nagapattinam district was again bifurcated into Nagapattinam and Thiruvarur districts during 1997. Thus, the erstwhile district of Thanjavur had been trifurcated into Thanjavur, Nagapattinam and Thiruvarur districts.

Thanjavur district stands unique from time immemorial for its agricultural activities and is rightly acclaimed as the Granary of the South India lying in the deltaic region of the famous river Cauvery and criss-crossed by lengthy network of irrigation canals. This coastal district abounds in green paddy fields, tall coconut groves, vast gardens of mango and plantain trees and other verdant vegetation. Various testimonials available in the ancient Tamil literature referring to the Cauvery as possessing the sanctity of the Ganges in conformity with the legendry and mythological stories attributed to its divine origin, rightly point out why the river is popularly called the ' Mother Cauvery' and its sacredness is evident from 'Kaviri-Thala-Puranam'. The river has also been named as 'Ponni' because it is yielding 'pon' -Gold in the form of paddy. That is why it is said with pride that every iota of the earth of Thanjavur is equal to an iota of gold. The tillers in Tamil literature have been rightly called as 'Kauvirippudhalvars', the sons of the Cauvery, as they alone are worthy of this title for the rich production of golden grains in this fertile soil.

It is no wonder therefore that at the very threshold of the district itself, one can feel the distinguished green vegetation and call Thanjavur as “the green mansion”, of the South. With the river Cauvery irrigating the district, the cropping pattern followed was Paddy-Paddy-Rice fallow pulses/cotton/gingelly. The economy of the district is, therefore, primarily agrarian in nature with very few industrial units.

Thanjavur is one of the thirteen coastal districts of Tamil Nadu in the production of marine fish which accounts for about 5 per cent of the total marine fish catch in the State. The district is famous for its exquisite ancient handicrafts-making of bronze icons, Thanjavur art plates, bell-metal castings, bowls, and napkin and powder boxes of metal with beautiful and artistic in-laying and engraving work of motifs well known as "Tanjore swami work". It is equally well-known for pith-work, ornamental fans, mats and making of musical instruments out of jackwood. It is also a flourishing center of handloom silk and cotton sarees.

Thanjavur attained prominence under the Chola rulers who were paramount in South India during 9th to 12th centuries. They were not only excellent rulers but also mighty builders, who erected a large number of exquisite temples in their empire, some of which constitute the finest specimens of architecture. Hence the district stands distinguished in the state even in its large number of temples, whose legends extend deep into early historic times. Many of these temples reflect the power, genius and architectural grandeurs of their authors displaying the unique and magnificent proficiency in sculpture, painting and wood carving. Art gallery the great Saraswathi Mahal library, the 'Sangeetha Mahal' (hall of music), the thriving of classical music and dance known as 'Bharathanatyam' and the celebration of grand annual music festival at Thiruvaiyaru, in honour of the great Saint Thiagaraja, all bear testimony to the cultural heritage.

The district can be divided into two distinct regions viz., the deltaic region, the upland area or non-deltaic region. The deltaic region covers the whole northern and eastern portions of the district where the Cauvery with its wide network of branches irrigate more than half of the district. It comprises the whole of Kumbakonam taluk and parts of Thanjavur, Papanasam taluks. The rest of the southern and western areas of the district are non-deltaic or upland region. A good portion of upland regions which was dry has now been brought under irrigation with the help of Grand Anaicut canal, fed by the Cauvery-Mettur Project and by extension of the Vadavar river. Non-deltaic region is also devoid of hills and slopes gradually seawards.

Thanjavur is the home to famous Brihadeeswara Temple, one of UNESCO World Heritage Sites. Thanjavur is famous for the Brihadishwara Temple (or Brihadeeswara temple) built by Raja Raja Cholan during the 11th century. The Brihadishwara Temple, also known as the Big Temple, is one of UNESCO World Heritage Sites. The temple is enclosed in two courts, surmounted by a lofty tower and including the exquisitely decorated shrine of Murugan. Among the other historic buildings is the Vijayanagara fort, which contains a palace that was expanded by the Maratha king Serfoji II with an armoury, a Bell Tower and the Saraswathi Mahal Library, which contains over 30,000 Indian and European manuscripts written on palm leaf and paper. Also built by Serfoji II is the Manora Fort, a monumental tower, situated about 65 km away from Thanjavur.

2.2. District at a Glance

2.2.1. Location

Thanjavur District lies in the East Coast of Tamil Nadu. It is located between $9^0$50' and $11^0$25' of the northern latitude and $78^0$45' and $70^0$25' of the Eastern longitude. The District is bounded on the north-west by the Coloroon River which demarcates itself from Tiruchirapalli, Perambalur and Cuddalore districts, and on the north and east it is bounded by Nagapattinam and the Thiruvarur districts, and on the South by the Palk Strait and Pudukottai district and on the West by Pudukkottai and Thiruchirappalli districts. The district has its headquartes at Thanjavur which was once upon a time, the kingdom capital of Raja Raja Cholan.

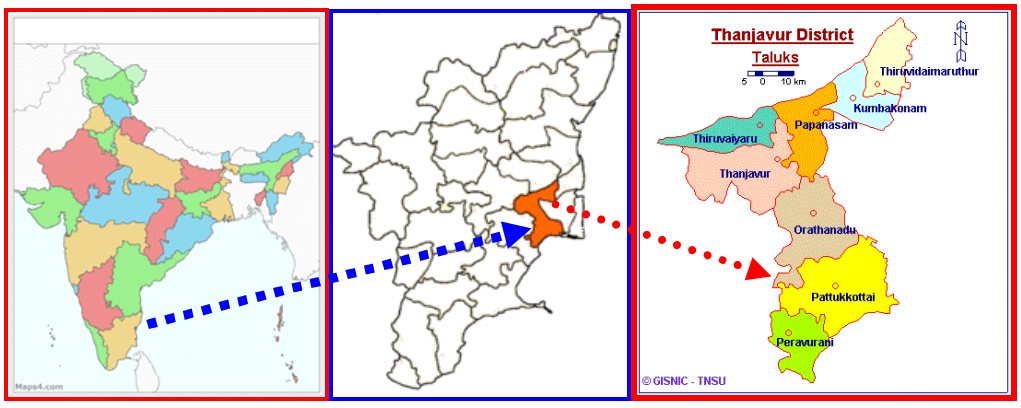


Fig.1. Map Showing the Position of Thanjavur District in the National Map

2.2.2. Administrative Divisions

The district consists of the following administrative units.

Revenue divisions	:	3
Taluks	:	8
Blocks	:	14
Revenue villages	:	906
Village Panchayat	:	589

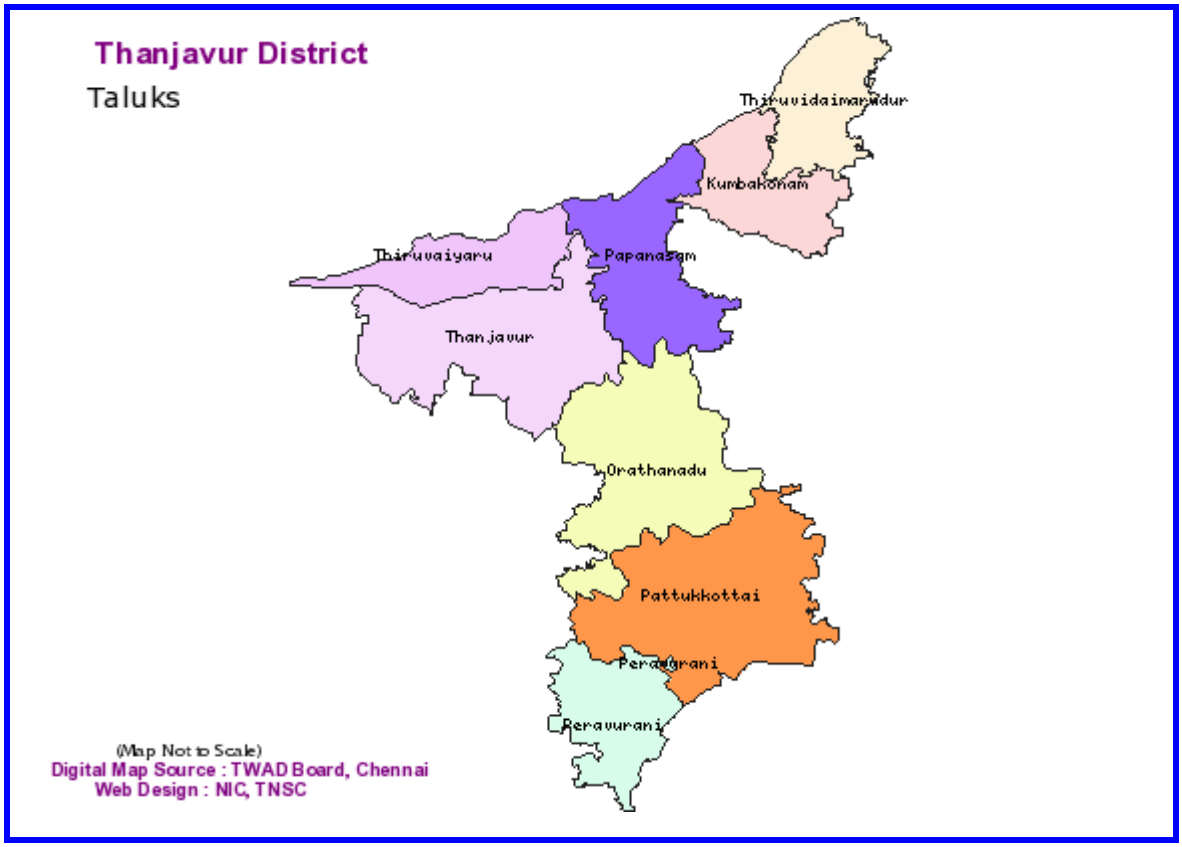


Fig. 2: Map showing the Taluks in Thanjavur District

The district includes eight taluks namely;

1. Kumbakonam,
2. Orathanadu,
3. Papanasam,
4. Pattukkottai,
5. Peravurani,
6. Thanjavur,
7. Thiruvaiyaru and
8. Thiruvidaimarudur.

Further, the district has been sub-divided into 14 community development blocks namely

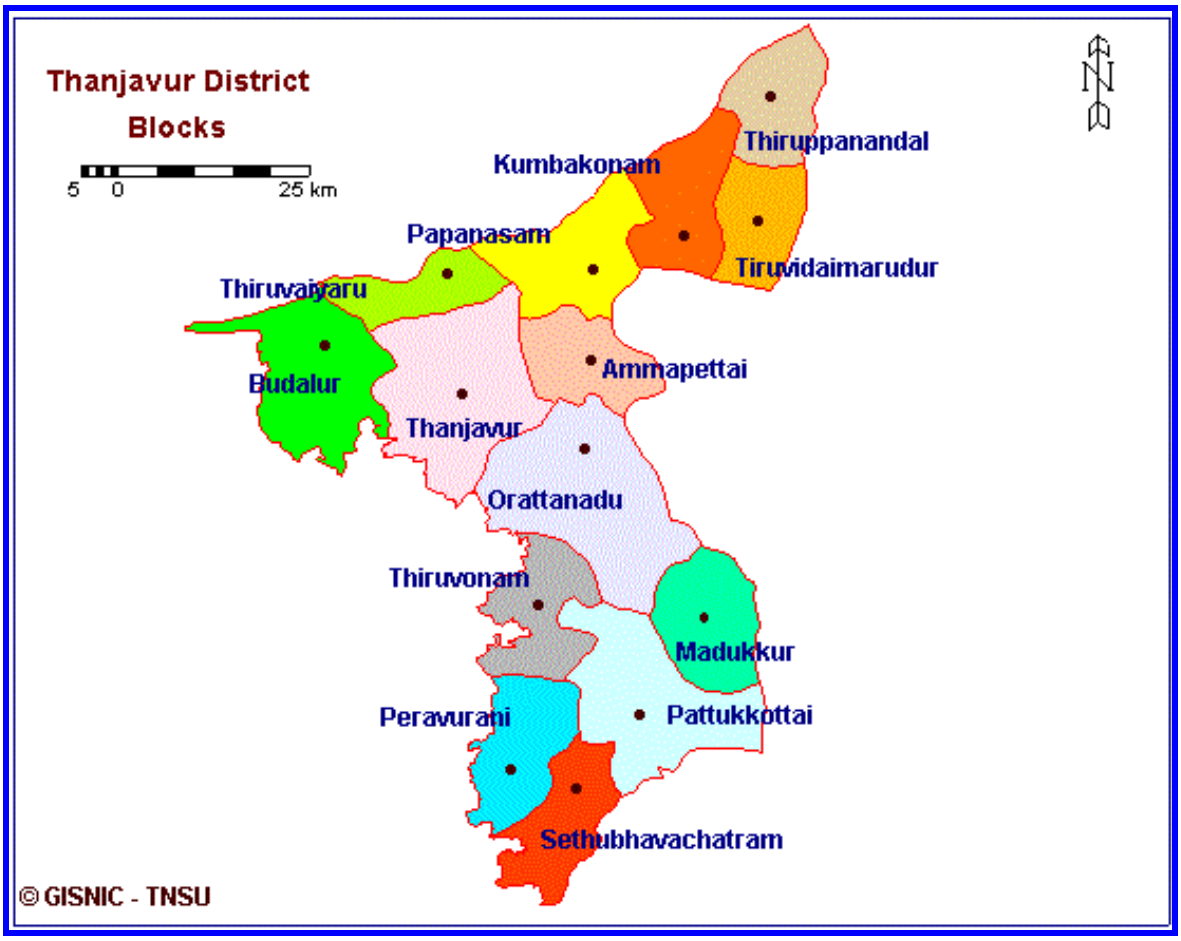


Fig 3: Map showing the blocks in the district

1. Ammapettai,
2. Kumbakonam,
3. Orathanadu,
4. Pattukkottai,
5. Sethubhavachatram,
6. Thiruppanandal
7. Thiruvonam
8. Budalur
9. Madukkur
10. Papanasam
11. Peravurani
12. Thanjavur
13. Thiruvaiyaru,
14. Tiruvidaimarudur

2.2.3. Demography

As per the Census 2001, Thanjavur district has a total population of about 22.16 lakhs, out of which about 66 percent live in rural areas and the rest live in urban areas. The details are furnished below in Table 1, below.

Table 1. Population in Thanjavur District-2001 Census

(in numbers)

Particulars	Person	Male	Female	Decadal growth rate in percentage
Total	2216138	1096638	1119500	7.38
Rural	1467577	726493	741084	-2.00
Urban	748561	370145	378416	32.00

Source: Census of India 2001

The decadal growth rate of rural population during 1991 to 2001 has been negative (-2.00 per cent), while the urban population has shown a decadal growth rate of 32 per cent. This shows that the rate of urbanization has been rapid in the district. The overall decadal population growth rate in the district was 7.38, which is well below the state's growth rate of 11.19 percent.

The literacy rate among male population of the district as could be seen from the Table 2 is higher at 84 percent while the female literacy rate was only 66 per cent. The overall literacy rate in the district was 75 per cent, which is higher than that of the State.

Table 2. Literacy rate in Thanjavur District

(in percent)

Particulars	Literacy rate		
	Person	Male	Female
Total	75.45	84.47	66.70
Rural	70.73	81.10	60.66
Urban	84.79	90.98	78.39

Source: Census of India, 2001

It could be seen from the Table 3 below that among the total workers, main workers constitute nearly 84 percent. Among the worker population, cultivators constitute 16.16 per cent while the agricultural labourers form 45.76 per cent.

Table 3. Occupational Classification of Population-2000-01

Industrial Category	Persons	% to total workers
Main Workers	750032	83.60
Marginal workers	147091	16.40
Total workers	897123	100
Cultivators	144942	16.16
Agricultural Labourers	410718	45.78
Household industries	37986	4.23
Other Workers	303477	33.83

Source : Census of India 2001.

2.2.4. Soils and Topography

i) Geology

The geological formation of Thanjavur district is made up of cretaceous, Tertiary and Alluvial deposits and the major area is occupied by the Alluvial and Tertiary deposits. The cretaceous formations occur as a small patch in West and South-West of Vallam. These formations have a very thick lateritic cap consisting of impure lime stones and sand stones of silt, clay calcarious and argillaceous variety, in the coast, these formations are over laid by Cuddalore sand stone of tertiary age.

The Cuddalore sand stone of Tertiary age are well developed as best seen, West of Grant Anaicut canal and near Orathanadu. These sand stones are covered by a thin layer of wind brown sandy clays, unconsolidated sand, clay bound sands and mottled clays with the lignite seams. This tertiary formation is invariably capped by laterite. In the east, the alluvial deposits of the river Cauvery and its tributaries lie over the Tertiary sand stone. They consist of sands, gravelly sands, clays and sandy clays. The thickness of these formations ranges from 30 Mt. to 400 Mt.

ii) Soil Colour

In Thanjavur district brown coloured soil was the maximum constituting nearly 65 per cent. Red soil and black soils were found in 19.30 and 15.97 percent of the area respectively.

iii) Soil Series

In Thanjavur district, 13 soil series were identified and the distribution of the various soil series is given in the Table 4 below. It could be seen from the table that Madukkur soil series occupied 34.18 per cent of the area followed by Kalathur (15.90 per cent). Kallivayal soil series was the least which accounted for only 0.17 per cent.

Table 4: Soil series and its Extent in Thanjavur District

Sl.No.	Name of the Soil series	Extent in ha.	Percentage to total
1.	Madukkur	1,10,573	34.18
2.	Kalathur	52,449	15.90
3.	Padugai	36,467	11.27
4.	Pattukkottai	33,424	10.33
5.	Adhanur	30,642	9.47
6.	Vallam	13,045	4.03
7.	Alathur	12,111	3.74
8.	Mudukulam	9,266	2.86
9.	Peravurani	6.672	2.06
10.	Alangudi	6,626	2.05
11.	Budalur	6,446	1.99
12.	Melkadu	5,045	1.56
13.	Kallivayal	482	0.17
14.	Reserved Forest	1,255	0.39
	Total	3,23,506	100.00

Source: Soil Survey and Land use Organization, Thanjavur.

The various soil series available in the district have been briefly explained in the following Table 5 for a better perception.

Table 5. Characteristics of Soil Series in Thanjavur District

Name of the series	Characters
Madukkur	Very deep brown soils derived from laterite parent material- Sandy loam – cultivated
Kalathur	Very dark gray brown, very deep calcarious, fine textured cauvery river alluvium Clay- cultivated.
Padugai	Brown, very deep, fine loamy, yound soils lying near the rivers. Sandy clay loan – cultivated.
Pattukkottai	Pale Brown, very deep, loamy, non-calcarious occupying, the top portion of the gently sloping Cauvery Mettur Project area- Loamy sand- Fallow
Adhanur	It comprises of dark gray brown to dark yellowish brown, loamy textured soils derived from Cauvery alluvium. The soils are very deep non-calcarious, having sand layer with in 100 cm Sandy clay loam- cultivated.
Vallam	It comprises of moderately deep sandy loam, yellowish red soils occupying the top most portion of the laterite cap. Sandy loam-cultivated fallow.
Alathur	These are grayish brown, fine loamy, very deep strongly calcarious, moderately alkaline soil occurring at the bottom of the cauvery Mettur Project area. Sandy clay loam cultivated fallows.
Madukulam	It consist of dark red- very deep, non-calcarious, fine loamy textured one occupying in the gently sloping land subjected to severe soil erosion. Sandy clay loam-cultivated.
Peravurani	They include grayish brown, very deep, alkaline, fine loamy, calcarious soils, setting on the sides of the jungle rivers having proximity to the sea Sandy loam- cultivated.
Alangudi	These soils consist of very dark gray brown, fine, very deep calcarious, poorly drained Cauvery alluvium. It occurs in pockets away from the river beds when the river takes wide curves. Sandy clay loam – cultivated.

Table 5. contd…

Name of the series	Characters
Budular	These are yellowish red to dark red, deep, non calcarious, acidic, gravelly in – SITU soils derived from granitic genesis. Sandy clay loam - cultivated.
Melkadu	These are dark brown, very deep, sandy calcarious coastal alluvium solid. Loamy sand -fallow
Kallivayal	These are dark brown, very deep, fine loamy, calcarious, saline and mildly alkaline soils derived from the coastal alluvium. Sandy loam- fallow

Source: Soil Survey and Land use Organization, Thanjavur.

iv) Soil Series and Crops

Details on major soil series found in the district and the crops grown are furnished in the Table 6 below.

Table 6. Major Soil Series and Crops Grown

Soil Series	Irrigated Crops	Rain fed crops
Melkadu	Tobacco, Gingelly and Vegetables	Groundnut and Casuarina
Padugai	Banana, Sugarcane, Paddy, Vegetables and Flowers	Groundnut, Gingelly and Eucalyptus
Kallivayal and Peravurani	Paddy and Pulses	-----
Alathur	Paddy, Sugarcane and Millets	-----
Budalur and Madukkur	Groundnut, Gingelly, Paddy, Millets and Chillies	Groundnut
Pattukkottai	Groundnut, Gingelly, Vegetables and Chillies	Groundnut, Coconut, Fruit trees, Eucalyptus and Casuarina
Mudukulam	Coconut, Flowers and vegetables	Groundnut, Millets and Fruit trees
Vallam	-----	Groundnut, Millets, Cashew and Eucalyptus
Kalathur, Adhanur and Alangudi	Paddy, Sugarcane and Cotton	Pulses

Source: Soil Survey and Land use Organization, Thanjavur.

vi) Land Capability

Land capability classification is given in Table 7 which shows the suitability of soils for agricultural uses. The groupings are made according to the soil limitations and the risks of damage when they are used.

Table 7. Land Capability of Thanjavur District

Land Capability Classification (LCC)	Soil Series	Extent	Per cent
II – Lands that have moderate limitations for sustained use under agriculture			
II s – Soil Limitations	Kalathur, Alangudi, Madukkur, Peravurani, Adhanur and Padugai	242429	75.23
II es – Erosion and Soil Limitations	Budalur, Madukulam and Pattukkottai	49139	15.25
II sw – Soil and wetness associated limitations	Alathur	12111	3.76
III – lands that have severe limitations for sustained use under agriculture			
III s – Soil Limitations	Melkadu	5045	1.57
III sw - Soil and wetness associated limitations	Kallivayal	482	0.14
III es - Erosion and Soil Limitations.	Vallam	13045	4.05
	Total	322251	100.00

Source: Soil Survey and Land use Organization, Thanjavur.

This classification system evaluates the soil based on the inherent soil characteristics (soil depth, texture, concretions, reaction, permeability), external land features (slope, erosion, stoniness etc.) that limits the use of land and environmental factors (rainfall and temperature). The groupings of soils into capability classes is primarily done on the basis of their capability to produce common cultivated crops and pastures without deterioration over a long period of time. The capability classes are designated by roman numerals I to VIII. In addition, the sub-classes (limitations) like topography (t), soils (s), wetness (w), climate (c) and erosion (e) are shown by suffixing small letters to the land capability classes. The numerals indicate progressively greater limitations and narrower choices for a practical use. It could be seen from the table above, that the soils with soil limitations are found to the extent of 75 percent.

vi) Soil Reaction (pH)

The details on series-wise soil reaction (pH) are furnished in Table 8. This could bring out a better perception on the best suited soils for the cultivation of crops whether it is seasonal/annual or perennial crop.

Table 8. Soil pH in Thanjavur District

Category	Soil Series	Extent (ha.)	Per cent
Medium acidic (5.6 to 6.0)	Budalur and Vallam	19494	6.04
Slightly acidic (6.1 to 6.5)	Pattukkottai and Mudukulam	42690	13.25
Neutral (6.6 to 7.5)	Padugai, Adhanur and Madukkur	177682	55.14
Mildly alkaline (7.6 to 8.0)	Kalathur	51449	15.97
Moderately alkaline (8.1 to 8.5)	Alangudi, Melkadu, Alathur, Kallivayal	24264	7.53
Strongly Alkaline (8.6 to 9.0)	Peravurani	6672	2.07
	Total	322251	100.00

Source: Soil Survey and Land use Organization, Thanjavur.

It could be seen from the above table, that the neutral soil series are Padugai, Adhanur and Madukkur accounted for more than 55 per cent of area in this district. These are the soils that are the best suited for agricultural purposes.

vii) Soil Productivity

The productivity ratings of the soils are worked out taking into consideration the soil properties such as depth, base saturation, texture, structure, organic matter content, mineral reserve and soil moisture. Five productivity classes were identified and used here. Different productivity ratings are given in Table 9, below.

Table 9. Productivity Ratings of the Soils in Thanjavur District

Productivity Class	Soil Series	Extent (ha.)	Per cent
Extremely Poor	Kallivayal, Melkadu	5527	1.72
Poor	Vallam, Alathur, Peravurani	31828	9.88
Average	Kalathur, Alangudi, Budalur, Mudukulam, Pattukkottai, Madukkur and Adhanur.	248429	77.09
Good	Padugai	36467	11.31
	Total	322251	100.00

Source: Soil Survey and Land use Organization, Thanjavur.

It could be seen from the table that the average productivity class accounted for the maximum of 77.09 per cent and the related soil series were Kalathur, Alangudi, Budalur, Mudukulam, Pattukkottai, Madukkur and Adhanur.

