



**NATIONAL AGRICULTURE  
DEVELOPMENT PROGRAMME  
(NADP)**



**STATE AGRICULTURE PLAN (SAP)**

**TAMIL NADU**

**Volume-I**

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

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

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**NATIONAL AGRICULTURE DEVELOPMENT PROJECT  
STATE AGRICULTURE PLAN  
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## FOREWORD

Date... 3.3.2010 .....

During the past five decades of planned development, India has achieved a spectacular increase in food grain production. Green revolution enabled India to enter into a new era in input use. The use of High Yield Varieties of seeds, plant protection chemicals and fertilizers have increased manifold. However, the farming community could not share the overall gains equitably. Besides, there has been a consistent decline in the rate of growth in agriculture particularly in 1990s. The growth rate was 3.2 per cent during 1990s and declined further to 2 per cent in the last five years as against 4 per cent growth rate in 1980's.

Tamil Nadu State has achieved significant progress in agriculture sector. However, marginalization of land holdings, high variability in rainfall distribution, inadequate capital formation, declining investment in agriculture, declining net area sown, over exploitation of ground water and inadequate storage and post harvest facilities affected the agriculture performance in the State.


At this juncture, the National Development Council resolved that a special Additional Central Assistance Scheme named National Agriculture Development Programme (NADP) be launched to evolve a strategy to rejuvenate agriculture.

To implement the various development schemes under NADP, preparation of District Agriculture Plan and State Agriculture Plan became a pre-requisite. The task of preparing the District Agriculture Plan and State Agriculture Plan is given to Tamil Nadu Agricultural University by Government of Tamil Nadu. Thus, 29 District level Plans, excluding Chennai and the Nilgris, were prepared by the Centre for Agricultural and Rural Development Studies (CARDS), Tamil Nadu Agricultural University.

The State Agriculture Plan was prepared by integrating all the 29 District level plans in a systematic manner. The document provides a detailed outline of current natural resources, strengths, weaknesses, opportunities and challenges of agriculture and allied sectors of the State, issues of different sectors, interventions recommended to overcome the issues, the action plans contemplated and the budget outlay -District-wise and Sector-wise.

I appreciate the team work by TNAU scientists, officials of the line departments, local bodies and farmer-representative for bringing out the State Agriculture Plan. I am sure that the report would pave way for achieving the desired growth rate.

I solicit the co-operation of the line department officials in implementing the action plans indicated in State Agriculture Plan effectively and commit to achieve a better growth in agriculture and allied sectors.

  
(P. MURUGESA BOOPATHI) 3/8/10

## **PREFACE**

With a view to achieve a minimum of four per cent growth in agriculture, the Government of India launched the National Agricultural Development Programme (NADP) during 2007-2008. Under this project, the Government of India has planned to incentivise the State Governments to push up agricultural production. One important mandatory of the NADP is to identify the Technical Support Institute (TSI) and under its guidance the District Agriculture Plans (DAPs) and State Agriculture Plan (SAP) are to be prepared. In this context, Centre for Agriculture and Rural Development Studies, Tamil Nadu Agricultural University has been identified as TSI by the Government of Tamil Nadu. Accordingly, District Agriculture Plans (DAPs) for 29 districts with the exception of the Nilgiris and Chennai districts have been prepared with the help of concerned district administration and submitted to Government of Tamil Nadu. Further, by consolidating the DAPs, the State Agriculture Plan (SAP) has been prepared.

The State Agriculture Plan (SAP) is brought out in two volumes by integrating all the 29 District Agriculture Plans. In total, there are eight chapters. The first five chapters are accommodated in Volume I and the remaining three chapters are discussed in Volume II. Volume I starts with the Executive Summary. The Introduction chapter highlights the present scenario of agriculture development and focuses its attention on the need for four percent growth in agriculture. The methodology followed has also been briefly outlined.

Chapter II takes stock of the present available resource-base in the State, assesses its potentials for growth in the years to come. Chapter III analyses the strengths, weaknesses, opportunities and the challenges faced by the State, from development perspective. The development issues, on-going projects/schemes, crop development constraints and the interventions recommended for development of crop-husbandry are outlined in chapter IV, while the issues, constraints, on-going schemes and interventions needed for allied sectors have been covered in chapter V.

In Volume II, Chapter VI presents sector-wise State Plan in project mode with action plans and budget outlays required during the 11<sup>th</sup> Five year plan period. Chapter VII deals with the performance indicators and monitoring and evaluation mechanisms proposed. Appendices I to IX with budget details are listed in Volume II.

The continued support and encouragement extended by the Agricultural Production Commissioner, Government of Tamil Nadu, is whole-heartedly acknowledged with sincere thanks. The co-operation extended by the Heads of all related line-departments in the State is also acknowledged with thanks.

We express our gratitude and sincere thanks to the Vice-Chancellor and Registrar, Tamil Nadu Agricultural University, Coimbatore-3 for their continued encouragement and administrative support extended through out the period. Our thanks are also due to Dr.K.Palanisami, Former Director, CARDS and Dr.M.Chandrasekaran, Professor and Head, Department of Agricultural Economics, CARDS for their meticulous support for the smooth conduct of the project and for taking steps on the anticipated lines in the preparation of SAP.

But for the continued support and encouragement extended by the Government of India, the SAP might not have been prepared in the holistic form and hence we place on record our sincere thanks to Government of India.

Finally, we will be failing in our duty, if we do not acknowledge the massive works turned out by the consultants Dr.R.Sundaresan and Dr.N.Srinivasan, Professors of Agrl. Economics (Retired), Th.R.Parimalarangan, Mrs. S. Ushanandhini and Selvi. K.Malarvizhi, Senior Research Fellows and J.Selvi and V.Yasodha, Data Entry Operators of the Project in bringing out the SAP in the present form.

Coimbatore - 3  
Dated: 29.03.2010

**Dr.N.Ajjan**  
**&**  
**Dr.R.Venkatram**

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# STATE AGRICULTURE PLAN

## EXECUTIVE SUMMARY

Considering the slower growth in agriculture and allied sectors, the National Development Council (NDC) has launched the National Agriculture Development Programme (NADP) with a Special Additional Assistance Scheme, since the beginning of Eleventh Five Year Plan, so as to rejuvenate agriculture and allied sectors and accelerate the growth process at-least to a minimum of four per cent per annum. Accordingly, each State Government has to formulate different strategies for the development of agriculture and allied sectors through the preparation of District Agriculture Plans (DAP) and State Agriculture Plan (SAP). While the DAP is prepared for a district taking into account the resource potentials available, the SAP aims at integrating the multiple programmes that are in operation in the districts and state, the resources and activities indicated in the District Agriculture Plans and combining all the resources available from other programmes. The State Agriculture Plan for Tamil Nadu is summarised below.

### 1. Location

Tamil Nadu is located in the Northern hemisphere in the hot zone between 8° and 13° N latitude and between 78° and 80° E longitude. Tamil Nadu is the eleventh largest state in India by area (about the size of Greece) and the sixth most populous state. It is one of the 28 states of India and it lies on the east coast of the southern Indian peninsula bordered by Puducherry, Kerala, Karnataka and Andhra Pradesh. Tamil Nadu is bound by the Eastern Ghats in the North, the Nilgiris, the Anamalai Hills and Palakkad in the West, Bay of Bengal in the East, Gulf of Mannar and Palk Strait in the South east and Indian Ocean in the South. The eastern most tips are formed by the point calimer and the Mudumalai wildlife sanctuary in the Western most tips. The Pulicat Lake is situated in the northern extreme. The southern most tip of Tamil Nadu is the Cape Comorin or Kanyakumari. West and north of the State has lofty hills, while the East and South are Coastal plains.

### 2. Development Issues:

The development issues of agriculture sector and other allied sectors are listed as under:

## **2.1. Agriculture Sector**

- Erratic and inadequate monsoon rain
- Declining trend of net area sown
- Diversion of fertile agricultural lands to non-agricultural purposes
- Low cropping intensity hovering around 115-119 per cent in the last five decades
- Depletion of ground water
- Increase of fallow lands
- Deterioration of soil health
- Unfavorable pattern of land ownership
- Yield gaps in majority of the crops
- Slowdown in growth rates of crop yields
- Inadequate seed availability and low seed replacement rates for most of the crops and
- Over use of certain chemical fertilizers and leaching away of organic matter of the soil

## **2.2. Horticulture Sector**

- Raising orchards and vegetables is a high investment proposition and many farmers with poor resource-base are unable to take up cultivation of horticultural crops
- Immediate post-harvest glut leads to sharp decline in the unit prices and erodes the profit of the farmers
- Highly perishable nature of horticultural products and lack of adequate cold storage facilities at affordable cost
- Raising horticultural crops are high-tech oriented and many farmers lack knowledge on the same
- Long gestation period up to economic bearing of fruit trees
- Seasonal aberrations due to erratic monsoon behavior
- Lack of appropriate transport and remoteness of production centres resulting in huge transportation costs and transit losses
- Declining availability of farm labourers especially during harvest seasons and
- Absence of adequate cold chain system resulting in huge spoilage of raw fruits and vegetables

### **2.3. Agricultural Engineering Sector**

- The development of agricultural engineering in the State is still in its infancy and is yet to gain momentum
- Peak seasonal operations and scarcity of labor promote ample opportunities for hastening the process of farm mechanization.
- Water and soil conservation works are to be intensified especially in Dryland tracts
- There exists vast scope for the development of water harvesting structures and
- Farmers need training in the up-keep of the machinery and implements.

### **2.4. Agricultural Marketing and Agri-Business Sector**

- Dominance of non-formal channels
- Need for institutional innovation for efficient alternative system responsive to market signals including stakeholders interactions and linkages among growers – traders – processors - exporters
- Developing wholesale markets by providing necessary infrastructure facilities
- Prevention of post-harvest losses
- Construction of roads linking villages with nearby assembling and wholesale markets (similar to sugarcane rural roads)
- Greater private investment in revamping agricultural marketing
- Developing commodity exchanges
- Capacity building training on post-harvest management, value addition and processing, quality and food safety among the farmers and market intermediaries and
- Strengthening of Market Intelligence and Information System

### **2.5. Animal Husbandry Sector**

- The demand – supply gap of green fodder is rather wide and requires bridging or narrowing down.
- Diminishing pasture / grazing lands and their poor quality
- Lack of knowledge on balanced feeding of animals especially cross-breed cows and on supplementary micro-nutrients

- Infertility problem among cross-bred cows and low/delayed conceivment among buffaloes
- Heifer rearing on scientific lines
- Scientific calf rearing to avoid calf mortality
- Lack of adequate genetically superior male breeds of cattle
- Non-availability of superior Rams and bucks
- Popularization of rabbit farming and Japanese quail farming
- Strengthening of Veterinary Institutions
- Insufficient processing and marketing facilities in most of the Milk Producers Unions
- Production of milk products like butter, ghee, ice cream, palpeda etc., on large scale and
- Improving infrastructure for collection, transportation, handling processing, packing and marketing of milk and milk products

## **2.6. Fisheries Sector**

- Sustainable fish production
- Strengthening infrastructure facilities for fish landing
- Reduction of post-harvest losses
- Encouragement of integrated fish farming and cage farming and
- Production of sea ranching and artificial reefs

## **2.7. Water Resource Utilization / Public Works Department**

- Efficient management of available water resources
- Conservation of rainwater and efficiency of water use
- Watershed management through extensive soil conservation and construction of check dams
- Restoration and maintenance of existing water bodies
- Identification of deficiencies and carrying out the improvements in the canals and other control and measuring structures
- Creation of public awareness and training activities on water management and
- Desilting, widening and strengthening of water bodies

### **3. SWOC Analysis:**

The strengths, weaknesses, opportunities and challenges of agriculture and allied sectors are summarized as under:

#### **3.1. Agriculture Sector**

##### **3.1.1. Strengths**

- The day-time round the year sun-shine and the visititudes of both south-west and north-east monsoons are the boons to the living of human race and the animal kingdom on this part of the planet earth.
- The State possesses varied types of agro-climatic conditions ranging from hot tropical through sub-tropical to temperate climate.
- The major types of soils like red, black, alluvial, loamy and sandy loam found in the State are highly suitable for growing a variety of crops.
- The State is fairly well endowed with water and land resources. Ground water potential is also fair in many parts of the State.
- A wide range of crops such as cereals, pulses, oilseeds, fruits, vegetables and other crops are cultivated under varied agro-climatic conditions and elevations in the State.
- People in the State are always industrious and hard-working and hence a science-based technological back-up can go a long way in improving agricultural production.
- Well-developed agri-based cotton and sugar-industries are the added strengths for the rapid growth of the economy.
- The rail as well as road transport systems, which are essential for agricultural development, are well – knitted in the State.
- Both urban and rural electrification is close to 100 percent in the State that acts as a catalyst for the growth of the State economy.
- The long coastal length of 1,076 kms. and the widely spotted inland water bodies indicate the high growth potential of fishery sector in the State and
- The livestock population is sizable in the State. There exists very good potential for boosting production of milk and sheep / goat / poultry meat in the State through scientific feeding, breeding and health management.



### **3.1.2. Weaknesses**

- The success of agriculture yet depends on the successful monsoons. Frequent monsoon failures, low and uncertain rainfall and its skewed distribution affect the tempo of agricultural growth.
- Uneconomic size of a very large number of marginal and small farms, low economic status of the farmers and the low literacy level among farmers affect the full adoption of scientific farming and hence the agricultural production and
- Many of the irrigation systems and structures are in dilapidated conditions for want of funds. The tanks and water ways are highly silted and filled with the growth of bushes. Heavy seepage losses and hindrance to the free flow of water are found in conveying water through the irrigation canals from dams, reservoirs and big tanks. Moreover, unauthorized encroachment of catchment and water spread areas of the irrigation tanks is a common phenomenon throughout the State. Improper up-keep of canal and river bunds results in recurring breaches and consequent damages to the standing crops, livestock and human lives in the villages especially during rainy seasons and flash flooding.

### **3.1.3. Opportunities**

- The rainfall pattern and its distribution provide scope for raising almost all field and horticultural crops round the year in most pockets of the State.
- As the urbanization and industrialization is on the ascent in the recent years, the market demand for quality agricultural products and protective foods like milk, fruits and vegetables is getting increased. This indicates the need for incentives for increasing the yield per acre in field crops and in vegetables and fruits production etc., besides milk and meat production in the years to come. The demand for ready-to-cook as well as ready-to-eat foods is also increasing. Thus, there is ample opportunity for the agri-processing units to flourish, in the years to come in the State.
- The red, black, alluvial and loamy soils found in the State are highly productive and their capabilities can be sustained through proper and planned soil fertility management practices.

- As the labour availability is becoming scarce, especially during peak agricultural operations like transplanting, harvesting etc., the farm mechanization is on the increase. However, the high investment requirement and non-affordability by the individual farmer, especially the marginal and small, give way for custom services and evolution of small agri-business entrepreneurs in the State
- Large extent of land (about 24 lakh hectares) is considered as waste land in the State. This provides opportunities for land reclamation and development of horticulture and plantation crops in the State and
- Acceptable adoption of Hi-Tech like precision farming

#### **3.1.4. Challenges**

- Low and skewed distribution of rainfall and heavy down-pour in a few days especially during north – east monsoon and consequent flash floods occurring often and inadequate infrastructure to control and store the flood water, damages the standing crops heavily and affects the production.
- Price volatility with high fluctuations and non-remunerative prices of farm products and consequent non-profitability of the farm business. This could lead to farmers quitting the agricultural profession itself, once for all.
- The out – breaks of pests and diseases are often recurring in certain endemic areas of the State. These pose the threat to the crops leading to complete loss to many farmers.
- In the recent years, due to heavy pumping of ground-water especially in summer and early kharif seasons, the reversal of ground water flow results in sea-water intrusion in the inlands along the coastal belt and consequently making the bore well as well as the open well-water, unfit for crop production and drinking. Many farmers in fact, abandoned the cultivation of especially the kharif crop, due to sea-water intrusion along the coastal belt.
- The inter-state disputes on the major irrigation systems like Cauvery, Mullai Periyar, Palar, etc. affect the agricultural growth of the State to a great degree and
- Fast urbanization and industrialization and indiscriminate conversion of agricultural land to non-agricultural purposes, pose a great threat of contraction of land put to agricultural uses and consequent reduction in production.

## **3.2. Horticulture Sector**

### **3.2.1. Strengths**

- Horticulture crops in general are high value crops in the State
- Soil and climatic conditions are highly favourable for raising many horticultural crops.
- The Department of Horticulture and Plantation Crops in the State has got the entire needed technical where-withal, supported by a separate Horticulture College and Research Institute and Horticulture Research Stations in the State.
- Increasing industrialization and urbanization and consequent per capita income increase create an effective internal and external demand for horticultural products, which are supposed to be the protective foods in human nutrition.
- The hill stations spotted in the Western ghats and in the middle of the state grow the vegetables like carrot, cabbage, cauliflower, potato etc., and temperate and sub-tropical fruits like plums, peaches, straw berries and plantation crops like tea, coffee, cardamom etc., and
- The state support for horticulture development in the form of National Horticulture Mission is an added strength to grow a variety of horticultural crops.

### **3.2.2. Weaknesses**

- The major weakness is the high-cost of cultivation of high-tech horticultural crops.
- Most of the fruit crops are highly season-bound and hence the year-round production is not possible.
- Lack of adequate demand for processed fruit and vegetable products and infrastructure for processing value-added products.
- Inadequate network of horticultural extension machinery in the State.
- Highly perishable nature of horticulture products and
- Lack of effective demand from low income and lower-middle income families towards fruits and vegetables.

### **3.2.3. Opportunities**

- As the urbanization, industrialization and the family income have shown an increasing trend in the recent years, the effective demand for protective foods is growing. Hence there exist ample opportunities to increase the fruit and vegetable production in the State.
- The tempo of liberalization of the economies in the world and the functioning of WTO give impetus to the export of horticultural products.
- Season-bound production, highly perishable nature of products and the year round demand provide excellent opportunity for the agro-processing entrepreneurs.
- Recent policy of reclaiming waste land and its allotment to landless labourers provide good opportunities to raise deciduous fruit trees like wood-apple, pomegranate, zizubus, jambulana, vegetables and bio-fuel plants like Jatropha, medicinal plants, etc., and
- Crop diversification from low-return field crops to high value horticultural crops is another possible opportunity.

### **3.2.4. Challenges**

- High-cost of high-tech cultivation of horticulture crops and low financial capability of majority of farmers
- Presence of rocky sub-soils and lack of awareness among the farmers pose severe threat to many orchard farmers.
- High perishability and inadequate post-harvest care also pose threat to grow horticultural crops and
- Post-harvest glut of season-bound fruits and highly fluctuating prices are the other threats confronted by horticultural farmers.

## **3.3. Agricultural Engineering Sector**

### **3.3.1. Strengths**

- Propensity of farmers to utilize the farm machineries like irrigation motor-pumpsets, tractors, tillers, harvesters, thrashers, winnowers etc. is a positive strength gained in the recent years in farm mechanization front.

- Young enterprising farmers / rural youths are coming forward to provide custom services to all sections of the farmers, by taking the risk of heavy investment.
- Big farmers also own the machineries
- Effective water harvesting techniques and
- Proven soil and water conservation techniques are also available.

### **3.3.2. Weaknesses**

- Large number of marginal and small farms
- Majority of the farmers are resource poor
- Lack of effective machineries for carrying out the farm operations like transplanting, weeding, etc.
- Inadequate number of water harvesting structures often leads to flash floods and surface run-off waste water.
- Farmers are yet to practice the scientific soil and moisture conservation activities especially in dry land areas and
- Heavy seasonal use and keeping idle without use in the rest of the year.

### **3.3.3. Opportunities**

- Scarcity and high cost of labor and availability of machineries and their uses at low cost are providing opportunities for intensifying farm mechanization.
- Financial institutions are coming up in a big way to help the rural youths and young entrepreneurs in owning the high cost machineries and render custom services to the farmers.
- There exists scope for organizing more number of entrepreneurial development programmes to the rural youths and to the innovative large farmers.
- There exists vast scope for soil and water conservation machinery for contour-bunding, basin-listing, etc.,
- There are ample opportunities for the popularization and adoption of water harvesting techniques like farm ponds, percolation ponds, etc., and
- Researchers have innumerable opportunities for product / machinery development to meet the existing latent demand for effective farm equipments.

### **3.3.3. Challenges**

- High priced products and heavy investment requirements and lack of effective repairing workshops in the easy reach of the farmers
- Farmers are exploited by charging very high rates of hiring charges by owners of the machineries and
- Political support and trade-unionism impede the mechanization process in agriculture.

## **3.4. Agricultural Marketing Sector**

### **3.4.1. Strengths**

- Network of periodic markets are functioning in the State.
- Well-knit regulated marketing system has been developed in the State.
- Cooperative marketing societies in certain pockets of the State render yeoman service to farming community
- A large number of commission mandies, wholesalers and retailers are eking out their livelihood through rendering marketing services to farmers and consumers.
- A large number of export agencies have become active in the recent years in exporting agricultural products, particularly in the context of trade liberalization.
- The functioning of TANFED, NAFED and CCI is an added strength to the marketing system, especially the export marketing system.
- Well established warehousing system by the CWC, SWC and co-operatives with three-tier approaches adds strength to the marketing system in the State and
- Changing life style and food habits of the people especially in the context of urbanization, industrialization and Information Technology revolution.

### **3.4.2. Weaknesses**

- Presence of innumerable intermediaries between farmers and consumers increase the cost of marketing and reduce farmers share in the consumer's rupee.
- Perishable nature of the farm products and the information asymmetry about market and price trend favour the intermediaries and weaken the bargaining power of the farmers.

- Inadequate functioning of majority of the organized marketing institutions also adds to the weakness of the marketing system.
- Post-harvest glut and consequent low prices of agricultural commodities
- Ineffective storage structures at the farm level and consequent losses of agricultural produce due to storage pests, including rats and dampness.
- The post-harvest losses have been estimated at 30 per cent for fruits and vegetables and 10 percent for food grains
- Agri-processing system is yet to develop in a big way and
- Absence of cold chain development.

#### **3.4.3. Opportunities**

- Strengthening the existing marketing organizations
- Deregulation of marketing activities
- Construction of more rural godown at village level
- Giving fillip to the growth of agro-processing industry
- Developing effective communication network
- Capacity building among farmers through training and exposure visits.
- Development of cold chains for perishables
- Strengthening storage system at farm level and
- Tapping the export markets.

#### **3.4.4. Challenges**

- Volatile prices / wide price fluctuations are the major threats that make the agricultural proposition non-profitable and perforce the farmers to exit agricultural profession, once for all and
- Increasing quality parameters and food safety standards in domestic and export markets

### **3.5. Animal Husbandry Sector**

#### **3.5.1. Strengths**

- Sizeable cattle population in the State
- Increasing cross-bred cows population

- Eagerness of SHGs on dairying
- Readily available bank credit
- Ready market for fluid milk and its by-products
- Involvement of private dairy is also on the increase in milk procurement and distribution
- Very high export potential for hides and skins
- The availability of fairly large number of veterinary institutions along with infrastructure facilities
- Propensity of dairy farmers to market the surplus milk through co-operatives and excellent network of dairy co-operatives
- Availability of superior germ plasm with high exotic blood levels and
- Availability of fairly a large number of Artificial Insemination Centres in the State.