2.2.5. Rainfall and Climate

The climate of Thanjavur can be termed as a fairly healthy one like other coastal areas. November, December, January and February are the pleasant months in a year with climate full of warm days and cool nights. From March onwards, the climate rather becomes sultry and the mercury shoots up and reaching its peak by the end of May and June, depending upon the on-set of summer rain. The South-West monsoon sets in June and continues till September followed by North-East monsoon in October that brings complete relief to the farmers till January. The rainfall during South-west monsoon period is much lower than that of North-East monsoon which sets in October and continues till the end of December and winter period starts in January. However Thanjavur District is benefited more by North-East monsoon because of its heavy rainfall and the Western ghats invariably feeds the Cauvery and helps greatly for the vast cultivation of the deltaic area. The details on normal rainfall of the district are given below in Table 9a.

Table 9. a. Season-wise Normal Rainfall in Thanjavur District

(in mm)

Season	Month	Normal Rainfall
South West Monsoon	June	36.7
	July	70.9
	August	115.8
	September	118.6
	TOTAL	342.0 (32.48)
North East Monsoon	October	190.5
	November	208.7
	December	146.5
	TOTAL	545.7 (51.82)
Winter Season	January	32.8
	February	17.9
	TOTAL	50.7 (4.82)
Hot Weather Season	March	21.9
	April	36.1
	May	56.6
	TOTAL	114.6 (10.88)
Year Total		1053.00 (100.00)

Source: Season and Crop Report: 2005-06, DES, Chennai.
(Figures in parenthesis represent percentage)

A look at the above table has revealed that the normal annual rainfall is 1053 mm. The maximum rainfall of 51.82 per cent is received during north east monsoon followed by south

west monsoon with 32.48 per cent of the total rainfall. The maximum and minimum temperatures recorded in the district are 36.6^{o} C, and 22.8^{o} C respectively.

2.2.6 Land Use Pattern

The total geographical area of the district is 3.40 lakhs hectares as could be noted from Table 10, below.

Table 10. Land Use Pattern in Thanjavur District

(in ha.)

Land use	2003-04	2004-05	2005-06	Triennium ending 2005-06	% age to the geographical area
Total geographical area	339657	339657	339657	339657	100.00
Forests	3426	3426	3390	3414	1.00
Barren and Uncultivable land	2201	2197	2149	2182.333	0.63
Land put to non-agrl. Use	78989	80590	81676	80418.33	24.05
Culturable waste	15634	14591	14700	14975	4.33
Permanent pastures	1746	1477	1385	1536	0.41
Misc. tree crops and groves	6814	5462	5010	5762	1.48
Current fallow	23694	10458	9404	14519	2.77
Other fallows	49993	32161	29913	37356	8.81
Net area sown	157160	189295	192030	179495	56.54
Area sown more than once	36844	62159	49262	49422	14.50
Gross area sown	194004	251454	241292	228917	71.04

Source: Season and Crop Reports, DES, Chennai.

Of this, an area of just one per cent is under forests and 0.41 per cent under pastures and grazing lands. As much as 24.05 per cent of the total area is under non-agricultural uses. The area under cultivable waste is 4.33 per cent. The fallow lands have accounted for nearly 12 per cent of the total geographical area. The cultivable land is about 1.80 lakhs hectares constituting 56.54 per cent of the geographical area of the district. The cropping intensity of nearly 128 per cent for the triennium ending 2005-06, is a good indication of the intensity of agriculture in the district.

2.2.7. Land Holdings and Distribution

The land holding pattern in the district is given below, in Table 11.

Table 11. Number and area of operational holdings in Thanjavur District-2000-01

Category of farmers	No.	% age to the total holdings	Area operated (ha.)	% age to the area operated
Marginal (below one ha.)	213782	76.96	75805	32.99
Small (1.0 - 2.0 ha.)	38191	13.75	54198	23.59
Semi-medium (2.0 - 4.0)	18673	6.72	50951	22.17
Medium (4.0 - 10.0)	6407	2.31	36537	15.90
Large (above 10.0 ha.)	720	0.26	12298	5.35
Total	277773	100.00	229789	100.00

Source: Agristat 2006, Director of Agriculture, Chennai

It could be discerned from the table above that the small holdings with a size of less than 2 ha constitute more than 90 per cent of the total number of holdings in the district and this category accounts for only about 56 per cent of the land area owned. On the other hand the relatively larger land holdings with a size of more than 4 ha constituting about just 3.00 percent of the total number of holdings account for more than 21 per cent of the total land owned in the district. However the medium sized holdings. (Four to ten ha) which constituted 2.3 per cent of the total holdings have accounted for nearly 16 per cent of the total area operated. Thus, there exists the skewed distribution of land among different farm sizes.

2.2.8. Irrigation, River and Groundwater

The agricultural occupation of the district is well supported by the river Cauvery and its tributaries. Cauvery is considered to be the best of the rivers that drain the Southern Peninsula of India. The river flows from Karnataka State and passes through Dharmapuri, Salem, Erode, Namakkal, Thiruchirappali, Thanjavur, Thiruvarur and Nagapattinam districts of the Tamil Nadu state covering a distance of about 770 Kms. and draining an area of about 72.800 sq.kms. in all. Springing from a spot lying on Brahmagiri Mountains on western-ghats at a height of 1,320 meters above mean sea level, Cauvery meanders its way across Karnataka and Tamilnadu and showering not only economic prosperity to the millions of people but also carving a riche for itself in their lives in historical, cultural and religious realms.

The three minor tributaries, Palar, Chennar and Thoppar enter into the Cauvery on her course, above Mettur, where the famous dam has been constructed. The Mettur dam joins the Sita and Pala mountains beyond that valley through which the Cauvery flow, up to the Grand Anaicuts. The dam in Mettur, impounds water not only for the improvement of irrigation but also to ensure the regular and sufficient water to the important Hydro-Electric generating station at Mettur. The river further runs through Erode district where river Bhavani merges with it. Two more tributaries viz. Noyyal and Amaravathi join it, while it passes through Erode and reaches Thiruchirappalli district. Here the river becomes wide, with a sandy bed and flows in an easterly direction till it splits into two at upper anaicuts about 14 kilometers west of Thiruchirappalli. The northern branch of river is called the Coleroon, while the southern branch retains the same name Cauvery and then goes directly eastwards into Thanjavur District. These two rivers again come closer just before Kallanai and form the interim island namely Srirangam near Thiruchirappalli. The river Cauvery and its tributaries are the most remarkable features of Thanjavur District.

Emerging as a small rivulet from the Coorg Mountains the river Cauvery expands rapidly increasing in volume, as hundreds of streams and rivulets merge with it which are mostly fed on the heavy rainfall of the south- West monsoon. After Sivasamudram Falls in Mysore, the Cauvery again forms beautiful waterfalls at Hoganekal in Dharmapuri District of Tamil Nadu state.

The Chola king, “Karikalan” has been immortalized as he has constructed the bank for the Cauvery all the way from Puhar (Kaveripoompattinam) to Srirangam. It was built as far back as 1,600 years ago or even more. On both sides of the river, the bund are found spreading to a distance of 1,080 feet. The dam Kallanai on the border between Tiruchirapalli and Thanjavur districts, constructed by him is a superb work of engineering marvel, which was constructed with earth and stone and has stood the vagaries of nature for hundreds of years. In 19th century, it was renovated on a larger scale. The name of the historical dam has since been changed as “Grand Anaicut” and stands as the head of the mammoth irrigation system with wide net-work of canals in the Thanjavur district. From upper anaicut, the coloroon branches and runs in north-east direction. After Grand Anaicut, the Cauvery divides into numerous branches and cover the whole of the delta with a vast network of irrigation channels and gets lost in the wide expanse of paddy fields. The mighty Cauvery River here is reduced to an insignificant channel and falls into the

Bay of Bengal at the historical place called Poompuhar (Kaveripoompatinam) about 13 Kms north of Tharangampadi. The river Cauvery flows the entire district in different names through its tributaries and branches viz., Grand Anicut canal, Vennar, Pannaiyar, Koraiyar, Vettar, Kodamuritiyar, Thirumalairajanar, Arasalar, Veerasozhanar, Mudikondan, Noolar, Vanjiar, Vikaraman, Nattar, Kirtimanar, Nandalar, Majalar, Mahimalayar, Palavar, Cholasudamani, Puthar, Valappar, Vadavar, pamaniar, Mulliyar, Ayyanar, Adappar, Harichandranathi, Vellaiyar, Pandavaiyar, Odambogiyar, Kattar, Kaduvaiyar and all these branch off into a number of small streams. These are the main sources of irrigation in the district.

The details on source-wise area irrigated in the district are given in Table 12. It could be visualized from the table that canals are the major sources of irrigation accounting for more than 75 per cent of the total irrigated area in the district, followed by tube wells accounting for about 24 per cent of the gross area irrigated.

Table 12. Source-wise area irrigated

(in ha.)

Sources of irrigation	2003-04	2004-05	2005-06	Triennium ending 2005-06	% age to the Gross area irrigated
Canals	95772	159137	155378	136762	56.82
Tanks	168	368	500	345	0.14
Tube wells	54570	36093	37279	42647	17.72
Ordinary wells	2023	1105	513	1214	0.50
Ordinary wells (supp)	29248	30259	30336	29948	12.44
Net area irrigated	181781	226962	224006	210916	87.62
Area irri more than once	25570	35814	27991	29792	12.38
Gross area irrigated	207351	262776	251997	240708	100.00
Irrigation intensity	114.07	115.78	112.50	114.12	

Source: Season and Crop Reports, DES, Chennai

The irrigation intensity worked out to nearly 114 per cent, which meant that the farmers have cultivated second crop of paddy under sizable area during the triennium period ending 2005-06.

The community development blocks or the Panchayat unions in the district are classified based on the level of exploitation of ground water potential and the data is presented in Table 13 and the table indicate that five blocks are classified as safe blocks in terms of groundwater development, five blocks are classified as semi-critical and the remaining four blocks are classified as critical and overexploited. This indicates that there is very limited scope for further expansion of area under groundwater irrigation in the district.

Table 13. Classification of blocks based on level of exploitation of ground water potential

Over Exploited (above100%)	Critical (90-100%)	Semi Critical (70-90%)	Safe (less than 100%)
Thirupanadal	Ammapet	Madukkur	Budalur
Thiruvidaimarudur	Kumbakonam	Orthanadu	Papanasam
		Peravurani	Pattukottai
		Thiruvaiaru	Sethubavachatram
		Thiruvonam	Thanjavur

Source: Agristat 2006, Director of Agriculture, Chennai.

2.2.9. Agricultural Activity

The occupation of the people in the district is primarily agriculture, as the district depends on the cauvery river water for the agricultural sector to grow, in a sustained way. The western part of the district is rain-fed. The ayacut area of the river cauvery has been cultivated with paddy, sugarcane, rice fallow pulses and cotton. The river bed has been lined with teak trees and bamboo bushes. In the padugai lands (river bund area), the farmers have been cultivating vegetables, where the soils are very good in terms of soil texture and fertility. They cultivated coconut in farm bunds and as coconut groves. The cultivation of rice fallow pulses is unique in the sense that it will be sown with the available moisture just a week before the harvest of paddy and grows with the available dew during the rest of its growing season. The rain-fed area of the district where red soil is predominant, groundnut and gingelly are the major crops. Summing up the cultivation, the major crops of the district are Paddy, Pulses, Sugarcane, Groundnut, Gingilly, Cotton and Coconut.

The district is benefited mainly from major canal irrigation projects spread over the entire district. Groundwater is an important source of irrigation during non-canal season as well as in areas outside the command areas of canal irrigation projects. Given the variety of soil types and irrigation sources, a number of crops are cultivated and the pattern of crop diversification is well-suited to minimize the risks in agricultural production given the low rainfall in the district. As the entire activity of this delta district rests on the release of water from the Mettur dam, it is obvious that the socio-economic conditions of the farmers depend mostly on the timely release of water from the dam. The normal date of release/opening of the dam was fixed as 12th June of every year. The farmers often raise two paddy crops namely kuruvai and thaladi when the reservoir is normally opened. They cultivate only one crop viz. Samba when water release is delayed due to late arrival of south east monsoon.

In order to pay special attention and to give special assistance in terms of subsidy and other management assistance, Intensive Agricultural District programme was implemented during the year 1962 and it was later converted in to Training and Visit system in 1981. By way of these programmes agriculture in this district got its launching pad and rocketed in to the present position. The major crops cultivated in Thanjavur district are Paddy, Pulses, Gingelly, Cotton, Groundnut and Sugarcane. The minor crops like Maize, Soyabean, and Redgram are also grown in uplands. Paddy is the principal crop grown in three seasons viz. Kuruvai, Samba and Thaladi. Pulses like Blackgram, Greengram and cash crops like Cotton and Gingelly are grown in rice fallows. In new delta area, the Groundnut is the principal crop Sugarcane is cultivated both in new delta and old delta. Banana is primarily grown in Padugai lands.

The area coverage of difference food and non-food crops cultivated in Thanjavur district is furnished below in Table 14. It could be observed from the table that the predominant crop was paddy which occupied nearly 64 percent of the gross cropped area of the district. It could also be seen that the area under sugarcane has increased considerably to the tune of 6000 ha. Among the various crops, one could witness the area under coconut is also substantial and is being cultivated in an area of 26287 ha. during 2005-06. During these three years the cropping intensity was observed to be the highest in 2004-05 at 132.84 percent which meant that the area cropped more than once was more. This could be attributed to the normal monsoon and normal date of the opening of the Mettur reservoir.

Table 14. Area of the Crops in the District

(in ha.)

Name of the Crop	Area of the Crop		
	2003-04	2004-05	2005-06
Paddy	123293	160608	154901
Blackgram	6354	13708	8951
Greengram	2776	8709	7392
Total food grains	133503	183976	171834
Sugarcane	9711	12000	15353
Banana	4158	4764	4921
Mango	777	849	842
Cotton	1738	2225	785
Groundnut	8065	8217	7274
Gingilly	4089	7243	5999
Coconut	24240	24893	26287
Total non food crops	41279	45726	44087
Total food and non food crops	194004	251454	241292
Net cropped area	157160	189295	192030
Area cropped more than once	36844	62159	49262
Cropping intensity	123.4	132.84	125.65

Source: Season and Crop Report, DES, Chennai

2.2.10. Horticulture

Thanjavur is predominantly a rice growing tract and hence the scope for horticultural crops is very much limited. Most of the farmers are small holders of land and cultivating less remunerative crops like paddy, maize, and groundnut. The farmers are very progressive and enthusiastic to adopt new technologies and new crops such as medicinal crops in pockets. After the intervention of Horticulture Department in this district, the farmers are ready to go in for cultivation of Horticulture crops which prove remunerative. The constraint in horticulture crop cultivation involves high cost and improved technologies, for which they need some support from Government in the form of subsidies and training. Only two horticultural crops viz; Mango and Banana dominate the horticultural scene. The details on area, production and productivity of these horticulture crops in the district are given in Table 15, below.

Table 15. Area, Production and Productivity of Mango and Banana in Thanjavur District in 2005-06

Name of the Crop	Area in ha	Production in MT	Productivity (tonnes / ha)
Banana	4921	242589	49291
Mango	842	3521	4182
Total Fruits	5258	NA	NA

Source: Season and Report, DES, Chennai.

It could be seen from the table that the area under banana was nearly 94 per cent of the fruit crops in the district. The area under mango was very little. The farmers cultivate banana as a change crop in the cropping pattern and the attention paid is also very little which could have its impact on productivity and the resultant production.

2.2.10. Livestock Activities in the District

Livestock growth in the district has shown a marginal increase over the decade. Animal Husbandry is an allied activity of Agriculture and cannot grow as fast as agriculture since its breeding programme is a slow process. The district has more indigenous cattle than any special breed of cattle. It could be seen from the Table 16 that the livestock population of the district has increased which is a very good sign of development in the district.

Table 16. Livestock Population Census

(in numbers)

Particulars	1997	2001
Cattle	318436	442000
Buffalo	57641	59300
Sheep	27190	23300
Goats	244471	273500
Pigs	2794	1800
Total	726627	800000

Source: Census of India Reports, 2001.

Further, the growth rates for the cattle population from 1997-2004 were estimated presented in Table 17. During the period under consideration, it could be observed that the cattle population has grown in numbers at the rate of 6.34 percent. The growth rate was the highest for the cross-breed cows, which stood at nearly 25 per cent and it augers well for the subsidiary income of the farming community in addition to their main source of income viz. income from crop enterprises. Buffaloes, both male and female and the poultry population have witnessed a negative growth rate.

Table 17. Livestock Population Growth Rates (1997–2004) -Thanjavur District

Cattle	Buffalo	Sheep	Goat	Poultry	Draught Bovine	Female Cross Breed	Female indigenous	She Buffalos
6.34	-7.08	6.45	4.82	-1.07	-5.198	24.368	-5.536	-7.130

Note : Annual Compound Growth Rate in per cent

Thanjavur poled cattle are distinguished by the possession of dehorned head and clipped ears. The breed is known as Umbalacherry. The main stream of the district is fed by Cauvery River, when the river is dry, flock owners of the sheep from Ramnathapuram and Southern Districts are coming with their migratory stock for pasturing temporarily. The cattle/sheep would be penned in the dry paddy fields for a monetary value so as to improve the soil fertility and soil health of the cultivable lands.

The Cattle Breeding and Fodder Development schemes have been replaced as Intensive Cattle Development Project, which functions from Thanjavur. Under Cattle Breeding and Fodder Development a Semen Bank is established at Ammapettai about 19 Kms from Thanjavur from which Liquid Nitrogen and Frozen Semen straws are being supplied to various institutions and Veterinary Sub-centers of the Animal Husbandry Department in this district.

Since, January, 2000, the Hon'ble Chief Minister's Special Animal Husbandry campaigns are being held in various Panchayat Union Villages, where Livestock breeders are not having access to Veterinary aid. The veterinary aids include, Artificial Insemination (at free of cost) and Disease investigation works. Demonstration of Urea enrichment of paddy straw and Audio Visuals are exhibited in the special camps by ICDP. Cattle owners in remote villages are benefited by the various departmental activities of this district.

The district has two livestock farms. One exotic cattle Breeding Farm located at Eachenkottai, in Orathanad taluk and one Progeny Testing Scheme (Buffalo) District Livestock Farm, Orathanad. There are two Poultry Extension Centres one at Orathanad and another in Pattukkottai.

The Animal Husbandry Department of this District looks after the welfare of the livestock through 2 clinician Centres, 6 Veterinary Hospitals, 45 Veterinary Dispensaries, 73 Sub-Centres, 14 Extension Veterinary Dispensaries, 3 Mobile Veterinary Dispensaries and 16 visiting Sub-centres in the district. Work done particulars of the department during 1999-2000 are as follows:

1	No. of Artificial Inseminations done	:	178514
2	No. of Calves Born	:	57382
3	No. of Mass contact Programmes conducted	:	881
4	No. of Vaccinations done	:	982964
5	No. of Castrations done	:	38061
6	No. of cases treated	:	597423

2.2.12. Fisheries

i) Coastal Fisheries

Thanjavur is one of the 13 maritime districts of Tamil Nadu state engaged in Marine Fishing and its fish production is about five per cent of the total catch in the state. The State has a total coastal line running to 1076 Kms embedded with 442 fishermen villages of which Thanjavur District occupies 45.1 Kms stretch in Palk Strait with 27 fishing villages in from Thambikkottai in Pattukkottai Taluk in the North and Sembagamadevi Pattinam in Peravurani taluk in the South. The coastal aquaculture is being done in an area of 822 ha. whereas the inland aqua culture has an area of 2400ha. The following statement shows the fishermen population details of the District.

- Total number of Families : 4899
- Total number of male children : 4858
- Total number of Female Children : 5050
- Total number of Adult male : 8094
- Total number of Adult Female : 7376
- Total number of male : 12952
- Total number of female : 12426
- Total Population : 25378

Table 18 given below shows the employment status of Fisher Folk

Table 18. Activity-wise Employment Status of Fisher folk

Activity	Male	Female	Total
Fishing	5503	-	5503
Fresh Fish Trade	90	122	212
Dry Fish Trade	57	598	655
Net making	21	1	22
Diving	-	-	-
Allied activities	42	89	131
Unemployed	2125	6533	8658
Employed in Govt.	27	6	33
Employed in Private	44	1	45
Others	286	23	309

The census data further reveal that there are 370 mechanized boats which are operated from Kallivayalthottam, Mallippattinam and Sethubavachathram fishing villages. There is a " T " Jetty in Mallippattinam coastal village constructed in 1980 facilitate the easy landing of the catches of Mechanised Boats. About 2500 fishermen were involved in mechanised fishing operations. In addition to the mechanised boats, 924 Plank Built Boats and 107 Cattumarams are also operated from the coastal villages and provide employment opportunity for more than 3000 fisherman of this district. There are 23 Fishermen C0-operative Societies and Nine Fisherwomen Co-operative Societies functioning in Thanjavur District.

Table 19 shows the extent of production of marine fish in Thanjavur district from 1998-2004.

Table 19. Marine Fish Production in Thanjavur District

(in tonnes)

1998-99	1999-2000	2000-2001	2003-04
17.150	17.550	8.030	22.650

ii) Inland Fisheries

Thanjavur district is also the richest in inland fishing due to the presence of Cauvery river system. The irrigation channels, canals major and minor tanks are richest in many varieties of fish. The inland fishing consists mostly of local Carps, Major Carps and other varieties such as Cat fish, Murrells, Tilapia etc.,

About 5,000 inland fishermen are engaged in fishing and the production of fish form inland water sources. Seeds of Catla, Rohu, Mirgal and Common Carp, early fry are also produced by the Fisheries Department. Fish seed production centre Silver Carp, and grass carps early fry were brought from West Bengal and reared by private fish seed producers. Enormous numbers of fishermen are indulged in fish production by culture methods.

2.2.13. Agricultural Marketing

There are 15 regulated markets, spread all over the district. The total arrival of commodities in the market committee of Thanjavur was 49237 tonnes during 2005-06 fetching a revenue of Rs.438.78 lakhs. As regards performance of regulated markets, they are yet to make a headway. No co-op marketing society is functioning in the district at present. There are four Farmers' Markets (Uzhavar Sandhai) functioning in the district.

2.2.14. Rural Industries / Agro Industries

Thanjavur district has 1329 food products industries as on 31st March 2005 (Source: Tamil Nadu – An Economic Appraisal2005-06). Besides this there are about 122 small scale industrial units engaged in the production of beverages and tobacco-based products. There are two sugar mills being operated under cooperative sector one sugar mill under private sector which caters to the need of sugarcane growing farmers.

2.2.15. Electrification

The electrification of villages play a vital role in the development of rural economy. The status of electrification process in Thanjavur district is given below.

- Towns electrified : 31
- Villages electrified : 1728
- Hamlets electrified : 3866
- Adi dravidar colonies electrified : 6671
- Pump sets enegized : 56129

The above details indicated the intensity with which the electrification process is going on Thanjavur district and this could be the accelerator of growth for Thanjavur district.

2.2.16. Banking

The banking activity of any district is a good indicator of commercialization of the region as these institutions provide the impetus for the economic activities (agriculture and industry) to flourish. These banks are either nationalized or scheduled banks that provide credit and capital requirements for agriculture and allied activities as well to industrial sector which both combine together to boost the economic growth of any particular region. Hence, details regarding the baking sector have been provided in the following Table 20, that follows.

Table 20. Details on Banking Sector in Thanjavur District

Particulars	2001-2002	2002-2003	2003-2004	2004-2005
No. of banks/ offices	165	163	164	164
Aggregate deposits (Rs. Lakhs)	189005	204100	217900	254500
Gross bank credit (Rs. Lakhs)	104481	125000	157200	196900
Population served per branch	13481	13596	13513	13513
Per capita deposit	8591	9210	9832	11484
Per capita credit	4749	5610	7093	8885
Credit deposit ratio	55.30	61.20	72.10	77.40

Source: Tamil Nadu-An Economic Appraisal, 2005

The above table indicated that all the parameters of banking development in relation to the population has been increasing and shows that the banking sector is going to be the best instrument for the development of the economy of the district.

Besides the nationalized, commercial and scheduled banks operating in the district, there are banks under cooperative sector and their details as on 2005-06 are given below.

- ❖ No. of branches : 21
- ❖ Share Capital : Rs. 34.08 crores
- ❖ Reserves : Rs. 35.84 crores
- ❖ Deposits : Rs. 127.95 crores
- ❖ Borrowings : Rs. 143.62 crores

The details regarding the number of cooperative societies and banks are given in the following table.

- ➢ Central Cooperative Bank : 2
- ➢ Cooperative Wholesale Stores : 1
- ➢ Coopearative Training Institute : 1
- ➢ Cooperative Printing Press : 1
- ➢ District Cooperativce Union : 1
- ➢ Primary Coop.Agri.& Rural Development Bank : 8
- ➢ Primary Agricultural Cooperative Bank : 257
- ➢ Cooperative Marketing Society : 6
- ➢ Cooperative Unban Bank : 6
- ➢ Primary Cooperative Stores : 13
- ➢ Students Coop.Stores : 116
- ➢ Vegetable Growers Coop.Societies : 1
- ➢ Cooperative Farm Societies : 5
- ➢ Employees Cooperative Societies : 56
- ➢ Land Colonization Cooperative Society : 5
- ➢ Labour Contract Cooperative Society : 2
- ➢ Youngman Literary Association Cooperative Society : 1
- ➢ Homeopathy Medicine Practitioners Coop. Society : 1
- ➢ Physically Handicapped Cooperative Society : 1
- ➢ Cooperative Canteen : 1

2.2.17. Education

The literacy level of the people in the district is an important factor and is very crucial for the economic prosperity of the district. The numbers and the places where the population are educated is the deciding factor to the above said economic criteria by which the economic development could be triggered. The details on educational institutions as could be seen from the district website are given below.

- Universities : 1
- Arts & Science College : 15
- Medical College : 1
- Engineering & Technology Colleges : 4
- College for Special Education : 3
- Schools for General Education : 1535
- Schools for Professional Education : 2
- Schools for Special Education : 13
- Institution for other professional Education : 14

2.2.18. District Income

The gross and net domestic product of the district as a measure of the district's income is given below, in Table 21.

Table 21. Gross and Net Domestic Product of Thanjavur District

(Rs. In lakhs)

Year	Net Domestic Product		Gross Domestic Product	
	Current Prices	Constant prices	Current Prices	Constant prices
1993-94	137753	137753	149751	149751
1994-95	171347	163946	185920	177414
1995-96	179200	159531	196665	174018
1996-97	210135	162507	229643	177712
1997-98	271576	203255	293628	220017
1998-99	288598	192398	312215	209274
1999-00	302483	202109	328312	220074
2000-01	350079	223866	379776	243741
2001-02	346390	213335	378911	234308
2002-03	368710	213785	403854	235952
Growth rate (in %)	12.00	5.00	11.75	5.17

Source: An Economic Appraisal 2005-06, Department of Evaluation and Applied Research Tamil Nadu

The growth rate was estimated to be 12 per cent at current prices and 5.00 per cent at constant prices, which is an indication of the better income growth in the district. The growth rates estimated for the gross district domestic product was also exhibiting the same trend as that of net district domestic product.

2.2.19. Intra-district growth differentials

Agro-processing industries especially rice milling, and oil extraction mills have significant potential for further expansion in the district which is ideally placed in terms of agro-climatic conditions, raw material availability and skilled manpower supply. Milk and meat production could be further increased with adequate support in the form of popularization of new breeds of milch animals and sheep and goats, increased emphasis on fodder production, and increasing veterinary infrastructure. Based on the selected growth drivers a composite index has been developed so as to rank the district among the total number of the districts in the state and classify as Highly developed, Developed and Lowly developed.

2.3. Development Vision and Strategy

Based on the complete resource mapping effected so far in this chapter, an attempt has been made to define the development mission and spell out the strategy.

i) Vision

The vision statement is as follows.

To uplift the level of living of the rural folk through the generation of additional employment and income in agriculture and allied sectors, which are the main sources of livelihood, by the application of science – based production and marketing technologies.

ii) Strategy

The major strategic approaches spelt out are:

- Increasing the crop and livestock production and productivity through effective transfer of latest technologies
- Mechanization of the farming sector.
- Adoption of water-harvesting and conservation technologies.
- Modernization of the irrigation structures and the systems.
- Extending development support to fishing industry.

CHAPTER III
SWOT ANALYSIS OF THE DISTRICT

3.1: Introduction

Chapter II has explained the resource-base of the district and indicated the potentials available for development in Thanjavur district. The development or the growth of the district requires huge financial outlay so as to provide the launching pad for the all round development in the sectors like agriculture, horticulture, agricultural engineering, animal husbandry, fisheries etc. The needed financial support will be in the form of National Agricultural Development Programme. In order to utilize the funds, appropriate development plans have to be prepared and implemented in the district. Hence, to identify the thrust areas of development and needed courses of interventions, the SWOT analysis was attempted.

SWOT analysis is a management tool for planning and it helps in focusing on key the issues. *SWOT* stands for **s**trengths, **w**eaknesses, **o**pportunities, and **t**hreats. The SWOT analysis provides a good framework for identifying the thrust areas of development and planning the development strategy.

3.2: SWOT analysis of the district

The results of the SWOT analysis of agricultural and allied sectors of the district are presented below:

i) Strength

The strengths of the district in relation to agricultural and allied sector development have been identified and listed below.

- Farmers in the district are very progressive and innovative in adopting modern technologies and using new crop varieties. This is borne out of the fact the district is one of the leading districts in the state in terms of productivity of many crops such as paddy, sugarcane, banana, mango and coconut.

- The district is endowed with both South West and North East monsoons
- Assured availability of irrigation water at least for one main season in a year, due to the existence of Cauvery irrigation system with well knitted Mettur reservoir, anaicuts and canals.
- Availability of ground water at shallow depth at least for a few months during winter and hot-weather periods.
- Scope for crop diversification, particularly during January to June.
- There exist potentials for increasing the area, production and productivity of rice-fallow pulses.
- The district has the advantage of the internationally reputed research institute namely, Tamil Nadu Rice Research Institute that caters to the needs of paddy and pulses growing farmers of the state in particular and the nation in general.
- A national institute on Paddy Processing Research center looks after the post-harvest management of paddy.
- The age old livestock farm exists in the district.
- Most villages in the district are connected by fairly good network of roads suitable for easy transportation of agricultural produces.
- In view of high level of urbanization, the district has a good local market for its agricultural commodities especially for fruits and vegetable.

ii) Weakness

Important weaknesses that impede the progress of agricultural and allied sectors development in the district are outlined below.

- The district mainly depends on the Cauvery river water from Mettur dam for its irrigation needs of its first crop Paddy and the annual Sugarcane crop. This aspect is the greatest weakness of this deltaic district. Therefore, successful crop production depends heavily on the success / failure of the monsoons and the opening of the Mettur dam on normal date of 12th June every year. It makes agricultural production riskier in many parts of the district especially during kuruvai season.
- Limited availability of groundwater is also a major weakness plaguing the agricultural development in this district particularly during peak seasons of agricultural operations.
- Increasing scarcity of labour, sharp increase in migration of people from rural to urban areas and high wage rates for agricultural labour forces the farmers to shift towards annual and perennial crops such as coconut.
- The sub-divided and fragmented land holdings in the district reduce the use of farm machineries which would help in timely cultural operations.

iii) Opportunities

- In view of the progressive nature of the farmers and their willingness to learn new techniques and take risks there are ample opportunities to promote better cropping pattern with crop diversification, new crop varieties and new technologies such as System of Rice Intensification.
- There are lots of opportunities to introduce water-saving techniques under canal irrigation systems by way of cleaning, desilting and lining of canals to facilitate easy flow of water with minimal seepage loss.
- With increasing labour shortage there is immense scope farm mechanization.
- There is also scope for introducing water-saving technologies at farm level especially for high water-intensive crops such as Paddy, sugarcane and banana.
- Further expansion of area under palm oil trees and horticultural crops (medicinal crops) is possible through implementation of water-saving technologies.
- Dry land agriculture has a good potential particularly in upland areas of this district by adopting appropriate mix of field crops, tree crops and livestock enterprises.
- The traditional sylvipasture system that combines sheep rearing with naturally growing trees such as Subabul could be further improved with a range of quick-growing tree species and sheep breeds.
- The coastal line of 45.9 km and the net work of inland water ways provide ample scope for fishery development.
- Growing teak trees on the canal and river banks throughout the district will augment the forest area as well as increase the revenue income to the district.

iv) Threats

- Frequent depressions in Bay of Bengal, cyclones, flooding and inundation of water and damages to crops are the natural threats the farmers of this district face.
- Increasing scarcity of groundwater in many parts of the district is a major threat to expansion of irrigated agricultural production.
- The traditional animal breed known as “Umbalachery bulls” native to this district and known for their compact body structure and draught power in wet lands of the district is on the decline which is a major threat to the sustainable farming systems in the district.
- Declining interest among farmers in continuing with agriculture due to increasing employment opportunities in non-agricultural sector and increasing risk in crop production coupled with stagnation in productivity and profitability of many crops.
- Increasing labour scarcity and high wages

- Increasing fertilizer prices and non-availability of fertilizers especially during peak seasonal operations
- Increasing diesel prices in the present context of farm mechanization.
- Sea water intrusion into the main lands.

3.3: Accommodating SWOT – addressing issues emerging out of the analysis

- In view of the high productivity achieved in some crops such as paddy, sugarcane, and coconut, sustaining the growth rate and further increase in productivity are possible only by continued modernization of production techniques and introduction of latest crop varieties.
- As labour and water are the two basic resources which are increasingly becoming scarcer in the district, there is a need for introducing labour-saving and water-saving technologies. These requirements are adequately addressed in the proposed district plan.
- The productivity enhancement techniques such as production and distribution of quality seeds, popularization of SRI technique in paddy, hybrid rice cultivation, soil health improvement, and technology demonstration in rice and a few other crops, as well as distribution of hybrid seeds in major crops are some of the strategies proposed to address the issue of enhancing productivity in the district. Since, Thanjavur district depends on canal irrigation, a number of proposals to take up water-saving measures in canal-irrigated system are possible.
- Farming system approach can also be encouraged to enhance the farm income.
- Strengthening extension activities will also be given top priority through technology demonstration, production of short films on modern technologies, farmers' training and study tours within and outside the state,
- Strengthening Farmers' Interest Groups and TANWABE Groups, etc.
- Marketing is one of the most neglected aspects of agricultural modernization strategies. Therefore, the District Agricultural Plan for Thanjavur district envisages modernization of agricultural marketing infrastructure as well as developing marketing skills of farmers in the district by strengthening rural shandies, dissemination of market intelligence, commodity group formation, training farmers in marketing and storage, facilitating contract farming and arranging for buyers-sellers meetings.

3.4: Sectoral / Regional Growth Drivers of the District

Based on the selected growth drivers a composite index was developed so as to rank the district among the districts of the state. The districts of the state are then

classified as highly developed, Developed and lowly developed. Strengthening the development of marine and inland fisheries would also form as the growth drivers of the district.

3.5. Composite Index of Agricultural Development of Thanjavur 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 100 per 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 are 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 Thanjavur 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 22 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) as indicated in Table.23.

Table 22. Selected Indicators of Agricultural Development for Thanjavur District

Component	Indicators	No. of Indicators
Crop-Area-Variables	Cropping Intensity	10
	Percentage of Gross Cropped Area to Total geographical area	
	Percentage Share of foodgrains to Gross Cropped Area	
	Percentage Share of foodcrops to Gross Cropped Area	
	Percentage Share of non foodcrops to Gross Cropped Area	
	Percentage Share of cultivable waste to total geographical area	
	Percent Area under High Yielding Variety-PADDY	
	Percent Area under High Yielding Variety-CHOLAM	
	Percent Area under High Yielding Variety-CUMBU	
	Percent Area under High Yielding Variety-RAGI	

Table 22. contd…

Component	Indicators	No. of Indicators
Irrigation	Irrigation Intensity	7
	Percent of Gross Irrigated Area to Gross Cropped Area	
	Percent of Net Irrigated Area to net area sown	
	Percent area under Canal Irrigation to Gross Irrigated Area	
	Percent area under Tank Irrigation to Gross Irrigated Area	
	Percent area under Well Irrigation to Gross Irrigated Area	
	Percent 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 (ton.)	
	Consumption of Potassium per hectare of Gross Cropped Area (tonnes)	
Cultivators-Labourers	Percent of Cultivators to total population	2
	Percent of Agri.labourers to total workers	
	TOTAL	25

Table 23. Rank of Thanjavur 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	5	5	15	-	-	25	7
	1995-96	7	3	11	8	3	2	1
	2000-01	6	3	9	8	6	11	2
	2005-06	7	4	12	18	6	18	6

The analysis showed that Thanjavur district was classified as 'developed' in agricultural development during 1990-91 and 2000-01. For the remaining two periods viz., 1995-96 and 2005-06 it was classified as 'highly developed'. In terms of overall agricultural development its rank among the 29 districts of Tamil Nadu varied from 1 to 7 during 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 23. The table shows that, in all the components and its performance in the period of study is good. For example, in irrigation it ranks less than 5 in all the 4 periods. Similarly in crop area variables also it occupied a ranking between 5^{th} and 7^{th} ranks.

CHAPTER IV

DEVELOPMENT OF AGRICULTURAL SECTOR

4.1: Introduction

The district is benefited from water flowing out of the "Grand Anaicut" which forms the source of water for rivers like Cauvery, Vennar and Vettar in the district. Groundwater is an important source of irrigation during non-canal season as well as in areas outside the command areas of canal irrigation systems. Given the variety of soil types and irrigation sources, a number of crops are cultivated and the pattern of crop diversification is well-suited to minimize the risks in agricultural production given the rainfall pattern in the district.

4.2: Land Use

The total geographical area is 3.40 lakh hectares. Of this only one per cent is under forests and 0.41 per cent is under pastures and grazing lands. As much as 24.05 per cent of the total area is under non-agricultural uses. The area under cultivable waste is 4.33 per cent. The fallow lands have accounted for nearly 12 per cent of the total geographical area. The cultivable land was 1.79 lakh hectares constituting 56.54 per cent of the geographical area of the district. It could be observed from the land use pattern given else where that the area under forests is very meager as there was no scope of increasing the forests in the district. As forest wealth is an important wealth of any region, the personnel of the forest department may concentrate on increasing the area under farm forestry and social forestry. During the past three years though the barren and uncultivable land has remained static, land put to non-agricultural uses has increased by nearly 2000 ha between 2003 and 2005. This could mean that the cultivable lands are being converted into either industrial areas or real estates. The current fallow has drastically reduced by about 15,000 ha between 2003 and 2005. As the monsoon has performed well, the net area sown and area sown more than once had increased by 40, 000 and 13,000 ha between 2003 and 2005 which is a good sign of hectic activities in the

agricultural and allied sectors in the years to come. Cultivable waste, current fallows and other fallows put together accounted for moiré than 16 per cent of the total geographical area and hence wasteland development merit consideration in this district as well.

4.3. Land Holding Pattern

The marginal and small farmers have constituted nearly 90 per cent of the farming community. These farmers have cultivated 56 per cent of the cultivated area. Hence any interventions for the betterment of the farmers in the district should target these groups of farmers.

4.4 Soil health

The geological formation of Thanjavur district is made up of cretaceous, Tertiary and Alluvial deposits and the major area is occupied by the Alluvial and Tertiary deposits. In Thanjavur district, 13 soil series were identified and the major series was observed to be Madukkur which has accounted for 34.18 per cent of the cultivated soils of Thanjavur district. It could be observed from the tables given elsewhere that the soils of Thanjavur district are suited for many crops like Paddy, Sugarcane, Banana, Gingelly, Groundnut, Coconut and Vegetable and flowers. Besides these cultivable lands, there lies problem soils in the district and the details are given below in Table 24. The areas under different problem soil categories such as saline and alkaline soils, are given in the table. Nearly 20000 ha are affected either by saline or alkaline or both in inland and coastal area of the district and hence this requires the attention of the planners and policy makers.

Table 24. Problem Soils of Thanjavur District

(in ha.)

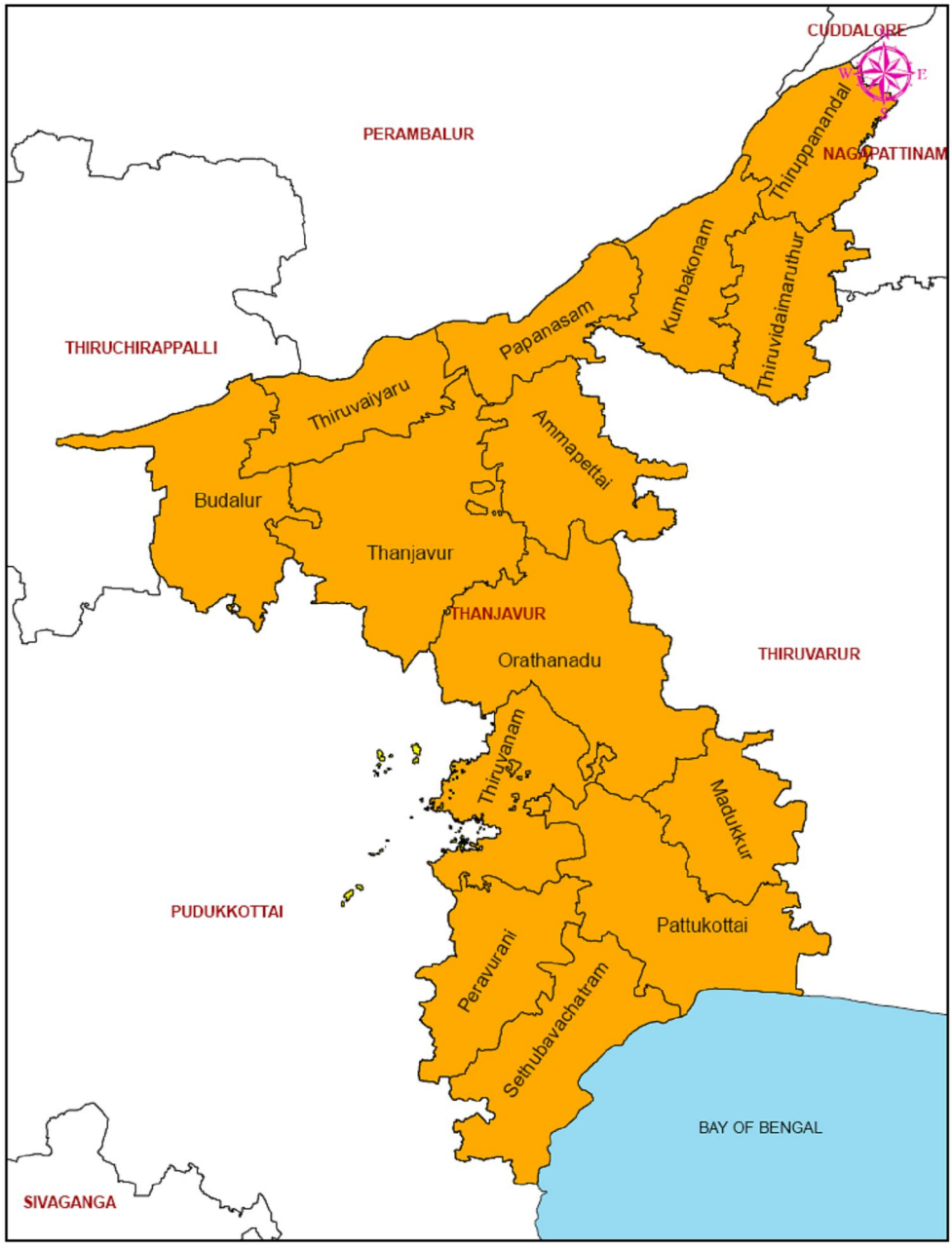
Problem Soils	2005-06	% age to the total
Inland		
Saline	2940	14.79
Alkaline	4060	20.42
Total	7000	35.21
Coastal		
Saline	1243	6.25
Alkaline	8456	42.54
Saline Alkaline	3181	16.00
Total	12880	64.79
Grand Total	19880	100.00

Source: Agristat 2006, Director of Agriculture, Chennai.

Thanjavur Soils and Area in hectare

Soil Description	Area (ha)
Very deep, fine, montmorillonitic, Vertisols	103281.03
Deep, fine, mixed, Inceptisols	71441.92
Deep, fine, mixed, Alfisols	30467.45
Moderately deep, fine, mixed, Alfisols	22781.41
Very deep, fine, mixed, Entisols	8839.23
Moderately shallow, fine loamy, mixed, Inceptisols	7874.54
Very deep, fine, montmorillonitic, Inceptisols	7079.33
Deep, fine loamy, mixed, Ultisols	6619.19
Deep, fine, montmorillonitic, Vertisols	6374.94
Deep, fine loamy, mixed, Alfisols	6242.45
Very deep, fine loamy, mixed, Alfisols	5190.35
Very deep, coarse loamy, mixed, Entisols	4293.39
Very deep, fine loamy, mixed, Entisols	3107.59
Deep, fine silty, mixed, Inceptisols	2688.89
Deep, fine, mixed, Ultisols	2480.71
Deep, contrasting particle size, mixed, Inceptisols	2010.24
Very deep, clayey skeletal, kaolinitic, Alfisols	1683.29
Very deep, fine, mixed, Inceptisols	1586.16
Deep, fine loamy, mixed, Inceptisols	1536.51
Very deep, fine loamy, mixed, Ultisols	1429.27
Very deep, sandy, mixed, Entisols	1030.91
Moderately deep, fine loamy, mixed, Inceptisols	913.68
Moderately shallow, fine, mixed, Inceptisols	838.94
Moderately shallow, fine loamy, mixed, Alfisols	690.24
Very deep, coarse loamy, mixed, Inceptisols	380.65
Shallow, loamy skeletal, mixed, Alfisols	180.87
Deep, coarse loamy, mixed, Entisols	146.05
Deep, sandy, mixed, Entisols	144.68
Very shallow, loamy, mixed, Entisols	104.22
Shallow, loamy, mixed, Entisols	62.97
Very deep, fine loamy, mixed, Inceptisols	43.73

AGROCLIMATIC ZONES OF THANJAVUR DISTRICT



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

NORTH EASTERN ZONE

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

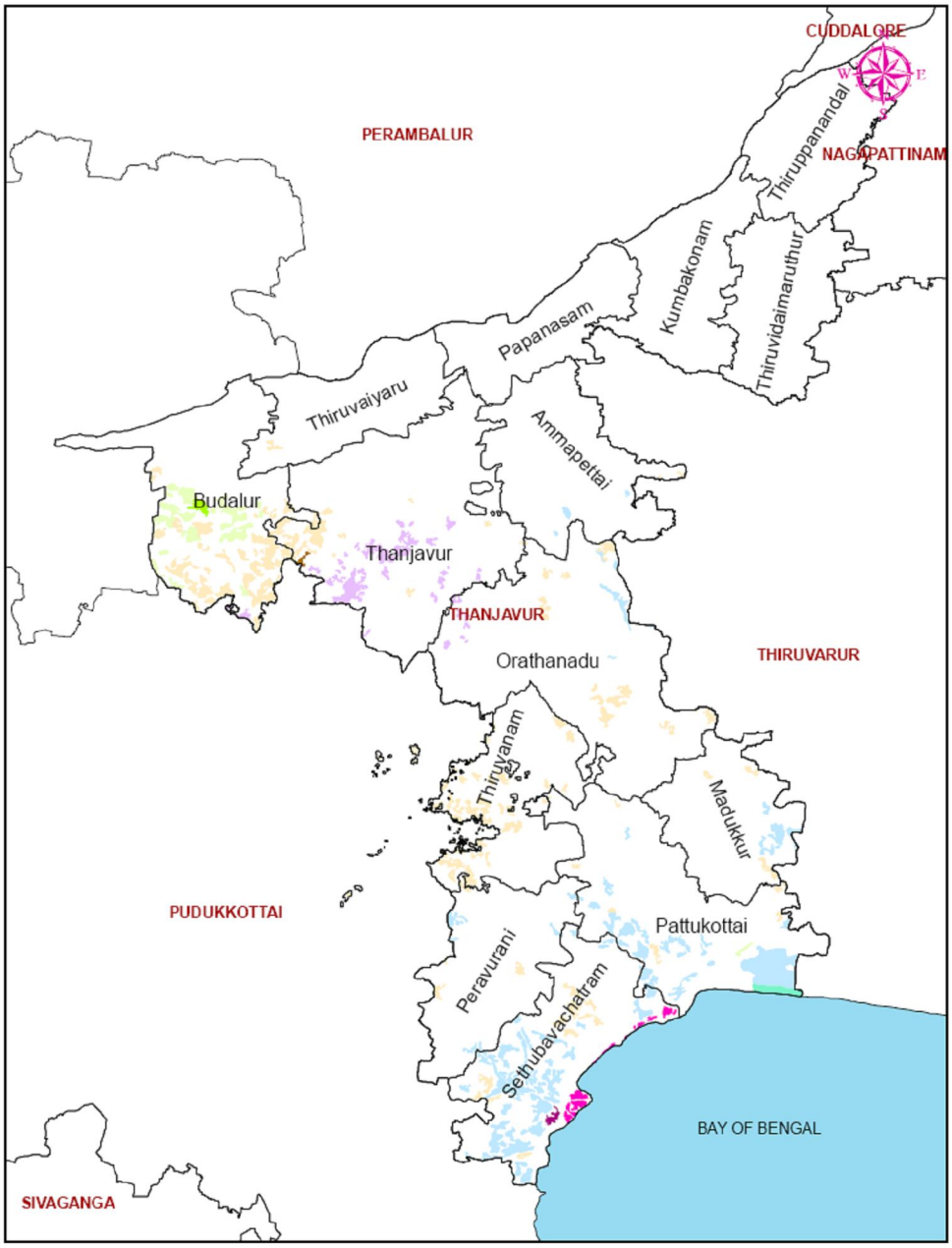
HIGH RAINFALL ZONE

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 THANJAVUR 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

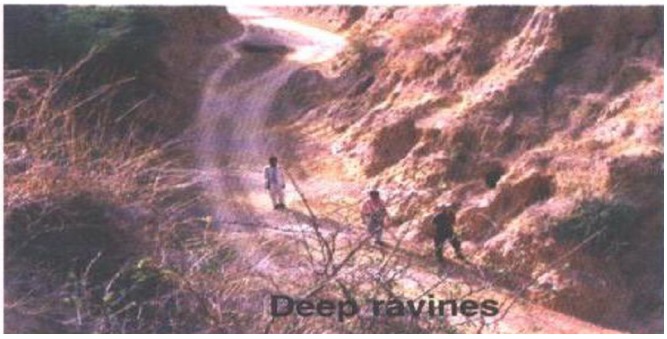
When the surface runoff goes in the form a concentric flow, a tiny water channels are formed in the field. These are small rivulets of such a size that they can be worked over with farm machinery. Rills are generally associated with the cultivated lands and are visible in the ploughed soil after first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