### **3.5.2. Weaknesses**

- Shortage of green fodder to the tune of above 80 per cent of the requirement.
- Lack of adequate knowledge on enriching the available dry fodder with nutrient supplements.
- Lack of knowledge among the farmers on hygienic milk production, scientific rearing of calves and management of cross bred cows during advanced pregnancy period.
- Insufficient cold chain management of vaccines
- Poor quality control system
- Problems in controlling the disease out-breaks
- Improper housing and frequent incidence of diseases
- Poor slaughter facilities
- Non-availability of veterinary services within the easy reach of the farmers due to insufficient technical manpower.
- Delayed conception, shy bearing in buffaloes and limited percentage of artificial insemination success and
- Decreasing buffalo population



### **3.5.3. Opportunities**

- Constantly increasing demand for milk and milk products from both domestic and export markets.
- The performance of genetically up-graded non-descript local breeds are quite promising in terms of increased milk productivity
- Financial institutions, especially the commercial banks, are liberal in extending credit facilities for starting mini-dairy farms
- Technology empowerment on scientific dairy farming among farmers / rural women to boost milk production.
- Presence of well – knit SHGs all over the State and
- Availability of well-knit co-operative milk marketing system and the growth of private procurement and distribution business units.

### **3.5.4. Challenges**

- Diminishing grazing land area in the recent times
- High incidence of mastitis and loss of milk productivity
- Increasing cost of feeds
- Non-availability of labour and high labour cost and
- Sudden outbreaks of diseases like Anthrax, black quarter, foot and mouth disease etc.

## **3.6 Fishery Sector**

### **3.6.1. Strengths**

- Tamil Nadu State is endowed with a coastal line of 1,076 kms, accounting for 13.3 per cent of the Nation's Coastal line of 8118 kms.
- State possesses 0.19 millions sq.kms of Exclusive Economic Zone (EEZ) accounting for 9.7 per cent of the country's EEZ of 2.02 m.sq.kms and a continental shelf of about 41,412 sq.kms.
- Diversified flora and fauna estimated at more than 3,509 species to support marine fisheries.
- The inland fishery sprawls over 3.71 lakh hectares of water spread area comprising reservoirs, major irrigation and long seasonal tanks, short seasonal tanks and ponds, estuaries and backwaters.

- Many fishermen cooperatives and fisher women cooperatives are functioning in the State.
- Sizable numbers of mechanized boats, motorized FRP boats, traditional crafts are available in the State.
- Sizable fishermen / fisher women population in the State and
- Existence of a Fisheries College and Research Institute and a Fisheries Department is an added strength to accelerate fisheries development in the State.

### **3.6.2. Weaknesses**

- Many water bodies received water only during north-east monsoon
- Non-availability of adequate infrastructure facilities for seed production, rearing, fish landing and marketing
- Fish culture in natural and small water systems is being practiced by stock and harvest method and not by scientific culture method
- Lack of post-harvest facility like cold storage and fish processing unit at the shore.
- Largely inadequate fish seed production
- Low fish productivity of tanks
- Non-availability of stock size quality fish seeds throughout the year
- Lack of efficient fishing gears for operation in deep waters
- Inadequate training packages on fish culture, breeding and seed rearing, feed formulation and fish diseases diagnosis etc.
- Paucity of funds to fish seed rearing centres
- Insufficient area for fish seed production
- Lack of hygienic handling of fish in marketing
- Low infrastructure support for artisanal fisherman impede the growth in fish production
- Poor technology adoption in the mechanized crafts and low hygiene are the major bottle necks in promoting export oriented fishing and product development
- Under-utilization of short seasonal tanks and
- Absence of dead storage level in the reservoirs affects the natural fish stock.

### **3.6.3. Opportunities**

- Vast expansion of marine resources with diverse fishes in the off-shore area provides good opportunity for increasing marine fish catching
- Large scale coastal aquaculture is possible
- Mariculture, including pearl culture, spat production, lobster fattening and multiple newer fishing product preparations possible.
- Rehabilitating the affected and unutilized shrimp farms for mari-culture activities.
- Ample opportunities for developing coastal / back water shrimp farming on large scale with greater rigor.
- Effective utilization of short seasonal tanks and ponds in the network of inland water ways for fish production and
- Establishment of large scale seed production and supply centres.

### **3.6.4. Challenges**

- Frequent monsoon failures, visitities of cyclones and occurrence of tsunami are the natural hazards that pose major threats to the growth of the fishery industry as a whole
- Inadequate infrastructure for seed production discourages the farmers in taking up inland fish culture
- Improper waste disposal and environmental pollution by coastal / brackish water shrimp farming act as the threat for their own survival and growth and
- High siltation of tanks and water ways and lack of periodic desilting activities.

## **3.7. Irrigation Systems (Public Works Department)**

### **3.7.1. Strengths**

- The presence of major and medium irrigation systems like Mettur dam, PAP, Sathanoor dam, Aliyar dam, Papanasam dam, Periyar – vaigai, Lower Bhavani resources and irrigation projects indicates the fairly developed the irrigation system in the State.
- The ground water potential in some parts of the State still remains under- exploited and
- The State is endowed with a network of well developed irrigation tanks and canals.

### **3.7.2. Weaknesses**

- Many of the water bodies including feeder channels and distribution channels are highly silted reducing the water holding capacity and the flow of water
- Many of the irrigation structures are in dilapidated conditions resulting in wastage of stored water through seepage etc.,
- Paucity of funds to manage and modernize most of the irrigation systems and structures
- Lack of awareness on the importance of good maintenance of irrigation structures among the farmers due to government interventions and
- No organized flood control measures in the areas chronically affected by frequent flash floods.

### **3.7.3. Opportunities**

- Modernization of irrigation systems
- Taking up repairing works of dilapidated water structures
- Desilting of reservoirs, tanks and canals
- Strengthening the bunds of tanks, rivers, canals etc.
- Modernizing the approach roads along and around the water bodies
- Construction of check dams
- Construction of barrages just before the confluence of river into the sea and irrigation shafts to prevent sea water intrusion in the coastal belt of the State and
- Taking up flood control measures with long-term perspective, in chronically affected areas.

### **3.7.4. Challenges**

- Heavy seasonal / monsoon down-pour in a short spell of time and the consequent flash floods and breaches on the river bunds and consequent crop, livestock and human losses
- Social threat of encroachment of catchment areas, water spread areas and meddling with irrigation structures and devices and wantonly spoiling them
- Sea water intrusion in coastal belt and
- Inter-state disputes on river water sharing with neighbouring States of Karnataka, Kerala and Andhra Pradesh.

#### **4. Growth trends in Crops**

The growth rates (1970-2006) for area, production and yield were estimated for major crops in Tamil Nadu and were found to be positive with reference to area, productivity as well as production in four crops viz., maize, total pulses, sugarcane and banana. On the other hand, the crops like cholam, cotton and chillies witnessed negative growth rates in area, productivity as well as in production. In paddy and groundnut, while area alone had shown negative growth rates, the productivity and production had been on the positive growth.

The above growth trends implied that the declining trend in area under paddy and groundnut warrant continued focus on research on variety and management technologies to continue not only for enhancing yield potentials but also for harnessing the potential created through distribution of quality seeds and large scale adoption of the management technologies. The negative trends in cotton are highly disturbing. The cotton textile industry is the largest manufacturing industry in the country and to feed this industry with the raw material viz., cotton, it becomes necessary to reverse the negative trends in area, productivity and production and hence the strategy must be at-least to increase the area under cotton and cotton production will increase through adoption of Bt-cotton.

Maize and sugarcane have shown excellent growth trends as they are the basic raw material for poultry / animal feed and sugar industries. Therefore, this trend may be encouraged to support these industries' growth in the state. These two crops are also quite impressive in increasing the income of the farmers through crop diversification.

The positive growths of area, productivity and production of total pulses are quite encouraging as they form the important sources of protein to human well – being. However, the productivity growth is rather marginal and hence needs strategy to increase the pulses productivity through sizable investment on research and also extension activities to promote adoption of pulses production technologies.

Groundnut is yet another important food/oilseeds crop, whose production performance had shown negative growth in majority of the districts. A positive trend in growth of area, production and productivity in groundnut was

observed only in three, four and five districts respectively. Therefore, before reaching an alarming situation of down trends, strategy planning must aim at increasing growth trend, especially in area and production.

With reference to horticultural crops like chilly and banana, the chilies crop experienced negative growth trends in area, productivity as well as in production and these trends must be at-least arrested and productivity should be given a fillip. As regards banana, the trends may be kept up, as the demand for protective foods like banana is on the increase due to per capita income growth.

As regards paddy crop, special attention is required in the districts of Perambalur, Theni, Villupuram and Nagappatinam. To increase maize production, districts like Thiruvannamalai, Nagappatinam and Thiruvarur require immediate attention. To increase productivity and production of cholam crop, special thrust needs to be given in the traditionally cholam growing areas of Salem, Coimbatore, Erode, Karur, Perambalur and Virudhunagar districts. As regards pulses, emphasis should be given for transferring technologies in the rice fallow districts as well as in other districts. Cotton productivity and also production need adequate attention in the traditionally cotton growing tracts of Salem, Coimbatore, Erode, Theni, Virudhunagar, Thoothukudi and Tirunelveli districts.

The growth rate in area is rather negative in 23 groundnut growing districts and this needs special attention to arrest the disturbing trend. Moreover, the districts of Salem, Karur, Coimbatore and Virudhunagar need prompt attention to increase productivity and production of groundnut. As regards the horticulture crops, Chillies cultivation requires special attention in almost in all the chillies growing areas in the state. Though, area, production and productivity of banana are quite convincing in the state, districts of Karur and Villupuram deserve special attention.

### **Shift in Area**

Markov Chain Analysis was employed to trace out the shifts in land use pattern and area under various crops. The results have shown that the net sown area retained its major area (78 per cent), while it lost nine per cent to forest land, four per cent to land put to non-agricultural uses, six per cent to current and other fallows and one per cent to permanent pastures. Cultivable waste had given way to barren and uncultivable lands.

As regards shifts in cropping pattern, the shift in area under crops was more pronounced in cotton and groundnut and to a considerable extent in paddy.

## **5. Recommended Interventions**

The interventions of agriculture and allied sectors could be grouped as under:

### **5.1. Agriculture Sector**

- Hybrid Seed Distribution – Rice, Sunflower, Maize, other Millets, Cotton
- Supply of Quality Seeds
- Integrated Nutrient / soil health management
- Problem soil management by adopting cost effective reclamation methods.
- Dry farming techniques
- Precision farming techniques
- Market led extension
- Integrated pest management
- Use of improved / modern implements / machineries
- Provision of community thrashing floors
- Production and Distribution of micronutrient mixture, green manure seeds, bio-fertilizers, bio-control agents, etc.,
- Organizing Grower Associations such as Rice Growers, Maize Growers, Mango Growers, and others.
- Establishment of Market Information Center in regulated markets
- Establishing more inputs testing / quality control laboratories
- Training farmers on Precision Farming practices
- Distribution of Tarpaulin

### **5.2. Horticulture Sector**

- Protected cultivation
- Provision of Net house structures
- Nursery/ vegetable production
- Popularising Pandal technique
- Package for plant protection including IPM
- INM and Irrigation Management for resource conservation

- Distribution of Plastic crates (Banana, Vegetables)
- Sinking Bore well with casing pipe
- Banana bunch cover
- Banana sucker treatment kit
- Humic acid / Effective E.M.
- Support System for crops – Banana
- Sales outlet-cum-information centre
- District level farmers workshop
- Inter state exposure visits
- 10 Ha Mega demo plot for the districts
- Formation of Farmers Associations (EFA) / Growers associations
- Support for Betel vine growers
- Model fertigation plot for vegetables and
- Precision farming techniques

### **5.3. Agricultural Engineering Sector**

- Popularization of Agricultural mechanization through conventional / modern machinery / Equipments
- Soil Conservation works
- Water Management works
- Introduction of newly developed Agricultural machineries / Implements
- Innovative water harvesting structures
- Promoting the concept of mechanized village
- Control of sea water intrusion
- Special scheme for the beneficiaries of land reforms – Innovative Scheme for OFD with special focus in SC land holdings
- Western Ghats Development Programme and
- Farmers Training

### **5.4. Agricultural Marketing and Agri. Business Sector**

- Establishment/ organization of commodity groups for marketing in the State
- Facilitation of Contract Farming between farmers and bulk buyers in the State



- Dissemination of Market intelligence
- Arrangement of Buyers - Sellers Meets
- Organizing the exposure visits to important markets within the State and out side the State for commodity groups / farmers and extension functionaries
- Strengthening of market extension centre at each district/ block level for capacity building and dissemination of marketing information and
- Co-ordinating through State Agricultural Marketing Boards to promote inter-state marketing for better market integration, better price realization by farmers and price stabilization.

### **5.5. Animal Husbandry Sector**

- Feed and Fodder development
- Genetic Up-gradation
- Improvement of Livestock health
- Institutional Development and Extension Services
- Capacity Building / Farmers and Technical Staff
- Germplasm Production Centre for Small Ruminants
- Popularising Small Ruminants - Farming System
- Processing and Marketing Facility
- Establishment of Piggery Unit
- Extension facilities

### **5.6 Fisheries Sector**

- Development of Farm Ponds for Fish culture
- Setting up of fish culture
- Renovation of nurseries and
- Farmers training

### **5.7. Irrigation Sector (PWD)**

- Desilting of tanks, canals and other waterways
- Strengthening the bunds of the canals and tanks
- Repairing the dilapidated irrigation works/devices/ structures
- Stabilizing the existing irrigation ayacut areas

- Bringing new areas under irrigation
- Exploring new irrigation possibilities and
- Strengthening the approach roads to water bodies

## 6. The State Agriculture Plan

For carrying out the developmental activities as contemplated in the form of interventions specified above, the State Agriculture Plan requires a sum of Rs. 3931.92 crores, as detailed in the table below. Thus, nearly 25 per cent of the total outlay is required for the Agricultural Sector followed by Irrigation systems (Public Works Department) (22 per cent), Agricultural Engineering Sector (19 per cent), Animal Husbandry and Fisheries Sector (13 per cent) and Horticulture Sector (12 per cent) in that order.

### Sector-wise Funds Requirement

(Rs. in lakhs)

Sl. No.	Name of the Sector	Year					
		2008-09	2009-10	2010-11	2011-12	Total	%
1	Agriculture	25101.89	24658.56	24354.41	24325.75	98440.61	25.04
2	Horticulture	11917.43	12068.57	11421.14	11921.56	47328.70	12.04
3	Agricultural Engineering	17972.80	18570.11	18801.37	19469.72	74814.00	19.03
4.a	Agricultural Marketing	1448.39	1277.70	1352.69	1481.96	5560.74	1.41
4.b	Additional Agriculture Marketing	-	7756.78	6334.16	5468.18	19559.13	4.97
5.a	Animal Husbandry	21932.76	7239.35	5401.28	4863.11	39436.50	10.03
5.b	Fisheries	5559.33	4000.76	2388.54	1576.29	13524.92	3.44
6	Public Works Department	31547.45	21952.13	16940.67	16795.86	87236.11	22.19
7	Sericulture	908.96	915.53	1014.08	1036.41	3874.98	0.99
8	Forestry	496.54	496.25	500.80	505.99	1999.58	0.51
9	Agricultural Research	89.00	122.00	22.00	24.00	257.00	0.07
10	Special Projects	305.26	188.76	302.22	363.64	1159.88	0.29
	<b>Total</b>	<b>117279.81</b>	<b>99246.50</b>	<b>88833.36</b>	<b>87832.47</b>	<b>393192.15</b>	<b>100.00</b>

## **CHAPTER – I**

### **INTRODUCTION**

Agriculture continues to be the mainstay of livelihood for more than 50 per cent of the population in Tamil Nadu. It contributes 12 per cent of Net State Domestic Product. It is the single largest private sector providing job opportunities for rural people besides being the source of supply of food grains and other dietary staples and serving as the prime source of raw materials for industries. Agricultural development is essential not only to achieve self reliance in foodgrains at the state level, but also for ensuring household food security and to bring equity in distribution of income and wealth resulting in ultimate reduction of the poverty level. In fact, high economic growth will have no meaning for the masses of people living in rural areas unless agriculture is revitalized.

Agriculture in Tamil Nadu is beset with a number of adverse characteristics such as declining total cultivable area vis a vis scarcity of cultivable land, low productivity per unit of labour in most of the regions, predominance of small and marginal farmer households, risk aversion due to production by tenants and agricultural labourers under insecure conditions, vast seasonal variations and presence of a large percentage of tradition loving farmers. Besides, agriculture development need to achieve self reliance in food grains and the estimated food requirement of various food crops by 2020 based on the projected population is furnished in Table. 1.1.

**Table. 1.1 Projected Food requirement and Area needed by 2020 in Tamil Nadu**

Sl. No.	Items	Requirement in 2020 (lakh tons)	Average Productivity (5 years) (Kg/ha)	Area required in 2020 (lakh ha.)
1	Rice	91.68	3370.00	27.20
2	Cholam	9.16	995.33	9.21
3	Cumbu	5.46	1372.33	3.93
4	Maize	1.17	1588.67	0.75
5	Ragi	4.52	2015.00	2.24
6	Other cereals	2.10	878.00	2.39
	Total cereals	114.09	1703.22	66.99
7	Pulses	23.39	436.67	53.65
8	Oilseeds	11.38	1690.33	6.73
9	Sugarcane	10.91	10923.67	9.98
10	Vegetables	79.52	25426.67	3.12
11	Fruits	10.13	23283.33	0.44
12	Fodder	819.00	20000.00	40.96
13	Forest	-	-	15.59
	Total	-	-	197.46

*Source: Draft Land Use Policy for Tamil Nadu by the Task Force under Dr.R.K.Sivanappan*

It could be seen from the table above that the area required in 2020 (197.46 lakh ha) for the producing required food including area under forest exceeds the existing geographical area of the State (130.15 lakh ha). Hence, enhancing the productivity of the crops is the only way to meet the food requirement in 2020. Moreover, the existing gap between the Target set for the 11<sup>th</sup> Plan and achievement so far made in Area, Production and Productivity of select crops at the end of the 10<sup>th</sup> Five Year Plan (2005-2006) are furnished in Table. 1.2.

**Table. 1.2. Gaps between Target and achievement in Area, Production and Productivity of Select Crops in Tamil Nadu**

**A - Area: (lakh. ha.)**  
**P - Production: (lakh. MT)**  
**Y - Productivity: (Kg/ha)**

Crop	11 <sup>th</sup> Plan target			Achieved till 2005-2006			Gaps			Gaps in Percentage Terms		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y
Paddy	22.0	85.8	3900	20.50	52.09	2541	1.5	33.71	1359	7.32	64.71	53.48
Millets	10.5	21.00	2000	7.41	7.30	985	3.09	13.7	1015	41.70	187.67	103.05
Pulses	10	7.0	700	5.25	1.77	337	4.75	5.23	363	90.48	295.48	107.72
Total Food Grains	42.5	113.8	2678	33.16	61.16	1844	9.34	52.64	834	28.17	86.07	45.23
Cotton	2.0	6.0#	510	1.10	1.68	260	0.9	4.32	250	81.82	257.14	96.15
Sugarcane	3.8	47.52	12505**	3.35	35.11	10500**	0.45	12.41	2005**	13.43	35.35	19.10
Oilseeds	11.6	20.40	1759	7.09	11.52	1625	4.51	8.88	134	63.61	77.08	8.25
Fruits	4.15	92.35	22.24*	2.58	57.79	22.40*	1.57	34.56	@	60.85	59.80	-
Vegetables	3.74	104.38	27.93*	2.34	65.47	28.12*	1.4	38.91	@	59.83	59.43	-
Spices	2.30	12.78	5.56*	1.30	7.84	6.02*	1	4.94	@	76.92	63.01	-
Plantation Crops	3.80	15.47	4.08*	2.37	8.07	3.04*	1.43	7.4	1.04	60.34	91.70	34.21
Flowers	0.40	3.20	8*	0.25	2.02	8.16*	0.15	1.18	@	60.00	58.42	-
Medicinal and Aromatic Plants	0.09	0.18	1.98*	0.06	0.08	1.42*	0.03	0.1	0.56	50.00	125.00	39.44

@ (Already the required productivity has achieved)

# (Cotton in lakh bales)

\*(in MT/ha)

\*\* (Sugarcane in terms of gur)

12505\*\*

From the table, it could be seen that an additional area of 1.5, 3.09 and 4.75 lakh hectares is required in the case of Paddy, Millets and Pulses respectively to bridge the gap between the year 2005-2006 and the target set for the 11<sup>th</sup> Plan period. In case of the total food grains, an additional area of 9.34 lakh hectares has to be brought under plough to meet the gap. Similarly, in the case of total horticulture crops, an additional area of 5.58 lakh hectares is absolutely essential for meeting the target set to be achieved at the end of 11<sup>th</sup> Plan.

Since, the scope for bringing additional area under crops is rather limited, emphasis should be on increasing the productivity levels. For example, in the case of Paddy, the productivity has to be increased to the tune of 53.48 per cent as compared to that of productivity of Paddy in 2005-06. Likewise, in the case of Millets and Pulses, the productivity has to be augmented to the extent of 103.05 and 107.72 per cent respectively.

In the case of Cotton, the productivity level has to be increased from 260Kg/Ha achieved in 2005-06 to 510Kg per hectare during 11<sup>th</sup> Five Year Plan. Though the productivity level of Sugarcane in Tamil Nadu is higher as compared to the other States, the productivity level still have to be increased to the tune of 96.15 per cent.

Nevertheless, in case of Fruits, Vegetables, Spices and Flowers, the requirement for the 11<sup>th</sup> Plan had already been achieved. Despite, the required increase in area under fruits and vegetables, which is again a major constraint, the gaps have to be necessarily filled only with the increase in productivity. Similarly, in the case of Plantation crops and Medicinal and Aromatic Plants the productivity level need to be increased to the extent of 34.21 and 39.44 per cent respectively.

In sum, it is evident from the table that an upsurge in productivity is absolutely warranted since a decline in the growth rate of yield of most of the important crops is observed particularly in Paddy, Millets, Pulses, Cotton and Sugarcane during the last three decades. Further, the seed availability and seed replacement rates for most of the crops remained inadequate. Hence, this calls for expanding the extension technology to a considerable extent so as to reach the vulnerable sections of the farming

community. Besides, focus should be on second green revolution in the case of rainfed crops.

Moreover, the trends and stages of development in the various resources like land, water would also reveal certain facts. In the State, the gross cropped area had declined from 73.8 lakh hectares in 1970-71 to 67.29 lakh hectares in 1990s and further to 60.33 lakh hectares in 2005-06. Similarly, the net area sown had also declined from 43.34 per cent of the geographical area in 1990-91 to 40.30 percent of the geographical area in 2005-06. The availability of land for agricultural purpose has been shrinking regularly putting increased pressure on the limited land resources. Land put to non agricultural uses had increased from 11.4 per cent in 1970-71 to 14.73 per cent in the 90s and further to 16.4 per cent in 2005-06 due to urbanization and industrialization which in turn led to the transfer of water and labour from agriculture to non agricultural purposes. The other fallow lands had also increased from 5.73 lakh hectares in 1970-71 to 15.18 lakh hectares in 2005-06.

Similarly, the culturable waste had exhibited wide fluctuation over years and it decreased from 5.06 lakh hectares in 1970-71 to 3.69 lakh hectares in 2005-06. In sum, the cultivable waste, current fallows and other fallows put together had increased from 21.36 lakhs hectares in 1969-70 to 26.45 lakhs hectares in 2005-06. The increased fallow lands (cultivable waste, current fallows and other fallows) was due to conversion of cultivable land to other purposes to meet the requirement of urbanization, inadequate water availability for cultivation arising out of failure of monsoon rains, uncertainty in release of water in Cauvery from major reservoirs and depletion of ground water. The cropping intensity has been hovering around 115-119 per cent in the last five decades in the state as compared to the all India figure of 133 per cent.

Large investments have been made since independence to harness the available water resources in the State. Area under canal irrigation in the state was 7.92 lakh hectares in 1950-51 and 8.00 lakh hectares in 2005-2006 with wider fluctuations obviously due to variations in the flow of water in Cauvery River particularly during North East Monsoon period.

Tank irrigation which was the major source of irrigation during fifties and sixties also lost its due share thereafter inspite of increase in numerical strength mainly because of encroachments and silting in the feeding channels. The net area irrigated by tanks which stood at 9.12 lakh hectares during the sixties (36.8 per cent of net area irrigated) dropped to 5.78 lakh hectares during 2005-2006.

Wells accounted for 52.64 per cent of net area irrigated during 2005-2006. Net area irrigated by wells received a three fold increase during the last five decades. As a result, there is over exploitation of ground water in the State leading to a fall in supply, saline water encroachment, drying of springs and shallow aquifers. Hence, various water saving technologies including the development of varieties with less water requirement need to be developed to economize water use and increase productivity of per unit of water applied to crops.

Growth in size of farm, a prime factor of input use efficiency would also throw some light on the development at village level. The average size of holdings in Tamil Nadu had declined from 1.45 hectares in 1970-71 to 0.89 hectare in 2000-01 (Table 1.3). Likewise, the available cultivable land per rural resident had also declined from 0.22 hectare per capita to 0.19 hectare per capita between 1970-71 and 2000-01. The growth in number and extent of small and marginal farmers (from 42 per cent to 55.50 per cent) acts as a major hurdle in promoting capital investment and modernizing the agricultural sector.

**Table 1.3 Average size of holdings in Tamil Nadu**

(in ha.)

Sl. No.	Classification	70-71	76-77	80-81	85-86	90-91	95-96	2000-2001
1.	Marginal (< 1 ha)	0.42	0.41	0.38	0.37	0.36	0.38	0.37
2.	Small (1 to 2 ha)	1.42	1.41	1.41	1.41	1.41	1.40	1.39
3.	Semi-medium (2 to 4 ha)	2.75	2.75	2.77	2.74	2.73	2.73	2.72
4.	Medium (4 to 10 ha)	5.83	5.77	5.78	5.78	5.72	5.60	5.68
5.	Large (≥ 10 ha)	16.94	17.28	17.97	18.78	18.44	21.68	19.48
	<b>Total</b>	<b>1.45</b>	<b>1.25</b>	<b>1.07</b>	<b>1.01</b>	<b>0.93</b>	<b>0.95</b>	<b>0.89</b>

Source: Compiled from Agricultural Census reports of T.N.



The yield gap is yet another issue contributing to agricultural stagnation in the state. Studies carried out by Tamil Nadu Agricultural University on the yield gap indicated considerable difference between on farm trials and yield realized so far by the farmers (Table. 1.4)

**Table 1.4 Yield gap in major crops**

Sl. No.	Crop	Potential Yield (Kg/ha)	Average Yield (Kg/ha)	Yield Gap (Kg/ha)
1.	Paddy (I)	6000	5275	(-) 725
2.	Cholam (I)	6000	3008	(-) 2992
3.	Ragi (I)	4750	2527	(-) 2223
4.	Red gram	1500	667	(-) 883
5.	Black gram	1270	389	(-) 881
6.	Groundnut (I)	2850	2481	(-) 369
7.	Sugarcane (I)	146000	109000	(-) 37000
8.	Cotton (I)	730	426	(-) 304

*Source: Dept. of Economics, TNAU, 2006; Coimbatore-641003. 'I' stands for irrigated*

From the above table, it is evident that the yield gap is found to be high in Sugarcane, Cholam (irrigated) and Ragi (irrigated) as compared to other crops. This indicates the need for reinforced extension methods for delivering the technologies. Though the yield gap in Paddy, Red gram and Black gram are compared to be low, the productivity level has to be increased since there is limited scope for bringing more area under these crops.

Policies, so far, have been diverted towards irrigated agriculture to increase agricultural production. Now the concern is that the gains from the green revolution areas have been plateauing out due to many factors and evidences suggest that the productivity returns to investment have substantial trickle down benefits for poor not only in irrigated areas but also those residing in less favoured areas. Hence, it is inevitable that rainfed area should also be promoted through application of technology, inputs and investment in order to convert these grey areas into green.

Realising the urgency of similar problems in many of the states in India, 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 atleast four per cent growth in the agricultural sector during the 11<sup>th</sup> Five Year plan period. To achieve 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 various 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, schemes for water harvesting and conservation, etc. keeping in view of the natural resources and technological possibilities in each district. These plans thus, would 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.

Preparation of District Agriculture Plan for individual district inturn follows the formulation of State Agriculture Plan (SAP). The State Agriculture Plan integrates multiple programmes that are in operation in the district and State, include the resources and activities indicated by the State and combines the resources available from the other programmes also.

### **Major Areas of Focus**

The NADP guidelines indicate the following major areas of focus. Based on these focussed areas, interventions and detailed action plans along with the budget are prepared. Few innovative schemes as per the felt needs of the stakeholders are also proposed.

- (a) Integrated development of major food crops like paddy, coarse cereals, minor millets, pulses and oilseeds;
- (b) Agriculture mechanization;
- (c) Activities related to the enhancement of soil health;
- (d) Development of rainfed farming systems in and outside watershed areas, as also Integrated development of watershed areas, wastelands and 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; and
- (l) Innovative schemes.

### **Methodology followed for the Preparation of District and State Agriculture Plan**

The task of preparing such District Agriculture Plans and State Agricultural Plan is assigned to Tamil Nadu Agricultural University, Coimbatore. In cooperation with scientists from Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) and officials from Department of Agriculture, Horticulture, Agricultural Engineering, Marketing, Animal Husbandry and Fisheries, Seed certification, PWD etc. the major interventions and action plans for each intervention is suggested. In what follows, the procedure adopted in preparing the plans is discussed.

### **Collection of Data**

The preparation of district level plan involved basically collection of base line and bench mark details at block and district levels. A template is developed to collect these particulars from the different districts (29 districts with the exception of Chennai and the Nilgiris) of Tamil Nadu. In order to dovetail the ongoing schemes, with the action plans, the current ongoing agriculture programs were listed and finally converged into the action plans and detailed project report for each type of intervention has been developed.

**Sensitization Workshop**

A series of Sensitization Workshops were also conducted at village/block level and district level. At first, many block level interaction meetings with farmers, local representatives, and other stakeholders of the block were conducted. In these meetings, the local needs and needed interventions for development of agriculture and allied sectors were enumerated. In the next level, discussion meetings were conducted with the line department officials. The objectives of National Agriculture Development Programme, preparation of District Agriculture Plans, State Agriculture Plan and formulation of specific project proposals were discussed in such meetings. The major interventions, local initiatives and priorities were discussed with the officials and other stakeholders. The action plans and proposals were finally developed.

**Preparation of Draft Action Plan and presentation in District Collectors Meeting**

Subsequently, based on the baseline information and proposals, a draft action plan was prepared for each district and this was presented in the District Collectors Meetings held in the respective district under the Chairmanship of District Collector. This meeting was attended by the scientists from TNAU, officials from line departments and the representatives of local bodies. A wide coverage was given in the media also to ensure better participation. The feedback received in the District Collectors Meeting was also incorporated before finalization of the District Agriculture Plan. The recommendations and relevant details based on Strategic Research Extension Plan and Agriculture Technology Management Agency have also been considered before finalizing the plan report.

This State Agriculture Plan document thus integrates all these district level action plans and organized in different chapters namely a brief current status of the economy of the State, Strengths, Weaknesses, Opportunities and Challenges of the State, interventions recommended by the Line Department Officials and the district-wise, sector-wise and year-wise budget required for the developmental activities to be carried out by the different sectors. Further to enhance the growth in agriculture and allied sectors, emphasis is also given in this report to dovetailing/convergence of resources by integration at ground level.

## CHAPTER - II

### RESOURCE BASE AND CURRENT STATUS OF THE ECONOMY

Tamil Nadu is located in the Northern hemisphere in the hot zone between 8° and 13° N latitude and between 78° and 80° E longitude. Tamil Nadu is the eleventh largest State in India by area (about the size of Greece) and the seventh most populous state. It is one of the 28 states of India and lies on the eastern coast of the southern Indian peninsula bordered by Puducherry, Kerala, Karnataka and Andhra Pradesh States. Tamil Nadu is bound by the Eastern Ghats in the North, the Nilgiris, the Anamalai Hills and Palakkad in the West, Bay of Bengal in the East, Gulf of Mannar and Palk Strait in the South east and Indian Ocean in the South. The eastern most point is formed by the Point Calimer and the Mudumalai wildlife sanctuary in the Western most point. The Pulicat Lake is situated in the northern extreme. The southern most tip of Tamil Nadu is the Cape Comorin or Kanyakumari. West and north of the state has lofty hills while the East and South are Coastal plains.

Tamil Nadu is the fifth largest contributor to India's GDP and the most urbanized state in India. The state has the highest number (10.56 per cent) of business enterprises in India, compared to the population share of about 6 per cent. Tamil Nadu has a coastline of about 1,076 kilometres which is the country's third longest coastline. Tamil Nadu has a wide variety of minerals with the most lignite (almost 90 per cent of India's reserves), magnesite (45 per cent) and garnet (over 40 per cent) reserves in India, among others. Tamil Nadu contributes 15 per cent of the total salt production in the country. Forests cover over 17 per cent of the state's geographical area with several protected areas of Tamil Nadu including wildlife and bird sanctuaries.

#### 2.1. Zonal Classifications

Tamil Nadu can be divided into three types of zonal classifications namely Geomorphologic zones, Agro-climatic zones and Agro-ecological zones.

##### 2.1.1. Geomorphologic Zones

Tamil Nadu is divided into four geomorphologic zones *viz.*, Coastal, Eastern Ghats, Central Plateau and Western Ghats. The coastal plain stretches from Pulicat Lake in the North to Cape Comorin (Kanyakumari) in the South. A broken line of

hills viz., the Javadus, Shervaroys, Kalrayans, Pachamalais and Kolli hills is known as the Eastern Ghats. On the Western border occurs a group of high hills between the Eastern and Western Ghats lays the Central plateau with elevation ranging from 152 to 610 metres above mean sea level. The general topography is undulating with an overall sloping from West to East.

The state can be divided broadly into two natural divisions (a) the coastal plains and (b) the hilly western areas. It can further be divided into coramandal plains comprising of the districts of Kancheepuram, Cuddalore, Vellore, Thiruvannamalai and alluvial plains of Cauvery delta extending over Thanjavur, Thiruvarur, Nagapattinam and part of Trichirappalli districts and dry southern plains in Madurai, Ramanathapuram, Sivagangai, Virudhunagar, Tuticorin and Tirunelveli districts. It also extends a little in Western Ghats in Kanyakumari district. The Western Ghats averaging 3,000 to 8,000 feet height runs along the Western part with the hill groups of Nilgiris and Anamalai on either side of it. Palani hills, Varshanad and Andipatti ranges are the major off shoots of ghats. The other prominent hill comprise of Javadu, Shervarayan, Kalrayan and Pachamalais. These ranges continue even beyond south of river Cauvery. A plateau is found between these hills and Western Ghats with an average elevation of 1,000 feet rising westward. The highest peak of Doddabettah in the Nilgiris is 8,650 feet above the mean sea level.

Western Ghats form a complete watershed and no river passes through them. The main streams i.e., Paraliyar, Vattasery, Phazhayar etc. are of limited length and join the Arabian Sea. All other rivers are east flowing rivers. The Eastern Ghats are not a complete watershed and as a result the rivers pass through at various places, notable among them is the river Cauvery.

### **2.1.2. Agro – Climatic Zones**

Based on the rainfall pattern, altitude and irrigation sources, Tamil Nadu is divided into seven agro-climatic zones.

- |                       |                           |
|-----------------------|---------------------------|
| 1. North eastern zone | 5. Southern zone          |
| 2. North western zone | 6. High rainfall zone and |
| 3. Western zone       | 7. Hilly zone             |
| 4. Cauvery delta zone |                           |

The distribution of Agro climatic zones in Tamil Nadu is exhibited in Fig 1.

**Fig 1. AGROCLIMATIC ZONES OF TAMIL NADU STATE**



### **2.1.2.1. North Eastern Zone**

The north eastern zone comprising the revenue districts of Chengalpet, Thiruvallur, Kancheepuram, Vellore, Thirivannamalai, Villupuram, Cuddalore and Perambalur is located in between 8°5' and 13°2' north latitude and 76°15' and 80°22' east longitude, covering an area of 31,065 Sq. km equivalent to 23.9 per cent of the State area.

The zone can be broadly divided into six geographical tracts. Coastal plain comprises of the northern plain (Kancheepuram district and part of Vellore, Cuddalore and Tiruchirapalli districts) with 77 M above MSL; a considerable portion of hilly and mountainous area undulating with hillocks; the eastern ghats comprising of hills; and the Central plateau undulating between eastern and western ghats, 150 to 160 m in elevation. Western Ghats comprises the highest mountains of the Peninsula. There are some backwater, lagoons adjoining the coast, around Cuddalore, Marakkanam and Pichavaram.

### **2.1.2.2. North Western Zone**

The north western zone comprising the revenue districts of Dharmapuri (excluding hilly areas), Salem and Namakkal is located in between 11° and 12°55' North latitude and 77°28' and 78°50' East longitude covering an area of 16,150 Sq. km equivalent to 12.4 per cent of the State area. Part of the tableland, an undulating plateau with hillocks is rising from 600 to 1000 m above MSL. Tracts below 350 m MSL comprise the watershed between the Cauvery and Vellur river systems. Besides, the zone has Shervaray hills, Kalrayan hills and Kolli hills.

The climate in the zone ranges from semi-arid to sub-humid with frequent occurrence of drought. The hottest months are March, April and May. Excepting the hills, the annual rainfall ranges from 560 to 1080 mm and the hilly regions enjoy the rainfall of above 1300 mm.

Southwest monsoon, northeast monsoon, winter showers and summer rains contribute to the annual rainfall. The monthly distribution of rainfall shows a pronounced maximum in September-October with a secondary peak during May. The maximum



temperature ranges from 23° to 42°C and the minimum from 10° to 14°C and being an interior region, the diurnal range of temperature is large particularly in summer.

### **2.1.2.3. Western Zone**

The western zone comprises of Erode and Coimbatore districts, Thiruchengodu Taluk of Namakkal district, Karur Taluk of Karur district and northern part of Dindigul and Madurai districts. The zone is located in between 9°10' and 12° North latitude and 70°30' to 78° East longitude. The altitude of the zone ranges from 160 to 450 m above MSL.

The zone has undulating topography sloping towards east. Western and northern parts of the zone are bound by the Western Ghats bordering Kerala and Karnataka states with peaks ranging from 1000 to 2750 m above MSL. On the east, the zone is bordered by Salem, Tiruchirapalli and Dindigul districts. The southern part of the zone lies in Madurai district having contours of varying altitudes.

The climate in the zone ranges from semi-arid to sub-humid with frequent occurrence of drought. Four distinct seasons are south-west monsoon (June-September), north-east monsoon (October-December), winter (January-February) and summer (March-May). The cool months of the year are November to January and the hot months are March, April and May. The annual rainfall of the zone varies from 524 to 1428 mm with an average of 780 mm. Of the total rainfall, 48.4 per cent is received during north-east monsoon and 32.2, 18.6 and 2.8 per cent during south west, summer and winter seasons respectively. The maximum temperature of the zone ranges from 26.9 to 42.1°C and the minimum from 16.2 to 24.5°C. The maximum temperature is experienced during the months of March, April and May, gets reduced gradually and reaches the minimum during the months of December and January. Being an interior region, the diurnal variation in temperature is large particularly in the dry and hot seasons.

### **2.1.2.4. Cauvery Delta Zone**

Cauvery Delta Zone lies in the eastern part of Tamil Nadu between 10°00' and 11°30' North latitude and 78°15' and 79°45' East longitude. It is bound by the Bay of

Bengal on the east, the Palk Straight on the south, Tiruchirapalli and Perambalur districts on the west and north-west, Cuddalore district on the north and Pudukkottai district on the south-west. This zone comprises the entire revenue taluks of Thanjavur, Thiruvarur and Nagapattinam districts, Musiri, Kulithalai, Lalgudi and Tiruchi taluk of Tiruchirapalli district, Chidambaram and Kattumannarkovil taluks of Cuddalore district and Aranthangi taluk of Pudukkottai district.

It is a deltaic zone. Cauvery is the river traversing the delta. A fair width of sandy beach occurs including the sand bars on the sea surface of the river delta, stiff clay seashores and marshy tidal swamps with mangroves. The terrain is an open plain sloping gently towards east and devoid of any hills or hillocks. The altitude ranges from 6 to 250 m above MSL.

The Cauvery delta zone has diverse climatic conditions as the zone includes coastal belt as well as inland area. Cyclonic storms and high humidity occur in coastal belts. The coastal belt is favoured by high rainfall and when it proceeds to the interior, the rainfall intensity decreases. The mean annual rainfall is 1,192 mm. North-east monsoon alone contributes about 52.5 per cent of the total followed by south-west monsoon with 30.5 percent. Hot weather season accounts for 11.4 per cent while, the winter season has only 5.6 per cent. The mean maximum temperature reaches 38.6°C in the month of May and the minimum of 21.0°C in December. April to August is the hot months and November to February is the cool months.

#### **2.1.2.5. Southern Zone**

The southern zone is located between 8 and 10°.55' North latitude and 79° 50 East longitudes. It is bound on the north by Tiruchirapalli and Thanjavur districts of Cauvery delta zone, on the south by Kanyakumari district of heavy rainfall zone and the Indian Ocean, on the east by Bay of Bengal and on the west by Kerala and part of Madurai district of the western zone. The southern zone consists of Tirunelveli, Tuticorin, Virudunagar, Ramanathapuram and Sivagangai districts, Thirumangalam, Madurai south, Madurai north and Melur taluks of Madurai district, Dindigul and northern taluks of Dindigul district and Pudukkottai district (except Aranthangi taluk).

This zone comprises of flat plains and intermittent hills at varying altitudes ranging upto 700 m high. The topography is undulating with the gradient sloping towards the east. The major river systems are Vaigai, Manimuthar, Sarguni, Gundar and Arjuna nadhi.

The climate of the southern zone is generally semi-arid and only a small portion comes under – sub-humid. Thus, frequent drought occurs. Summer is very hot. The zone comes under rain shadow area. The rainfall ranges from 700 to 1277 mm with a mean of 876.4 mm. North-east monsoon accounts for 54.9 per cent of total rainfall and forms the main cropping season. South-west monsoon accounts for 23.9 per cent of total rainfall of this zone. Winter rainfall is negligible and summer rainfall forms 13.0 per cent. The maximum temperature ranges between 30.0° and 37.5°C, while the minimum temperature is from 20.0° to 27.0°C. The temperature is more or less similar in most parts of this zone. However, along the Western Ghats, the minimum temperature tends to be low.

#### **2.1.2.6. High Rainfall Zone**

The High rainfall zone of Tamil Nadu consists of Kanyakumari district, located between 77°50' and 77°36' East longitude and 8°03' and 8°35' North latitude. It is bordered by Tirunelveli district in north-east, the Kerala State in the North West and Arabian Sea in the west and Indian Ocean in the south.

Kanyakumari district extends from the Arabian Sea to the Western Ghats upto an elevation of 600 m above MSL. Two distinct physiographic regions *viz.*, the hill and 'else' region and the plains are identifiable in this district. The climate is sub-humid influenced by both the south-west and north-east monsoons, because of the proximity of sea and the Western Ghats. There is not much variation in the mean monthly temperature, which varies from 23.9°C (minimum) to 36.7°C (maximum).

#### **2.1.2.7. Hilly Zone**

This zone comprises the Nilgiris, the Shervarays, the Yelgiris, the Anamalais and the Palani hills. The rainfall varies from 1000 mm at the foot of the hills to 5000 mm at the peaks. The maximum temperature varies from 15°C to 24°C and that of

minimum ranges from 7° to 13°C. The soil is mainly lateritic. The major crops are vegetables, potato and tropical and temperate fruit crops. At the foot of the hills, hill tribes raise minor millets. At higher altitudes wheat cultivation is common during winter season.

### **2.1.3. Agro-Ecological Systems**

Besides, Tamil Nadu can also be classified under four Agro-ecological systems. There are 16 zones showing distinct soil characteristics under Hill Ecosystem, Upland ecosystem, Plain Ecosystem and Coastal ecosystem.

#### **Soils of Agro-Ecological Systems**

##### **i) Hill Ecosystem**

- Deep to very deep, clayey and gravelly clay soils of the Nilgiris, hot humid to per humid (rainfall 1500- 2500 mm) ecosystem with Length of Growing Period (LGP) more than 210 days.
- Shallow to medium deep (with rocky phases), loamy to gravelly clay soils of south Sahayadris, hot humid / per humid transitional to moist semi-arid (rainfall 900 – 1700 mm) ecosystem with Length of Growing Period (LGP) of 210 days.
- Shallow to moderately deep (with rock phases) red soils of Eastern Ghats, loamy to clayey with gravels, hot moist semi-arid to dry semi-arid transition (rainfall 750 – 1000 mm) with Length of Growing Period (LGP) between 150 – 180 days.

##### **ii) Upland Eco-system**

- Moderately deep to deep gravelly loam to gravelly clay soils of upland, hot semi-arid dry ecosystem (rainfall 750 – 1000 mm) with Length of Growing Period (LGP) between 150 – 180 days.
- Moderately deep to deep, gravelly loam to gravelly clay soils, semi-arid to arid transitional ecosystem (rainfall 750 mm) with Length of Growing Period (LGP) between 90 – 120 days.
- Deep to moderately deep, clayey black soils in association with gravelly clay red hill soils of upland, hot semi-arid dry to arid transitional ecosystem (rainfall<750mm) with Length of Growing Period (LGP) between 90-120 days.