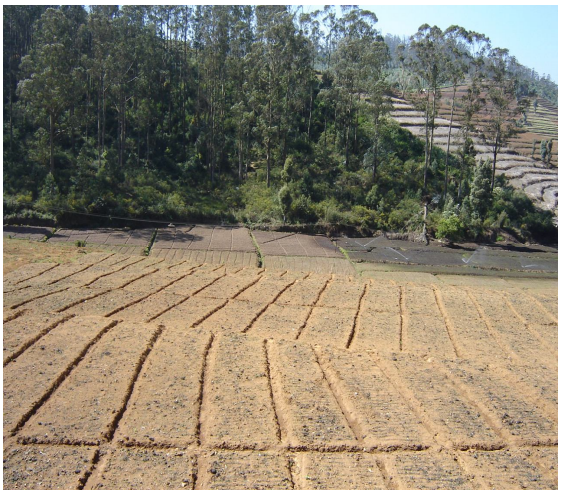
Salinity

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

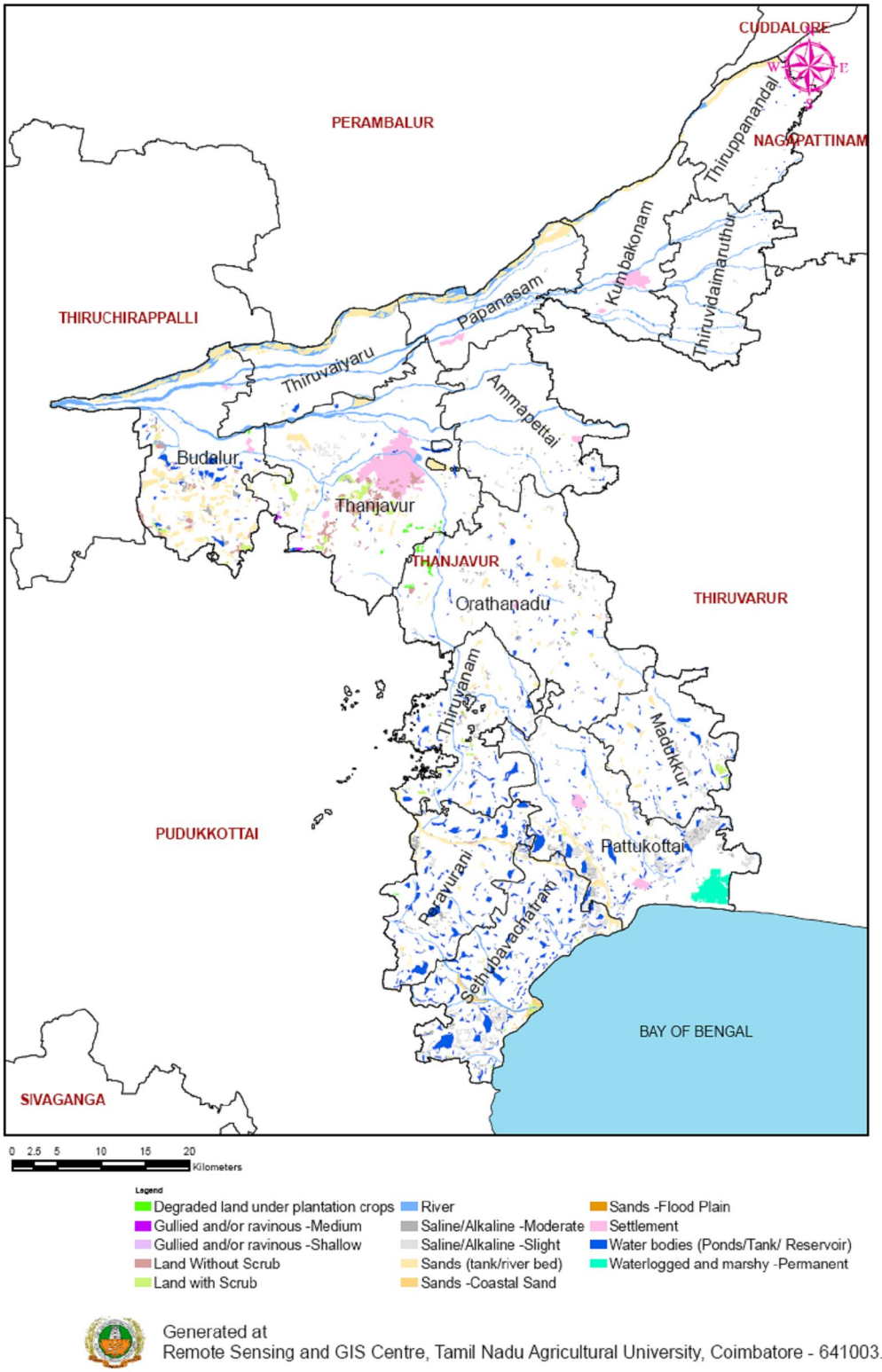
Barren / rocky / stony areas are the rock exposures of varying lithology often barren and devoid of soil and vegetal cover. They occur in hill forests as openings or as isolated exposures on plateau and plains. These can be easily delineated from other type of degraded land because of their severe nature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



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

WASTELAND CLASSIFICATION

Culturable Wastelands

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

i. **Agricultural Land inside notified forest:** Lands put under cultivation within the restricted forest areas.

ii. ***Degraded forest – Scrub domination:*** Lands as noticed under the Forest Act and those lands with various types of forest cover, in which vegetative cover is less than 20% are classified as degraded forest land. Among the vegetative types scrubs and thorny bushes are dominated species.

iii. ***Degraded land under plantation crops:*** This includes degraded lands containing plantations inside and outside of the notified forest area.

iv. ***Degraded pastures / grazing land***: All those grazing land in non-forest areas, whether or not they are permanent pastures or meadows, which have become degraded due to lack of proper soil conservation and drainage measures fall under this category.

v. ***Gullied / ravenous land***: The gullies are formed as a result of localised surface run off affecting the friable unconsolidated material resulting in the formation of perceptible channels resulting in undulating terrain. The gullies are the first stage of excessive land dissection followed by their networking which leads to the development of 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).

4.5: Water Resources and management

As the district is dependent on the river water of Cauvery, the long lasting water disputes between the riparian states is a concern to ponder over. Besides this, the irrigation system with wide net work of canals and irrigation channels was another area ringing alarm bells to the administrators as these canals and channels have been narrowed and shallowed due to siltation and poor maintenance. The "Kudi Maramathu" done by the villagers during 1950's and 1960's and even earlier has become the past. The farmers are waiting for the government for this important work. This is another area where attention is much needed in the district to increase the water conveyance efficiency.

4.6. Cropping Pattern

The cropping pattern of Thanjavur district, as could be evidenced from the various statistical reports is Paddy, coconut, Pulses, Sugarcane and Groundnut in that order. If, Mettur dam is opened on the normal date of 12th June, the farmers could go in for two crops of Paddy namely Kuruvai and Thaladi. If the monsoon is delayed and erratic, they could cultivate only one crop of paddy ie. Samba. They follow the paddy crop with pulses which will be sown just one week before the harvest of Paddy crop. Now the farmers have started cultivating rice fallow cotton as well. The crop will be sown in the left over stubbles of paddy with the available moisture. The areas where labour problem exists the farmers are cultivating Sugarcane. The rainfed areas are cultivated with groundnut. Hence the needed interventions and support would be focused towards these crops. The major crops cultivated and the varieties grown are given below.

Paddy **:** ADT 36,ADT43,ADT39,ADT 38,CR1009,Co 43, White Ponni, BPT 5204
Pulses **:** ADT 3,ADT 5 ,T 9 VBN 3, KM2
Groundnut **:** VRI 2,TMV 7,Gujarat 1 &2
Gingilly **:** TMV 3,TMV 4 TMV,6,VRISV1
Sugarcane **:** COC 671
Cotton **:** SVPR 1, MCU 7

Yield levels of these crops are comparable with any other leading districts in the state. However, there exists scope for pushing up the yield frontiers further.

4.7: Input Management

The consumption pattern of Nitrogen, Phosphorus and Potassium fertilizers is given below in Table 25. A look at the consumption of fertilizers, reveals that the farmers are using more quantity of nitrogenous fertilizers than any other form of inorganic fertilizers. The reason attributed for this could be the subsidized prices of nitrogenous fertilizers and the lack of knowledge on the balanced fertilizer application.

Table 25. Consumption of Nitrogen, Phosphorus and Potassium

(in lakh tones)

Name of the nutrient	2003-04	2004-05	2005-06	Triennium Average (2005-06)
Nitrogen	0.26	0.21	0.4	0.29
Phosphorous	0.07	0.09	0.12	0.09
Pottassium	0.09	0.09	0.05	0.08

Source : Agristat, 2006, Director of Agriculture, Chennai.

4.8: Farm Mechanisation / Farm equipments

The district has 56129 energized pumpsets out of the total number of about 1768052 pumpsets in the state as a whole. As per the 1991 census there were nearly 10000 tractors are available in the district. Many farmers have also sought for power connections to pump sets.

4.9. Special Projects / Programmes on-going in the district

The details of special projects / programmes ongoing in the district are given below, in Table 26.

Table 26. Details of Agricultural special project / programmes ongoing in Thanjavur district

Name of the scheme	Target (L.Rs.)	Acht. (L.Rs.)	No of Beneficiaries	Area cover age (Ha.)
2004-05				
ISOPOM –Pulses	4.965	4.875	3779	12450
ISOPOM Oil seeds	7.120	7.131	3275	1890
ISOPOM Oil palm	20.846	14.657	1586	220
ISOPOM Maize	0.088	0.084	46	20

Table 26. contd…

Name of the scheme	Target (L.Rs.)	Acht. (L.Rs.)	No of Beneficiaries	Area cover age (Ha.)
ICDP Cotton	11.050	11.045	2318	300
ICDP –Rice	25.669	25.649	44451	8900
Sugarcane dev. prog.	0.170	0.170	630	1025
Coconut dev. board scheme	3.450	3.450	58	1020
2005-06				
ISOPOM –Pulses	20.621	15.495	19040	23000
ISOPOM Oil seeds	14.295	6.768	5244	1800
ISOPOM Oil palm	53.718	42.477	860	421
ISOPOM Maize	--	--	--	--
ICDP Cotton	96.303	69.479	9000	800
ICDP –Rice	7.52	7.447	75000	2389
Sugarcane dev. prog.	--	--	--	--
Coconut dev. board scheme	8.200	7.819	78	50
2006-07				
ISOPOM –Pulses	22.531	22.531	18.030	22.800
ISOPOM Oil seeds	11.152	11.143	4744	1625
ISOPOM Oil palm	93.138	58.083	9069	796
ISOPOM Maize	--	--	--	--
ICDP Cotton	4.102	4.102	898	30
ICDP –Rice	40.100	40.099	67922	50000
Sugarcane dev. prog.	1.130	1.130	830	300
Coconut dev. board scheme	15.718	15.699	357	2500
TANWABE	16.147	16.328	4455	--
Seed village	12.01	12.034	13775	6300

Most of the above schemes are implemented with a view to pushing up the yield levels of the crops concerned. Yet there exists potential for increasing the yield by strengthening these activities. Oil palm is the new crop introduced in this district in the recent years. There is also scope for extending the area under maize and cotton.

4.10: Constraint Analysis

The major constraints affecting agricultural production in the district are unseasonal rains which affect the crops mostly during the growing and flowering season of the major crops. The ill-drained vertisol soil of the delta district is another major constraint. The data on yield levels of major crops in Thanjavur district are compared

with that of the state-level average for Tamil Nadu as well as with the highest yield obtained in the state and the details are presented below in Table 27, that follows.

Table 27. A comparison of yield of major crops in Thanjavur district and Tamil Nadu in 2005-06

(in kgs/ha.)

Area under crops	Thanjavur	Tamil Nadu State	Highest yield in the state
Paddy	2579	2541	4160
Ragi	1972	1325	3007
Maize	1173	1189	1609
Blackgram	376	328	730
Greengram	299	336	713
Sugarcane	100	105	139
Banana	49291	49104	NA
Mango	4182	4299	NA
Cotton	508	260	508
Groundnut	2471	1775	3161
Gingilly	451	469	784
Coconut (nuts/ha.)	19090	13782	25742

Source: Season and Crop Report, DES, Chennai.

In crops such as paddy, ragi, maize, green gram, black gram, other pulses and sugarcane, the yield levels achieved in Thanjavur district are either on par or higher than that of the state-level average.

Yield gap analysis of major crops and the reasons for gaps

a) Reasons for the yield gap

1. In adequate availability of good quality seeds and genetically pure seeds in high yielding varieties/ hybrids required by the farmers.
2. Limitations in the use of latest technologies among the farmers

b) Technological gap

Top three technologies mostly adopted are

1. Urea gypsum neem cake application- Paddy
2. IPM technologies -Paddy
3. Bio fertilizer application -Paddy

Top three technologies least adopted are

1. Plant population maintenance-Paddy
2. Manuring-Coconut.
3. Magnesium sulphate application -Gingelly
4. Post harvest technologies

Therefore, as compared to the yield potentials obtained in the research stations and in the experiments conducted, there exists very good potentials to bridge the yield gaps through the adoption of science-based latest technologies.

4.10: Recommended interventions for the district

In agricultural sector, the important crops such as paddy, pulses and groundnut will be covered under the proposed plan. In addition, adequate emphasis has been given to strengthening extension activities, developing marketing infrastructure and implementing special projects especially on harnessing and conservation of water resources by the Water Resources Organization of Public Works Department and the Agricultural Engineering Department. Soil and water conservation programmes are proposed to conserve these two precious natural resources to enhance and sustain productivity. Farm mechanization to reduce the cost of cultivation is also envisaged to a significant extent. Following are the specific interventions recommended for crop development in the district.

i) Increasing the productivity levels of major crops viz. Paddy, Groundnut, Pulses, Gingelly and Cotton.

ii) Strengthening the support system of the agricultural extension machinery and

iii) Intensive development education to improve the knowledge and capability of the farmers.

4.11: Projected outcome and Growth Rate during the plan period

The expected outcome by implementing the proposed projects is to achieve a growth rate of above four percent in agricultural sector in Thanjavur district.

4.12: Researchable issues

1. Reclamation of land and water resources affected by salinity and alkalinity
2. Design and development of cost-effective, labour-saving farm machineries and implements to suit specifically the needs of the marginal and small farmers.
3. Crop varieties suitable for anaerobic conditions during the times of floods.
4. Water-saving technologies for paddy, sugarcane and coconut.
5. Increasing the productivity of fodder and green manure crops
6. Development of fodder grass varieties suitable for traditional sylvi-pastoral system of the district
7. Conservation of traditional draught bullock breed viz., Umbalachery which is facing the threat of extinction.
8. Biological weed control and pest control.
9. Control of rat menace in paddy fields.
10. Evolving high yielding paddy, pulses and cotton varieties
11. Prevention of sea water intrusion in the coastal belt.
12. Farming system research

CHAPTER V
ALLIED SECTORS

5.1: Introduction

Allied activities viz. horticulture, animal husbandry, fisheries and forestry have the potentials for providing significant employment opportunities to rural and urban population. Allied activities provide supplementary occupation to the people besides contributing to Gross State Domestic Product. The dependence on the agricultural sector for supporting livelihood is well known while the allied sectors offer scope for absorbing under utilized and surplus labour from the agricultural sector. The allied sectors have vast potentials for putting the State's rural economy on a higher growth trajectory.

5.2: Horticulture Development

Thanjavur is predominantly a rice growing tract and hence the scope for horticultural crops is very much limited. However, there exist potentials in growing fruit trees like mango, cashew etc and vegetable crops in upland areas. Vegetable cultivation during summer season in rice fallows is also possible. Most of the farmers are small holders of land and cultivating less remunerative crops like paddy, maize, and groundnut. The farmers are very progressive and enthusiastic to adopt new technologies and new crops such as medicinal crops in pockets. After the intervention of Horticulture Department in this district, the farmers are ready to go in for cultivation of Horticulture crops which prove remunerative.

The constraints in horticulture crop cultivation are

i) High cost of cultivation

ii) High cost of improved technologies

iii) Water inundation during rainy seasons in plains

Some of the on-going programmes in the Horticultural department are listed below, in Table 28.

Table 28. Ongoing Schemes 2006-07 in Horticultural Sector in Thanjavur District

Particulars	Physical (Ha)	Financial (Lakhs)
Integrated Horticulture Development Scheme		
Fruit crops	106.00	5.91
Vegetables Seeds	76.00	0.668
Species	2.00	0.054
Others	-	0.198
National Horticulture Mission		
Mango	50.00	5.625
Anola	50.00	5.625
Banana	500.00	37.500
Cocoa	600.00	33.750
Total	**1200.00**	**82.500**

As could be discerned from the table above, the Integrated Horticulture Development Scheme and the National Horticulture Mission are the two major schemes implemented in Thanjavur district. Following are the recommended interventions for horticulture development in Thanjavur District.

i. Increasing the production and productivity of fruits and vegetables by extending the area and productivity
ii. Popularizing the precision farming
iii. Providing incentives for developing physical support system for banana and Betelvine etc.
iv) Provision of marketing infrastructure.

5.3. Animal Husbandry

The Animal Husbandry department has contributed immensely to livestock development especially dairy animals in Thanjavur district and in providing additional income to the poor farmers in the villages. Umbalachery breed of cattle are specific to this location of the state. These bullocks are known for their draught power especially in the puddled conditions and more specifically in the clayey soils of the district, while the other breeds are also reared for agricultural purposes. Many milch breeds including cross-bred cows are available throughout the district. Poultry activity, both layers and broilers

in the district are in the infancy stage in this district and it tends to become the major animal husbandry activity in the district in the years to come. Therefore the major issues identified for development in the district are the following.

- Green fodder shortage is the core problem
- Large number of non-descript breeds of cattle is available in the district and they have to be genetically up graded through cross-breeding (artificial insemination) programmes.
- Lack of through knowledge among livestock rearers on the scientific rearing of cows, heifers, calves and buffaloes.
- Strengthening the veterinary services delivery systems for effective TOT.

To sum up, the major constraints identified in livestock development in the district are the poor management practices followed by the farmers in feeding, breeding and health management.

The interventions recommended for livestock development in the district are

- Development of feed and fodder
- Provision of improved health care facilities
- Genetic up gradation of non-descript breeds
- Promoting poultry development
- Capacity building among the officials as well as the livestock rearers
- Strengthening of extension activities

5.4. Fisheries Development

Inland and coastal fisheries are the resource potential for fisherman in the district. Being a district having a coastal belt with a coastal length of 45.1 kms, there is immense potential for exploitation of the marine catches. Thanjavur is one of the 13 Maritime districts of state engaged in Marine Fishing and its fish production is about five per cent of the total catch of the state. There are 27 Fishing villages in the district starting from Thambikkottai in Pattukkottai Taluk in the North and ending in Sembagamadevi Pattinam in Peravurani Taluk in the South. Further, 23 Fishermen Cooperative Societies and nine Fisherwomen Co-operative Societies are functioning in Thanjavur District. The

major issues involved are to accelerate the development of fisheries, both inland and marine so as to increase production as a whole in the district.

On-going Schemes / Activities

Government Welfare Schemes to the Marine Fishermen

1. Housing:

   From 1996-97 onwards, Ma. Singaravelar memorial Fishermen free housing scheme, 718 concrete roofed houses constructed and handed over to houseless poor of Fisher folk.

2. Link Roads to the Fishermen villages from Main Roads facilitate the fast and easy transport of the fish catches to the Nearest Market and the fishermen get good prices for their catch.

3. Providing street light to Fishermen villages.

   In 24 Fishermen villages in Thanjavur district, 209 street lights and 10 sodium vapour light in 5 villages have been provided by the Fisheries Department in addition to the lights provided by local body.

4. Guide Lights had been provided in the Fishermen Villages to locate their shore during Night times.

5. Fishermen Saving Cum Relief Scheme

   During rainy season (Sep, Oct, Nov., & Dec.) due to unfavorable conditions the fishermen can not venture into the sea and hence they suffer without earnings. To minimize their sufferings and to create saving habit among fishermen, the saving cum Relief scheme was introduced. For this, subscriptions were collected at the rate of Rs.45/- for eight months (January to August) (45 x 8 = 360) from each fishermen. In addition to the fishermen share, the central and state Government shares are added and distributed to the fishermen during lean season.

6. Insurance Schemes:

   All the members of the fishermen co-operative societies are covered under insurance scheme and the premium amount were paid by both Central and State Government equally. In addition, another scheme of "Group Janatha Personal Accident Insurance Scheme" with the premium amount paid by the fishermen themselves is also implemented for more financial assistance when the fishermen meet with accidents or in the case of death.

7. In addition to the above schemes so many other schemes such as subsidy for purchase of in board & outboard motors, Fishing gears and crafts are also implemented. During rainy seasons weather warning reports received from Meteorological Centre, Chennai, are informed to the Fishermen villages.

8. Through fisher women co-operative societies Aluminum vessels, ice boxes and baskets are given on subsidized cost to improve their fish marketing business. Training is also given to them in marketing, processing and net making.
9. Through Tamil Nadu state's Fisheries Apex Co-operative Federation (TAFCOFED) Integrated Marine fisheries development programme is also implemented in selected villages.

The interventions recommended are:

- Subsidy assistance to private fish seed rearing / fish seed production
- Expansion of fish culture in hitherto unutilized water bodies by stocking fingerlings
- Sustain /retain the existing infrastructure facility (ponds under culture) for aquaculture
- Infrastructure development to conserve the endangered native fish
- Promotion of seaweed culture
- Development of integrated model for Coastal Aquaculture
- Provision of Subsidy for the purchase of drag net
- To provide subsidy for the provision of Moped with Ice box
- Capacity building by given training to farmers
- Development of live fish retail market
- Desilting of Samuthiram lake (20ha) and Naadiamman Kulam lake (5 ha)

5.5. Agricultural Marketing

As Thanjavur district is granary of Tamil Nadu, the marketing need to be at its true competitiveness so as to fetch maximum prices to the farmers. The farmers need more infra structural facilities to market their produce. They need awareness on prices prevailing else where in the country by way of market intelligence and price forecasts. The interventions recommended for the development of marketing activities in the district are

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. Capacity building of farmer's skill
8. Price surveillance
9. Regulated Market and *Uzhavar Shandies* Publicity
10. Market Infrastructure

5.6. Agricultural Credit

5.6.1. Credit Disbursement

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

I. Policy Innovations of Government of India:

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

II. Policy initiatives of Reserve Bank of India:

1. Guidelines on Priority Sector Lending (PSL) revised enlarging its scope.
2. Limits for loans under DRI scheme raised from Rs.6500 to Rs.15000 and that for housing loan under scheme from Rs.5000 to 20000.
3. CBs/RRBs to introduce on a pilot basis in one district, a simplified cyclical credit product whereby the farmers can use core component of 20 per cent of credit limit throughout the year, provided interest is serviced.
4. Banks are allowed to utilize the services of retired bank / Government employees and ex-servicemen as business correspondents.

III. Policy and Development Initiatives of NABARD:

1. NABARD to play an active and supportive role in the implementation of 'Rural Business Hub' Scheme of Ministry of Panchayat Raj envisaging Public-Private-Panchayat Partnership to develop holistic and integrated partnership between decentralized rural production units and larger corporate entities.
2. A new 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 Thanjavur district is furnished in Table 29.

Table 29. Activity Wise Credit Disbursement and Projections under Agricultural and Allied Sectors in Thanjavur District

(Rs. lakh)

Sectors	2008-09	2009-10	2010-11	2011-12
Crop loan	67904.98	71300.23	74865.24	78608.5
Term loan		0	0	0
Micro Irrigation	3869.9	4063.4	4266.56	4479.89
Land Development	495.4	520.17	546.18	573.49
Farm Mechanization	6692.78	7027.42	7378.79	7747.73
Plantation & Horticulture	1363.49	1431.66	1503.25	1578.41
Forestry & Waste land Development	2789.14	2928.6	3075.03	3228.78
Dairy Development	1857.03	1949.88	2047.38	2149.74
Poultry	138.5	145.43	152.7	160.33
Sheep/Goat/ Piggery	297.11	311.97	327.56	343.94
Fisheries	1292.68	1357.31	1425.18	1496.44
Storage Godown & Market yards	272.6	286.23	300.54	315.57
Bio-gas	0	0	0	0
Sericulture	0	0	0	0
Others	249.4	261.87	274.96	288.71
Sub total - Term loan	19318.03	20283.94	21298.13	22363.03
Total Agriculture Credit (1+2)	87223.01	91584.17	96163.37	100971.53
Non Farm sector	11930.2	12526.71	13153.05	13810.7
Other Priority Sector	18001.75	18901.84	19846.93	20839.28
Grand Total	**117154.96**	**123012.72**	**129163.35**	**135621.51**

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. 123012.72 Rs. 129163.35 and Rs. 135621.51 lakhs respectively. The total flow of agriculture credit in terms of crop loan and term loan in 2011-12 would be Rs. 100971.53 lakhs. The flow of credit for non-farm sector and other priorty sectors in 2011-12 would be Rs. 13810.7 and Rs. 20839.28 lakhs respectively.