**iii) Plain Eco-system**

- Moderately deep to deep gravelly loam and gravelly clay red lateritic soils of plains, moist semi-arid eco systems (rainfall 1000 – 1500 mm) with Length of Growing Period (LGP) between 180 – 210 days.
- Deep to very deep clayey black soils of plains (riverine plain), hot moist to dry semi arid transitional ecosystem (rainfall 750 – 1500 mm) with Length of Growing Period (LGP) of 210 days.
- Deep to very deep clayey black soils of Cauvery Delta, hot semi arid to moist eco system (rainfall 1000 – 1500 mm) with Length of Growing Period (LGP) of 210 days.
- Moderately deep to very deep red and lateritic soils with gravelly texture, hot dry semi arid eco system (rainfall 750 – 1000 mm) with Length of Growing Period (LGP) between 150-180 days.
- Deep to moderately deep clayey black soils (inland plain, hot semi arid dry to arid transitional ecosystem (rainfall less than, 750 – 1000 mm) with Length of Growing Period (LGP) between 100 - 120 days.
- Deep to moderately deep gravelly clay to gravelly loam red soils, of plains, hot semi arid to moist transitional ecosystem (rainfall less than 750 – 1000 mm) with Length of Growing Period (LGP) between 120 - 150 days.
- Deep to moderately deep mixed red and black soils, clay and gravelly loam and gravelly clay of plain (inland plain, hot semi arid dry to moist transitional ecosystem (rainfall 750 – 1200 mm) with Length of Growing Period (LGP) between 120 - 150 days.

**iv) Coastal Eco-system**

- Deep to moderately deep, sandy soils of narrow coastal plains, gravelly clay and gravelly loam soils of inland plain, hot moist semi arid to dry sub humid transitional eco system (Rainfall – 1000 – 1500 mm).
- Deep sandy soils of coastal plain, sandy to sandy loam, hot moist to dry semi arid transitional eco system (rainfall <1000 mm) with Length of Growing Period (LGP) between 150 – 180 days.

- Deep, sandy soils of coastal plain, sandy to sandy loam, hot semi arid to arid transitional eco system (rainfall <750 mm) with Length of Growing Period (LGP) between 90 – 120 days.

## 2.2. Administrative Divisions

Currently, Tamil Nadu is divided into 32 districts including the recently formed Tirupur district. For reasons of administration, the districts of the State have been bi and tri-furcated over years giving rise to as many as 32 districts. For instance, Erode (1976) was carved out of Coimbatore, Dharmapuri (1965) and Namakkal districts (1997) were originated from Salem district and Pudukkottai (1974), Karur (1996), Nagapattinam (1991), Thiruvarur (1997) and Perambalur (1996) districts were delineated from the erstwhile Thanjavur and Thiruchirappalli districts. Sivagangai and Virudhunagar districts (1994) were carved out of Ramanathapuram, while Dindigul (1985) and Theni (1997) districts were originated from Madurai district. Tirunelveli district was bifurcated into Tirunelveli and Thoothukudi districts (1986), while North Arcot district was bifurcated into Thiruvannamalai district (1989) and Vellore district (1989) and South Arcot district into Cuddalore district and Villupuram district (1993). Chengalpattu district was bifurcated into Kancheepuram and Thiruvallur (1996) districts. Krishnagiri district (2003) came into existence from Dharmapuri district along with certain parts of Salem district.

The details of administrative division in Tamil Nadu state are furnished in Table 2.1. The State comprises of 32 districts, 208 taluks, 385 blocks, 561 town Panchayats, 150 municipalities and ten municipal corporations for smooth functioning of the State.

**Table 2.1 Details of Administrative Divisions in Tamil Nadu State**

Sl. No	District Name	Number of Taluks	Number of Blocks	Number of Town Panchayats	Number of Municipalities	Municipal Corporations
1	Ariyalur	3	6	2	2	-
2	Chennai (TN State HQ)	5	Nil (Urban District)	-	-	Chennai
3	Coimbatore*	9	19	52	10	Coimbatore and Tirupur
4	Cuddalore	6	13	16	5	-

Table 2.1 Contd.,

Sl. No	District Name	Number of Taluks	Number of Blocks	Number of Town Panchayats	Number of Municipalities	Municipal Corporations
5	Dharmapuri	5	8	10	1	-
6	Dindigul	8	14	24	3	-
7	Erode	7	20	53	10	Erode
8	Kancheepuram	8	13	24	10	-
9	Kanniyakumari (HQ at Nagercoil)	4	9	56	4	-
10	Karur	4	8	11	4	-
11	Krishnagiri	5	10	7	2	-
12	Madurai	7	13	12	6	Madurai
13	Nagapattinam	7	11	8	4	-
14	Namakkal	4	15	19	5	-
15	Perambalur	3	4	4	1	-
16	Pudukkottai	9	13	8	2	-
17	Ramanathapuram	7	11	7	4	-
18	Salem	9	20	33	4	Salem
19	Sivagangai	6	12	12	3	-
20	Thanjavur	8	14	22	3	-
21	The Nilgiris (HQ at Udagamandalam)	6	4	11	4	-
22	Theni	5	8	22	6	-
23	Thiruvallur	8	14	13	12	-
24	Thiruvarur	7	10	7	4	-
25	Thoothukudi	8	12	19	3	Thoothukudi
26	Tiruchirappalli	8	14	17	3	Tiruchirappalli
27	Tirunelveli	11	19	36	7	Tirunelveli
28	Tiruvannamalai	7	18	10	4	-
29	Vellore	8	20	22	14	Vellore
30	Villupuram	8	22	15	3	-
31	Virudhunagar	8	11	9	7	-
	<b>Total</b>	<b>208</b>	<b>385</b>	<b>561</b>	<b>150</b>	

Source: Tamil Nadu Economic Appraisal (2005-06), Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.

\*Before bifurcation into Coimbatore and Tirupur

### 2.3. Rainfall

The quantum and distribution of rainfall influence the pattern of cropping and crop growth in a locality. The agricultural production and productivity of crops mainly depends on the timely onset of South-West and North-East monsoons and the quantum

and spread of rainfall. Therefore, the details on the normal annual rainfall pattern, district-wise, in Tamil Nadu have been presented in Table 2.2.

**Table 2.2 District-wise Distribution of Normal Rainfall**

Sl. No	District	South-west	North-East	Winter	Hot weather	Total
		(June-Sep)	(Oct- Dec)	Jan & Feb	March to May	
		Normal	Normal	Normal	Normal	Normal
1	The Nilgiris	1060	367.7	30.8	237.2	1695.7
2	Chennai	443.5	753.1	37.3	64.2	1298.1
3	Kancheepuram	462.7	697.2	32.1	60.1	1252.1
4	Thiruvallur	449.5	604.1	33.5	65.7	1152.8
5	Cuddalore	373.6	716.5	56.4	89.3	1235.8
6	Villupuram	433	484.8	34.5	77.1	1029.4
7	Thanjavur	342	545.7	50.7	114.6	1053.0
8	Thiruvarur	301.8	665.4	57.9	104.8	1129.9
9	Nagapattinam	274.1	886.4	81.5	99.7	1341.7
10	Pudukkottai	350.7	418	38.2	114.6	921.5
11	Thiruvannamalai	465.8	439.8	32.8	108.2	1046.6
12	Vellore	442	353	20.3	101.7	917
13	Dharmapuri	361	316.7	18.5	156.9	853.1
14	Krishnagiri	403.6	290.9	14.3	154.7	863.5
15	Salem	380	347	21.3	149.7	898.0
16	Namakkal	317	291	18.1	150.4	776.5
17	Erode	213.1	323.5	20.7	154.1	711.4
18	Coimbatore	192.9	327	26.1	148.4	694.4
19	Tiruchirapalli	270.3	356.1	25	110.1	761.5
20	Karur	249.7	365.4	24	103.1	742.2
21	Perambalur	349.6	449.6	34.5	115.9	949.6
22	Madurai	305.4	373	29.8	131.8	840.09
23	Theni	178.4	384	48.4	222.7	833.5
24	Dindigul	251.4	399.2	33	148	831.6
25	Ramanathapuram	136.1	507.4	53.9	123.8	821.2
26	Virudhunagar	181.8	431.2	42	174.6	829.6
27	Sivagangai	289.6	415.5	35.8	135.1	876.0
28	Thirunelveli	92.6	429.8	72.6	141.9	736.0
29	Thoothukudi	86.8	410.1	46.6	112.2	655.7
30	Kanniyakumari	327.8	427.4	33.4	217.4	1006.0
	<b>State average</b>	<b>332.8</b>	<b>459.2</b>	<b>36.8</b>	<b>129.6</b>	<b>958.4</b>
	Season-wise distribution (%)	34.73	47.91	3.84	13.52	100.00

Source: Tamil Nadu Economic Appraisal (2005-06), Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.



As could be seen from Table 2.2 the average normal rainfall of 958.4 mm is received in the state as a whole. About 48 per cent of the total average rainfall is received during North-East monsoon, while about 35 per cent is received during South-West monsoon. The balance of about 17 per cent is obtained during winter as well as summer months, as could be evidenced from the table. It is also pertinent to note that the districts of Salem, Namakkal and Dharmapuri received almost equal quantities of rainfall in both South-West and North-East monsoons. On the other hand, Krishnagiri and the Nilgiris are benefited more by the South-West monsoon. All other districts are benefited more by North-East monsoon.

As regards geographical distribution of rainfall in the state, the maximum normal rainfall of about 1700 mm is received in the Nilgiris district, while the minimum of about 694 mm is received in Thoothukudi district. The table also reveals the fact that almost all the mid and northern coastal districts receive more than 1000 mm of normal rainfall. The mid-inland and southern districts, receive lesser than 1000 mm. Because of high rainfall and high elevation, the sub-tropical and temperate crops like coffee, tea, hill vegetables, peaches, plums, straw berries etc, are grown in the Nilgiris district. On the other hand, in the remaining plains of Tamil Nadu characterized by tropical climate, the field crops like paddy, cholam, cumbu, ground nut, sugar cane, banana, cotton, etc are cultivated. Even among the districts in the plains, in mid and northern coastal districts, paddy is predominantly grown in wetlands in larger areas, while in the mid and northern in-land districts, garden land crops like cholam, cumbu, ragi, maize, groundnut, cotton etc are cultivated. Southern districts are characterized more by dryland agriculture due to low rainfall regime and hence cotton, pulses, cholam, cumbu etc are predominantly grown under rainfed conditions and in a few pockets where irrigation facilities are available, farmers resort to invariably for paddy cultivation. However, the southern most district viz. Kanyakumari, comes under high rainfall zone and hence the paddy and plantation crops like rubber are grown.

The temporal spread of rainfall in the State is furnished in Table 2.3.

**Table 2.3 Temporal Spread of Rainfall in Tamil Nadu State**

(in mm)

Sl. No.	Year	SWM	NEM	Winter	Hot weather	Total
1.	1993-94	305.2	709.9	35.5	121.3	1171.9
2.	1994-95	220.3	479.0	27.2	203.3	929.8
3.	1995-96	347.5	248.3	10.5	115.2	721.5
4.	1996-97	454.8	541.1	13	112.3	1121.2
5.	1997-98	286.0	782.3	5.5	78.4	1152.2
6.	1998-99	340.1	602.4	21.5	116.4	1080.4
7.	1999-00	199.9	499.5	119.5	77.9	896.8
8.	2000-01	314.5	335.6	16.8	118.4	785.3
9.	2001-02	260.0	379.4	70	85.8	795.2
10.	2002-03	185.4	407.1	8.7	129.7	730.9
11.	2003-04	336.5	403.1	11.6	283.4	1034.6
12.	2004-05	360.7	472.1	14.3	23.70	870.8
13.	2005-06	380.5	828.8	15.9	150.9	1376.1

*Source: Tamil Nadu Economic Appraisal (2005-06), Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai (various issues)*

It could be seen from the table above, that the total rainfall received from South-West monsoon during 2004-05 was 8.80 percent above normal rainfall. However, during 2005-06 it was 7.3 percent. The rainfall received from South West monsoon was excess in one district, normal in 23 districts and deficient in six districts during 2005-06. The precipitation in the North East monsoon was comparatively improved from 472.1 mm in 2004-05 to 828.8 mm in 2005-06. The State has experienced an improvement in the overall rainfall to the tune of 36.10 percent against the normal rainfall during the review year.

The month-wise distribution of rainfall for the period from 2002-03 to 2005-06 along with normal rainfall is furnished in Table 2.4.

**Table 2.4. Month-wise Distribution of Rainfall - Tamil Nadu**  
(in mm)

Sl. No.	Month	Normal	2002-03	2003-04	2004-05	2005-06
1.	June	46.3	48.5	44.7	45.9	29.5
2.	July	77.6	24.6	82.2	61.2	80.6
3.	August	95.3	53.3	141.4	35.7	82.0
4.	September	113.6	59.0	68.1	217.9	116.4
<b>South West Monsoon</b>		<b>332.8</b>	<b>185.4</b>	<b>336.5</b>	<b>360.7</b>	<b>308.5</b>
5.	October	187.1	225.3	208.4	273.6	292.0
6.	November	179.4	146.2	172.7	182.4	370.9
7.	December	92.7	35.7	22.0	16.1	165.9
<b>North East Monsoon</b>		<b>459.2</b>	<b>407.2</b>	<b>403.1</b>	<b>472.1</b>	<b>828.8</b>
8.	January	22.1	0.8	8.8	3.1	15.8
9.	February	14.4	7.9	2.8	11.3	0.1
<b>Winter Season</b>		<b>36.8</b>	<b>8.7</b>	<b>11.6</b>	<b>14.4</b>	<b>15.9</b>
10.	March	19.9	46.0	4.8	25.8	54.5
11.	April	43.4	37.2	34.4	133.6	34.4
12.	May	66.3	46.5	244.2	72.3	62.0
<b>Hot weather season</b>		<b>129.6</b>	<b>129.7</b>	<b>283.4</b>	<b>231.7</b>	<b>150.9</b>
<b>Total</b>		<b>958.4</b>	<b>731.0</b>	<b>1034.6</b>	<b>1078.8</b>	<b>1304.1</b>

Source: Tamil Nadu Economic Appraisal (2005-06), Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.

From the table, it could be seen that comparatively high rainfall was received in the months of September, October, November and December and low rainfall was received in the months of January and February in all the years under question.

The study carried out by the Department of Agricultural Economics, Tamil Nadu Agricultural University revealed that due to increasing temperature and changing rainfall the reduction in rice yield is expected to go down by 10-15 percent in 2020 and even 80 per cent in 2080.

#### **2.4. Soils of Tamil Nadu**

Major portion in Tamil Nadu is covered by red sandy and red loam soils. Red sandy soils have developed from acidic parent material like granite, gneiss, quartzite, sandstone etc. Sand particles are coated with red coloured hematite or yellow coloured limonite, which is responsible for the various shades of red and yellow soils, which usually contain ferruginous gravel containing iron, aluminum and silica. These sandy, loamy sand and sandy loam soils are heavily leached and therefore poor in basic elements and plant nutrients. The red colour of soils is due to the coating of ferric oxides on soil particles. Calcium is the important exchangeable cation. They are neutral to slightly alkaline in reaction.

Black soils of Tamil Nadu which are either shallow (3 to 4 ft. deep) or deeper, are of very heavy texture, with high moisture retention capacity. They are rich in lime and alkaline in reaction. They contain low amounts of nitrogen but sufficient quantities of phosphorus and potash.

Mixed red and black soils occur in Coimbatore, Madurai, Ramanathapuram and Tirunelveli districts. Black soils are dominated by beidellite, while red soils are dominated by kaolinite. The cation exchange capacity of the black soils is much higher than that of the red soils. However, the cation exchange capacity of red soils is high at an intermediate depth only. Black soils contain almost the same amount of nitrogen.

Laterite soils occur in the Chengleput and Thanjavur districts, formed from varieties of parent materials in humid climate. Paddy is grown in lower elevation and tea, cinchona, rubber and coffee at the higher elevation. They are rich in humus and plant nutrients and strongly acidic in reaction. Soil acidity increases with elevation.

Deltaic alluvium occurs in Thanjavur district and a belt of coastal alluvium covers extends from Chennai to Kanyakumari. Alluvial soils are most extensive and most fertile, several feet deep at higher elevations. These soils consist of alternate layers of silt, clay and sand of varying thickness. The texture of the surface soils is usually loamy. The Cauvery alluvium is poor in humus, nitrogen and phosphorus, but rich in potash and lime. These soils possess a low cation exchange capacity and are alkaline in reaction.

Soils developed from Cuddalore sandstone are loamy in texture and deep to light red, yellow and light yellow and even grayish white in colour and deficient in humus, nitrogen, phosphorus and lime. These soils are low in cation exchange capacity and neutral to moderately alkaline in reaction. The soils, which have developed from Archean schist, are found only in a small area to the west of Budalur. The profile show brownish grey loam of clay at the top one-foot surface soil and brown sub-soil. Soils are usually sandy below three feet. Surface and sub-soils are usually very hard. They are poor in humus, nitrogen, phosphorus and lime but rich in potash. These soils are slightly alkaline, free from soluble salts and low cation exchange capacity.

The profile characteristics of coastal alluvial soils formed from recent marine deposits are similar to Cauvery alluvium in their alternate layers of clay, silt and sand, but exhibit the influence of sea as indicated by the presence of shells and bleached sand. They are poor in nitrogen and available phosphorus but rich in potash and lime. Some of them also contain salts. Peaty soils, which occur mainly on the south east coast of Tamil Nadu, are usually coloured blue due to the presence of ferrous iron. They contain varying amounts of organic matter.

The types of soil and their availability in Tamil Nadu are furnished in Table 2.5.

**Table 2.5. Types of Soil and area covered in Tamil Nadu**

Types of soil	Areas in Tamil Nadu
Red Loam	Parts of Kancheepuram, Cuddalore, Salem, Dharmapuri, Coimbatore, Tiruchirappalli, Thanjavur, Ramanathapuram, Madurai, Tirunelveli, Sivagangai, Thoothukudi, Virudhunagar, Dindigul, and The Nilgiris Districts
Laterite soil	Parts of The Nilgiris District
Black soil	Parts of Kancheepuram, Cuddalore, Vellore, Thiruvannamalai, Salem, Dharmapuri, Madurai, Ramanathapuram, Tirunelveli, Sivagangai, Thoothukudi, The Nilgiris Districts, Virudhunagar and Dindigul districts
Sandy Coastal alluvium	On the coasts in the districts of Ramanathapuram, Thanjavur, Nagapattinam, Cuddalore, Kancheepuram and Kanyakumari
Red sandy soil	Small patches in the districts of Coimbatore and The Nilgiris

*Source: Statistical Handbook of Tamil Nadu, 2006*

#### **2.4.1. Soil Taxonomy**

As per the USDA system of the classification, the soils of Tamil Nadu are classified into six orders *viz.*, Entisols, Inceptisols, Alfisols, Mollisols, Ultisols and Vertisols. There are 12 sub-orders, 29 great groups, 44 sub-groups and 94 soil families. About 50 percent of the total area of State is occupied by Inceptisols, 30 percent by vertisols, six percent by entisols, one percent by utisols and very negligible area by mollisols.

Entisols include young river alluvium sandy and eroded red and laterite soils, moderately deep red, laterite and black soils are included under inceptisols. Deep red and laterite soils are grouped under alfisols. Ultisols consists of highly weathered laterite soils. Deep black cotton and old alluvial soils are classified under vertisols. The salient features of soils series of Tamil Nadu are furnished in Table 2.6.

**Table 2.6 Salient Features of Soil Series of Tamil Nadu State**

Sl.No	Soil series	Area (ha)	Taxonomy	Potentials	Brief description	Districts
1	Irugur	998960	Fine loamy, Kaolinitic, isomegathermic deep, Typic Ustorthents	Moderately deep to deep	Red to dark red, deep, fine loamy, non calcareous, slightly acid to neutral soils	Coimbatore, Dindigul, Erode, Salem, karur, Tiruchirapalli, Namakkal, Theni, Madurai
				Fine loamy texture		
				Gentle slope		
				Moderately rapid permeability		
				Low cation exchange capacity		
				Neutral reaction		
				Free from salinity		
Non-calcareousness						
2	Vannapatti	488089	Coarse loamy, mixed, isomegathermic moderately deep, Typic Ustorthents	Coarse loamy textured	Reddish brown to red, moderately deep coarse loamy non-calcareous, well drained, neutral soils	Dharmapuri, Erode, Kancheepuram, Vellore, Thiruvallur, Karur
				Very gentle slope		
				Well drained		
				Neutral reaction		
				Free from salinity		
Non-calcareousness						
3	Tulukkanur	422121	Fine loamy, mixed isomegathermic calcareous deep, Typic Haplustalfs	Deep to very deep	Reddish brown to dark grayish brown, moderately deep to very deep, fine loamy, calcareous, well drained soils	Namakkal, Erode, Karur, Salem, Tiruchirapalli, Theni, Madurai
				Fine textured		
				Gentle slope		
				Moderate to rapid permeability		
				High water holding capacity		
				Medium cation exchange capacity		
				High organic matter		
				Neutral reaction		
Free from salinity						

Table 2.6 Contd.....

Sl. No.	Soil series	Area (ha)	Taxonomy	Potentials	Brief description	Districts
4	Vayalagam	291778	Fine loamy, Kaolinitic, isomegathermic deep, Typic Rodustalfs	Deep	Yellowish red to red, moderately deep to deep, fine loamy to fine, non-calcareous, with quartz mixed iron gravel present	Pudukottai, Madurai, Dindigul, Tiruchirapalli, Theni
				Sandy clay loam in sub-surface		
				Gentle slope		
				Medium cation exchange capacity		
				Free from salinity		
Non-calcareousness						
5	Mangulathu -patti	287092		Non- calcareous	Upland undulating Well drained weathered genesis, Brown soil deep (50-100 cm) Fine loamy moderately rapid	Vellore, Kancheepuram, Thiruvallur, Pudukottai
6	Madukkur	256810	Fine loamy, Kaolinitic, isomegathermic, very deep, Ultic Haplustalfs	Very deep	Yellowish brown, very deep fine loamy, moderately well drained soils	Thanjavur, Perambalur, Pudukkottai, Madurai, Tiruchirapalli
				Loamy textured in surface		
				Very gentle slope		
				Moderately rapid permeability		
				High water holding capacity		
				Neutral reaction		
				Free from salinity		
Non-calcareousness						
7	Peelamedu	244912	Fine, Montmorillonitic, isomegathermic, very deep, Typic Calciusterts	Very deep	Dark brown to very dark greyish brown, deep to very deep calcareous moderately alkaline soils.	Madurai, Perambalur, Coimbatore, Namakkal, Salem, Tiruchirapalli, Dindigul, Karur, Theni, Erode
				Clay loam to clay		
				Very gentle slope		
				High organic matter		
				High cation exchange and water holding capacities		
Free from salinity						



Table 2.6 Contd.....

Sl. No.	Soil series	Area (ha)	Taxonomy	Potentials	Brief description	Districts
8	Palladam	217732	Fine montmorillonitic, isomegathemic, calcareous, very deep, Typic Halpusterts	Gentle slope	Dark brown, shallow, coarse loamy, calcareous mildly alkaline, well drained soils	Coimbatore, Erode, Karur, namakkal, Dindigul
				Well drained		
				High organic matter		
				Free from salinity		
9	Palaviduthi	203662	Fine loamy, Kaolinitic isomegathemic deep, Typic Rodustalfs	Very deep	Red to dark reddish brown, very deep fine loamy, slightly acidic to neutral, well drained soil.	Dindigul, madurai, Tiruchirapalli, Theni, Karur
				Clay loam to clay in sub-surface		
				Very Gentle slope		
				Moderate permeability		
				High cation exchange capacity		
				Neutral reaction		
				Free from salinity		
10	Mayamankurichi	197020		Crusting	Very Gentle slope lands, Moderately well drained Calcgneiss brown soil very deep (> 100 cm), Sandy day loam, Moderately slow	Tirunelveli
				Medium water holding capacity		
				Non saline		
				Mild alkalinity (7.4 - 7.8)		
11	Kalathur	180104	Fine montmorillonitic, isomegathemic, calcareous, very deep, Typic Halpusterts	Very deep	Brown to dark, Greyish brown, very deep, fine calcareous, moderately well drained, alkaline alluvial soils	Thiruvarur, Thanjavur, Nagapattinam, Perambalur, Tiruchirapalli, Madurai
				Loamy textured		
				Very gentle slope		
				High water holding capacity		
				High cation exchange capacity and organic matter		

Table 2.6 Contd.....