CHAPTER VI
DISTRICT PLAN

Now, the interventions (projects) proposed, the associated outlays, the physical targets, budgetary requirements, time frame for achievements in the agricultural (field crops) sector, horticultural sector, agricultural engineering sector, agricultural marketing and agricultural sector, animal husbandry sector and fisheries sector have been discussed in this chapter. This would comprehend the activities and the achievements to be made in the four years period of eleventh plan, under NADP.

6.1. Vision of XI Plan

The 11th Plan provides an opportunity to restructure policies to achieve a new vision of growth that will be more broad-based and inclusive, bringing about a faster reduction in poverty and helping bridge the divides that are currently the focus of so much attention. One of the major challenges of the 11th Plan must be to reverse the deceleration trend in agricultural growth from 3.2 per cent observed between 1980 and 1996-97 to a trend averaging only 1.5 per cent subsequently. This deceleration is undoubtedly at the root of the problem of rural distress that has surfaced in many parts of the country. To reverse this trend, corrective policies must be adopted .There is a need to raise the growth rate of agricultural GDP to around four per cent as aimed at in the XI plan period.

6.2. District Plan

The various development issues, constraints and activities (interventions) planned for the development of agriculture and allied sectors have been discussed in the earlier two chapters viz. chapter IV and V. Based on the discussions the district plan in full has been briefly outlined below in this chapter. The activities planned and the associated targets and costs are presented for the development of both agricultural and allied sectors. The agricultural sector is taken up first.

6.3. Agricultural (Field crops) Sector:

The development of agriculture sector has been aimed at by mainly pushing up the productivity levels of the major crops viz. Paddy, Pulses, Groundnut, Cotton and Sugarcane grown in the district. Activities planned for and the costs involved under each crop area detailed below.

6.3.1. Paddy

A. The Strategy

Paddy productivity in the district is on par with state average productivity. However, there is immense scope for increasing the productivity of paddy further in this district, by using appropriate crop varieties with suitable crop production techniques. Adequate supply of improved seeds and hybrid seeds, better water conservation measures, adoption of system of rice intensification, etc would go a long way in sustaining and increasing the productivity of paddy in this district. Assistance to TANWABE groups and self-help groups for seed production, seed minikit, popularization of hybrid rice and green manure production are some of the important strategies envisaged for increasing rice productivity in the district.

B. The Plan

The details of the plan showing the activities (interventions) planned, the targets fixed and the costs involved for increasing the paddy productivity in the district are exhibited in the Table. 30.

Table. 30. Interventions for increasing the Paddy Productivity

(Rs. In lakhs)

Activities	Unit	2008-09		2009-10		2010-11		2011-12		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
TANWABE	No	10	5	12	6	14	7	14	7	25.00
Incentive to seed production	Metric Tonnes	300	9	360	10.8	420	12.6	420	12.6	45.00
Seed distribution subsidy	Metric Tonnes	300	15	360	18	420	21	420	21	75.00
Seed minikit	Nos	400	0.4	400	0.4	400	0.4	400	0.4	1.60
Rice-Hybrid distribution subsidy	Qtl.	10	1	20	2	20	2	20	2	7.00
Greenmanure seed distribution	MT	80	12	90	13.5	120	18	140	21	64.50
Soil Health Card	Nos	67500	67.5	67500	67.5	67500	67.5	67500	67.5	270.00
Vermi compost	Nos	20	2	20	2	30	3	30	3	10.00
MN mixture distribution	L.Ha	0.14	70	0.28	140	0.35	175	0.42	210	595.00
Gypsum	L.Ha	0.006	0.003	0.007	0.004	0.008	0.004	0.01	0.005	0.02
Rat control	Nos	300	15	300	15	300	15	300	15	60.00
Publicity and Training	Nos	1	0.5	1	0.5	1	0.5	1	0.5	2.00
Marker, Conoweeder	Ha.	350	10.5	300	9	300	9	400	12	40.50
Transplanter to TANWABE	Nos	14	10.5	18	13.5	20	15	20	15	54.00
Power Tiller	Nos	20	13	30	19.5	40	26	50	32.5	91.00
Campaigns	Nos	300	3	320	3.2	350	3.5	400	4	13.70
Production of film	Nos	2	5	2	5	3	7.5	3	7.5	25.00
Tarpaulin	No.	200	10	250	12.5	300	15	400	20	57.50
Biofertilizer	L.Nos	2.1	6.3	2.25	6.75	2.4	7.2	2.5	7.5	27.75
Publicity / POL & Hireing	Nos	1	0.5	1	0.5	1	0.5	1	0.5	2.00
Community Thrashing floor	Nos	8	16	14	28	28	56	30	60	160.00
Total			**272.20**		**373.65**		**461.70**		**519.01**	**1626.57**

Source: Records of Office of the Joint Director of Agriculture, Thanjavur

C. The Budget

The financial implications of the plan for the four years period considered under eleventh plan period for District Agricultural Plan under NADP are as given in Table 31 below.

Table 31 Budget for Paddy Productivity Increase

Year	Financial Outlay (lakh Rs.)
2008-09	272.20
2009-10	373.65
2010-11	461.70
2011-12	519.01
Total	**1626.56**

Thus, the total budget outlay for agricultural (crop husbandry) development in the state and 11th plan under NADP involves 1626.56 lakhs for Thanjavur district.

D. Outcome

By implementing the planned activities listed in the Table 30, the increase in the productivity levels at the rate of about 100 kgs per hectare per year, is expected.

6.3.2. Pulses

A. The Strategy

Blackgram and greengram are the major pulse crops grown in the district under rice fallow condition. Hitherto, the farmers in general bestowed least attention in pushing up the yield levels and hence considered as the least cared crop. But in the recent years few farmers realized the need for adopting a few package of practices and started realizing better results. To encourage the adoption of few improved practices in raising pulses and to push up the yield levels the technology oriented development plan has been formulated under DAP of NADP.

B. The Plan

The activities (interventions) planned for and the associated physical targets and financial outlays are given in Table 33.

C. The Budget

The budget allocations required for the planned activities as could be deduced from Table 32 is as follows.

Table 32. Budget Allocation for Pulses Development

Year	Financial Outlay (lakh Rs.)
2008-09	80.00
2009-10	69.00
2010-11	72.60
2011-12	75.00
Total	**296.60**

Thus, a total outlay of Rs. 296.60 lakhs is involved in implementing the pulses development in the district during the XI plan under NADP.

D. The Outcome

The yield variation in the pulse crops of rice fallow is very wide ranging from 250 to 800 kgs per hectare with the average being around 300 kgs. Therefore, by implementing the above planned activities, especially the application of DAP, the yield level can be pushed up by another 200 kgs or so , attaining an average yield level of 500 kgs per hectare or even more.

Table 33. Interventions for increasing Pulses Productivity

(Rs. in lakhs)

Activities	Unit	2008-09		2009-10		2010-11		2011-12		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
Seed production(Group)	No	4	2.00	0	0.00	0	0.00	0	0.00	2.00
Seed production Subsidy	Metric Tonnes	15	1.50	15	1.50	15	1.50	15	1.50	6.00
Seed Distribution Subsidy	Metric Tonnes	200	24.00	250	30.00	280	33.60	300	36.00	123.60
Integrated Nutrient Management	L.Ha.	0.03	37.50	0.03	37.50	0.03	37.50	0.03	37.50	150.00
DAP Spray	L.Ha.	.075	15.00	--	--	--	--	--	--	15.00
Total			**80.00**		**69.00**		**72.60**		**75.00**	**296.60**

Source: Records of Office of the Joint Director of Agriculture, Thanjavur

6.3.3. Groundnut

A. Strategy

Groundnut cultivation is more localized in the coastal taluks of Pattukkottai, Peravurani etc. The crop is managed with the shallow ground water availability. There is ample scope to improve the yield levels by the adoption of improved package of practices and irrigation support.

B. The Plan

With this in view, the developmental activities for groundnut and the associated physical targets and financial outlays have been planned and the details are portrayed in Table 34.

Table 34. Interventions for increasing Groundnut Productivity

Activities	Unit	2008-09		2009-10		2010-11		2011-12		Total
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
M.N. Mixture Distribution	Ha	200	1.00	200	1.00	200	1.00	200	1.00	4.00
Tarpaulins	No	10	0.50	10	0.50	10	0.50	10	0.50	2.00
Construction of Rural godowns	No.	7	70.00	0	0.00	0	0.00	0	0.00	70.00
Total			**71.50**		**1.50**		**1.50**		**1.50**	**76.00**

C. The Budget

The plan outlay required for groundnut development in Thanjavur district is summarized below, in Table 35.

Table 35. Year-wise Financial Outlay for Groundnut Development

Year	Financial Outlay (lakh Rs.)
2008-09	71.50
2009-10	1.50
2010-11	1.50
2011-12	1.50
Total	**76.00**

The financial outlay of Rs. 76 lakhs is required for implementing the groundnut development activities in the during eleventh plan period under NADP.

D. The Outcome

Application of manure mixture and advocacy of package of practices would increase the yield level at least by 250 kgs per hectare.

4. Extension / Infrastructural Support

The infra structural facilities in the extension wing to be strengthened to augment the production levels of agricultural sector

A. The Strategy

By way of bridging the gap between the research and extension activities in the agricultural sector, the transfer of technologies from lab to land could be effectively done so as to benefit the farmers. This could be achieved by strengthening the infra structural facilities of the agricultural department.

B. The Plan

The activities planned, the budget outlays and the physical targets are given in Table below 37.

C. The Budget

The year-wise budgetary allocations are summarized in Table 36 given below.

Table 36. Financial Outlay for Infra Structural Development

Year	Financial Outlay (lakh Rs.)
2008-09	21.65
2009-10	11.65
2010-11	11.65
2011-12	11.65
Total	**56.60**

The total plan outlay required is Rs. 56.60 lakhs for the infrastructural development in the district under NADP in the 11th plan period.

D. The Outcome

The most needed lab to land programme would be implemented in letter and spirit with the given assistance and hence the productivity and income levels would be bolstered up in the days to come.

Table 37. Strategy for Bridging the Gap of Research and Extension

Particulars	Unit	2008-2009		2009-2010		2010-2011		2011-2012		Total	
		No. of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost	No.of Units	Total Cost
Strengthening of District Information Centre, Providing Lap Top ,Printer, LCD, Scanner, Digital Camera, Copier etc	L.Rs.	0	0	0	0	0	0	0	0	0	2.5
Exposure visit Inter state @ 30 farmers/Tour, 10 days @ Rs.600/day/farmer (Rs.1.8 Lakh)	L.Rs	3	5.4	3	5.4	3	5.4	3	5.4	12	21.6
Exposure visit Inter state @ 50 farmers/Tour, 5 days @ Rs.300/day/farmer (Rs.0.75 lakhs each)	L.Rs	3	2.25	3	2.25	3	2.25	3	2.25	12	9
District level exhibition/ kissan mela @ Rs.2.0 Lakh/ District	L.Rs	1	2	1	2	1	2	1	2	4	8
Publicity & Propaganda, Printing of Lit., Display boards, conduct of press tour, Technology transfer through TV, Radio & other mass media @Rs.2.0 Lakh / district	L.Rs	1	2	1	2	1	2	1	2	4	8
Video Conferencing facilities to District HQ @Rs.10.0 Lakh/ District & State HQ @Rs.15 Lakh	L.Rs	1	10	0	0	0	0	0	0	1	10
Total			**21.65**		**11.65**		**11.65**			**11.65**	**56.60**

In sum the four major project`ts recommended for agricultural development in Thanjavur district under NADP and the associated budget outlays are summarized below in Table 38.

Table 38. Crop-wise / Activity-wise Cost for Agricultural Sector

(Rs. in Lakhs)

Activities	2008-09	2009-10	2010-11	2011-12	Total
Crop: Paddy	272.20	373.65	461.70	519.01	1626.56
Crop: Groundnut	71.50	1.50	1.50	1.50	76.00
Crop: Pulses	80.00	69.00	72.60	75.00	296.60
Extension / Infrastructural Activities	21.65	11.65	11.65	11.65	56.60
Total	**445.35**	**455.8**	**547.45**	**607.16**	**2055.76**

Source: Records of Office of the Joint Director of Agriculture, Thanjavur.

The budget outlay for agricultural sector works out to Rs. 2055.76 lakhs for the eleventh plan period, under NADP.

6.4. Horticultural Sector

i. Precision Farming

This is a proven, farming technique in which the farming activities are done with high precision to take care of location-specific requirements. High quality of products ensures higher prices and assured markets. It is proposed to cover an area of 500 Ha, every year, in selected pockets of Thanjavur District. Assistance will be given at the rate of 75 per cent of project cost or Rs. 80000/ha whichever is less.

ii. Support System for Crops

High risky crops like betel vine which is one of the least attention paid crop of the district needs protection from risk. Proper supporting system is necessary for assured crop for which 75 per cent assistance will be provided for propping materials.

iii. District Level Farmers' Workshops

Crop specific and location specific district level farmers workshop will be convened to create awareness among farmers regarding high value and new Technologies of Horticulture crops.

iv. Interstate Exposure Visit

Exposure visit for 4 batch/year will be organized @ 50/batch to get exposed with adoption of new technologies from other states.

v. Sales Outlet Points

Marketing of the produced vegetables is of prime importance considering the perishable nature of the products. Hence starting vegetable sales outlet for vegetables produces attains much significance from the view point of both consumer and producer.

Further, the horticultural department has proposed new projects to bolster the production of horticultural crops in the district. The details and proposed outlay of the said projects is as follows**.**

PROJECT – I

Project Title: Improvement of vegetables production and productivity

i. Back Ground

Thanjavur District is the rice bowl of Tamil Nadu. Cauvery River is a important source of irrigation for this district and it serves 6 blocks out of 14 blocks. The remaining blocks which is not covered by Cauvery River the predominant crop is most suitable for

vegetables cultivation. In respect of vegetables only hybrid and High yielding vegetables seed distribution is done under Integrated Horticulture Development Scheme, hence further development activities for vegetables under National Agriculture Development Programme is must.

ii. Project Rationale

Under National Agriculture Development Programme the following scheme can be implemented for vegetables in Thanjavur.

1) Package for plant protection

iii. Project Strategy

The farmers who are engaged in vegetable cultivation in Thanjavur District are small and marginal farmers. They are mainly dependent on this crop for their lively hood. Due to vagarious in monsoon the farmers are led to a debt trap. Hence the above scheme can be implemented with 50-75 per cent subsidy under NADP.

iv. Project goals

1) A sizable area can be brought under Hybrid and High yielding varieties of vegetables.
2) Latest technologies can be imparted to the farmers by introduction of net house and post harvest technology.
3) Increase in yield can be obtained by way of introduction of latest technology in cultivation.

v. Project Components

The main component involved in this project is Distribution of Plant Protection Chemicals.

vi. Implementation Chart of the Project

The scheme to be implemented under National Agriculture Development Programme during 2008-09 in Thanjavur District with subsidy pattern of 50-75%.

vii. Reporting

The scheme will be implemented on receipt of government order during 2008-09 and the progress of work will be reported once in a month.

viii. Budget Abstract

The budget details for this project have been abstracted below, in Table 39.

Table. 39 Project I – Improvement of Vegetable Production and Productivity - Budget Abstract

Year	Amount (Rs. in lakhs)
2008-09	3.00
2009-10	3.00
2010-11	3.00
2011-12	3.00
Total	**12.00**

As could be noted from the table above, the total cost of the project is Rs.12/- lakhs.

PROJECT - II

Project title: Support for Betel vine Cultivation

i. Back Ground

Thanjavur District is the rice bowl of Tamil Nadu. Cauvery River is a important source of irrigation for this district and it serves 6 blocks out of 14 blocks. In these four blocks, betel vine crop is being cultivated.

ii. Project Rationale

Under National Agriculture Development Programme the following project can be implemented in betelvine cultivation in Thanjavur.

iii. Project Strategy

The farmers who are engaged in Betelvine cultivation in Thanjavur District are small and marginal farmers. They are mainly dependent on this crop for their lively hood. Due to vagarious of monsoon, the farmers are led to debt trap. Hence the above scheme can be implemented with 75 per cent subsidy under NADP.

iv. Project goals

1) To protect the betelvine crop from the cyclone and hale wind supporting system like propping is a must.
2) Supporting system is required to obtained higher yield.
3) Increase in yield can be obtained by way of introducing low cost technology.

v. Project Components

The main component involved in this project is supporting system for Betelvine crop.

vi. Implementation Chart of the Project

The scheme to be implemented under National Agriculture Development Programme during 2008-09 in Thanjavur District with subsidy pattern of 75 per cent.

vii. Reporting

The scheme will be implemented on receipt of government order during 2008-09 and the progress of work will be reported once in a month.

viii. Budget Abstract

The year-wise budget details are provided in Table. 40 below

Table. 40 Project II - Support for Betelvine Cultivation - Budget Abstract

Year	Amount (Rs. In lakhs)
2008-09	25.00
2009-10	25.00
2010-11	25.00
2011-12	25.00
Total	**100.00**

As could be noted from the table above, the total cost of the project is Rs.100/- lakhs.

PROJECT – III

Project title : Human Resource Development

i. Back Ground

In Thanjavur District Cauvery being the main source of irrigation, Agriculture and Horticulture is the predominant occupation. Most of the farmers are small and marginal and an area of 4560 ha. is under horticulture crops the farmers in order to be exposed as well as create awareness on latest technologies of agriculture, several developmental activities like workshops demonstrations and visits are the needs of the hour.

ii. Project Rationale

Under National Agriculture Development Programme the following schemes can be implemented for increasing the production of Horticulture crops and create awareness among.

1) District Level farmers workshop
2) Inter state exposure visit

iii. Project Strategy

The farmers who are engaged in horticulture crop cultivation in Thanjavur District are small and marginal farmers. They are mainly dependent on these activities for their lively hood. The farmers will gain experience by exposure visits to other states as well as they will have first hand information through demonstrations.

iv. Project Goals

1) To learn the latest technologies in Agriculture and Horticulture
2) To know the recent development taking place in and around our country through exposure visit.

v. Project Components

The components involved for above schemes are

1. District level farmers workshop
2. Inter state exposure visit.

vi. Implementation Chart of the Project

The scheme to be implemented under National Agriculture Development Programme during 2008-09 in Thanjavur District with subsidy pattern of 100 per cent assistance.

vii. Reporting

The scheme will be implemented on receipt of government order during 2008-09 and the progress of work will be reported once in a month.

viii. Budget Abstract

The year-wise budget requirements for this project are summarized below, in Table. 41.

Table. 41. Project III - Human Resource Development - Budget Abstract

Year	Amount (Rs. In lakhs)
2008-09	2.9
2009-10	2.9
2010-11	2.9
2011-12	2.9
Total	**11.6**

It could be discerned from table that the total project outlay is Rs.11.6 lakhs.

PROJECT - IV

Project title: Infrastructure

i. Back Ground

Thanjavur District comprises of 14 blocks and out of which more that 9 blocks predominantly cultivate vegetables and allied agriculture produces. Hence, to improve the vegetables production in Thanjavur District some more infrastructures are needed, and this can be implemented through NADP.

ii. Project Rationale

Under National Agriculture Development Programme the following infrastructures facilities can be facilitated for higher and quality production of vegetables.

1. Sales outlet point in district head quarters for urban population.

iii. Project Strategy

The entrepreneurs involved in vegetable production in this district are marginal and small farmers. They still depend on agricultural occupational activities for their liveli hood. In order to increase the standard of this farming community the schemes mentioned above may be implemented with 70 per cent subsidy under NADP.

iv. Project Goals

1) To increase the standard of farming community.
2) To make quality vegetables available for the consumers in the urban area throughout the year.

v. Project Components

Under this NADP infrastructure head, the following components may be included.

1) Sales outlet points in the district head quarters meeting out the urban population.

vi. Implementation Chart of the Project

The above said components may be included and implemented through NADP during 2008-09 in Thanjavur district with subsidy pattern of 50 per cent.

vii. Reporting

The scheme will be implemented on receipt of government order during 2008-09 and the progress of work will be reported with in 15 days.

viii. Abstract

For infrastructure development in horticulture, the total budget outlay of Rs. 5.2 lakhs is required for Thanjavur District. The year-wise budget requirements are given below in Table. 42.

Table. 42. Project - IV - Budget summary

Year	Amount (Rs. in lakhs)
2008-09	1.3
2009-10	1.3
2010-11	1.3
2011-12	1.3
Total	**5.2**

The project cost, thus works out to Rs.5.2 lakhs for the 11th Plan period under NADP.

Table 43. Horticulture Development Plan for Thanjavur District

(Rs.in lakhs)

Activities / project	2008-09		2009-10		2010-11		2011-12		Total Estimate in lakh Rs.
	Phy in ha.	Fin. in lakh Rs.	Phy in ha.	Fin. in lakh Rs.	Phy in ha.	Fin. in lakh Rs.	Phy in ha.	Fin. in lakh Rs.	
I. Improvements in Vegetable Production and Productivity.(Package for plant protection)	200	3.000	200	3.000	200	3.000	200	3.000	12.000
II. Support for betelvine	25	25.000	25	25.000	25	25.000	25	25.000	100.000
III. Human Resource Development									
District level farmers workshop	100	0.400	100	0.400	100	0.400	100	0.400	1.600
Inter State Exposure visit (5 days)	50	2.500	50	2.500	50	2.500	50	2.500	10.000
Total	150	2.900	150	2.900	150	2.900	150	2.900	11.600
IV. Sales outlet points in districts (Rent and infrastructure)	1	1.300	1	1.300	1	1.300	1	1.300	5.200
Total budget	**376**	**32.20**		**32.20**		**32.20**		**32.20**	**128.80**

xi. The Budget

The budget outlays on various projects in horticultural development are given in Table 43. The year-wise budget involvement is summarized below, in Table 44.

Table 44. Plan Outlay for Horticulture Development

Year	Financial Outlay (lakh Rs.)
2008-09	32.20
2009-10	32.20
2010-11	32.20
2011-12	32.20
Total	**128.80**

In overall, a total outlay of Rs. 128.80 lakhs is required for horticulture development in Thanjavur district for four years of XI plan under NADP.

x. Outcome

With the recommended interventions and the projects, the horticultural activities would get a boom and increase its share in the district income.

6.6. Agricultural Engineering Sector

The agricultural engineering activities of any district include, hiring of heavy machineries equipments like bull dozers, tractors etc. at reasonable hire charges. Besides, the department under takes soil and water conservation measures and educates the farmers on farm mechanization, soil and water conservation, land shaping, water harvesting etc.

i. Strategy

With the above scenario in mind, the department has prepared the development activities like introduction of newly developed machinery such as combined harvester, mini crop thrasher, paddy transplanter, pot hole digger, coconut dehusker and power weeder etc. in Stream I. In stream II the department has proposed to strengthen the on-going programmes on farm mechanization, water harvesting structures, soil conservation works and water management works.

ii. The Plan

The details on the agricultural engineering activities planned for under Streams I and II, the targets fixed and the financial requirements are indicated in Table 46.

iii. The Budget

The budget outlays under stream I and II are summarized and given below in Table 45.

Table 45. Plan Outlay for Agricultural Engineering Development

Year	Financial Outlay (lakh Rs.)		
	Stream I	**Stream II**	**Total**
2008-09	937.25	925.95	1863.20
2009-10	1055.22	905.70	1960.92
2010-11	1258.12	895.70	2153.82
2011-12	1575.54	933.70	2509.24
Total	**4826.13**	**3661.05**	**8487.18**

The total outlay required for implementing the various activities under Streams I and II during the XI plan period under NADP is Rs. 8487.18 lakhs.

iv. The Outcome

The mechanization, soil and water conservation activities in the district will move upward and bring cheers to the farming community by reducing the cost of cultivation and lifting the profit barriers.

Table 46. Proposal for NADP- Agricultural Engineering Department

(in lakhs Rs.)

Project Component	Unit Cost. Rs in Lakhs	2008-09		2009-10		2010-11		2011-12		Total	
		Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs
Stream I. Introduction of Newly Developed Agrl. Machinery / Implements											
Mini Combined Harvester TNAU model	2.50	20	50.00	20	50.00	20	50.00	22	55.00	82	205.00
Mini Crop Thrasher (High Capacity)	2.10	15	31.50	16	33.60	17	35.70	17	35.70	65	136.50
Power Weeders with Attachments (All models)	1.00	9	9.00	11	11.00	13	13.00	15	15.00	48	48.00
Power Thrasher	1.00	17	17.00	23	23.00	23	23.00	24	24.00	87	87.00
Paddy Transplanter	1.40	16	22.40	18	25.20	28	39.20	49	68.60	111	155.40
Post Hole Digger	0.85	12	10.20	15	12.75	18	15.30	32	27.20	77	65.45
Shredder (Heavy)	1.00	2	2.00	2	2.00	2	2.00	2	2.00	8	8.00
Shredder (Medium)	0.40	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Maize Husker Sheller	0.90	5	4.50	8	7.20	10	9.00	13	11.70	36	32.40
Coconut De-husker	0.60	20	12.00	20	12.00	20	12.00	20	12.00	80	48.00

Table. 46 Contd…

Project Component	Unit Cost. Rs in Lakhs	2008-09		2009-10		2010-11		2011-12		Total	
		Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs
Groundnut decorticator	0.35	35	12.25	35	12.25	35	12.25	35	12.25	140	49.00
Chisel Plough	0.12	0	0.00	1	0.12	1	0.12	2	0.24	4	0.48
Power Weeders - Oleo mac	0.65	2	1.30	2	1.30	2	1.30	2	1.30	8	5.20
Ratoon Manager	1.00	2	2.00	2	2.00	5	5.00	10	10.00	19	19.00
Multi Crop thrasher (Tractor PTO)	1.25	10	12.50	10	12.50	15	18.75	15	18.75	50	62.50
Knapsack Power Operated Hydraulic Sprayer	0.20	124	24.80	174	34.80	330	66.00	530	106.00	1158	231.60
Shredder (Tractor PTO Operator)	0.85	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Power Operated Chaff Cutter	0.30	11	3.30	10	3.00	10	3.00	11	3.30	42	12.60
Japanese yanmar 6-Row Transplanter with nursery raising system	7.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Japanese yanmar 8-Row Transplanter with nursery raising system	10.50	1	10.50	1	10.50	1	10.50	1	10.50	4	42.00
Korean 4-row walk behind transplanter	2.00	3	6.00	12	24.00	12	24.00	12	24.00	39	78.00

Table.46 Contd…

Project Component	Unit Cost. Rs in Lakhs	2008-09		2009-10		2010-11		2011-12		Total	
		Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs
Combined harvester- Tractor operated	12.00	15	180.00	17	204.00	22	264.00	27	324.00	81	972.00
Combined harvester- self propelled	16.00	7	112.00	10	160.00	15	240.00	25	400.00	57	912.00
Maize combined harvester	16.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Gender friendly equipments	0.08	50	4.00	50	4.00	50	4.00	50	4.00	200	16.00
Innovative Water harvesting structures											
Lined farm pond with Mobile sprinkler	3.00	100	300.00	100	300.00	100	300.00	100	300.00	400	1200.00
Rejuvenation of percolation ponds with 2 recharge shafts	1.00	110	110.00	110	110.00	110	110.00	110	110.00	440	440.00
Control of sea water intrusion											
Recharge shafts to prevent sea water intrusion in coastal areas	0.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
TOTAL		**586**	**937.25**	**667**	**1055.22**	**859**	**1258.12**	**1124**	**1575.54**	**3236**	**4826.13**

Table.46 Contd…

Project Component	Unit Cost. Rs in Lakhs	2008-09		2009-10		2010-11		2011-12		Total	
		Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs
Stream-II											
Popularization of Agricultural Mechanization through Conventional Machinery / Equipments											
Power Tiller	1.16	220	255.20	220	255.20	220	255.20	245	284.20	905	1049.8
Rotovator	0.90	220	198.00	220	198.00	220	198.00	230	207.00	890	801
Cultivator	0.16	75	12.00	75	12.00	75	12.00	75	12.00	300	48
Off-set Disc Harrow	0.47	0	0.00	0	0.00	0	0.00	0	0.00	0	0
Disc Plough	0.35	80	28.00	85	29.75	85	29.75	85	29.75	335	117.25
Water Harvesting Structure											
Farm Pond - unlined	0.50	300	150.00	310	155.00	290	145.00	290	145.00	1190	595
Check dam - Minor	0.30	25	7.50	25	7.50	25	7.50	25	7.50	100	30
Check dam - Medium	0.75	75	56.25	40	30.00	40	30.00	40	30.00	195	146.25
Check dam - Major	1.00	10	10.00	10	10.00	10	10.00	10	10.00	40	40

Table. 46. Contd…

Project Component	Unit Cost. Rs in Lakhs	2008-09		2009-10		2010-11		2011-12		Total	
		Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs	Nos.	Cost. Rs in Lakhs
Percolation Pond	3.25	10	32.50	7	22.75	7	22.75	7	22.75	31	100.75
Recharge Shaft	0.30	175	52.50	200	60.00	200	60.00	200	60.00	775	232.5
New Village Tank	1.50	21	31.50	22	33.00	22	33.00	22	33.00	87	130.5
Collection Well	0.40	0	0.00	0	0.00	0	0.00	0	0.00	0	0
Soil Conservation Works											
Compartment Bunding	0.03	0	0.00	0	0.00	0	0.00	0	0.00	0	0
Land Shaping	0.10	80	8.00	80	8.00	80	8.00	80	8.00	320	32
Terrace Support wall	0.30	0	0.00	0	0.00	0	0.00	0	0.00	0	0
Water Management works											
PVC Pipe laying	0.15	350	52.50	350	52.50	350	52.50	350	52.50	1400	210
Ground Level Reservoir	0.80	40	32.00	40	32.00	40	32.00	40	32.00	160	128
Fertigation assembly	0.12	0	0.00	0	0.00	0	0.00	0	0.00	0	0
TOTAL		**1681**	**925.95**	**1684**	**905.70**	**1664**	**895.70**	**1699**	**933.70**	**6728**	**3661.05**

6.7. Animal Husbandry Sector

Table. 47 Budget Outlay for Animal Husbandry Sector – 2008 – 2012

Sl. No.	Name of the Programme	Unit cost Rs. in lakhs	2008-09		2009-10		2010-11		2011-12		Total	
			units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs
1	**CATTLE & BUFFALO**											
I	**FEED AND FODDER DEVELOPMENT**											
1	Fodder development at District Livestock farm Orathanad (DAH) 78 acres	0	0	45.60		0.00	0	0.00	0	0.00	0	45.600
2	Popularizing mineral mixture to improve livestock production (DAH) @ 1kg/ month for one year	0.006	1000	6.00	1000	6.00	1000	6.00	1000	6.00	4000	24.000
3	Popularizing chaff cutter for SHG (DAH)	0.1	10	1.00	10	1.00	10	1.00	10	1.00	40	4.000
4	Establishing of 6 x 6 x 4 feet silo to ensile sugarcane tops (DAH) (75% subsidy)	0.1125	10	1.125	10	1.125	10	1.125	10	1.125	40	4.500
5	Fodder production by SHG @ 10 acre/Block(DAH) 14 blocks	0.235	20	4.70	40	9.40	40	9.40	40	9.40	140	32.900
6	Supply of mineral mixture to the milch animals at subsidised cost (50%) @18 kg/ year (DDD)	0.005	500	2.50	500	2.50	500	2.50	500	2.50	2000	10.000
7	Supply of by-pass protein feed to the milch animals 360kgs/year/ animal @ (50% subsidised cost of rs.9/- per k.g) (DDD)	0.033	650	21.45	650	21.45	650	21.45	650	21.45	2600	85.800
8	Chaff cutters for idf villages on community basis (mechanised) ((DDD)	0.7	13	9.10	0	0.00	0	0.00	0	0.00	13	9.100
9	Chaff cutters for elite farmers small type) (@ rs.20,000 as 100% grant ((DDD)	0.2	2	0.40	2	0.40	2	0.40	2	0.40	8	1.600
10	Production of fodder seed / slips in dairy or chilling centres & land of DDD 52 acres (DDD)	2.1	52	109.20	0	0.00	0	0.00	0	0.00	52	109.200
11	Fodder development activities in IDF villages & in farmers field ((DDD)	0.235	65	15.275	3	0.705	3	0.705	4	0.94	75	17.625

Table.47 contd…

Sl. No.	Name of the Programme	Unit cost Rs. in lakhs	2008-09		2009-10		2010-11		2011-12		Total	
			units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs	Cost in units	Cost in lakhs
12	Paddy straw block making (TANUVAS demonstration unit)	7	1	7.00	0	0.00	0	0.00	0	0.00	1	7.000
II	**Improvement of livestock health and genetic upgradation**											
1	Mobile veterinary diagnostic laboratory (DAH)	12	1	12.00	0	0.00	0	0.00	0	0.00	1	12.000
2	Identification and traceability of breedable bovine population (DAH)	0.0002	135000	27.00	0	0.00	0	0.00	0	0.00	135000	27.000
3	Mobile veterinary clinics @ 1/ TALUK (DAH)	5.832	4	23.328	0	0.00		0.00	0	0.00	4	23.328
4	Control of parasitic diseases through treatment to enhance vaccine response (DAH)			22.50		22.50		22.50		22.50	0	90.000
5	Programmed breeding indigenous Cattle & buffalo to increase conception Rate (DDD)	0.007	2100	14.70	2100	14.70	2100	14.70	2100	14.70	8400	58.800
6	Mobile input units (one per 50 DCS) (DDD)	4.5	4	18.00	0	0.00	0	0.00	0	0.00	4	18.000
IV	**INFRASTRUCTURE DEVELOPMENT**											
1	Milking machines for ID farms (DDD)	1	13	13.00	0	0.00	0	0.00	0	0.00	13	13.000
2	Portable milking machines for farmers (DDD)	0.18	4	0.72	2	0.36	2	0.36	2	0.36	10	1.800
3	Bulk milk cooler (DDD)	30	1	30.00	0	0.00	0	0.00	0	0.00	1	30.000
4	Walk-in coolers (DDD)	30	1	30.00	0	0.00	0	0.00	0	0.00	1	30.000
5	Revival of dormant MPCS (DDD)	1	4	4.00	2	2.00	2	2.00	2	2.00	10	10.000
6	Manufacturing facilities for milk khoa (DDD)	0.77	1	0.77	1	0.77	0	0.00	0	0.00	2	1.540
7	Milk weighing machine for milk producers co-op. Societies (DDD)	0.17	5	0.85	5	0.85	4	0.68	4	0.68	18	3.060
8	P.C. Based automatic milk collection stations to IDF villages milk producers Cooperative societies (DDD)	1.75	13	22.75	3	5.25					16	28.000
9	Quality assurance lab strengthening (DDD)	10			1	10.00					1	10.000

Table. 47 contd…

Sl. No.	Name of the Programme	Unit cost Rs. in lakhs	2008-09		2009-10		2010-11		2011-12		Total	
			units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs	units	Cost in lakhs
10	Energy management system (DDD)	10	0	0.00	0	0.00	0	0.00	0	10.00	1	10.000
11	Establishing rural herbal nursery units for SHG women – solar powered units (TANUVAS)	10	1	10.00	1	10.00	1	10.00	0	0.00	3	30.000
12	Establishment of quarantine facilities, Strengthening of Bull sheds, calf sheds, bull mother farm and semen production station at Exotic Cattle Breeding Farm Eanchankottai (TNLDA)			297.36		416.00		210.00		0.00		923.360
13	Renovation of existing veterinary institutions(DAH)	5	40	200.00		0.00	0	0.00	0	0.00	40	200.000
14	Livestock component, DLF Orathnad	60.76	-	60.76								60.760
	EXTENSION FACILITIES											
1	Farmers study tour @5000/- per farmer (DDD)	0.05	40	2.00	40	2.00	40	2.00	30	1.50	150	7.500
2	Skill development for technical staff (DDD)	0.05	11	0.55	11	0.55	11	0.55	11	0.55	44	2.200
3	Orientation training / workshop for milk producers at society Level (DDD)	0.2	4	0.80	4	0.80	4	0.80	4	0.80	16	3.200
4	Strengthening of training equipments for technology dissemination on Ethno-Veterinary Medicine at VUTRC Thanjavur	10	1	10.00	0	0.00	0	0.00	0	0.00	1	10.000
	TOTAL			**1024.438**		**528.358**		**306.170**		**95.905**		**1954.871**

Project – I

Feed and Fodder-Incentives for Fodder Cultivation and Mechanization - Supply of Mineral Mixture- By-pass Protein-Fodder Enrichment

i) Abstract

- Proving quality seed materials for fodder cultivation/incentives for cultivation.
- Supply of good quality drinking water to livestock in severely affected areas.
- Fodder cultivation is to be developed in the region. Low quality fodder/alternate fodder resources should be enriched to meet the protein demand.
- Providing good quality animals through concerted efforts by the agencies.
- Supply of chaff cutters/mineral mixtures/enrichment of fodder resources.
- The budget requirement is Rs.351.33 lakhs.

ii) Budget

Feed and Fodder Development:-Incentives for Fodder Cultivation / Mechanization - Supply of Mineral Mixture- By-pass Protein-Fodder Enrichment **(Rs. in Lakhs)**

Sl.No.	Schemes Proposed	
1.	Fodder development at District Livestock farm Orthanad (DAH)	45.60
2.	Popularizing mineral mixture to improve livestock production (DAH) @ 1kg/month for one year	24.00
3.	Popularizing chaff cutter for SHGs (DAH)	4.00
4.	Establishing of 6 x 6 x 4 feet silo to ensile sugarcane tops (DAH) (75% subsidy)	4.50
5.	Fodder production by SHGs @10 acre/B1/yr (DAH) 14 blocks	32.90
6.	Supply of mineral mixture to the milch animals at subsidised cost (50%) @ 18 Kg/year (DDD)	10.00
7.	Supply of by-pass protein feed to the milch animals (360kgs/ year/animal @ 50% subsidised cost of Rs.9/- per kg) (DDD)	85.80
8.	Chaff cutters for IDF villages on community basis (Mechanised) (DDD)	9.10
9.	Chaff cutters for Elite farmers (small type) @ Rs.20,000 as 100% grant (DDD)	1.60
10.	Fodder development activities (for production of fodder seed/ slips in dairy or chilling centres & Land of DDD) (DDD)	109.20
11.	Fodder development activities in IDF villages and in farmers field (DDD)	17.63
12.	Paddy straw block making demonstration unit (TANUVAS)	7.00
	Total	**351.33**

iii) Background / Problem Focus

Human and livestock population should be managed to reduce the pressure on fragile ecosystem. Popularising the improved agronomic practices to maximize the crop yield per raindrop. Integrated watershed management for efficient management of land and water resources should be given top priority. Appropriate land use planning discouraging water intensive crops, encouraging sprinkler and drip irrigation systems, and practicing alternate land use such as agro-forestry, agro-horticulture and silvi-pasture would provide long-term drought proofing incorporating livestock wherever possible as only livestock rearing can give regular revenue for livelihood. The green fodder availability is restricted to selected areas and seasons. High population pressure on grazing lands has led to depletion and over exploitation of available grazing lands. In addition, rapid urbanisation has led to shrinking of grazing lands. Moreover, with the increasing pressure on land for growing food grains, oil seeds and pulses and diversified use of agriculture residues, the gap between the demand and supply of fodder is increasing.

iv) Project Rationale

Dairy cattle rearing is an important subsidiary occupation for the farmers of Tamilnadu. Milk production and profit in dairy farming depends upon feeding and management practices. During the recent years, prices of various feed ingredients like groundnut cake, w heat bran, maize etc., have increased which is a major constraint for profitable milk production. Feeding natural grasses and green fodder will help to reduce the expenditure on concentrate feeding. Green grass is a good source of vitamin A which is present in the form of carotene. One kg of green grass provides 50mg of vitamin A. This vitamin is necessary to maintain the health and reproduce status of the animal. Grasses are also good source of protein. One kg of green fodder gives 15 to 20g protein to the animal. Cowpea, beans, subabul leaves etc. give 30 to 40g of protein. Balanced feeding is essential to fully exploit the genetic potential of livestock. In the State, fodder production is still deemed ancillary to agricultural production. Crop

residues mainly sorghum and paddy straws that are poor in nutritive value constitute the major fodder for livestock. The effects of better breeding and management can happen if the animals are properly fed. Better feeding alone can bring about an increase of 30% in milk production.

v) Project Strategy

Livestock when fed with green fodder tend to waste a lot of these precious feed. Further the utilization of the fodder (both green fodder & dry fodder) is enhanced and the feed conversion efficiency increases when the fodder is chopped and fed. Hence it is proposed to provide chaff cutters that will chop the fodder there by reducing wastage. The Shortage of green fodder is estimated to be 80 per cent and dry fodder 50 per cent, even under normal conditions. One Chaff cutter will be provided to one Self Help Group in each block. The SHG to be provided with the chaff cutter will be identified by the District Administration. The Chaff cutter that is provided will be operated manually with provision for mechanizing the same if necessary in future. The main objective of the project is to develop rearing of livestock as a major livelihood opportunity. Farmers' exposure to modern and scientific animal rearing is rather limited. The project will adopt the strategy of rural poor combining traditional methods of livestock rearing and modern inputs.

vi) Project Goals

- Awareness creation
- Group mobilisation and motivation
- Capacity building for seeds / mechanisation
- Promotion of cultivation of fodder

vii) Project components

Mechanization of fodder component

- Chaff cutters for Elite farmers (small type) @ Rs.20,000 as 100% grant (DDD)
- Chaff cutters for IDF villages on community basis (Mechanised) (DDD)
- Popularizing chaff cutter for SHGs (DAH)

Fodder development activities / technology transfer

- Fodder development activities (IDF villages & in farmers field (DDD)
- Fodder development at District Livestock farm Orathanad (DAH)
- Fodder production by SHGs @10 acre/one/block/yr (DAH) 14 blocks

Technology transfer

- Establishing of 6 x 6 x 4 feet silo to ensile sugarcane tops (DAH) (75% subsidy)
- Paddy straw block making demonstration unit (TANUVAS)

Supply of inputs for livestock

- Popularizing mineral mixture to improve livestock production (DAH) @ 1kg/month for one year
- Supply of by-pass protein feed to the milch animals (360kgs/ year/animal @ 50% subsidized cost of Rs.9/- per kg) (DDD)
- Supply of mineral mixture to the milch animals at subsidised cost (50%) @ 18 Kg/year (DDD)

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

Project Title	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand Total	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost	Total Units	Total Cost
DAH- fodder component											
Fodder development at District Livestock farm Orathanad (DAH) 78 acres	0	0	45.60		0	0	0	0	0	0	45.60
Popularizing mineral mixture to improve livestock production (DAH) @ 1kg/ month for one year	0.006	1000	6.00	1000	6.00	1000	6.00	1000	6.00	4000	24.00
Popularizing chaff cutter for SHG (DAH)	0.1	10	1.00	10	1.00	10	1.00	10	1.00	40	4.00
Establishing of 6 x 6 x 4 feet silo to ensile sugarcane tops (DAH) (75% subsidy)	0.1125	10	1.125	10	1.125	10	1.125	10	1.11	40	4.50

Fodder production by SHG @ 10 acre/Block(DAH) 14 blocks	0.235	20	4.70	40	9.4	40	9.4	40	9.4	140	32.90
DDD											
Supply of mineral mixture to the milch animals at subsidised cost (50%) @18 kg/ year (DDD)	0.005	500	2.5	500	2.5	500	2.5	500	2.5	2000	10.00
Supply of by-pass protein feed to the milch animals 360kgs/year/ animal @ (50% subsidised cost of Rs.9/- per kg) (DDD)	0.033	650	21.45	650	21.45	650	21.45	650	21.45	2600	85.80
Chaff cutters for IDF villages on community basis (mechanised) (DDD)	0.7	13	9.1	0	0	0	0	0	0	13	9.10
Chaff cutters for elite farmers small type) (@ Rs.20,000 as 100% grant (DDD)	0.2	2	0.4	2	0.4	2	0.4	2	0.4	8	1.60
Production of fodder seed / slips in dairy or chilling centres & land of DDD 52 acres ((DDD)	2.10	52	109.2	0	0	0	0	0	0	52	109.20
Fodder development activities in IDF villages & in farmers field ((DDD)	0.235	65	15.275	3	0.705	3	0.705	4	0.94	75	17.63
TANUVAS											
Paddy straw block making (TANUVAS demonstration unit)	7	1	7	0	0	0	0	0	0	1	7.00
Total	**351.33**										

Fodder Production by SHG @ 10 acre/ one/ block/ year (DAH) 14 blocks

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

Fodder Cultivation of Fodder (Co-3) per Acre

II.	Fodder Cultivation of Fodder (Co-3) per Acre	
S.No.	**Name of Operation**	**Amount (in Rs.)**
1 a)	Bush clearance and land reclamation	2,600.00
1.b)	Cost of ploughing	1,600.00
2.	Formation of ridges and furrows/beds and irrigation channels	500.00
3.a)	Cost of fym 10 mt. @ Rs.300/mt.	3,000.00
3.b)	Labour cost for transportation and application, loading and unloading	1,000.00
4.a)	Cost of slips 16,000 numbers @ Rs.0.25 /slip	4,000.00
4.b)	Planting cost	840.00
5.a)	Cost of chemical fertilizers N 150 Kg @ Rs.5.48/kg – 822.00 P 50 Kg @ Rs.10.88/kg – 544.00 K 40 Kg @ Rs.3.85/Kg - 154.00	1,520.00
5. b)	Cost of labour for application	200.00
6.	After cultivation weeding	840.00
7.	Cleaning the channels	500.00
8.	Irrigation charges	800.00
9.	Harvesting charges and transportation	1,600.00
10.	Miscellaneous expenses	800.00
	Total Cost Required Per Acre	**20,000.00**

	Financial Requirement Per Self Help Group:	**Rs. in Lakhs**
1.	Cost of training per SHG	0.035
2.	Cost of fodder cultivation	0.20
	Total Requirement per SHG	0.235
DAH	Total requirement for 14 blocks with 14 SHG @ 10 Acres /Block/year 140 acres totally by DAH	32.90
DDD	Fodder development activities (in IDF villages & in farmers field)Total requirement for 75 acres totally by DDD	17.63

Fodder Development in DLF Orathanad

Fodder Component	**2008-09**
Area under fodder cultivation (irrigated) (acres)	78.00
Non recurring	**Rs. in lakh**
Erection of one bore well	5.50
Preparation of fodder land- land clearance, cost of seeds, sowing cost	12.20
Barbed wire fencing for 800 running metres @Rs.300 /running metre	24.00
Total non recurring cost	**41.70**
Recurring cost	
Cost of maintenance of fodder plots @ Rs. 5000 per acre	3.90
Total recurring cost	3.90
Value of fodder produced @ Rs per metre for 3842.50 metres for one year and 4702.50 metres for II year	15.37
Total fodder development cost	**45.60**

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

  Popularizing Mineral mixture to improve livestock production to dairy cows @ Rs.600/cow/year, 1 kg / cow / month @ Rs.50/kg,12 kg/year, 1000 cows/year, 4000 cows/years- 4 Blocks (DAH). Total amount Rs.24 lakhs
- **Establishing of 6 x 6 x 4 feet silo to ensile sugarcane tops - DAH** (75%@ of the total cost of Rs.15,000/-, costing about Rs.11,250/- per unit)
- **Popularizing chaff cutter for SHGs – DAH @ Rs.10,000/- per unit**
- **Supply of mineral mixture to milch animals at subsidized cost** (50%) @ 18 kg per year @ Rs.500/- per animal **- DDD**

- **Supply by-pass protein feed to the milch animals of the members of the society**

  360 kg/animal/year) for 1800 cows @ 50% subsidy of Rs.9/- per kg. **- DDD**

- **Paddy straw block making (demonstration unit) – TANUVAS**

  1. Paddy straw block making demonstration unit - Rs.4.00 lakh
  2. Training Components - Rs.3.00 lakh
  3. Total cost per unit - Rs.7.00 lakh

Implementation chart of the project

Activity	2008-2009	2009-2010	2010-2011	2011-2012
Fodder development at District Livestock farm Orthanad (DAH) 78 acres	18-20-20-20	-	-	-
Popularizing mineral mixture to improve livestock production (DAH) @ 1kg/month for one year	250-250-250-250	250-250-250-250	250-250-250-250	250-250-250-250
Popularizing chaff cutter for SHGs (DAH)	3-3-2-2	3-3-2-2	3-3-2-2	3-3-2-2
Establishing of 6 x 6 x 4 feet silo to ensile sugarcane tops (DAH) (75% subsidy)	3-3-2-2	3-3-2-2	3-3-2-2	3-3-2-2
Fodder production by SHGs @10 acre/B1/yr (DAH) 14 blocks	10-10-10-10	10-10-10-10	10-10-10-10	05-05-05-05
Supply of mineral mixture to the milch animals at subsidised cost (50%) @ 18 Kg/year (DDD)	150-150-100-100	150-150-100-100	150-150-100-100	150-150-100-100
Supply of by-pass protein feed to the milch animals (360kgs/ year/animal @ 50% subsidised cost of Rs.9/- per kg) (DDD)	150-150-150-200	150-150-150-200	150-150-150-200	150-150-150-200
Chaff cutters for IDF villages on community basis (Mechanised) (DDD)	4-4-2--3	-	-	-

Chaff cutters for Elite farmers (small type) @ Rs.20,000 as 100% grant (DDD)	2	2	2	2
Fodder development activities (for production of fodder seed/ slips in dairy or chilling centres & Land of DDD) (DDD)	12-12-14-14	-	-	-
Fodder development activities in IDF villages & in farmers field (DDD)	15-15-15-20	3	3	4
Paddy straw block making demonstration unit (TANUVAS)	1	-	-	-

Reporting

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

Project II. Improvement of livestock Health and Genetic up-gradation

Vaccine Availability and Cold Storage facilities- Door-to-door Health Cover to Livestock -Tracing of Breedable Bovine Population-Breeding and Resource Mobilization

i) Abstract (Summary of the Project)

To provide comprehensive livestock health cover including immunization against important viral, bacterial diseases. This will protect livestock and poultry from diseases and overall improvement in health is anticipated. The proposal " Identification and traceability of bovines" will enable creation and maintenance of breedable bovine population which is very important for policy decision. Control of parasitic diseases will enhance vaccine response which will ensure optimum immunity. Mobile veterinary

laboratory will monitor and maintain continued health cover and disease forecasting system. Mobile input units in Aavin will cover the health of animals.

ii) Budget

Sl.No.	Proposals	Rs in Lakh
1.	Mobile Veterinary diagnostic laboratory (DAH)	12.00
2.	Identification and traceability of breedable bovine population (DAH)	27.00
3.	Mobile veterinary clinics @ 1/Taluk (DAH)	23.328
4.	Control of parasitic diseases through treatment to enhance vaccine response (DAH)	90.00
5.	Programmed breeding indigenous cattle & buffalo to increase conception rate (DDD)	58.80
6.	Mobile input units (one per 50 DCS) (DDD)	18.00
	Total	**229.13**

iii) Background / Problem Focus

Artificial insemination service to livestock, immunization of animals and birds are carried out with the available manpower. Mobile veterinary laboratory facility will help in disease diagnosis, disease mapping and disease forecasting easily and quickly. Immunization and deworming of livestock and poultry.

iv) Project Rationale

To provide optimum health cover of livestock through quick, effective and timely disease diagnosis one Mobile veterinary laboratory facility is proposed.. Controlling parasitic diseases will ensure optimum immunity.

v) Project Strategy

Total cattle population under co-operative ambit is 16 lakh. of which 70% are breedable at any given time.. Mobile veterinary laboratory facility will help in disease diagnosis, disease mapping and disease forecasting easily and quickly.

vi) Project Goals

- Implementation of livestock health cover schemes.
- Timely availability of vaccines and biological.