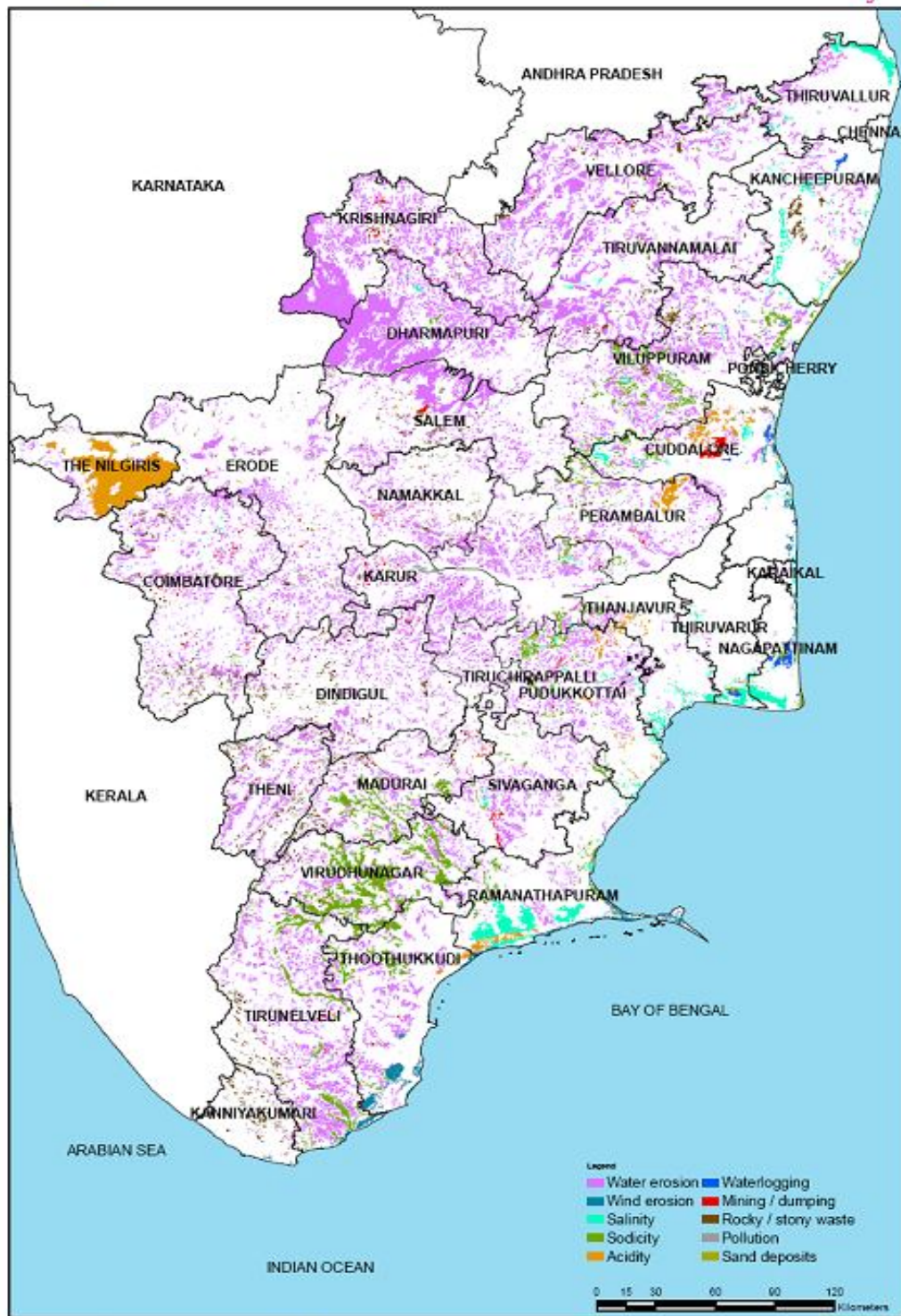
Sl. No.	Soil series	Area (ha)	Taxonomy	Potentials	Brief description	Districts
12	Pattukkottai	162624	Fine loamy, Kaolinitic isomegathermic, very deep, Ultic Haplustalfs	Very deep	Yellowish brown to reddish brown to reddish brown, deep to very deep, fine loamy to fine, slightly acidic, well drained soils	Pudukottai, Perambalur, Thanjavur, Thiruvarur, Tiruchirapalli
				Loamy sub-surface		
				Level to gentle slope		
				Rapid moderately rapid permeability		
				Neutral reaction		
				Free from salinity		
				Non-calcareousness		
13	Nanguneri	146290		Non saline	Very Gentle slope lands, Moderately well drained weathered gneiss, Brown soil moderately deep (25-50 cm) Sandy loam rapid	Tirunelveli
				Neutral (6.6 - 7.3)		
14	Palathurai	116878	Coarse loamy, Kaolinitic, isomegathermic, calcareous, deep Ultic Haplustalfs	Moderately deep	Dark red to dark brown, moderately deep to deep, fine loamy soils occurring on very gentle slope lands	Coimbatore, Dindigul, Karur, Theni, Namakkal, Erode, Perambalur, Tiruchirapalli
				Loamy textured		
				Gentle slope		
				Medium cation exchange capacity		
				Slight erosion		
15	Hosur	111317		Non saline	Gently slope undulating well drained, Granitic gneiss with quarts veins red soil very deep (> 100 cm) Fine moderately rapid	Dharmapuri
				Non-calcareousness		
				High water holding capacity (>50%)		
				Neutral (6.6 - 7.3)		

#### **2.4.2. 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.

The different land degradation categories are shown in the map given below in Fig 2.

Fig 2. LAND DEGRADATION MAP OF TAMIL NADU



## **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.



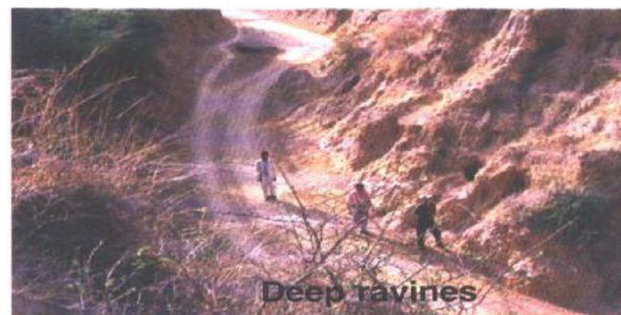
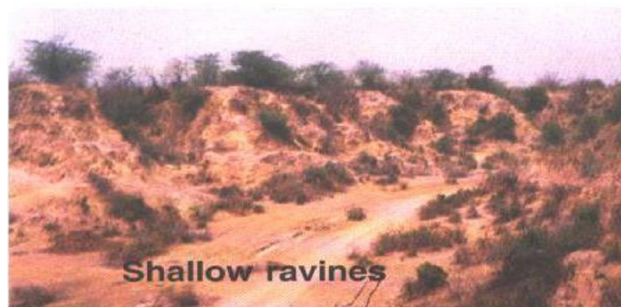
### 3. Gullies

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 into gullies. They are commonly found in sloping lands, developed as a result of concentrated run-off over fairly long time. They are mostly associated with stream courses, sloping grounds with good rainfall regions and foot hill regions. These are the first stage of excessive land dissection followed by their networking which leads to the development of ravenous land.



#### **4. Ravines**

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



#### **Wind Erosion**

It implies uniform displacement of topsoil by wind action. It can result in loss of topsoil and the deposition of the eroded material elsewhere leads to formation dune complexes. The risk of wind erosion is severe in the arid and semi-arid areas. It includes both the removal and deposition of soil particles by wind action and the abrasive effects of moving particles as they are transported. Not only can the wind remove topsoil from good farmland; it can result in additional damage by burying land, buildings, machinery, etc. with unwanted soil. It occurs when soil is left devoid

of vegetation either because of poor rainfall to support any vegetal cover or loss of vegetation due to overgrazing. In the sand deposited areas with rainfall the sand gets stabilized partially or fully depending on vegetal cover it establishes.

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

### **5. Sheet Erosion**

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





## 6. Stabilized Dunes / Partially stabilized Dunes

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



Stabilized sandune



Partially stabilized sanddune

## 7. Un-stabilized dunes

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



## Water logging

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

## 8. Surface Ponding

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

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

### 9. Sub-surface Water logging

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

### 10. Salinization / Alkalization

Salinization can result from improper management of canal irrigation water resulting in the rise of water table and consequent accumulation of salts in the root zone in arid, semi-arid and sub humid (dry) conditions and ingress of sea water in coastal regions and/or use of high-salt containing ground water. They also become saline when soils have developed on salt-containing parent materials or have saline ground water. The soils with EC more than 2ds/m in vertisols and >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 ingress areas mainly with sand deposition excluding the sandy areas of desert region.



**Sea Ingress areas**



### WASTELAND CLASSIFICATION

The waste land of Tamil Nadu is furnished below in Fig 3.

**Fig 3. WASTELAND MAP OF TAMIL NADU**



## 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 word 'ravine' is usually associated not with an isolated gully but a network of gullies formed generally in deep alluvium and entering nearby river flowing much lower than the surrounding table lands. The ravines then are extensive systems of gullies developed along river courses.
- vi. Land with or without scrub:** This is the land which is generally prone to degradation and may or may not have scrub over. Such land occupies topographically high locations in the respective systems. This excludes hilly and mountainous terrain.

- vii. Water-logged and marsh:** Surface water-logged land is that land where the water is near the surface and water stands for most of the year. Marsh is a land which permanently or periodically inundated by water and is characterised by vegetation which includes grasses and reeds.
- viii. Salt Affected Lands (Saline / Alkaline):** The salt affected land is generally characterised as the land that has adverse effects on the growth of most of the plants due to the action or presence of excess soluble salts or excess exchangeable sodium. The saline soils have more of soluble salts with electrical conductivity of more than  $4 \text{ dSm}^{-1}$ . Alkali land has an exchangeable sodium percentage (ESP) of above 15 which is generally considered as the limit between normal and alkali soils. The predominant salts are carbonates and bicarbonates of sodium.
- ix. Sands :** Sandy areas are those areas which have stabilized accumulation of sand, in situ or transported, in tank / river bed, coastal, riverine or inland areas.
- x. Mining / industrial Waste lands:** These are lands where large-scale mining operations bring about the degradation of land and resultant mine dumps.

#### **Unculturable Wastelands**

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

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

## **2.5. Land Use Pattern in Tamil Nadu State**

Land use statistics in general indicate the way in which the land area is put under various uses. Land as a scarce resource, is to be managed effectively to benefit the human race that depends on land for its livelihood. Therefore, the details on the land use pattern in Tamil Nadu State as a whole and for the individual district are furnished in Table 2.7. The changes in land use pattern in the State over a period of time are shown in Table 2.8

### **i) Geographical Area**

It could be seen from Table 2.7, that the total geographical area in the State is 13 million hectares. Among the districts, Erode has the maximum geographical area of 8.16 lakh hectares and Thiruvarur has the minimum geographical area of 2.10 lakh hectares, as could be visualized from Table 2.7.

### **ii) Forest**

Perusal of the Table.2.7 further indicates that the area under forest is around 21 lakh hectares accounting for 16 percent of the geographical area. The district of Erode has the maximum area of 2.29 lakh hectares and Cuddalore has the minimum area under forest with 1,415 hectares only. Over years, the area under forest had increased very marginally by about 1.50 lakh hectares. This is a good sign. However, it is pointed out that for a natural / environmental balance to receive good rains there must be 33 percent of the geographical area under forest cover. This indicates that afforestation must be taken up on war-footing. Since, the scope for bringing more area under natural forest cover is almost an impossible proposition, the development efforts must be dovetailed for intensification of green cover in forest area as well as on hills and hillocks and planting tree crops in shrub-jungles, village wastelands and farms in almost all the districts in the State.

### **iii) Barren land**

The barren and uncultivable land is around 5.03 lakh hectares in 2005-06 as compared to that of 6.10 lakh hectares in 1979-80 as indicated in Table 2.8. Thus, a reduction of 1.00 lakh hectare over the period of 25 years could be witnessed. This

down-trend is a good sign and might be due to increase in area under forest, waste land development programme etc. However, still there exist scopes to reduce the extent of the barren land through wasteland development efforts. Among the districts, (Table 2.7) the barren land area is more pronounced in the districts of Villupuram, Theni, Salem, Dindigul and Nagapattinam.

#### **iv) Cultivable Waste**

Table 2.8 indicates that the area under cultivable wastelands was 3.74 lakhs hectares in 2005-06, while it was 3.51 lakh hectares in triennium ending 1979-80. Thus, a very marginal increase of about 0.23 lakh hectares could be observed during the period under question. Among the districts, (Table 2.7) the maximum area under cultivable waste is found in Karur district, with 67,831 hectares followed by Thiruvannamalai (14963 ha), Theni (14700 ha) and Coimbatore (13997 ha) districts in that order.

#### **v) Other Fallow Lands**

Other fallow lands, which are also otherwise considered as wastelands have shown an alarming uptrend. While it was 4.56 lakh hectares in TE 1979-80, it was almost 17 lakh hectares in 2005-06. This upsurge is a serious problem that needs immediate attention of the policy makers and planners. The districts of Tirunelveli, Virudhunagar, Sivagangai and Erode have more than 1.00 lakh hectares under other fallow lands as could be noted from Tables 2.7 and 2.8.

#### **vi) Current Fallows**

The area under current fallows was quite high in TE 1979 with 12.57 lakh hectares and it had reduced by about 4.54 lakh hectares to 8.03 hectares in TE 2005-06. This is a good sign and might be due to tapping more of ground water and stabilization of ayacuts under irrigation systems in some areas. Further reduction of current fallows is quite possible by the modernization of irrigation systems and adoption of water harvesting techniques, in addition to other moisture conservation measures. Erode, Villupuram, Coimbatore, Thiruvannamalai, Ramanathapuram and Thoothukudi districts have sizeable area under current fallows.

### **vii) Net Area Sown**

Table 2.8, further exhibits the fact that the net sown area was reducing considerably from 62.56 lakh hectares in TE 1979-80 to 50.10 lakh hectares in TE 2005-06. This is rather a disturbing trend that needs immediate attention of the policy makers and planners. This might be, of course, due to marked increase in lands put to non-agricultural uses, due to rapid industrialization and urbanization. The districts of Coimbatore, Erode and Villupuram have more than 3.00 lakh hectares of net sown area and it was the lowest in Kanniyakumar district with 0.79 lakh hectare (Table 2.7).

### **viii) Area Sown more than once**

Area sown more than once had shown a drastic down-trend over the period considered (Table 2.8). This is rather an astonishing fact and quite contradictory to the normal expectations. In spite of modernization of existing irrigation systems and more tapping of ground water, the steep fall in area sown more than once during the planned period so far, is a serious issue that needs an indepth analysis. There exists scope to arrest this down-trend and to either increase or atleast stabilize the area sown more than once through rehabilitation of the existing irrigation systems and structures and energization of pumpsets and motors at a faster rate through pumping more of public investments. The Table 2.8 reveals that the districts of Nagapattinam, Thiruvarur and Thanjavur have sizable area under area sown more than once and this might be due to the cauvery ayacut. Thiruvannamalai, Villupuram, Cuddalore and Kancheepuram districts also have sizeable area under area sown more than once.

The cropping intensity for the State as a whole, as could be visualized from Table 2.8, had decreased from 121.60 percent in TE 1979-80 to 118.12 percent in TE 1999-2000 and 114.67 percent in 2005-06. This down-trend must be reversed and augmented to keep agriculture growing at a faster rate.

The district of Nagapattinam has the maximum cropping intensity of 162.43 percent followed by Thiruvarur (155.13 percent) and Thiruvallur (140.86 percent) districts. The cropping intensity is around 125 percent in the districts of Kancheepuram, Thiruvannamalai and Thanjavur. It is around 120 percent in

Cuddalore, Dharmapuri and Thirunelveli districts. The remaining districts have the intensity of less than 120 percent with the exception of Ramanathanpuram, Sivagangai and the Nilgiris districts. Therefore, concerted efforts in increasing the area sown more than once, must be bestowed in the districts of Ramanathapuram, Sivagangai, The Nilgiris, Pudukottai, Karur, Perambalur, Coimbatore, Tiruchirappalli, Erode, Dindigul, Theni, Madurai, Thoothukudi etc.,

In sum, perusal of the land use statistics of Tamil Nadu State clearly showed that there exist scopes for,

1. Arresting the down-trend in the net sown area and its stabilization
2. Reducing the extent of current fallows
3. Developing the wastelands like barren and uncultivable land as well as other fallow lands.
4. Intensive fodder development activities and
5. Regulations for preventing diversion of lands to non-cultivable uses.

The study to find out the impact of urbanization and industrialization on Land Use Pattern in Tamil Nadu State revealed that the share of Agriculture sector in Net State Domestic Product, Per Capita Net State Domestic Product and Road Density were found to have a negative impact on the share of the land put to Non-agricultural uses. Thus, the study pointed out the need for strengthening the infrastructure facilities especially roads and also continued increase in the Net State Domestic Product of the State. Further, Road Density was found to have a negative impact on urbanization as it facilitates not only improved infrastructure and other amenities in the rural areas, but also helps the agricultural development by mitigating the mass exodus of the rural people to urban areas in search of livelihood.

**Table 2.7. District wise Land Use Classification in Tamil Nadu - 2006****(Hectares)**

Sl. No	Districts	Geographical Area	Percentage	Forest Area	Percentage	Barren and Unculturable Lands	Percentage	LPNA Use	Percentage	Culturable Waste	Percentage	PP and Other Grazing Lands	Percentage
1	Chennai	17098	0.13	300	0.01	0	0.00	16798	0.79	0	0.00	0	0.00
2	Kancheepuram	443210	3.40	23856	1.13	10948	2.18	146085	6.83	10430	2.83	18328	16.62
3	Thiruvallur	342243	2.63	19736	0.94	13638	2.71	102580	4.80	8326	2.26	8164	7.40
4	Cuddalore	367781	2.82	1415	0.07	14647	2.91	55875	2.61	6072	1.65	608	0.55
5	Villupuram	722203	5.54	71697	3.40	56651	11.26	135874	6.35	10405	2.82	4195	3.80
6	Vellore	592018	4.54	150722	7.14	24379	4.84	83735	3.92	5513	1.50	3998	3.62
7	Thiruvannamalai	631205	4.85	153318	7.26	21058	4.18	92598	4.33	14963	4.06	2908	2.64
8	Salem	520530	4.00	125682	5.95	39098	7.77	58673	2.74	6528	1.77	4206	3.81
9	Namakkal	336335	2.58	43909	2.08	24743	4.92	38302	1.79	4781	1.30	6684	6.06
10	Dharmapuri	449777	3.45	164177	7.78	19648	3.90	51248	2.40	5364	1.45	6209	5.63
11	Krishnagiri	514326	3.95	202409	9.59	26679	5.30	42140	1.97	4991	1.35	8156	7.39
12	Coimbatore	747079	5.74	158801	7.52	7464	1.48	106025	4.96	13997	3.80	85	0.08
13	Erode	816191	6.27	228749	10.84	7074	1.41	80708	3.77	556	0.15	187	0.17
14	Tiruchirappalli	440383	3.38	36246	1.72	13599	2.70	84791	3.96	8856	2.40	659	0.60
15	Karur	289557	2.22	6187	0.29	2901	0.58	37264	1.74	67831	18.40	10801	9.79
16	Perambalur	369137	2.83	16999	0.81	11388	2.26	59341	2.77	9299	2.52	1446	1.31
17	Pudukottai	466329	3.58	23535	1.12	9863	1.96	129297	6.05	10392	2.82	5126	4.65
18	Thanjavur	339657	2.61	3390	0.16	2149	0.43	81676	3.82	14700	3.99	1385	1.26
19	Thiruvarur	209709	1.61	2452	0.12	113	0.02	37059	1.73	1896	0.51	768	0.70
20	Nagapattinam	271583	2.08	4633	0.22	33419	6.64	47655	2.23	3837	1.04	964	0.87
21	Madurai	374173	2.87	48473	2.30	13154	2.61	74417	3.48	7127	1.93	233	0.21
22	Theni	324230	2.49	103718	4.91	43322	8.61	23993	1.12	3894	1.06	314	0.28
23	Dindigul	626664	4.81	138923	6.58	36210	7.20	65184	3.05	8931	2.42	6946	6.30
24	Ramanathapuram	408957	3.14	4488	0.21	4591	0.91	8443	0.39	4245	1.15	154	0.14
25	Virudhunagar	424323	3.26	26466	1.25	4525	0.90	70286	3.29	9663	2.62	804	0.73
26	Sivagangai	418900	3.22	21877	1.04	4747	0.94	117569	5.50	18375	4.98	1367	1.24
27	Tirunelveli	682308	5.24	120801	5.72	30961	6.15	103669	4.85	47442	12.87	5271	4.78
28	Thoothukudi	459054	3.52	11012	0.52	19762	3.93	74489	3.48	58139	15.77	5132	4.65
29	The Nilgiris	254485	1.95	142577	6.75	3375	0.67	9975	0.47	2018	0.55	5078	4.60
30	Kanyakumari	167200	1.28	54177	2.57	3149	0.63	26890	1.26	0	0.00	133	0.12
	<b>State</b>	<b>13026644</b>	<b>100.00</b>	<b>2110703</b>	<b>100.00</b>	<b>503255</b>	<b>100.00</b>	<b>2138679</b>	<b>100.00</b>	<b>368661</b>	<b>100.00</b>	<b>110309</b>	<b>100.00</b>
	<b>% to State Total</b>	<b>100</b>	<b>-</b>	<b>16.20</b>	<b>-</b>	<b>3.86</b>	<b>-</b>	<b>16.42</b>	<b>-</b>	<b>2.83</b>	<b>-</b>	<b>0.85</b>	<b>-</b>



Table 2.7 Contd...