Mobile Animal Disease Diagnostic Laboratory

For mobility and to provide diagnosis at the farmer's doorsteps, the Animal Disease Diagnostic unit will be provided with one vehicle with facilities to make on the spot diagnosis. The vehicle will be fitted with a refrigerator, a centrifuge, a microscope and equipments to conduct post mortem examinations. This will help in identification of the pathogens quickly and thus undertake disease control measures without wastage of time. The cost of the vehicle is approximately Rs.11.00 lakh. The cost of microscope will be Rs.0.50 lakh cost of refrigerator will be Rs.0.25 lakh, cost of centrifuge will be Rs.0.15 lakh, cost of post mortem kits and other chemicals and chemical reagents will be Rs.0.10 lakh.

Establishment of Mobile Veterinary Clinics in each Block of Tamilnadu

Animal Husbandry Department plays a major role in providing veterinary assistance and health cover to the livestock and poultry reared in the State. The services provided included health cover, disease diagnosis, and disease prevention, disease control, breeding support and imparting training to farmers. Apart from this, to provide veterinary services and breeding coverage to livestock reared by farmers residing in remote areas who face difficulties to reach veterinary institutions, 55 mobile veterinary units are functioning in the State. The services provided by these units are well recognized by the public as they provide the services at the doorsteps. The mobile units are located in the district / divisional headquarters and 14 mobile units are functioning in the hilly areas.

Need for the Programme

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 labourers 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 labourers 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 at the block headquarters of all the districts except in places where the units are already functioning.

- 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.
- 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.
- The unit will be provided with one vehicle at a cost of Rs.4.75 lakh.
- 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.
- Necessary equipments like surgical and obstetrical kits, microscope, AI guns, etc apart from LN2 containers sheath will be provided to each unit.

- Diesel worth Rs.45,000/- will be provided per year to each unit for running the vehicle.
- 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.
- The units will go around the area of operation as per the programme and carryout the activities providing breeding support and veterinary health care.

Anticipated Benefits

- Farmers in remote villages can get veterinary assistance and breeding support at their villages itself.
- Saving the valuable time of the animal rearers as they need not spend unnecessary time in bringing their animals to
- far away veterinary institutions for getting veterinary assistance and breeding support.
- Helps in improving the economy of the target villages.

vii) Project Components

Mobile Service at Door Step for Livestock Health Cover

- Mobile input units (one per 50 DCS) (DDD)
- Mobile veterinary clinics @ 1/Taluk (DAH)
- Mobile Veterinary diagnostic laboratory (DAH)

Disease Control and Breeding Support

- Control of parasitic diseases through treatment to enhance vaccine response (DAH)
- Identification and traceability of breedable bovine population (DAH)
- Programmed breeding indigenous cattle & buffalo to increase conception rate (DDD)

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

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

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

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

Anticipated Expenditure (Recurring and Non-recurring Expenditure) for One Year for Mobile Veterinary Clinic

Non-recurring expenditure

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

Recurring Expenditure

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

List of Equipments and Instruments Required for

One Mobile Veterinary Unit

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

- **Control of Parasitic Diseases – DAH**
- Control of parasitic diseases to enhance vaccine response @ Rs.1/- per sheep or goat and Rs.3/- per calf below one year, 4 times /year, Rs. 22.50 Lakhs/year, for 4 years (DAH) for 1,31,456 calves, 35,609 Sheep and 4,16,543 Goats

- **Programmed Breeding of Indigenous Cattle & Buffalo** to increase conception rate @ Rs.700/animal, for 6000 animals.(DDD)- will result in 3150 additional adult female buffaloes are brought in and additional revenue of Rs.3.024 lakh per day is created to the farmer through additional milk expected to be produced - **DDD**
- **Mobile Input Units - DDD**

  Establishment of mobile input units @ Rs. 4.5 Lakhs/unit, The cost is inclusive of salary for the veterinarian, medicines, veterinary equipment and other expenses, 9 units totally

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

Project Title	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand Total	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost	Total Units	Total Cost
Mobile veterinary diagnostic laboratory (DAH)	12	1	12.00	0	0	0	0	0	0	1	12.00
Identification and traceability of breedable bovine population (DAH)	0.0002	135000	27.00	0	0	0	0	0	0	135000	27.00
Mobile veterinary clinics @ 1/ TALUK (DAH)	5.832	4	23.328	0	0		0	0	0	4	23.328
Control of parasitic diseases through treatment to enhance vaccine response (DAH)			22.50		22.5		22.5		22.5	0	90.00
Programmed breeding indigenous Cattle & buffalo to increase conception Rate (DDD)	0.007	2100	14.70	2100	14.70	2100	14.70	2100	14.70	8400	58.80
Mobile input units (one per 50 DCS) (DDD)	4.5	4	18	0	0	0	0	0	0	4	18.00
Total											**229.128**

Implementation chart of the project

Activity	2008-2009	2009-2010	2010-2011	2011-2012
Mobile veterinary diagnostic laboratory (DAH)	1	-	-	-
Identification and population traceability of breedable bovine (DAH)	13500	-	-	-
Mobile veterinary clinics @ 1/ TALUK (DAH)	4	-	-	-
Control of parasitic diseases through treatment to enhance vaccine response (DAH)	22.50	22.50	22.50	22.50
Programmed breeding indigenous cattle & Buffalo to increase conception rate (DDD)	2100	2100	2100	2100
Mobile input units (one per 50 DCS) (DDD)	4	-	-	-

Reporting

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

Project III. Infrastructure Development

Strengthening Processing, Quality Control and Marketing Facilities at Thanjavur Dairy Development Department . Strengthening of Dist Livestock Farms and the Veterinary Institutions with Basic Facilities like Fencing, Bore-wells, Water Troughs etc. Rural Herbal Nurseries –Training Facilities for Herbal Centre. Cold Storage Facilities.

i) Abstract (Summary of the Project)

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

ii) Budget

Sl. No	Projects	Rs in Lakhs
1.	Renovation of existing Veterinary institutions (DAH)	200.00
2.	Livestock Component – Orathanad (DAH)	60.76
3.	Milking machines for ID farms (DDD)	13.00
4.	Portable milking machines for farmers (DDD)	1.80
5.	Bulk milk cooler (DDD)	30.00
6.	Walk-in coolers (DDD)	30.00
7.	Revival of Dormant MPCS (DDD)	10.00
8.	Manufacturing facilities for milk Khoa (DDD)	1.54
9.	Milk weighting machine for milk producers Co-Op Societies (DDD)	3.06
10.	P.C.Based automatic milk collection stations to IDF villages milk producers cooperative societies (DDD)	28.00
11.	Quality assurance lab strengthening (DDD)	10.00
12.	Energy management system (DDD)	10.00
13.	Establishing rural herbal nursery units for SHG women – solar powered units (TANUVAS)	30.00
14	Establishment of quarantine facilities, Strengthening of Bull sheds, calf sheds, bull mother farm and semen production station at Exotic Cattle Breeding Farm Eanchankottai (TNLDA)	923.36
	Total	**1351.52**

iii) Background / Problem Focus

The quality of milk need to be improved, limited chilling milk units threatens the quality maintenance and hence it needs to be strengthened and expanded to handle excess

milk during flush season, to encourage rural dairy farmers to produce more milk, to market quality milk, preparation of value added milk products and to maintain the plant and machineries clean to increase shelf life of milk at consumers home and place. Based on this background, the existing problems are addressed through above mentioned facilities.

iv) Project Rationale

To produce clean milk and to measure the quality (fat and SNF) and quantity of milk, save time and to collect accurate data on milk parameters. To encourage more milk production, to sustain rural family earnings, to handle the milk during flush season, to pasteurize milk to ensure quality, safety, particularly destroying TB bacillus. To convert excess milk in to khoa, paneer, ice cream facilities are proposed and thereby encouraging the farmers to produce more milk.

v) Project Strategy

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

vi) Project goals

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

vii) Project Components

Milk Collection and Processing Components

- Milking machines for ID farms (DDD)

- P.C. based automatic milk collection stations to IDF villages milk producers cooperative societies (DDD)
- Portable milking machines for farmers (DDD)
- Quality assurance lab strengthening (DDD)

Quality Assurance Lab

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

- Revival of Dormant MPCS (DDD)
- Walk-in coolers (DDD)
- Bulk milk cooler (DDD)
- Energy management system (DDD)
- Milk weighting machine for milk producers Co-Op Societies (DDD)
- Manufacturing facilities for milk Khoa (DDD)

Infrastructure development

- Renovation of existing Veterinary institutions (DAH)
- Establishing rural herbal nursery units for SHG women – solar powered units (TANUVAS)

Livestock Farm Development

- Establishment of quarantine facilities, Strengthening of Bull sheds, calf sheds, bull mother farm and semen production station at Exotic Cattle Breeding Farm Eanchankottai (TNLDA)
- Livestock Component – Orathanad (DAH)

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

Project Title	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand Total	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost	Total Units	Total Cost
Milking machines for ID farms (DDD)	1	13	13	0	0	0	0	0	0	13	13.00
Portable milking machines for farmers (DDD)	0.18	4	0.72	2	0.36	2	0.36	2	0.36	10	1.80
Bulk milk cooler (DDD)	30	1	30	0	0	0	0	0	0	1	30.00
Walk-in coolers (DDD)	30	1	30	0	0	0	0	0	0	1	30.00
Revival of dormant MPCS (DDD)	1	4	4	2	2	2	2	2	2	10	10.00
Manufacturing facilities for milk khoa (DDD)	0.77	1	0.77	1	0.77	0	0	0	0	2	1.54
Milk weighing machine for milk producers co-op. Societies (DDD)	0.17	5	0.85	5	0.85	4	0.68	4	0.68	18	3.06
P.C. Based automatic milk collection stations to IDF villages milk producers Cooperative societies (DDD)	1.75	13	22.75	3	5.25					16	28.00
Quality assurance lab strengthening (DDD)	10			1	10					1	10.00
Energy management system (DDD)	10	0	0	0	0	0	0	0	10.0	1	10.00

Establishing rural herbal nursery units for SHG women – solar powered units (TANUVAS)	10.0	1	10.0	1	10	1	10	0	0	3	30.0
Establishment of quarantine facilities, Strengthening of Bull sheds, calf sheds, bull mother farm and semen production station at Exotic Cattle Breeding Farm Eanchankottai (TNLDA)			297.36		416		210		0		923.36
Renovation of existing veterinary institutions (DAH)	5.00	40	200.00		0	0	0	0	0	40	200.00
Livestock component, DLF Orathanad	60.76	-	60.76								60.76
										Total	**1351.52**

Scheme for Growing Herbal Plants Implemented by TANUVAS

Details	**Year 2008-2009**			
	Cost/unit	**units**	**location**	**Beneficiary**
solar powered self help centres for growing herbal and fodder plants using renewable energy source by SHG women	10.0	one	VUTRC Thanjavur	300
Year 2009-2010				
solar powered self help centres for growing herbal and fodder plants using renewable energy source by SHG women	10.0	one	Kumbakonam	300
Year 2010-2011				
solar powered self help centres for growing herbal and fodder plants using renewable energy source by SHG women	10.0	one	Pattukottai	300

Establishing Rural Herbal Nursery Units for SHG Women – Solar Powered Units Training at Veterinary University Training and Research Centre, Thanjavur

Items	Cost in Rs.
A poly-green house for raising seedlings of medicinal herbs and fodder varieties for sale 100 sq. ft. area	1,00,000
A fodder plot with relevant fodder grasses and trees	1,000
EVM herbal garden harbouring plants essential for primary health care of livestock and human beings	1,000
The complex is to be fitted with solar power lighting-two lights	50,000
Building in 300 Sq.ft area with low cost roofing and water harvesting arrangement.	2,00,000
Under – ground water source, bore-well	2,50,000
Solar pumping system	1,50,000
Solar uninterruptible power supply (UPS)	19,000
Solar lantern	4,000
A personal computer with printer working on solar power source	75,000
Organising Training and materials	50,000
Recurring Grant	1,00,000
Total	**10,00,000**

2. Tamil Nadu Livestock Development Agency (TNLDA)

Tamil Nadu Livestock Development Agency (TNLDA) has been established as an autonomous State Implementing Agency to co-ordinate all the breeding activities in cattle and buffaloes in the state. The agency is implementing the National Project for Cattle and Buffalo Breeding (NPCBB) in Tamil Nadu since 9-1-2003. The primary aim of the Agency is to increase milk production, per capita availability of milk and per animal productivity. The objective of the agency includes bringing all the breed able female cattle and buffaloes under defined breeding programme through artificial insemination and natural service in a phased manner.

To achieve the objectives the activities of the agency includes Introduction of quality bulls with high genetic merit for frozen semen production, Quality control of goods and services at sperm stations, semen banks and Supply of quality genetic inputs

.

The Frozen semen production stations of the state are being strengthened and modified to meet the minimum standard Protocol (MSP) for frozen semen production stipulated by the Central monitoring Unit (CMU) of Government of India (GOI) under National Project for cattle and Buffalo Breeding (NPCBB). For modernization of the four semen production stations by way of modification of bull sheds with loafing area, laboratories, bio-security fencing around the semen production stations at Exotic Cattle Breeding Farm, Eachenkottai, District Livestock Farm Ooty and District Livestock Farm, Hosur and also for setting up of a modern Semen production station in the 330 acres of land at DLF Hosur under II phase (2006-07 to 2011-12) of NPCBB a sum of Rs.3044 lakh was proposed. Against this the funds sanctioned for the strengthening of semen station has been restricted to Rs.600 lakh during the second phase and the gaps in funding are proposed for consideration under NADP.

Strengthening of Frozen Semen Production Station
Exotic Cattle Breeding Farm, Eachenkottai

a. Establishment of quarantine facilities at Exotic Cattle Breeding farm, Eachenkottai

The Minimum Standard Protocol for frozen semen production formulated by the Central Monitoring Unit of Government of India under National Project for Cattle and Buffalo Breeding necessitates to quarantine the animals purchased from other source for rearing inside the farm for a mandatory period and this requires essential facilities for quarantining the animals. At present the animal quarantine is being carried out in a make shift facility. Hence, to meet the requirement of MSP standards, a quarantine facility is proposed to be created to house 30 animals, stores for storing cattle feed, medicine, equipments etc,

Quarantine	2008-09		
	Physical	Amount Rs. (In lakh)	
		Available under NPCBB	To be mobilised
Sheds	1	60.00	**0.00**
Store& office	1		**30.00**
Fencing	4.2km		**8.40**
Bore well land development etc			**3.00**
Sub total	**1**	**60.00**	**41.40**

b. Strengthening of Bull Sheds

The present strength of 134 bulls is expected to be increased to 282 by the end of 2008-09 and 325 by the end of 2012-13.

The existing facilities for the housing of bulls need modification to house 24 bulls per bull shed to meet the MSP standards. The bull shed shall have individual pens with loafing area for the bulls, common passage for tractor to unload fodder, flooring as per MSP, facility for ad lib water and separate manger and water facility. The modification of **one** bull shed has been taken up and the modification of **two** more shed are planned to be taken up from the funds sanctioned under NPCBB Phase II. In addition to the existing three bull sheds, **two** new bull sheds in 2008-09, **four** new bull sheds in 2009-10 and **three** new bull sheds in 2010-11 need to be constructed to meet the standards laid down under MSP on housing of bulls.

For the two new bull sheds that are to be constructed during the year 2008-09, funds are available for construction of one bull shed under **NABARD** and for the other funds are sought under **NADP.** Likewise for **four** new bull sheds in 2009-10 and **three** new bull sheds in 2010-11 **four** new bull sheds in 2009-10 and **three** new bull sheds in 2010-11 funds are sought under **NADP**.

c. Strengthening of Calf sheds

The existing facilities for housing of calves need modification to meet the MSP standards. As the space in the existing calves are very less and requires more than one person to look after the sheds, the modifications of sheds is not preferred due to the condition of the existing facility and hence establishment of **three** new calf sheds to house 40 calves in each shed as per the Minimum standard Protocol is proposed under NADP.

Items	2008-09				2009-10		2010-11	
	Physical	Amount (Rs.in lakhs)			Physical	Amount (Rs.in lakhs)	Physical	Amount (Rs.in lakhs)
		Available under NABARD	Available Under NPCBB	To be mobilised		To be mobilised		To be mobilised
Bull sheds								
Modification	3		75.00					
New sheds	2	80		60.00	4	280.00	3	210.00
Calf sheds	3		15.00	30.00				
Fencing				4.00				
Sub total		**80.00**	**90.00**	**94.00**		**280.00**		**210.00**

d. Strengthening of bull mother farm

The bull mother facility for housing Jersey bull mothers is proposed to be shifted to third plot in order to have mandatory distance between the housing of stud bulls and the female stock for biosecurity reasons. Hence, funds are proposed for the following under NADP.

Items	2008-09			2009-10	
	Physical	Amount (Rs. in lakhs)		Physical	Amount(Rs. in lakhs)
		Available under NPCBB	To be mobilised		To be mobilised
Bull mother farm					
Cow sheds	1	50.00	16.00	1	66.00
Calf shed	1		53.76		
Calving pen and isolation shed	1		7.20		
Laboratory				1	30.00
Store				1	30.00
Fencing 12.5km	1		25.00		
Bore well land development etc			20.00		
Sub total		**50.00**	**121.96**		**136.00**

Livestock Components Districts Livestock Farm (Orathanad)

Particulars	I Year
I. Non-recurring	
i. Cost of Animals	15.00
ii. Construction & Renovation of sheds	8.00
iii. Equipments	0.50
iv. Others Infrastructure development	2.50
Total (NR)	**26.00**
II. Recurring	
v. Conc. Feed	15.00
vi. Medicines	0.80
vii. Animal maintenance cost	3.60
viii. Others	0.36
Total (R)	**19.76**
Grand Total (A)	**60.76**

- **Infra Structure Development of Veterinary Institutions - DAH**

  Fencing, borewell with water troughs, minor repair of Veterinary Institutions for 20 units @ Rs. 5.00 lakhs per unit

Implementation Chart of the Project

Activity	2008-2009	2009-2010	2010-2011	2011-2012
Renovation of existing Veterinary insttns. (DAH)	10-10-10-10	-	-	-
Livestock Component – Orathanad (DAH)	60.76 lakh	-	-	-
Milking machines for ID farms (DDD)	3-3-3-4	-	-	-
Portable milking machines for farmers (DDD)	1-1-1-1	1-1	1-1	1-1
Bulk milk cooler (DDD)	1	-	-	-
Walk-in coolers (DDD)	1	-	-	-
Revival of Dormant MPCS (DDD)	1-1-1-1	1-1	1-1	1-1
Manufacturing facilities for milk Khoa (DDD)	1	1	-	-
Milk weighing machine for milk producers Co-Op Societies (DDD)	2-1-1-1	1-1-1-2	1-1-1-1	1-1-1-1
P.C.Based automatic milk collection stations to IDF villages milk producers cooperative societies (DDD)	4-3-3-3	1	1	1
Quality assurance lab strengthening (DDD)	1	-	-	-
Energy management system (DDD)	1	-	-	-
Establishing rural herbal nursery units for SHG women – solar powered units (TANUVAS) comprising Solar fencing, borewell, shed, glasshouse, nursery preparation, seedlings, drip irrigation, vermicomposting etc	Establishment	75-75-75-75	75-75-75-75	75-75-75-75
Establishment of quarantine facilities, Strengthening of Bull sheds, calf sheds, bull mother farm and semen production station at Exotic Cattle Breeding Farm Eanchankottai (TNLDA)	297.36 lakh	416.00 lakh	210.00 lakh	-

Reporting

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

Project IV - Extension Facilities

Capacity Building Through Adoption of Technology – Training to Sensitize Field Veterinarians and Farmers on Ethno Veterinary Medicine for Primary Health Care of Livestock to Save Time, Energy and Money and it is Eco-friendly.

Abstract (Summary of the Project)

As many as two thirds of the world's peoples today reportedly survive on the foods that have been and are being provided to humanity through indigenous knowledge of plants, animals, insects, microbes and farming systems. In India more than 70 % people live in rural areas. Of which over 70 % own livestock. India has a livestock population of nearly 200 million (that is about 20 % of the world's livestock population) and the contribution of livestock sector is 26 % of the total agriculture. Small and marginal farmers account for 56 % of the bovine (cattle and buffalo) and 62 % of the sheep and goat population. Of the total household income categories, income from livestock accounts for 15-40 %.

Budget

Sl.No.	Projects	Cost in lakhs
1.	Farmers study tour @ Rs.5000/- per farmer (DDD)	7.50
2.	Skill development for technical staff (DDD)	2.20
3.	Orientation training / workshop for milk producers at society level (DDD)	3.20
4.	Strengthening of training equipments for technology dissemination on EVM at VUTRC Thanjavur	10.00
	Total	**22.90**

Background / Problem Focus

For the resource poor farmers, who have a few heads of livestock, cost-effective animal husbandry is a priority. Healthy and productive livestock with optimal inputs from renewable resources form the basis for sustained income. The natural resource management would be of foremost significance. The issue is to meet the challenge on increasing the productivity of the complex farming systems of the smallholder farmers. The secret apparently lies in understanding the indigenous traditional livestock healthcare practices in totality and in a proper perspective. Establishment and management of common property resources such as fodder fields, herbal gardens and village ponds would help sustain life in villages. It is increasingly recognised that the environmental sustainability and diversity are ecologically linked. This is because diversity offers a multiplicity and synergism of interactions, which can safeguard and if necessary, heal any part of the system.

Project Rationale

Despite the impact apparently created by modernisation and development in the recent past in agriculture and animal husbandry in the last few years, there has been a change in the attitude towards a traditional knowledge base on agriculture and animal husbandry. A concept catching up fast is indigenous technology and has been practiced in harmony with nature. There is also revival of interest in conserving the germ plasm of the native plant and animal species. The native species are known to be drought resistant and would thrive even in severe droughts situations. It is not out of context to mention about the traditional practice prevalent in different parts of the state-cattle herds from nearby Perambalur and Ariyalur districts are brought to the Cauvery delta by road, which are used for herding the fields. Every herd comprises of 100 animals of native species generally referred to as Kidayamadu or Malaiyamadu. They charge Rs.150/- per night per unit of 100 animals. It is interesting to note that the respective cattle owners are not paid anything in cash. This practice enables sustenance of cattle during drought. This system may be taken up and all possible help should be rendered to make it remunerative and effective especially during drought situations. Apart from being a veritable resource of

native germplasm the local breeds of livestock provide the valuable organic manure to thousands of hectares of cultivable lands. Nuclear herds of native breeds must be established in private and Government sectors

Project Strategy

- Capacity building is the key for imparting knowledge to farmers at grass root level
- Training on EVM to farmers, veterinarians, other stake holders
- Documentation and validation of ITK
- Field tour for farmers

Project goals

- Training on skill components to farmers
- Field visits
- EVM propagation with all stake holders

Project components

- Farmers study tour @ Rs.5000/- per farmer (DDD)
- Skill development training for technical staff of Aavin, Trichy 25 staff per year, @ Rs.5000/- per staff, for 4 years -DDD
- Orientation training/workshop for milk producers' at society level Rs.20,000 per programme, 4 programmes/year, for 4 years - DDD
- Strengthening of training equipments for technology dissemination on EVM at VUTRC Thanjavur

S.No.	Scheme Component	Unit cost
1	Strengthening of TANUVAS centre with facilities for transfer of technology - Training	
	1.Van	7.50
	2.LCD projector with laptop computer	1.35
	3.P.A.system	0.25
	4.Digital video camera	0.25
	5.Generator	0.50
	6.Charts & displays	0.15
	Total	**10.00**

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

Project Title	Unit Cost	2008-2009		2009-2010		2010-2011		2011-2012		Grand Total	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost	Total Units	Total Cost
Farmers study tour @5000/- per farmer (DDD)	0.05	40	2	40	2	40	2	30	1.5	150	7.50
Skill development for technical staff (DDD)	0.05	11	0.55	11	0.55	11	0.55	11	0.55	44	2.20
Orientation training / workshop for milk producers at society Level (DDD)	0.2	4	0.8	4	0.8	4	0.8	4	0.8	16	3.20
Strengthening of training equipments for technology dissemination on Ethno Veterinary Medicine at VUTRC Thanjavur	10	1	10	0	0	0	0	0	0	1	10.00
									Total		**22.90**

Implementation Chart of the Project

Activity	2008-2009	2009-2010	2010-2011	2011-2012
Farmers study tour @ Rs.5000/- per farmer (DDD)	40	40	40	30
Skill development for technical staff (DDD)	11	11	11	11
Orientation training / workshop for milk producers at society level (DDD)	4	4	4	4
Strengthening of training equipments for technology dissemination on EVM at VUTRC Thanjavur Spectrophotometer-HTPLC-chemicals-field staff. Recurring contingency - travel etc.,	Establishment of facilities and equipping	20-20-20-20	20-20-20-20	20-20-20-20

Reporting

The implementing agencies viz. District Co-operative Milk Producers Union and the TANUVAS, Veterinary University Training and Research Centre, Thanjavur will submit periodical project reports to their controlling officers.