Sl. No	Districts	Land Under Misc. Tree Crops and Groves not included in the Net Area Sown	Percentage	Current Fallows	Percentage	Other Fallow Lands	Percentage	Net area Sown	Percentage	Area Sown more than once	Percentage	Gross Cropped Area	Percentage	Cropping intensity
1	Chennai	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
2	Kancheepuram	16273	5.93	8156	1.07	73136	4.82	135998	2.59	34460	4.37	170458	2.83	125.33
3	Thiruvallur	7779	2.84	19931	2.63	46365	3.05	115724	2.21	47286	5.99	163010	2.70	140.86
4	Cuddalore	19716	7.19	35588	4.69	13969	0.92	219891	4.19	52268	6.63	272159	4.51	123.77
5	Villupuram	6142	2.24	86725	11.43	19802	1.30	330712	6.31	58680	7.44	389392	6.45	117.74
6	Vellore	2976	1.08	55061	7.26	55731	3.67	209903	4.00	27930	3.54	237833	3.94	113.31
7	Thiruvannamalai	2690	0.98	68662	9.05	32621	2.15	242387	4.62	62541	7.93	304928	5.05	125.80
8	Salem	3460	1.26	43871	5.78	21566	1.42	217446	4.15	33127	4.20	250573	4.15	115.23
9	Namakkal	3854	1.40	28375	3.74	9143	0.60	176544	3.37	29145	3.69	205689	3.41	116.50
10	Dharmapuri	2894	1.05	31464	4.15	5720	0.38	163053	3.11	33595	4.26	196648	3.26	120.60
11	Krishnagiri	10316	3.76	27097	3.57	10419	0.69	182119	3.47	22603	2.87	204722	3.39	112.41
12	Coimbatore	3383	1.23	84525	11.14	57842	3.81	314957	6.01	18375	2.33	333332	5.53	105.83
13	Erode	1360	0.50	90697	11.95	105878	6.97	300982	5.74	23719	3.01	324701	5.38	107.88
14	Tiruchirappalli	1931	0.70	21142	2.79	81812	5.39	191347	3.65	12886	1.63	204233	3.39	106.73
15	Karur	1278	0.47	4774	0.63	46802	3.08	111719	2.13	2835	0.36	114554	1.90	102.53
16	Perambalur	20855	7.60	19969	2.63	18654	1.23	211186	4.03	16789	2.13	227975	3.78	107.94
17	Pudukottai	28112	10.25	7089	0.93	92684	6.11	160231	3.06	1843	0.23	162074	2.69	101.15
18	Thanjavur	5010	1.83	9404	1.24	29913	1.97	192030	3.66	49262	6.24	241292	4.00	125.65
19	Thiruvarur	2132	0.78	5709	0.75	6353	0.42	153227	2.92	84488	10.71	237715	3.94	155.13
20	Nagapattinam	10554	3.85	2747	0.36	19232	1.27	148542	2.83	92749	11.76	241291	4.00	162.43
21	Madurai	4014	1.46	7356	0.97	66317	4.37	153072	2.92	7728	0.98	160810	2.67	105.05
22	Theni	2334	0.85	1636	0.22	33330	2.20	111599	2.13	8472	1.07	120071	1.99	107.59
23	Dindigul	7414	2.70	15425	2.03	94126	6.20	253505	4.83	8253	1.05	261758	4.34	103.25
24	Ramanathapuram	41210	15.02	27784	3.66	56439	3.72	185563	3.54	0	0.00	185563	3.08	100
25	Virudhunagar	6568	2.39	3063	0.40	160066	10.54	142883	2.72	5961	0.76	148843	2.47	104.17
26	Sivagangai	8712	3.18	7342	0.97	118460	7.80	120451	2.30	0	0.00	120451	2.00	100
27	Tirunelveli	10009	3.65	32053	4.22	165481	10.90	166621	3.18	34082	4.32	200703	3.33	120.45
28	Thoothukudi	39256	14.31	6693	0.88	72756	4.79	171815	3.28	7239	0.92	179054	2.97	104.21
29	The Nilgiris	3538	1.29	5069	0.67	1855	0.12	81000	1.54	79	0.01	81079	1.34	100.09
30	Kanyakumari	581	0.21	1433	0.19	1536	0.10	79323	1.51	12484	1.58	91807	1.52	115.73
	<b>State</b>	<b>274351</b>	<b>100.00</b>	<b>758840</b>	<b>100.00</b>	<b>1518008</b>	<b>100.00</b>	<b>5243839</b>	<b>100.00</b>	<b>788879</b>	<b>100.00</b>	<b>6032718</b>	<b>100.00</b>	<b>115.04</b>
	<b>% to State Total</b>	<b>2.11</b>	<b>-</b>	<b>5.83</b>	<b>-</b>	<b>11.65</b>	<b>-</b>	<b>40.26</b>	<b>-</b>	<b>6.06</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Source: Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.

**Table 2.8. Land Utilization Pattern in Tamil Nadu State****(Area in lakh hectares)**

Sl. No.	Classification	Average area TE 1979-80		Average area TE 1999-2000		Average area TE 2005-2006	
		Area	%	Area	%	Area	%
1.	Forests	20.25	15.58	21.38	16.45	21.18	16.27
2.	Barren and Uncultivable land	6.10	4.69	4.78	3.68	5.07	3.89
3.	Land put to non-agrl uses	16.82	12.94	19.66	15.13	21.26	16.33
4.	Cultivable waste	3.51	2.70	3.47	2.67	3.74	2.87
5.	Permanent pastures and other grazing lands	1.65	1.27	1.23	0.95	1.12	0.85
6.	Land under missed crop and groves not included net area sown	1.95	1.50	2.38	1.83	2.82	2.16
7.	Current fallow	12.57	9.67	10.08	7.76	8.03	6.16
8.	Other fallow lands	4.56	3.50	11.37	8.75	16.95	13.01
9.	Net area sown	62.56	48.15	55.60	42.78	50.10	38.49
10.	Total geographical area	130.01	100.00	129.96	100.00	130.15	100.00
11.	Area sown more than once	13.52		10.08		7.51	
12.	Gross cropped area (9+11)	76.11		65.68		51.45	
13.	Cropping intensity (12÷9)	121.60		118.12		114.67	

Source: *Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.* TE:Triennium Ending

### Shift in Land Use

The land use pattern of the state has undergone distinct changes over years. For example, net sown area which accounted for 42.80 percent during 1999-2000 had declined to 40.75 percent in 2005-2006. Similarly, other fallow lands had increased from 8.80 percent in 1999-2000 to 11.65 percent during 2005-06. On the contrary, the share of current fallows had declined from 7.80 percent to 5.83 percent during the periods under question.

Markov chain analysis was resorted to find out the shift in land use pattern in Tamil Nadu State. The data on land use pattern were collected for the period from 1970 to 2006 and five year average was taken into consideration for analysis.

Markov analysis is a way of analyzing the current movement of variables in an effort to forecast their future movement. The transaction matrix in a rectangular array would summarize the transition probabilities for a given Markov process. In such a

matrix, the rows would identify the current state of system being studied and the columns would identify the alternative status to which the system could move.

From	To			
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
S <sub>1</sub>	P <sub>11</sub>	P <sub>12</sub>	P <sub>13</sub>	P <sub>1n</sub>
S <sub>2</sub>	P <sub>21</sub>	P <sub>22</sub>	P <sub>23</sub>	P <sub>2n</sub>
S <sub>3</sub>	P <sub>31</sub>	P <sub>32</sub>	P <sub>33</sub>	P <sub>3n</sub>
S <sub>n</sub>	P <sub>n1</sub>	P <sub>n2</sub>	P <sub>n3</sub>	P <sub>nn</sub>

The generalized state transition matrix is represented by a matrix of order where  $P_{ij}$  denotes the probability of moving from state  $S_i$  to  $S_j$ . The interpretation of a given state matrix would depend on the problem itself. However, the diagonal probabilities are associated with the consumer's retention and the column probabilities are associated with gain from others and row probabilities would indicate the loss. The sum of probabilities in each row must be equal to one.

The retention, gain and loss probabilities were calculated and the state transition matrix was constructed. While the retention probabilities were listed along the main diagonal, loss probabilities (if any) were inserted in the appropriate rows cells of matrix and gain probabilities (if any) were inserted in the appropriate column cells of the matrix. The results of the Markov analysis are presented below.

**Table: 2.9. Markov Chain Analysis – Probability Matrix**

	← Loss →							
	Forest	Barren and uncultivable land	Land put to non-agrl. uses	Cultivable waste	PP + MTC	CF+OF	NSA	↑
Forest	<b>0.50</b>	0.00	0.29	0.08	0.11	0.00	0.00	Gain ↓
Barren and uncultivable land	0.00	<b>0.32</b>	0.00	0.00	0.00	0.00	0.67	
Land put to non-agrl.uses	0.00	0.00	<b>0.58</b>	0.00	0.00	0.41	0.00	
Cultivable waste	0.00	0.09	0.00	<b>0.00</b>	0.13	0.00	0.77	
PP + MTC	0.04	0.52	0.00	0.42	<b>0.00</b>	0.00	0.00	
CF+OF	0.20	0.05	0.00	0.00	0.00	<b>0.51</b>	0.21	
NSA	0.09	0.00	0.00	0.00	0.00	0.06	<b>0.78</b>	

Note: PP - Permanent Pastures      MTC – Miscellaneous Tree Crops  
NSA – Net Sown Area      OF – Other Fallows      CF – Current Fallows

It could be seen from Table 2.9 that the forest area retained its area by 0.50 percent and the remaining area has been moved to land put to non-agricultural uses (29 percent), cultivable waste (8 percent) and permanent pastures and land under miscellaneous tree crops and groves not included in the net area sown (11 percent). Net sown area has gained 67 percent of the area from barren and uncultivable land. Land put to non-agricultural uses retained its area by 58 percent and the rest has moved to current fallows and other fallow lands (41 percent). Cultivable waste had completely lost its area to barren and uncultivable land (9 percent), permanent pastures and area under miscellaneous tree crops and groves not included in the net area sown (13 percent) and net sown area (77 percent). Though net sown area retained its majority of the area (78 percent), it lost nine percent to forest land and rest four percent to land put to non-agricultural uses, six percent to current fallow and other fallow lands and one percent to permanent pastures.

## **2.6 Operational Holdings**

Operational holding often determines agricultural production and productivity. The operational holdings as per Agricultural census are furnished in Table 2.10. The results of successive agricultural census confirm the growing imbalance and asymmetry in the distribution of size of holdings. The number of marginal farmers in the State had increased from 64.95 percent of the total holdings operated in 1976-77 to 74.3 percent of total holdings operated in 1995-96. However, the marginal farmers have operated only 21.07 and 30.27 percent of total area in 1976-77 and 1995-96 respectively. Semi-medium, medium and large farmers accounted for a small proportion of 10 percent of holdings and they have operated a higher proportion of 46.1 percent of total area in 1995-96. In sum, the number of marginal farmers has been increasing over years which show that the process of marginalization of farmers is continuing and they tend to subsist on low income levels.

**Table 2.10. Operational Holdings as per Agricultural Census**

Sl. No	Category	1976-77		1979-80		1985-86		1990-91		1995-96	
		No	Area	No	Area	No	Area	No	Area	No	Area
1	Marginal (below 1.0 Ha)	3951175 (64.95)	1607533 (21.07)	5014754 (69.74)	1906499 (24.73)	5497735 (71.34)	2017615 (25.88)	5848096 (73.11)	2117826 (28.34)	5951104 (74.28)	2210341 (30.27)
2	Small (1.0-2.0 Ha)	1125740 (18.42)	1586429 (20.80)	1209059 (16.81)	1709987 (22.18)	1260306 (16.35)	1771545 (22.72)	1274515 (15.93)	1794471 (24.01)	1233836 (15.40)	1721286 (23.57)
3	Semi-Medium (2.0 to 4.0 Ha)	683086 (11.18)	1875796 (24.59)	657868 (9.15)	1821579 (23.63)	648822 (8.42)	1778376 (22.81)	617605 (7.72)	1686514 (22.57)	600833 (7.50)	1622811 (22.22)
4	Medium (4.0 to 10.0 Ha)	305496 (5.00)	1763039 (23.11)	269059 (3.74)	1555400 (20.18)	260645 (3.38)	1507987 (19.34)	227594 (2.85)	1301124 (17.41)	199791 (2.49)	1134853 (15.54)
5	Large (10.0 Ha and above)	46056 (0.75)	795663 (10.43)	39763 (0.55)	714394 (9.27)	39215 (0.51)	720418 (9.24)	31122 (0.39)	573742 (7.68)	26268 (0.33)	613910 (8.41)
<b>Total</b>		<b>6111553</b> <b>(100.00)</b>	<b>7628460</b> <b>(100.00)</b>	<b>7190503</b> <b>(100.00)</b>	<b>7707859</b> <b>(100.00)</b>	<b>7706723</b> <b>(100.00)</b>	<b>7795941</b> <b>(100.00)</b>	<b>7998932</b> <b>(100.00)</b>	<b>7473577</b> <b>(100.00)</b>	<b>8011832</b> <b>(100.00)</b>	<b>7303201</b> <b>(100.00)</b>

*Figures in bracket indicates percent to total*

*Source: Tamil Nadu and Economic Appraisal 2005-06 Evaluation and Research Department, Government of Tamil Nadu, Chennai.*

## Size of Holdings

The distribution of size of holdings in Tamil Nadu is furnished in Table 2.11. It could be seen that the average size of marginal holdings had declined from 0.41 hectare in 1976-77 to 0.37 hectare in 2000-01. However, there had been no marked differences in the size of small, semi-medium and medium holdings over years. The size of large holdings had increased from 17.28 hectares in 1976-77 to 19.48 hectares in 2000-01. In sum, the average size of holdings in Tamil Nadu State had decreased from 1.25 hectares in 1976-77 to 0.89 hectare in 2000-01.

**Table 2.11. Size of Holdings in Tamil Nadu State**

(Area in hectare)

Sl. No.	Categories	1976-77	1979-80	1985-86	1990-91	1995-96	2000-01
1.	Marginal	0.41	0.38	0.37	0.36	0.38	0.37
2.	Small	1.41	1.41	1.41	1.41	1.40	1.39
3.	Semi-medium	2.75	2.76	2.74	2.73	2.73	2.72
4.	Medium	5.77	5.78	5.78	5.72	5.60	5.68
5.	Large	17.28	17.96	18.78	18.44	21.68	19.48
		1.25	1.07	1.01	0.93	0.95	0.89

*Source: Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.*

## 2.7. Rivers, Irrigation and Drainage Systems

All river systems of the State flow eastward from the Western Ghats and are rainfed. The Palar, the Pennaiyar and the Cheyyar are the three important river systems in the North. None is perennial. Cutting across the centre of the state is the Cauvery fed by both the monsoons; it is practically perennial, although in recent years, this has become drier mainly to the impounding of water in the dams of Karnataka. Yet, along with its tributaries, the Bhavani and the Amaravathi, it is the most important source of canal irrigation. South of the Cauvery are three important rivers, namely the Vaippar, the Vaigai and Tamiravaruni. Of these, Tamiravaruni is perennial and a source of canal irrigation. Besides these, there are several other smaller and less important rivers in the State. The rivers naturally, graded almost to their heads with only slight interruptions of

profiles when they pass through the Eastern Ghats. Though these rivers are not long, the deltas present extremely distinctive features and the power and irrigation developments are outstanding.

Tamil Nadu with seven percent of population of the country is endowed with only three percent of the water resources of India. The State's water resources are dependent on rainfall. The Tamil Nadu Water Policy, 1994 was formulated based on the National Water Policy, 1987. Taking into account of the National Water Policy, 2002, the state Water Policy has been redrafted emphasizing the need for utmost efficiency in water utilization and public awareness of the importance of its conservation.

### 2.7.1. Total Water Potential

The total water potential of the State including groundwater is 46,540 million cubic meters (MCM). The total surface water potential of the State is 24,160 MCM, including the contribution from neighbouring states of Andhra, Karnataka and Kerala. Of the total water potential, the surface water potential of about 2.4 million hectares has almost been fully (more than 95 percent) tapped since the late sixties. Ground water is, therefore, the only alternative source available for further development. The details of blocks with present level of ground water development are furnished in Table 2.12.

**Table 2.12. Groundwater Potential among Blocks**

Sl. No	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
1.	Kancheepuram	1. Lathur 2. Uthiramerur	1. Sittampur 2. T.Kundram	1. Acharapakkam 2. Kattankulathur 3. Kunrathur 4. Maduranthagam 5. St.Thomas Mt 6. Wallajabad	1. Kancheepuram 2. Sriperumbudur
2.	Thiruvellore	1. Ellapuram 2. Minjur 3. Pallipattu 4. R.K.Pet 5. Thiruvankadu 6. Tiruttani	1. Kadambathur 2. Poonamalee	1. Gummidipoondi 2. Madhavaram 3. Poondi 4. Sholavaram 5. Tiruvallur	1. Villivakkam

Table 2.12. Contd.....

Sl. No	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
3	Cuddalore			1. Annagrmam 2. Cuddalore 3. Kammapuram 4. Kattumannarkoil 5. Kurinjipadi 6. Mangalore 7. Melbhuvanagiri 8. Nallur 9. Panriti 10. Vridhachalam	1. Keerapalayam 2. Kumaratchi 3. Portonova
4	Villupuram	1. Gingee 2. Kandamangalam 3. Kolianur 4. Mailam 5. Marakanam 6. Melmalaiyanur 7. Mugaiyur 8. Olakkur 9. Rshivandhiyam 10. Sankarapuram 11. Tiruvennainallur 12. Ulundurpet 13. Vallam	1. Kallakurichi 2. Thirunavalur 3. Vanur 4. Vikravandi	1. Chinnasalem 2. Kanai 3. Thiyagadurgam 4. Tirukovilur	1. Kalrayan hills
5	Vellore	1. Alangayam 2. Anaicut 3. Arcot 4. Gudiyatham 5. Jolarpet 6. K.V.Kuppam 7. Kandili 8. Kaniyambadi 9. Katpadi 10. Madanur 11. Natrampalli 12. Pernampet 13. Sholinghur 14. Timri 15. Tiruppathur 16. Vellore	—————	—————	—————



Table 2.12 Contd....

Sl.No	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
6	T.V.Malai	1. Chengam 2. Kalasapakkam 3. Kilpenathur 4. Polur 5. Pudupalayam 6. Thandaranpattu 7. Thiruvannamalai 8. Thuringapuram 9. Vandavasi	1. Arni West 2. Javadi hills	1. Anakavur 2. Arnl East 3. Chetpet 4. Cheyyar 5. Vembakkam	1. Pernamallur 2. Thellar
7	Salem	1. Attur 2. Ayotiapattinam 3. Gangavalli 4. Konganapuram 5. Magudan chavadi 6. Mecheri 7. Nangavalli 8. Omalur 9. P.N.Palayam 10. Panamarathupatti 11. Salem 12. Talaiwasal 13. Valapadi 14. Veerapandi	1. Kadayampatti	1. Edapadi 2. Kolathur 3. Sankari 4. Tharamangalam	1. Yercaud
8	Namakkal	1. Erumaipatti 2. Namagiripettai 3. Namakkal 4. Pallipalayam 5. Puduchatram 6. Rasipuram 7. Sendamandalam 8. Vennandur	1. Mallasamudram 2. Paramathi	1. Kabilamalai 2. Mohanur 3. Tiruchengodu	1. Elachipalayam 2. Kolli hills

Table 2.12 Contd....

Sl. No	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
9.	Dharmapuri	1. Burugr 2. Dharmapuri 3. Harur 4. Karimangalam 5. Mathur 6. Morappur 7. Nallampalli 8. Palacode 9. Pappireddipatti 10. Uthangarai 11. Vepanapalli	1. Pennagaram	1. Hosur 2. Kaveripattinam 3. Krishnagiri 4. Shoolagiri	1. Kelamangalam 2. Thalli
10.	Coimbatore	1. Annur 2. Avinashi 3. Kinathukadavu 4. Madukarai 5. P.N.Palayam 6. Pollachi north 7. Pollachi south 8. Sarkarsamakulam 9. Sultanpet 10. Sular 11. Thondamuthur	1. Gudi-mangalam 2. Karnamadai 3. Palladam 4. Udumalpet	1. Anamalai 2. Madathukulam 3. Pongalur 4. Thiruppur	_____
11.	Erode	1. Ammapet 2. Andiyur 3. Nambiyur	1. Bhavanisagar 2. Satya-mangalam 3. Thalavadi	1. Bhavani 2. Dharampuram 3. Gobichetti-palayam 4. Kangeyam 5. Kundadam 6. Modakurichi 7. Mulanur 8. Perundurai 9. T.N.Palayam 10. Vellakoil	1. Chennimalai 2. Erode 3. Kodumudi 4. Uthukuli

Table 2.12 Contd....

Sl.No.	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
12	Trichy	1. Thatiengarpettai 2. Thuraiyur 3. Uppiliyapuram	1. Manaparai 2. Musiri	1. Manachanallur 2. Marungapuri 3. Puliambadi 4. Thiruverumbur 5. Vaiyampatti	1. Andanallur 2. Lalgudi 3. Manikandam 4. Thottiam
13	Karur	1. Kadavur 2. Thanthoni	_____	1. Aravakurichi 2. Karur 3. Krishnarayapuram 4. Kulithalai 5. Thogamalai	1. K.Paramathy
14	Perambalur	1. Alathur 2. Perambalur 3. Veppanthattai 4. Veppur	_____	1. Ariyalur	1. Andimadam 2. Jayamkondam 3. Sendurai 4. Thirumanur 5. T.Palur
15	Pudukottai	_____	_____	1. Thiruvarankulam	1. Annavasal 2. Aranthangi 3. Arimalam 4. Avudiarkoil 5. Gandharvakottai 6. Karambakudi 7. Kunnandarkoil 8. Manamelkudi 9. Ponnamaravathi 10. Pudukottai 11. Thirumatyam 12. Viralimalai
16	Thanjavur	1. Thiruppanandal 2. Thiruvaidamaruthur	1. Ammapet 2. Kumbakonam	1. Madukur 2. Orathanadu 3. Peravoorani 4. Thiruvaiyaru 5. Thiruvonam	1. Budalur 2. Papanasam 3. Pattukottai 4. Sethubhava chattiram 5. Thanjavru

Table 2.12 Contd....

Sl. No	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
17	Thiruvarur	1. Valangaiman	1. Kodavasal	1. Mannargudi 2. Nannilam 3. Needamangalam 4. Thiruvarur	1. Koradachery 2. Kottur
18	Nagapattinam	1. Kollidam 2. Kuttalam 3. Sembanarkoil 4. Sirkazhi	_____	1. Myladuthurai	_____
19	Madurai	1. Chellampatti 2. Sedapatti 3. Usilampatti	1. Alanganallur	1. Kallikudi 2. T.Kallupatti 3. Thirumanagalam 4. Thiruparan kundram	1. Kottampatti 2. Madurai east 3. Madurai west 4. Melur 5. Vadipatti
20	Theni	1. Andipatti 2. Chinnamanur 3. Myladumparai 4. Periyakulam 5. Uthamapalayam	1. Bodinaikkanur 2. Cumbum 3. Theni	_____	_____
21	Dindigul	1. Attur 2. Batlagundu 3. Dindigul 4. Guzliamparai 5. Oddanchattiram 6. Reddiarchattiram 7. Sanarpatti 8. Thoppampatti 9. Vadamadurai 10. Vendasandur	1. Nilakottai 2. Palani	1. Natham	1. Kodaikanal

Table 2.12 Contd....

Sl. No.	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
22	Ramanathapuram	_____	1. Thirupullani	1. Mandapam 2. Paramakudi 3. Ramanathapuram	1. Bogalur 2. Kadaladi 3. Kamuthi 4. Mudukulathur 5. Nainarkoil 6. R.S.Mangalam 7. Tiruvadanai
23	Virudhunagar	1. Rajapalayam 2. Watrap	1. Kariapatti 2. Sivakasi 3. Srivilliputhur 4. Vembakottai	1. Aruppukottai 2. Narikudi 3. Sattur 4. Trichuli 5. Virudhunagar	_____
24	Sivagangai	_____	_____	1. Kaliyarkoil 2. Sivagangai 3. S.Pudur	1. Devakottai 2. Illayangudi 3. Kallal 4. Kannankudi 5. Manamadurai 6. Sakkottai 7. Singampunari 8. Thiruppathur 9. Thiruppuvanam
25	Tirunelveli	1. Melaneelithanallur 2. Radhapuram 3. Sankarankoil 4. Valliyur	_____	1. Alangulam 2. Kadayanallur 3. Keelapavoor 4. Kuruvikulam 5. Vasudevanallur	1. Ambasamudram 2. Cheranmadevi 3. Kadayam 4. Kalakadu 5. Manur 6. Nanguneri 7. Palayamkottai 8. Pappakudi 9. Shenkottai 10. Tenkasi

Table 2.12 Contd....

Sl.No.	District	Over Exploited	Critical (Dark)*	Semi critical (Grey)*	Safe (White)*
		Greater than 100%	Between 90 and 100%	70 and 90%	Less than 70%
26	Thoothukudi	1. Kayathar 2. Kovilpatti 3. Ottapidaram 4. Sathankulam 5. Thoothukudi 6. Udangudi 7. Vilathikulam	1. Pudur	1. Alwarthiru nagar 2. Karunkulam 3. Srivaikundam 4. Tiruchendur	_____
27	Nilgiri	_____	_____	_____	1. Gudalur 2. Coonoor 3. Uthaga mandalam 4. Kothagiri
28	K.Kumari	_____	_____	_____	1. Agastheeswaram 2. Rajakka mangaiam 3. Thovalai 4. Tiruvattar 5. Kurunthenkode 6. Melpuram 7. Munchirai 8. Killiyur 9. Thuckalay

Source: Report on Dynamo Ground Water Resources of Tamil Nadu as on Tamil Nadu, State

The change in availability of ground water in Tamil Nadu is furnished in Table 2.13.

**Table 2.13. Change in Availability of Groundwater in Tamil Nadu**

Sl. No.	Years of Assessment	Category of blocks					Total
		Safe blocks	Semi critical blocks	Critical blocks	Over exploited blocks	Saline	
1	1987	251	86	41	-	-	<b>378</b>
2	1992	209	86	89	-	-	<b>384</b>
3	1998	137	70	35	135	8	<b>385</b>
4	2003	97 (25.20)	105 (27.27)	37 (9.61)	138 (35.84)	8 (2.08)	<b>385</b>

*Source: Report on Dynamo Ground Water Resources of Tamil Nadu as on Tamil Nadu, State.*

The ground water potential for future development has been estimated at 3142.27 MCM as of January's 2003. This balance potential is mostly distributed in 239 blocks compressing safe, semi- critical and critical categories. The ground water availability is found to be in safe condition only in 97 blocks (25.20 percent) of Tamil Nadu State.

### **2.7.2. Sources of Irrigation**

The major irrigation sources of the State are canals, tanks and wells. The percapita availability of water in the State stood at 900 cubic meters as against the All – India level of 2200 cubic meters. The sources of irrigation and percentage of net and gross area irrigated are indicated in Table 2.14.

**Table 2.14. Source-wise Net Area Irrigated and Percentage to Total Irrigated Area****(in lakh hectares)**

Sources of Irrigation	1950-51	1960-61	1970-71	1980-81	1990-91	1997-98	1998-99	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Canal	7.88 (42.0)	8.82 (36.0)	8.84 (34.0)	8.89 (35.0)	7.69 (32.4)	8.38 (28.45)	8.34 (27.63)	8.67 (29.20)	8.33 (28.8)	8.01 (28.6)	6.14 (26.6)	4.49 (20.9)	7.54 (28.6)
Tanks	5.65 (30.0)	9.36 (38.0)	8.98 (35.0)	5.90 (22.0)	5.31 (22.3)	6.75 (22.90)	6.90 (22.83)	63.30 (21.30)	5.88 (20.4)	5.36 (19.2)	4.22 (18.3)	3.85 (17.9)	4.65 (17.6)
Wells	4.26 (240)	5.98 (24.0)	7.75 (30.0)	10.67 (42.0)	10.59 (44.6)	14.13 (47.97)	14.75 (48.91)	14.54 (48.90)	14.49 (50.2)	14.48 (51.7)	12.63 (54.2)	12.99 (60.5)	14.00 (53.1)
Other sources	0.76 (4.0)	0.46 (2.0)	0.35 (1.0%)	0.24 (1.0)	0.14 (0.7)	0.19 (0.64)	0.18 (0.61)	0.17 (0.6)	0.16 (0.6)	0.14 (0.5)	0.11 (0.4)	0.15 (0.7)	0.18 (0.7)
<b>Total</b>	<b>18.55</b>	<b>24.62</b>	<b>25.92</b>	<b>25.70</b>	<b>23.73</b>	<b>29.45</b>	<b>30.18</b>	<b>29.72</b>	<b>28.87</b>	<b>28.01</b>	<b>23.09</b>	<b>21.48</b>	<b>26.37</b>
Percentage of net area irrigated to net area sown	36.00	41.10	42.00	48.00	42.50	52.77	53.60	54.40	54.10	54.10	50.30	45.81	51.70
Gross area irrigated	21.89	32.35	34.10	32.94	28.94	35.19	36.34	35.85	34.90	34.12	26.22	24.79	30.87
Percentage of gross area irrigate to total gross area sown	37.10	44.20	46.20	50.90	43.60	53.66	54.80	54.99	55.10	54.80	50.50	46.60	52.40

*Figures in parenthesis indicate percent to total*

*Source: Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.*



It could be seen that the percentage of canal area irrigated has come down from 42.00 in 1950-51 to 28.6 in 2004-05. Similarly, the percentage of area irrigated by tanks declined from 30.00 in 1950-51 to 17.6 in 2004-05. On the contrary, wells have shown a constant rise from 24.00 percent in 1950-51 to 52.8 percent in 2005-06. The other sources of irrigation had shown a constant downward trend. The percentage of net area irrigated to net area sown had shown an upward trend with a fall in 1990-91, 2002-03 and 2003-04. The same phenomenon was observed in the case of gross area irrigated to total gross area. The net area irrigated and gross area irrigated had improved by 35.8 and 37.1 percent respectively during 2005-06 over 2003-04. The area under canal, tank and well irrigation had witnessed an upward shift between 2003-04 and 2005-06.

The district wise area irrigated over years is furnished in Table 2.15. The net area irrigated was more pronounced in the districts of Villupuram, Coimbatore, Thanjavur, Erode, Thiruvannamalai, Cuddalore and Thiruvarur in that order in 2005-06. Area irrigated more than once was found to be more in the districts of Thiruvannamalai, Villupuram, Thiruvalur, Thanjavur, Nagapattinam, Cuddalore and Erode in that order. The gross area irrigated in 2005-06 ranged from 38,885 hectares in Kanyakumari district to 2,81,185 hectares in Villupuram district.

**Table 2.15 District – wise details of Net Area and Gross Area Irrigated in Tamil Nadu****(in hectares)**

Sl.No.	District	Net Area Irrigated			Area irrigated more than once			Gross Area Irrigated		
		2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
1	Kancheepuram	109488	105478	120700	32030	32884	32605	141518	138362	153305
2	Thiruvallur	85681	83954	92498	20858	19839	37138	106539	103793	129636
3	Cuddalore	142736	146355	155013	26111	28503	25779	168847	174858	180792
4	Villupuram	126360	222021	243141	42804	41021	38044	169164	263042	281185
5	Vellore	78420	70294	103345	15282	26814	21983	93702	97108	125328
6	Thiruvannamalai	92404	144156	160639	40003	44325	58511	132407	188481	219150
7	Salem	59391	80199	97973	10908	17556	21707	70299	97755	119680
8	Namakkal	53126	47420	74318	11282	13739	13828	64408	61159	88146
9	Dharmapuri	30682	51447	66690	1553	5814	11691	32235	57261	78381
10	Krishnagiri	35045	44075	49002	5259	4367	9248	40304	48442	58250
11	Coimbatore	152963	160261	170511	7278	13313	10960	160241	173574	181471
12	Erode	79935	149713	161217	4374	28668	23687	84309	178381	184904
13	Thiruchirapalli	68830	91549	110054	9048	12243	11798	77878	103792	121852
14	Karur	33819	42880	54709	1264	2046	2681	35083	44926	57390
15	Perambalur	49011	63987	66855	7611	12049	9726	56622	76036	76581

Table 2.15 Contd.....

(in hectares)

Sl.No.	District	Net Area Irrigated			Area irrigated more than once			Gross Area Irrigated		
		2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
16	Pudukkotai	83037	102713	109827	1242	1486	1355	84279	104199	111182
17	Thanjavur	126963	160889	165679	25570	35814	27991	152533	196703	193670
18	Thiruvarur	118275	141206	147564	10568	15320	17798	128843	156526	165362
19	Nagapattinam	104594	118174	125014	21834	27925	27113	126428	146099	152127
20	Madurai	48631	77206	92245	1141	8284	7163	49772	85490	99408
21	Theni	49985	52657	55718	6029	8009	7912	56014	60666	63630
22	Dindigul	69409	92955	104672	4502	7156	7399	73911	100111	112071
23	Ramanathapuram	70678	72718	68547	0	0	0	70678	72718	68547
24	Virudhunagar	54790	52596	55365	5390	5118	4544	60180	57714	59909
25	Sivagangai	73124	83160	88999	0	0	0	73124	83160	88999
26	Thirunelveli	85525	110389	111132	10454	25541	28646	95979	135930	139778
27	Thoothukudi	37100	40038	39674	1555	1131	6657	38655	41169	46331
28	Nilgiris	820	736	750	0	0	0	820	736	750
29	Kanyakumari	26851	27972	27694	6935	10945	11191	33786	38917	38885
	<b>Total</b>	<b>2147673</b>	<b>2637198</b>	<b>2919545</b>	<b>330885</b>	<b>449910</b>	<b>477155</b>	<b>2478558</b>	<b>3087108</b>	<b>3396700</b>

Source: Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.

### **2.7.3. District-wise Details of Net Area and Gross Area Irrigated and Irrigation Intensity**

The district wise details of net area and gross area irrigated along with the irrigation intensity for the period from 2003-04 to 2005-06 are furnished in Table 2.16. It could be seen that the irrigation intensity at the state level varied from 115.41 percent in 2003-04 to 116.34 percent in 2005-06. The irrigation intensity was found to be higher than the state level in the districts of Kancheepuram, Thiruvarur, Cuddalore, Vellore, Thiruvannamalai, Salem, Namakkal, Dharmapuri, Krishnagiri, Thanjavur, Nagapattinam, Tirunelveli and Kanyakumari in 2005-06. Further, there had been increase in the irrigation intensity continuously from 2003-04 to 2005-06, only in the districts of Salem, Dharmapuri, Karur, Thiruvarur, Tirunelveli and Kanyakumari.

**Table 2.16 Irrigation Intensity - By Districts****(Area in hectares)**

Sl. No.	District	Net Area Irrigated			Gross Area Irrigated			Irrigation Intensity (in percentage)		
		2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
1	Kancheepuram	109488	105478	120700	141518	138362	153305	129.25	131.18	127.01
2	Thiruvallur	85681	83954	92498	106539	103793	129636	124.34	123.63	140.15
3	Cuddalore	142736	146355	155013	168847	174858	180792	118.29	119.48	116.63
4	Villupuram	126360	222021	243141	169164	263042	281185	133.87	118.48	115.65
5	Vellore	78420	70294	103345	93702	97108	125328	119.49	138.15	121.27
6	Thiruvannamalai	92404	144156	160639	132407	188481	219150	143.29	130.75	136.42
7	Salem	59391	80199	97973	70299	97755	119680	118.37	121.89	122.16
8	Namakkal	53126	47420	74318	64408	61159	88146	121.24	128.97	118.61
9	Dharmapuri	30682	51447	66690	32235	57261	78381	105.06	111.30	117.53
10	Krishnagiri	35045	44075	49002	40304	48442	58250	115.01	109.91	118.87
11	Coimbatore	152963	160261	170511	160241	173574	181471	104.76	108.31	106.43
12	Erode	79935	149713	161217	84309	178381	184904	105.47	119.15	114.69
13	Thiruchirapalli	68830	91549	110054	77878	103792	121852	113.15	113.37	110.72
14	Karur	33819	42880	54709	35083	44926	57390	103.74	104.77	104.90
15	Perambalur	49011	63987	66855	56622	76036	76581	115.53	118.83	114.55

Table 2.16 Contd....

(Area in hectares)

Sl. No.	District	Net Area Irrigated			Gross Area Irrigated			Irrigation Intensity (in percentage)		
		2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
16	Pudukkottai	83037	102713	109827	84279	104199	111182	101.50	101.45	101.23
17	Thanjavur	126963	160889	165679	152533	196703	193670	120.14	122.26	116.89
18	Thiruvarur	118275	141206	147564	128843	156526	165362	108.94	110.85	112.06
19	Nagapattinam	104594	118174	125014	126428	146099	152127	120.88	123.63	121.69
20	Madurai	48631	77206	92245	49772	85490	99408	102.35	110.73	107.77
21	Theni	49985	52657	55718	56014	60666	63630	112.06	115.21	114.20
22	Dindigul	69409	92955	104672	73911	100111	112071	106.49	107.70	107.07
23	Ramanathapuram	70678	72718	68547	70678	72718	68547	100.00	100.00	100.00
24	Virudhunagar	54790	52596	55365	60180	57714	59909	109.84	109.73	108.21
25	Sivagangai	73124	83160	88999	73124	83160	88999	100.00	100.00	100.00
26	Thirunelveli	85525	110389	111132	95979	135930	139778	112.22	123.14	125.78
27	Thoothukudi	37100	40038	39674	38655	41169	46331	104.19	102.82	116.78
28	Nilgiris	820	736	750	820	736	750	100.00	100.00	100.00
29	Kanyakumari	26851	27972	27694	33786	38917	38885	125.83	139.13	140.41
	<b>Total</b>	<b>2147673</b>	<b>2637198</b>	<b>2919545</b>	<b>2478558</b>	<b>3087108</b>	<b>3396700</b>	<b>115.41</b>	<b>117.06</b>	<b>116.34</b>

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

#### **2.7.4. Command Area Development Programme**

Farmer's participation in water management activities is necessary for ensuring optimum utilization of available quantity of water and for covering maximum area. The centrally sponsored command area development programme aims at improving water use efficiency in canal irrigated areas by means of On-Farm Development Works (OFD) and Rotational Water Supply (RWS). The expenditure incurred under this programme is shared equally between the centre and state. The programme had been implemented in thirteen commands during 2004-05 and 2005-06 in the state. In the thirteen command areas, On Farm Development Works were carried out at a total cost of Rs.37.12 crores during 2004-05 and Rs.39.89 crores during 2005-06. However, only areas of 19,792 hectares have been benefited during 2004-05. The total expenditure on Rotational Water Supply (RWS) declined from Rs.1.42 crores in 2004-05 to Rs.0.75 crore in 2005-06. The area benefited has also reduced from 53,317 hectares in 2004-05 to 25,550 hectares in 2005-06. Cauvery, Parambikulam, Aliyar, Tamiravaruni and Manimuthar commands together accounted for more than 60 percent of the total area benefited under both OFD and RWS works during 2005-06.

#### **2.7.5. Micro Irrigation**

Micro irrigation consists of Drip Irrigation and Sprinkler Irrigation. Under the centrally shared scheme for providing micro irrigation where in the scheme cost is shared between the centre and state in the ratio of 90: 10, drip irrigation system was provided during 2004-05 to cover an extent of 6,935 hectares at a cost of Rs.304.30 lakhs. Similarly, sprinkler system covering an extent of 2,890 hectares was provided at a cost of Rs.154.80 lakhs.

### **2.8. Cropping Pattern**

The principal crops raised in the state comprises of food crops like paddy, millets, pulses and oilseeds and non-food crops like cotton and sugarcane. The total cropped area and gross production of principal crops depend on the quantum and spread of precipitation and availability of ground water. Paddy, a staple food crop, is grown extensively in the districts of Thanjavur, Thiruvarur and Nagapattinam.

The area, production and productivity of principal crops are furnished in Table 2.17. The area under paddy increased from 13.97 lakhs hectares in 2003-04 to 18.73 lakhs hectares (34.3 percent) in 2004-05 and further to 20.50 lakhs hectares (9.5 percent) during 2005-06. However, the area under paddy declined from 26.36 hectares in 1970-71 to 20.50 lakhs hectares in 2005-06. The area under millets declined from 9.03 lakhs hectares in 2003-04 to 8.24 lakhs hectares in 2004-05 and further declined to 7.41 lakhs hectares in 2005-06.

However, the area under food grains exhibited a steady increase during the period under consideration. It had increased from 28.37 lakhs hectares in 2003-04 to 32.87 lakhs hectares in 2004-05 and further to 33.17 lakhs hectares in 2005-06. As regards oilseeds, the area had increased from 6.95 lakhs hectares in 2003-04 to 7.09 lakhs hectares in 2005-06. Similarly, the area under cotton increased from 0.98 lakhs hectare in 2003-04 to 1.29 lakhs hectares in 2004-05 and then declined to 1.10 lakhs hectares in 2005-06. Similar phenomenon was observed in the case of sugarcane also.

**Table 2.17 Area, Production, Productivity of Principal Crops**

Crops	Area (lakh ha)			Production (Lakh tonnes)			Yield Rate (Kgs./ha)		
	2003-2004	2004-2005	2005-2006	2003-2004	2004-2005	2005-2006	2003-2004	2004-2005	2005-2006
Paddy	13.97	18.73	20.50	32.23	50.62	52.09	2308	2703	2541
Millets	9.03	8.24	7.41	8.88	6.30	6.30	983	1053	850
Pulses	5.37	5.90	5.25	2.01	1.77	1.77	375	367	337
Food grains	28.37	32.87	33.17	43.12	61.14	61.16	1520	1870	1844
Oilseeds	6.95	7.15	7.09	9.64	11.52	11.52	1387	1484	1527
Cotton	0.98	1.29	1.10	1.23	1.68	1.68	213	244	260
Sugarcane	1.92	2.22	1.92	17.66	32.44	32.44	102	110	105

*Oilseeds* - Groundnut, gingelly, castor and sunflower

*Cotton* - in lakh bales of 170 kgs. of lint each

*Sugarcane* - in terms of gur, Yield rate tonnes / hec.

*Source* : Tamil Nadu – An Economic Appraisal – Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.



### 2.8.1. Shift in Area

Markov Chain analysis was attempted to trace the shift in area of principal crops over years. The data collected for the period from 1970 to 2006 were taking into consideration of five year average area. The results revealed that paddy retained 44 percent of its area and the rest was shared by total cereals (42 percent), total pulses (4 percent) and total oilseeds (10 percent). Total cereals retained 63 percent of its area and the remaining area was shared by groundnut (18 percent), total oilseeds (10 percent), cotton (8 percent) and paddy (1 percent) in that order. Likewise, total pulses retained 49 percent of its area and the remaining is shared by paddy (26 percent) and sugarcane (25 percent) almost equally. As regards sugarcane, 59 percent of area is retained by it and the remaining area is shared by total pulses. As regards cotton, all its area is shared by total cereals only. As regards groundnut, only two percent of area is retained by it and the remaining 98 percent of area is shared by paddy only. Similarly, as regards fruit crops, the entire area is retained by fruit crops only. In the case of total oilseeds, 54 percent of area is retained by it, 29 percent is shared by groundnut, 13 percent by total pulses, four percent by total fruits and negligible area by sugarcane. Thus, it could be seen that shift in area is more pronounced in the case of area under cotton and groundnut. The actual of transitional probability matrix of area under principal crops in Tamil Nadu is given in Table 2.18.

**Table 2.18. Transitional Probability Matrix of Area under Principal Crops in Tamil Nadu**

	← Loss →								
	Paddy	Total cereals	Total pulses	Sugar-cane	Cotton	Ground-nut	Total fruits	Total oilseeds	↑ Gain ↓
Paddy	0.44	0.42	0.04	0.00	0.00	0.00	0.00	0.10	
Total cereals	0.01	0.63	0.00	0.00	0.08	0.18	0.00	0.10	
Total pulses	0.26	0.00	0.49	0.25	0.00	0.00	0.00	0.00	
Sugarcane	0.00	0.00	0.41	0.59	0.00	0.00	0.00	0.00	
Cotton	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
Groundnut	0.98	0.00	0.00	0.00	0.00	0.02	0.00	0.00	
Total fruits	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	
Total oilseeds	0.00	0.00	0.13	0.00	0.00	0.29	0.04	0.54	

## 2.8.2. Production of Crops

The yield rate of paddy rose by 17.1 percent to reach 2703 kgs/ha in 2004-05 and 2541 kgs/ha in 2005-06. In harmony with this, the production of paddy rose from 32.33 lakh tonnes in 2003-04 to 50.62 lakh tonnes in 2004-05 and to 52.09 lakh tonnes in 2005-06. However, the production of millets in the State declined marginally by 2.3 percent from 8.9 lakh tonnes in 2003-04 to 8.68 lakh tonnes during 2004-05 and sharply reduced to 6.30 lakh tonnes in 2005-06 due to reduction in area under crops by about 8.7 percent in 2004-05 and 10.1 percent in 2005-06. On the other hand, the production of pulses had increased by 7.5 percent from 2.01 lakh tonnes to 2.16 lakh tonnes and declined to 1.77 lakh tonnes in respective years. The total food grains production was 43.12 lakh tonnes and it increased to 61.46 and 61.16 lakh tonnes in 2004-05 and 2005-06 respectively. The oilseeds (groundnut, gingelly, castor and sunflower) production increased from 9.64 lakh tonnes in 2003-04 to 11.52 lakh tonnes in 2005-06 due to increase in production from 1387 kg/hectare in 2003-04 to 1527 kg/hectare in 2005-06. The production of sugarcane (in terms of gur) had increased from 17.66 lakh tonnes in 2003-04 to 32.44 lakh tonnes in 2005-06.

The index numbers of area, production and productivity of food and non-food crops for a period of three years from 2003-04 is furnished in Table 2.19.

**Table 2.19. Index number of Area, Production and Yield rate of Principal crops**

Crops	Area	Production	Yield Rate
<b>Food Crops</b>			
2003-04	76.06 (0.69)	67.93 (-7.9)	83.34 (-1.79)
2004-05	87.37 (11.31)	96.72 (28.79)	98.06 (14.72)
2005-06	91.61 (4.24)	108.91 (12.19)	97.55 (-0.5)
<b>Non-food Crops</b>			
2003-04	66.27 (6.77)	66.66 (-1.51)	70.50 (-6.37)
2004-05	69.17 (2.9)	87.75 (21.09)	90.88 (20.38)
<b>Overall</b>			
2003-04	75.22 (4.54)	67.65 (-5.90)	80.20 (-3.14)
2004-05	83.22 (8.10)	94.45 (26.80)	96.27 (16.07)
2005-06	85.36 (2.04)	106.61 (12.16)	98.46 (2.19)

*Figures in parentheses indicate the change over the previous year*

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

From the table, it is evident that the index of agricultural production has gone up by 12.19 points over the previous year due to 2.04 points increase in area and 2.19 points increase in productivity. Further, the increase in the production of food crops (12.19 points) was marginally higher as compared to that of non-food crops (12.16 points). The increase in production of food crops was due to the increase in area under crops (4.24 points) and the increase in the production of non-food crops was due to increase in productivity (10.60 points).