6.9 Agricultural Marketing / Agribusiness Sector

One of the essentials of the agricultural development is markets for farm products. In that sense, the agricultural marketing sector is like heart in the body. The relationship between agricultural and marketing sector dates back to ancient times. The agricultural production would go as a waste if it is not properly marketed. In chapter V, ten interventions have been recommended and hence the same have been formulated into ten projects and presented in detail below.

Project - I

i. Project Title: Organization of Commodity Groups for Marketing

ii. Rationale

According to Government sources, the inefficient marketing system leads to an avoidable waste of around Rs 50,127 crores. A major part of this can be saved by introducing scale and technology in agricultural marketing. Milk and eggs marketing are two success areas of role of scale and technology in marketing. The extent to which the farmer-producers will benefit (out of saving of avoidable waste) depends on the group-marketing practices adopted by the farmers. In this sense, Farmers' Groups/ Commodity Groups need to be promoted for undertaking marketing activities on behalf of the individual members of the group.

Based on the international experience, in view of expanding retail trade, organizing the farmers and equipping the commodity groups can facilitate the aggregation of produce and also enhance the bargaining power of the farmers. The experience in Malaysia, Thailand and Philippines indicated that the retail chains will depend on some intermediary agency for sourcing the produce. If this role can be taken by the farmers' commodity groups, the commodities can move directly to the market without any intermediary. Therefore it is proposed to organize the commodity groups for marketing of agricultural commodities in Tamil Nadu over the period of four years.

iii. Strategy

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

iv. Goals

To realize higher prices through establishing commodity groups by Organizing group marketing for major agricultural commodities.

v. Components

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

vi. 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 and marketing. To organize, an amount of Rs.20, 000/= is provided per group.

In this project it is proposed to organize 200 commodity groups in paddy, turmeric, sugarcane and pulses commodities for marketing of agricultural commodities in Thanjavur district over the period of four years. This will require Rs 46.00 lakhs for the period of four years.

Project - II

i. Project Title: Facilitation of Contract Farming Between Farmers and Bulk Buyers

ii. Rationale

Apart from linking the farmers to consumers through farmers' organizations, another initiative for reducing the transaction cost is the 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. Therefore this project viz. Facilitation of contract farming is contemplated in the NADP.

iii. Strategy

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

iv. 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. Organizing 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. Cost and Financing

Arranging several rounds of meeting with large number of farmers and traders, to effect contract farming and train them on contract specifications and monitoring them, require an amount of Rs.10,000/- per meeting. In this project it is proposed to organize many meetings on various crops for arranging contract farming between farmers and bulk buyers in Thanjavur district for marketing of agricultural commodities. This will require the budget allocation of resources of Rs 8.40 lakhs, for the period of four years in the XI plan.

Project - III

i. Project Title: Dissemination of Market intelligence

ii. 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. 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. Components

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

v. 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 Thanjavur district over the period of four years. This will require resources of Rs. 46.00 Lakhs for the period of four years.

Project - IV

i. Project Title: Arrangement of Buyers - Sellers Meet

ii. 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 among farmers about the demand and quality requirements for various

agricultural produce and also to build knowledge among the traders on the availability of various agricultural commodities. 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 a 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 gains.

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. Cost and Financing

In this project it is proposed to arrange for 12 buyers-sellers meet in Thanjavur district over the period of four years. This will require a budget allocation 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 Outside the State by Commodity Groups / Farmers and Extension Functionaries

ii. Rationale

The goal of 4 per cent growth in agriculture can only be achieved by increasing productivity per unit of land. Considering the costs and constraints of resources such as water, nutrients and energy, the genetic enhancement of productivity should be coupled with input use efficiency. This can be made possible only by creation and utilization of

new and improved technology. Since new technology creation and development is a slow process, for attaining the desired 4 per cent growth during the XI 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. 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. 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. 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. Cost and Financing

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 under stand know the marketing of commodity through observations 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. 3.45 lakhs for the period of four years in Thanjavur district.

Project - VI

i. Project Title: Strengthening of Market Extension Centre at Each District/ Block Level for Capacity Building and Dissemination of Marketing Information

ii. 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. Strategy

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

iv. 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. Components

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

vi. Cost and Financing

Over the last few years mass media has seen a phenomenal growth in the country both in terms of reach and advance in technology. This medium has not been exploited to its full potential for the purpose of agricultural extension specifically market led extension. A concerted and well-coordinated effort now needs to be made to use the electronic media in the Extension strategy by strengthening infrastructure facility. In this project it is proposed to strengthening market extension centre in Thanjavur district over the period of four years. This will require resources of Rs. 2.50 Lakhs for the period of four years.

Project - VII

i. Project Title: Capacity Building of Farmers' Skill

ii. Rationale

Apart from pursuing policies and creating formal organizations to intervene in agricultural marketing, governments have adopted several programmes of providing market support services. It appears that the types of programmes initiated cover a very wide spectrum of possible solutions to help small and marginal farmers. However, the benefits have not adequately reached the intended target groups. The main reason is that agricultural marketing and business related aspects of training, education and research have remained neglected in our country.

The role of the market as knowledge and information exchange amongst the converging farmers needs to be appreciated and harnessed. Farmers get benefit from deregulation of markets, minimum guaranteed price scheme, contract farming, and crop/income insurance, only to the extent they organize in marketing groups, self-help groups, cooperatives or companies and learn skills suited to the new marketing environment. Understanding quality standards (including FAQ), learning the terms of contract and insurance, and choosing and preparing the produce for the market are going to be essential skills for farmers. There is a need for greater synergy between extension services and market. State Marketing Departments and Boards, APMCs, Krishi Vigyan Kendras (KVKs), Marketing Cooperatives, NGOs and PRIs should pay increasing attention to train the farmers in marketing related skills. All stakeholders in the Supply Chain (i.e. from farmers to consumers) should be exposed to the following characteristics and complexities of the marketing system to make it more efficient. Hence in this project the following training programmes are proposed with budget requirement of Rs. 14.26 Lakhs.

- Training on Warehousing and storage
- Training on Grading
- Training on Market intelligence
- Training on Post Harvest Management of selected commodities

- Massive awareness programme is to be undertaken to demystify the commodity futures markets and enable the farmers to enter into futures contract so as to insure their price risk.
- Training to farmers on selected commodities for Export Promotion.

iii. 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.

iv. Components

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

v. Cost and Financing

In this project it is proposed to organize about 124 trainings under Capacity Building of Farmers Skill titles for marketing of agricultural commodities in Thanjavur district over the period of four years. This will require resources of Rs 14.26 Lakhs for the period of four years.

Project - VIII

i. Project Title: Strengthening of Selected Market Infrastructure (equipments)

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 48, reflected the need for improvement in the market infrastructure in coming years.

Table 48. Estimates of Marketed Surpluses of Various Commodities

Commodity	Marketed Surplus Ratio (%)
Rice	51.9
Wheat	53.8
Jowar	39.7
Bajra	45.4
Maize	46.2
Other Coarse Cereals	57.1
Pulses	53.9
Oilseeds	79.6
Sugarcane	92.9
Fruits and Vegetables**	88.2
Cotton	100.0
Fish	100.0
Milk	60.0
Mutton and Goat Meat	100.0
Beef and Buffalo Meat	100.0
Meat(Total)	100.0
Eggs	88.2

****** Source of Marketed Surplus (MS) Output Ratio for Fruits and Vegetables is Achyra, S S (2003). Agril. Marketing in India, (as a Part of Millennium Study of Indian Farmers), P134 (Original Source- Agril Statistics at a Glance 2001. Agril. Statistics Division, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi).

iii. 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. Cost and Financing

In this project it is proposed to strengthen market infrastructure in Thanjavur district over the period of four years. This will require resources of Rs. 23.00 Lakhs for the period of four years.

Project - IX

i. Project Title: Establishment of Price surveillance mechanism

ii. 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. 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. Cost and Financing

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 Thanjavur district over the period of four years. This will require resources of Rs. 2.30 Lakhs for the period of four years.

Project - X

i. Project Title: Strengthening and Publicity for Regulated Market and *Uzhavar Shandies*

ii. Rationale

Arrivals to market yards of regulated markets are only about 15 % 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. Components

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

iv. Cost and Financing

In this project it is proposed to have the publicity programmes with the above components in this district with a financial outlay of Rs. 23.00 Lakhs over the period of four years in Thanjavur district.

Overall, the ten projects proposed for agricultural marketing development, the physical targets and year-wise financial outlays are expostioned in Table 49 A.

Table 49 A. Original Project Proposals for Agricultural Marketing and Agri-Business

(Rs. in lakhs)

Activities	2008-09		2009-10		2010-11		2011-12		Total
	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	
Commodity group Formation	50	10.00	50	11.00	50	12.00	50	13.00	46.00
Market Intelligence	100	10.00	100	11.00	100	12.00	100	13.00	46.00
Contract Farming facilitation	20	3.00	10	1.65	10	1.80	10	1.95	8.40
Market visit (National and State level)	1	0.75	1	0.83	1	0.90	1	0.98	3.45
Publicity	1	5.00	1	5.50	1	6.00	1	6.50	23.00
Buyers sellers meeting	3	0.60	3	0.66	3	0.72	3	0.78	2.76
Strengthening of Market Extension centers	1	2.50	0	0.00	0	0.00	0	0.00	2.50
Market Price Surveillance	5	0.50	5	0.55	5	0.60	5	0.65	2.30
Training	31	3.10	31	3.41	31	3.72	31	4.03	14.26
Marketing Infrastructure	1000	5.00	1000	5.50	1000	6.00	1000	6.50	23.00
Total		**40.45**		**40.10**		**43.74**		**47.39**	**171.67**

Table 49 B. Additional Project Proposals for Agricultural Marketing and Agri-Business - (DDA(AB)

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I.	**Infrastructure**								
1	Construction of rural godowns in the premises of the regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
2	Storage godowns for storing produce under lock and key for few days	0	0.00	0	0.00	0	0.00	0	0.00
3	Construction of new drying yards/renovation of dilapidated ones	0	0.00	0	0.00	0	0.00	0	0.00
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								
	(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

Table 49 B. Contd.,

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
8	Strengthening the State Ghee and Oil Grading Laboratories	5	1.00	0	0.50	0	0.50	5	2.00
9	Strengthening the Commercial Grading Centres with Laboratory facilities (more numbers can also be included)	3	1.00	0	0.20	0	0.20	3	1.40
10	Strengthening the infrastructure facilities in the Uzhavar Shandies	0	0.00	0	0.00	0	0.00	0	0.00
11	Construction of cold storage facilities in Uzhavar Shandies and in rural godowns	0	0.00	0	0.00	0	0.00	0	0.00
12	Office automation with computer facility for billing etc. in regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
13	Lawying and relawying of village link roads	0	0.00	0	0.00	0	0.00	0	0.00
14	Provision of Oil moisture meters	0	0.00	0	0.00	0	0.00	0	0.00
15	Provision of Oil testing machines	0	0.00	0	0.00	0	0.00	0	0.00
16	Provision of Electronic weighing machines	0	0.00	0	0.00	0	0.00	0	0.00
17	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00
II.	**Publicity and Propaganda**								
1	Market committee-wise strengthening of the Publicity and Propaganda units	0	0.00	0	0.00	0	0.00	0	0.00

Table 49 B. Contd.,

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
II.	**Publicity and Propaganda**								
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	42	2.10	42	2.10	42	2.10	126	6.30
5	Others if any (Specify)								
	(i) Hiring of vehicle	42	0.42	42	0.42	42	0.42	126	1.26
	(ii)Laptop / LCD projector	1	1.50	0	0.20	0	0.20	1	1.90
III.	**Public relations**								
1	Construction of bus-stop shed un front of the regulated markets and in selected villages	0	0.00	0	0.00	0	0.00	0	0.00
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	0	0.00	0	0.00	0	0.00	0	0.00
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	75	4.50	75	4.50	75	4.50	225	13.50
6	Installation of electric light facilities including solar lights in the community threshing floors	0	0.00	0	0.00	0	0.00	0	0.00

Table 49 B. Contd.,

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-11		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
7	Construction of over head tanks, laying of street pipelines and provision of public drinking water taps in a village or two wherein the market arrivals are more	0	0.00	0	0.00	0	0.00	0	0.00
8	Provision of Education loan to the children of a few regular customers	0	0.00	0	0.00	0	0.00	0	0.00
9	Celebrating the regulated market fortnight in each district (just like co-operative weeks/fortnight)	0	0.00	0	0.00	0	0.00	0	0.00
10	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00
IV.	**Facilities to farmers / Stakeholders**								
1	Construction of rest/stay rooms for farmers I regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
2	Construction/modernization of the common toiletry facilities in the regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
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)**								
	Grand Total	**168**	**10.52**	**159**	**7.92**	**159**	**7.92**	**486**	**26.36**

Table 49 C. Additional Project Proposals for Agricultural Marketing and Agri-Business – (Market Committee)

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I.	**Infrastructure**								
1	Construction of rural godowns in the premises of the regulated markets	2	75.00	2	80.00	2	100.00	6	255.00
2	Storage godowns for storing produce under lock and key for few days	1	35.00	1	40.00	1	45.00	3	120.00
3	Construction of new drying yards/renovation of dilapidated ones	2	5.00	5	6.00	1	2.50	8	13.50
4	Construction of new auction halls/modernizing the existing ones	1	15.00	1	15.00	0	0.00	2	30.00
5	Construction of money disbursement halls/counters	1	10.00	0	0.00	0	0.00	1	10.00
6	Construction of office buildings and staff quarters	1	50.00	1	25.00	1	25.00	3	100.00
7	Installation of processing units/purchase of new instruments in the premises of the regulated markets								
	(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

Table 49 C. Contd.,

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		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	0	0.00	0	0.00	0	0.00	0	0.00
11	Construction of cold storage facilities in Uzhavar Shandies and in rural godowns	0	0.00	0	0.00	0	0.00	0	0.00
12	Office automation with computer facility for billing etc. in regulated markets	0	0.00	0	0.00	0	0.00	0	0.00
13	Lawying and relawying of village link roads	0	0.00	0	0.00	0	0.00	0	0.00
14	Provision of Oil moisture meters	0	0.00	0	0.00	0	0.00	0	0.00
15	Provision of Oil testing machines	0	0.00	0	0.00	0	0.00	0	0.00
16	Provision of Electronic weighing machines	0	0.00	0	0.00	0	0.00	0	0.00
17	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00
II.	**Publicity and Propaganda**								
1	Market committee-wise strengthening of the Publicity and Propaganda units	0	1.00	0	1.00	0	1.00	0	3.00
2	Market committee-wise purchase of extension education aids	0	1.50	0	1.50	0	1.50	0	4.50
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

Table 49 C. Contd.,

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
4	Pre-harvest campaigns on large scae	3	0.15	3	0.15	3	0.15	9	0.45
5	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00
III.	**Public relations**								
1	Construction of bus-stop shed un front of the regulated markets and in selected villages	0	0.00	0	0.00	0	0.00	0	0.00
2	Taking up public relations activities in the villages	0	0.50	0	1.00	0	1.50	0	3.00
3	Construction of common village threshing floors	5	15.00	5	17.50	5	18.00	15	50.50
4	Construction of village common discussion (Chavadi) hall	5	5.00	5	5.00	5	5.00	15	15.00
5	Distribution of tarpaulins to small and marginal farmers	100	5.00	100	5.00	100	5.00	300	15.00
6	Installation of electric light facilities including solar lights in the community threshing floors	5	2.50	5	3.00	5	3.50	15	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	2	3.00	2	3.50	2	4.00	6	10.50
8	Provision of Education loan to the children of a few regular customers	10	1.00	10	1.00	10	1.00	30	3.00
9	Celebrating the regulated market fortnight in each district (just like co-operative weeks/fortnight)	1	1.00	1	1.00	1	1.00	3	3.00
10	Others if any (Specify)	0	0.00	0	0.00	0	0.00	0	0.00

Table 49 C. Contd.,

(Rs.in lakhs)

Sl. No.	Possible Development Interventions	2009-10		2010-2011		2011-12		Total	
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
IV.	**Facilities to farmers / Stakeholders**								
1	Construction of rest/stay rooms for farmers I regulated markets	1	10.00	0	0.00	0	0.00	1	10.00
2	Construction/modernization of the common toiletry facilities in the regulated markets	2	2.00	0	0.00	0	0.00	2	2.00
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	25.00	0	25.00	0	25.00	0	75.00
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	**142**	**262.65**	**141**	**230.65**	**136**	**239.15**	**419**	**732.45**

Budget Abstract

(Rs.in lakhs)

Sl.No.	Particulars	2008-09	2009-10	2010-11	2011-12	Total
A.	Original Project	40.450	40.10	43.740	47.390	171.670
B.	Additional Project DDA(AB)	-	10.52	7.92	7.92	26.36
C.	Additional Project Market Committee	-	262.65	230.65	239.15	732.45
	Grand Total	**40.450**	**313.26**	**282.31**	**294.46**	**930.48**

Overall Budget

The overall year-wise budget requirements for the eleventh plan period as a whole are summarized below in Table 50.

Table 50. Budget Outlay for Marketing Development

Year	Financial Outlay (lakh Rs.)
2008-09	40.45
2009-10	313.26
2010-11	282.31
2011-12	294.46
Total	**930.48**

As could be discerned from the table above, the overall budget outlay for the required for the development of agricultural marketing in the district of Thanjavur is Rs. 930.48 lakhs for XI plan under NADP.

6.10. Sector-wise Budget Summary

The sector-wise budget requirements for development activities planned for XI plan period under NADP for Thanjavur District are outlined below, in Table 51.

Table 51. Abstract of Sector-wise and Year-wise Budget Outlay

(Rs. in lakhs)

Sl. No.	Name of Department	Financial Proposal for N.A.D.P				
		2008-09	**2009-10**	**2010-11**	**2011-12**	**Total**
1	Agriculture	445.350	455.800	547.450	607.160	2055.760
2	Horticulture	32.200	32.200	32.200	32.200	128.800
3	Animal Husbandry	1024.438	528.358	306.170	95.905	1954.871
4	Fisheries	434.600	340.850	256.600	221.600	1253.650
5	Agricultural Engineering	1863.200	1960.920	2153.820	2509.240	8487.180
6	Agricultural Marketing	40.450	313.26	282.31	294.46	930.48
	Total	**3840.24**	**3631.39**	**3578.55**	**3760.57**	**14810.74**

In sum, the total budget outlay for the entire planned activities in agriculture and allied sectors workers out to Rs. 14810.74 lakhs for the XI plan period under NADP in Thanjavur district.

அனுப்புதல்	பெறுதல்
திரு.சா.விஜயராஜ் குமார், இ.ஆ.ப., மாவட்ட ஆட்சியர், தஞ்சாவூர்-613 001.	1. மாவட்ட பஞ்சாயத்து தலைவர், தஞ்சாவூர். 2. பெருந்தலைவர், அனைத்து பஞ்சாயத்து ஒன்றியங்கள். 3. வேளாண்மை இணை இயக்குநர், தஞ்சாவூர். 4. மண்டல இணை இயக்குநர், கால்நடை பராமரிப்புத் துறை, தஞ்சாவூர். 5. இணைப் பதிவாளர், கூட்டுறவுத் துறை, தஞ்சாவூர். 6. தோட்டக்கலை துணை இயக்குநர், தஞ்சாவூர். 7. செயற் பொறியாளர், வேளாண் பொறியியல் துறை, தஞ்சாவூர். 8. துணை இயக்குநர், பட்டுவளர்ச்சித் துறை, திருச்சி. 9. செயலர், விற்பனைக் குழு, தஞ்சாவூர்.

கடித எண்.975/2008 நாள் 9.5.2008.

பொருள்-	தேசிய வேளாண்மை வளர்ச்சித் திட்டம் - மாவட்ட வேளாண்மை திட்டம் - 2008-2012 கலந்துரையாடல் கூட்டம் - சம்பந்தமாக.
பார்வை-	தமிழ்நாடு வேளாண்மைப் பல்கலைக் கழகம் - வேளாண்மை மற்றும் ஊரக வளர்ச்சி மைய இயக்குநர் அவர்களின் கடிதம் நாள் 28.04.2008.

தேசிய வேளாண்மை வளர்ச்சித் திட்டத்தின்கீழ் 2008-12ஆம் ஆண்டுகளுக்கான தஞ்சாவூர் மாவட்ட வேளாண்மைத் திட்டம் தமிழ்நாடு வேளாண்மை பல்கலைக் கழகத்தால் திட்ட முன் வரைவு தயாரிக்கப்பட்டு மாவட்ட ஆட்சியர் அவர்களின் தலைமையில் 15.05.2008 அன்று காலை 11.30 மணி அளவில் மாவட்ட ஆட்சியர் அலுவலக பிரதான கட்டிடத்தில் விவாதிக்கப்பட்டு, இறுதி வடிவம் தரப்பட உள்ளது,

தாங்கள் மேற்கண்ட கூட்டத்தில் தவறாது கலந்து கொண்டு திட்டம் குறித்து தங்களின் மேலான கருத்துக்களை தெரிவிக்குமாறு கேட்டுக் கொள்கின்றேன்.

மாவட்ட ஆட்சியருக்காக.

நகல்-	1	இயக்குநர், வேளாண்மை மற்றும் ஊரக வளர்ச்சி மையம், தமிழ்நாடு வேளாண்மை பல்கலைக் கழகம், கோயமுத்தூர்-3.
	2	பேராசிரியர் மற்றும் தலைவர், மண் மற்றும் நீர் மேலாண்மை ஆராய்ச்சி நிறுவனம், (SWMRI) தஞ்சாவூர்.
	3	முனைவர்.கே.கோவிந்தராஜன், இணைப் பேராசிரியர், வேளாண் பொருளியல் துறை (CARDS), TNAU, கோயமுத்தூர்.

தேசிய வேளாண்மை அபிவிருத்தித் திட்டம்

கலந்தாய்வுக்கூட்டம்

நாள் : 15.05.2008

தஞ்சாவூர்

வ.எண்	பெயர்	பதவி	கையொப்பம்
1.	C. விஜயராஜ்குமார் இஆப	மாவட்ட ஆட்சியர்	
2.	செல்வி [illegible]	மாவட்ட ஊராட்சித் தலைவர்	
3.	இரா. ராசரத்தினம்	ஒன்றியப் பெருந்தலைவர்	
4	K.V.S. குமார்	இணைப்பதிவாளர்	
5	N.A. [illegible]	ஒன்றியக் குழுத்தலைவர் [illegible]	
6.	P. வெற்றி செல்வன்.	முன்னோடி விவசாயி மேலவாளா	
7.	Dr. K. [illegible]	உதவி இயக்குநர் கால்நடை பராமரிப்புச் [illegible] அபிவிருத்தி, தஞ்சாவூர்.	
8.	P. யோகநாதன்.	துணை இயக்குநர் தோட்டக்கலை.	15.5.08
9.	மா. மனோகரன்.	மேலாளர், தஞ்சாவூர் [illegible]	
10	[illegible]	துணை வேளாண்மை இயக்குநர் [illegible]	15.5.2008
11.	[illegible]	செயற்பொறியாளர் (வேளாண்மை) தஞ்சாவூர்	
12.	T. ஜெயராஜ்	பேராசிரியர் & தலைவர் [illegible] நீர் மேலாண்மை ஆராய்ச்சி நிலையம், [illegible]	
13	அ. [illegible]	வே.இ.இ., தஞ்சாவூர்	15.5.08
14	பே. துரைராசன்	ஒன்றியப் பெருந்தலைவர் தஞ்சாவூர்	15.5.08
15.	[illegible]	வே.து.இ. (ம.தி.)	
16.	இரா. [illegible]	வே.து.இ./PA-[illegible]	
17	S. [illegible]	வே.அ (நா) தஞ்சாவூர்	
18	சோ. அன்னியராஜ்	உதவி பொறியாளர் [illegible] / தஞ்சாவூர்	

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தமிழ்நாடு வேளாண்மைப் பல்கலைக்கழகம்
தேசிய வேளாண்மை அபிவிருத்தி திட்டம்
(2008 - 2012)
தஞ்சாவூர் மாவட்ட வேளாண் திட்டம்
கலந்தாய்வு கூட்டம்
நாள் : 15.5.2008
நேரம் : காலை 11.30 மணி

THE BANNER

KING RAJA RAJA CHOLAN

Proposal presented

Proposal explained

Questions Asked

Reference Materials Distributed

Points Stressed

Audience Participation

Collector Clarifies

Serious Deliberations


Dy Director (Agri) Thanjavur explains


District Panchayat President Observes

Collector making a point

Portion of the Participants

Prof & Head SWMRI explains

Dy Director, Horti ,Thanjavur making a point

Lighter Moments

J D A, Thanjavur clarifies

Concluding the session