The study carried out in the Department of Agricultural Economics, Tamil Nadu Agricultural University to identify the potential crops to exports indicated that commodities like cotton, groundnut, gingelly, tomato, banana, onion and potato have high competitiveness. Further, the study suggested that large area available under the rainfed conditions and marginal lands can be planted with cashew. The study also called for the encouragement of private exporters to take up banana export by resorting to contract farming.

### **2.8.3. Growth Rates of Area, Production and Productivity of Principal Crops in Tamil Nadu**

The growth rates of area, production and productivity of select crops of Tamil Nadu state are furnished in Table 2.20. To have a better perception of the performance of area, production and productivity, the total period considered were classified into four periods viz 1970-71 to 1979-80, 1980-81 to 1989-90, 1990-91 to 2005-06 and 1970-71 to 2005-06.

**Table 2.20. Growth Rates of Area, Production and Productivity of major Crops of Tamil Nadu State**

Crop	1970-71 to 79-80			1980-81 to 89-90			1990-91 to 2005-06			1970-71 to 2005-06		
	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Paddy	0.17	0.77	0.60	-2.53	4.80	7.52	-1.44	-2.50	-1.08	-1.07	0.51	1.60
Cholam	-4.16	6.52	11.15	-0.99	4.81	5.86	-3.11	-6.09	-3.08	-1.50	-2.18	-0.69
Maize	5.10	5.38	1.46	5.89	6.95	1.00	13.31	12.50	-0.71	6.95	8.52	1.46
Total Pulses	-4.91	0.64	5.83	3.76	6.77	2.90	-4.71	-3.60	1.17	0.84	1.37	0.52
Sugarcane	2.46	8.11	5.51	2.82	-0.98	-3.70	0.61	0.93	0.32	2.37	3.56	1.16
Cotton	-2.89	2.79	5.85	4.62	7.87	3.10	-6.82	-8.80	-1.37	-1.50	-1.57	-0.07
Groundnut	-5.61	0.10	6.05	2.33	4.14	1.77	-4.98	-3.66	1.39	-0.09	0.87	0.95
Chillies	2.00	-6.03	-7.87	-3.37	-2.69	0.70	0.07	0.86	0.79	-0.33	-3.10	-2.78
Banana	3.40	3.96	0.55	0.22	-2.69	6.94	1.29	3.30	1.99	2.11	2.08	0.53

It is evident from the table, that during the period from 1970-71 to 1979-80, the area under sorghum, total pulses, cotton and groundnut exhibited a negative growth rates. As regards the other crops under question, the growth rate of area ranged from 0.17 per cent per annum in paddy to 5.10 per cent per annum in maize. As regards the production, all the chosen crops showed a positive growth rate, with the exception of chillies. Similar phenomenon was observed in the productivity of chillies. The growth rates in the productivity of the remaining chosen crops varied from 0.55 per cent in banana to 11.1 percent per annum in sorghum crop.

During the period from 1980-81 to 1989-90, the area under paddy, sorghum and chillies witnessed a negative growth rate and among the other chosen crops, the growth rate in area ranged from 0.22 per cent per annum in banana to 5.87 percent per annum in maize. As regards the growth rate in production, the rate of growth was found to be maximum (7.87 per cent per annum) in cotton and minimum (4.14 percent per annum) in groundnut. Sugarcane, chillies and banana exhibited a negative growth rate in production and the same varied from -0.98 to -2.69 percent per annum respectively. All the chosen crops with the exception of sugarcane exhibited a positive growth rate in productivity. The rate of growth of productivity was found be the highest in paddy (7.52 per cent) followed by banana (6.94 percent), sorghum (5.86 percent), cotton (3.10 percent) and total pulses (2.90 percent) in that order.

A different phenomenon was observed in the growth rates of area, production and productivity of the crops under question during the period from 1990-91 to 2005-06. It could be seen that paddy, sorghum, total pulses, cotton and groundnut exhibited a negative growth rate in area. As regards the production, with the exception of Maize, sugarcane, chillies and banana all other crops exhibited negative growth rates. As regards the growth rates of productivity it was found to be the highest in banana (1.99 per cent per annum) and the lowest in sugarcane (0.32 per cent per annum). Paddy (-1.08 percent), sorghum (-3.08 percent), maize (-0.71 percent) and cotton (-1.37 percent) witnessed a negative growth rate in its productivity.

In the entire study period, the area under paddy, sorghum, cotton, groundnut and chillies exhibited a negative growth rate. Among the other crops, the growth rate in area varied from 0.84 per cent per annum in total pulses to 6.95 per cent per annum in maize. As regards the rate of growth of production, with the exception of sorghum, cotton and chillies, all the other chosen crops witnessed a positive growth rate. However, the growth rate of production in paddy was found to be 0.51 percent only. Likewise, a negative growth rate in productivity was observed in sorghum, cotton and chillies. Since majority of crops chosen for the study exhibited a negative growth in area, concerted efforts must be taken up for augmenting the productivity of the crops for sustaining the production. The negative growth rates in area under Paddy, sorghum, cotton, groundnut and chillies over a period of 35 years clearly indicated the shift of lands of these crops to some other purposes. This tendency has to be arrested and steps should be taken for augmenting the productivity of the crops under question.

In sum, it could be inferred that over the period of 36 years (from 1970-71 to 2006-07) considered, among the 9 major crops for which the growth rates were marked out, the growth rates were found to be positive with reference to area, productivity as well as production in four crops viz., maize, total pulses, sugarcane and banana. On the other hand, the three crops viz cholam, cotton and chillies witnessed negative growth rates in area, productivity as well as production. In paddy and groundnut, while area alone had shown negative growth rates, the productivity and production had been on the positive growth.

The above growth trends implied that the down trends in area under paddy and groundnut must be arrested and thrust must be given to accelerate the growth rates in productivity and hence production. The negative trends in cotton are rather the highly disturbing signs. The cotton textile industry is the largest manufacturing industry in the country and to feed this industry with the raw material viz., cotton, it becomes necessary to reverse the negative trends in area, productivity and production into positive ones and hence the strategy must be atleast to increase the area under cotton and boost cotton productivity so as to increase cotton production.

Maize and sugarcane have shown excellent growth trends. The former is the raw material for the feed industry, while the latter is the raw material for sugar industry. Therefore, this trend may be encouraged to support these industries' growth in the state. These two crops are also quite impressive in increasing the income of the farmers through crop diversification.

The positive growths of area, productivity and production of total pulses are quite encouraging as they form the important sources of protein to human well – being. However, the productivity growth is rather marginal and hence needs strategy to increase the pulses productivity through sizable investment on research and extension activities relating to pulses.

With reference the horticultural crops like chilly and banana, the former experienced negative growth trends in area, productivity as well as production and these trends must be atleast arrested and productivity may be given a fillip. As regards banana, the trends may be kept up, as the demand for protective foods like banana is on the increase due to per capita income growth.

The study carried out by the Department of Agricultural Economics, Tamil Nadu Agricultural University revealed that the production losses due to leaf folder in paddy were the maximum in the state accounting for 11.40 percent of the total losses. The Benefit Cost analysis and Net Present Value for leaf folder were worked out to be 26.72 and 21.49 for Bio-control/Bio-technology and conventional breeding respectively. The BCR and NPV revealed that the Bio-control/Bio-technology method is economically profitable for solving the top ten constraints namely leaf folder, yellow Stem Borer, Drought/Water Scarcity, Rice blast, Ear head bug, Rice Tungro Virus(RTV), Sheath rot, Brown Plant Hopper (BPH) and Bacterial Leaf Blight (BLB). The economic surplus for controlling leaf folder was the maximum which amounted to Rs.169.01 million. This is followed by stem borer (127.30), drought (117.90), rice blast (118.31) and ear head bug and BLB (57.28). The study also indicated that there is greater scope for increasing the productivity level, thereby increasing the production of rice, by addressing these constraints.

### 2.8.3.1. District-wise Growth rates of Area, production and Productivity of Crops

Growth rates of Area, Production and Productivity of major crops in all the districts of Tamil Nadu with the exception of Chennai and the Nilgiris districts over the years were worked out as detailed in Table 2.21.

**Table 2.21 Years of Estimation of growth rates – District wise**

S.No	Years of estimation	Districts
1	1970-71 to 2005-06	Kancheepuram, Cuddalore, Vellore, Salem, Dharmapuri, Coimbatore, Tiruchirapalli, Pudukkottai, Thanjavur, Madurai, Ramanthapuram, Thirunelveli and Kanyakumari.
2	1998-99 to 2005-06	Thiruvallur, Namakkal, Karur, Perambalur and Theni
3	1996-99 to 2005-06	Thiruvarur and Villupuram
4	1994-95 to 2005 -06	Nagapattinam
5	1991-92 to 2005-06	Thoothukudi, Sivagangai and Virudhunagar
6	1986-87 to 2005-06	Dindigul
7	1987-88 to 2005-06	Thiruvannamalai
8	1981-82 to 2005-06	Erode

The classification of the districts was necessitated due to bifurcation and trifurcation of the districts over years. The results of the analysis are presented in Tables 2.22 to Table 2.48.

As regards the area under Paddy, negative growth rate was observed in all the districts with the exception of Thiruvannamalai, Erode and Virudhunagar districts. Similarly negative growth rate in production was observed in the districts of Kancheepuram, Cuddalore, Vellore, Salem, Coimbatore, Tiruchirapalli, Thanjavur, Ramanathapuram, Thirunelveli, Thiruvallur, Namakkal, Perambalur, Theni, Villupuram, Thiruvarur, Nagapattinam, Erode and Dindigul. Like-wise, Dharmapuri, Thiruvallur, Karur, Perambalur, Theni, Villupuram, Thiruvarur, Nagapattinam, Erode and Virudhunagar districts exhibited a negative growth rate in the productivity of paddy.



As regards Choram, Thiruvallur and Namakkal districts alone exhibited a positive growth rate in area. Further only Namakkal district had exhibited a positive growth rate in the production of Choram. The productivity of choram exhibited a positive growth rate in the districts of Vellore, Salem, Madurai, Ramanathapuram, Thirunelveli and Namakkal.

With reference to total pulses, a positive growth rate in area, production and productivity was observed in the districts of Dharmapuri and Villupuram. Likewise Kancheepuram, Cuddalore, Salem, Coimbatore, Trichirapalli, Pudukkottai, Thanjavur, Madurai, Ramanathapuram, Thirunelveli, Kanyakumari, Namakkal, Erode, Dindigul and Virudhunagar districts had shown positive growth in productivity. Similarly a positive growth in area, production and productivity was observed in the case of sugarcane in the districts of Kancheepuram, Cuddalore, Pudukkottai, Thanjavur, Thirunelveli, Namakkal, Perambalur, Villupuram, Erode and Thoothukudi.

In Chillies, a negative growth rate in area, production and productivity was observed over years in the districts of Kancheepuram, Cuddalore, Vellore, Salem, Dharmapuri, Coimbatore, Thiruchirapalli, Pudukkottai, Thanjavur, Madurai, Ramanathapuram, Thirunelveli, Thiruvallur, Namakkal, Karur, Villupuram, Nagapattinam, Erode, Dindigul and Virudhunagar.

With regard to Banana, a positive growth rate in area, production and productivity was observed in the districts of Cuddalore, Vellore, Dharmapuri, Coimbatore, Pudukkottai, Namakkal, Kanyakumari, Perambalur, Thiruvarur, Erode, Dindigul, Sivagangai, and Thoothukudi. Karur alone had exhibited a negative growth rate in area, production and productivity of banana.

Cuddalore, Coimbatore, Pudukkottai, Madurai, Karur, Theni, Villupuram, Erode, Dindigul, Sivagangai, Virudhunagar, and Thoothukudi districts had shown a negative growth rate in area, production and productivity of cotton. Thiruvannamalai district had alone exhibited a positive growth rate in all the three aspects in cotton.

A positive growth rate in area, production and productivity of groundnut was observed in the district of Thiruvarur only. Similarly negative growth rate of area, production and productivity was observed in Salem, Coimbatore, Karur and Virudhunagar districts. The positive growth rate of productivity in groundnut was more pronounced in Theni district (7.66 percent) as compared to other districts.

In sum, in Kancheepuram district with the exception of chillies an increase in productivity was observed in all the crops. In Erode district with the exception of paddy and cotton, productivity in all other crops under consideration had shown a positive growth rate. On the contrary, in Dindigul district all the crops with the exception of Groundnut, Chillies, Cholan and Maize had shown a negative growth rate over years. In Thoothukudi, Cotton, Cholan, Total pulses and Chillies exhibited a negative growth rate in productivity.

In Tiruchirapalli district with the exception of cotton and banana, all other crops exhibited a negative growth rate. In Theni, all other crops with the exception of maize had exhibited a negative growth rate. In Coimbatore district, all crops with the exception of maize and banana exhibited a negative growth rate in production. In Ramanathapuram district all the selected crops had exhibited a negative a growth in the production. In Nagapattinam district, all the crops with the exception of cotton had exhibited a negative growth rate in production.

**Table 2.22. Growth rates of Area, Production and Productivity of Major Crops in Kancheepuram District**

Crop	(Percentage)		
	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-3.29	-1.76	1.58
Total Pulses	-0.43	2.21	0.42
Sugarcane	3.06	4.19	1.09
Cotton	0.86	1.12	0.55
Groundnut	-2.71	0.37	3.16
Chillies	-7.51	-9.99	-2.69
Banana	-5.00	-2.70	3.24

**Table 2.23. Growth rates of Area, Production and Productivity of Major Crops in Cuddalore District**

(Percentage)

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-3.75	-2.62	1.17
Maize	6.65	11.10	1.52
Cholam	-9.81	-12.81	-3.32
Total Pulses	-0.10	2.43	0.72
Sugarcane	1.50	2.23	0.81
Cotton	-4.36	-4.56	-0.20
Groundnut	-5.60	-3.09	2.65
Chillies	-8.08	-10.82	-2.99
Banana	7.36	7.68	1.13

**Table 2.24. Growth rates of Area, Production and Productivity of Major Crops in Vellore District**

(Percentage)

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-6.60	-4.68	2.06
Maize	0.00	1.27	1.26
Cholam	-4.44	-3.17	1.32
Total Pulses	0.67	-0.04	-1.06
Sugarcane	-1.41	-1.29	0.21
Cotton	10.41	9.44	-0.89
Groundnut	-5.13	-2.84	2.41
Chillies	-4.60	-6.16	-1.64
Banana	3.46	4.75	2.21

**Table 2.25. Growth rates of Area, Production and Productivity of Major Crops in Thiruvannamalai District**

(Percentage)

Crop	1990-91 to 2006		
	Area	Production	Productivity
Paddy	0.62	2.02	0.91
Maize	-6.37	-8.20	-7.05
Cholam	-8.97	-14.69	-4.85
Total Pulses	-6.51	-8.36	-0.76
Sugarcane	0.18	0.69	-0.57
Cotton	17.27	16.84	3.13
Groundnut	-3.69	0.23	4.12
Chillies	-2.19	-2.74	0.35
Banana	0.58	1.05	-1.37

**Table 2.26. Growth rates of Area, Production and Productivity of Major Crops in Salem District**

(Percentage)

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-2.31	-0.13	2.22
Maize	12.80	14.38	1.40
Cholam	-3.80	-2.80	1.04
Total Pulses	-0.80	0.07	1.63
Sugarcane	-1.14	-1.26	-0.12
Cotton	0.46	0.32	-0.14
Groundnut	-1.40	-1.58	-0.19
Chillies	-0.48	-1.75	-1.28
Banana	-2.41	0.27	2.74

**Table 2.27. Growth rates of Area, Production and Productivity of Major Crops in Dharmapuri District**

(Percentage)

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-1.45	1.07	2.56
Maize	-0.21	0.08	0.28
Cholam	-1.82	-1.93	1.33
Total Pulses	0.04	1.49	2.00
Sugarcane	2.44	2.71	0.57
Cotton	3.64	3.59	-0.05
Groundnut	0.59	0.88	1.37
Chillies	-2.53	-3.75	-0.34
Banana	0.22	2.90	2.67

**Table 2.28. Growth rates of Area, Production and Productivity of Major Crops in Coimbatore District**

(Percentage)

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-7.90	-6.07	1.20
Maize	2.86	3.28	0.40
Cholam	-1.78	-4.30	-2.56
Total Pulses	-2.88	-3.06	0.20
Sugarcane	-4.20	-3.98	0.23
Cotton	-5.63	-7.89	-2.39
Groundnut	-4.36	-4.38	-0.03
Chillies	-4.31	-6.11	-1.89
Banana	2.93	5.19	2.20

**Table 2.29. Growth rates of Area, Production and Productivity of Major Crops in Tiruchirapalli District****(Percentage)**

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-3.34	-1.09	2.32
Maize	-3.04	-3.39	1.03
Total Pulses	-0.25	-5.10	0.54
Sugarcane	-2.72	-2.59	0.48
Cotton	-3.23	1.51	0.90
Groundnut	1.26	-2.57	2.57
Chillies	-3.74	-7.02	-1.25
Banana	-5.62	1.86	2.09

**Table 2.30. Growth rates of Area, Production and Productivity of Major Crops in Pudukkottai District****(Percentage)**

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-0.70	1.81	1.55
Cholam	-3.46	-5.21	-0.04
Maize	-10.01	-8.03	1.36
Total Pulses	-1.21	-1.82	0.25
Sugarcane	8.54	9.65	1.03
Cotton	-3.36	-3.84	-0.50
Groundnut	-0.34	0.14	1.70
Chillies	-8.02	-11.06	-2.50
Banana	16.18	18.50	2.00

**Table 2.31. Growth rates of Area, Production and Productivity of Major Crops in Thanjavur District****(Percentage)**

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-4.91	-3.33	1.65
Maize	-7.91	-4.96	3.21
Total Pulses	-5.78	-6.50	1.35
Sugarcane	2.33	3.03	0.68
Cotton	5.73	5.04	-0.66
Groundnut	-5.31	-3.80	1.60
Chillies	-11.20	-12.37	-1.32
Banana	-0.49	1.69	2.19

**Table 2.32. Growth rates of Area, Production and Productivity of Major Crops in Madurai District****(Percentage)**

Crop	1970 to 2006		
	Area	Production	Productivity
Paddy	-3.07	-1.28	1.06
Cholam	-8.13	-8.28	0.89
Maize	3.02	5.25	2.17
Total Pulses	-7.63	-3.58	1.00
Sugarcane	-1.67	0.80	2.52
Cotton	-4.25	-7.20	-2.37
Groundnut	-6.88	-6.54	1.68
Chillies	-9.57	-12.61	-2.73
Banana	-6.02	-3.96	2.19

**Table 2.33. Growth rates of Area, Production and Productivity of Major Crops in Ramanathapuram District****(Percentage)**

Crop	1970 to 2006		
	Area	Production	Productivity
Paddy	-2.33	-2.33	0.74
Cholam	-5.44	-6.42	0.20
Total Pulses	-7.95	-6.57	0.54
Sugarcane	-10.72	-10.35	0.91
Cotton	-9.70	-9.80	0.84
Groundnut	-3.91	-4.45	1.32
Chillies	-0.59	-2.50	-1.92
Banana	-9.32	-6.03	3.62

**Table 2.34. Growth rates of Area, Production and Productivity of Major Crops in Thirunelveli District****(Percentage)**

Crop	1970 to 2006		
	Area	Production	Productivity
Paddy	-2.24	-0.17	2.12
Cholam	-9.11	-8.33	0.87
Maize	20.33	18.17	-1.80
Total Pulses	-0.35	-1.94	1.43
Sugarcane	4.70	5.12	0.29
Cotton	-7.19	-4.43	2.97
Groundnut	-2.77	-1.86	0.93
Chillies	-7.14	-8.29	-1.24
Banana	-0.62	2.44	3.08



**Table 2.35. Growth rates of Area, Production and Productivity of Major Crops in Kanyakumari District****(Percentage)**

Crop	1970-71 to 2006		
	Area	Production	Productivity
Paddy	-1.17	0.09	2.72
Total Pulses	-0.34	0.20	0.96
Groundnut	-5.13	-10.63	2.01

**Table 2.36. Growth rates of Area, Production and Productivity of Major Crops in Thiruvallur District****(Percentage)**

Crop	1998-99 to 2005- 2006		
	Area	Production	Productivity
Paddy	-4.53	-10.62	-3.02
Cholam	8.31	-17.32	-12.89
Total Pulses	4.49	-2.03	-4.76
Sugarcane	-5.25	-10.75	-1.65
Groundnut	-7.47	-5.71	2.44
Chillies	-6.46	-3.79	-4.76
Banana	2.57	9.78	-4.76

**Table 2.37. Growth rates of Area, Production and Productivity of Major Crops in Namakkal District****(Percentage)**

Crop	1998 to 2006		
	Area	Production	Productivity
Paddy	-10.40	-12.98	-2.88
Maize	11.04	7.49	-3.20
Cholam	7.68	0.24	-6.90
Total Pulses	-13.87	-13.38	0.56
Sugarcane	2.48	2.06	-0.41
Cotton	0.33	-0.59	-0.91
Groundnut	-6.64	-9.82	-3.41
Chillies	-0.94	-1.38	-0.44
Banana	0.80	5.74	4.90

**Table 2.38. Growth rates of Area, Production and Productivity of Major Crops in Karur District**  
(Percentage)

Crop	1998 to 2006		
	Area	Production	Productivity
Paddy	-1.14	-3.57	-2.46
Cholam	0.22	-3.67	-3.88
Total Pulses	-2.42	-5.55	-5.25
Sugarcane	-5.71	-9.78	-4.31
Cotton	-13.81	-14.55	-0.86
Groundnut	-4.95	-5.02	-0.07
Chillies	-17.88	-15.08	3.42
Banana	-4.58	-8.18	-3.77

**Table 2.39. Growth rates of Area, Production and Productivity of Major Crops in Perambalur District**  
(Percentage)

Crop	1998 to 2006		
	Area	Production	Productivity
Paddy	-2.27	-6.13	-3.95
Cholam	-8.73	-11.12	-2.62
Maize	105.57	104.71	-0.42
Total Pulses	-7.57	-8.19	-1.18
Sugarcane	0.24	2.23	1.99
Cotton	-27.83	-26.12	2.36
Groundnut	-4.51	-4.29	0.22
Chillies	-10.14	-5.62	5.03
Banana	2.22	1.02	-1.18

**Table 2.40. Growth rates of Area, Production and Productivity of Major Crops in Theni District****(Percentage)**

<b>Crop</b>	<b>1998 to 2006</b>		
	<b>Area</b>	<b>Production</b>	<b>Productivity</b>
Paddy	-2.81	-1.11	-7.30
Cholam	-1.35	-1.14	-5.60
Maize	8.16	5.06	-4.07
Total Pulses	-6.25	-2.05	-3.79
Sugarcane	-5.66	-5.18	-0.96
Cotton	-9.96	-19.06	-14.93
Groundnut	-16.15	-17.24	7.66
Chillies	-8.36	-13.31	12.85
Banana	-5.81	-9.46	21.29

**Table 2.41. Growth rates of Area, Production and Productivity of Major Crops in Villupuram District****(Percentage)**

<b>Crop</b>	<b>1996-97 to 2005- 2006</b>		
	<b>Area</b>	<b>Production</b>	<b>Productivity</b>
Paddy	-1.80	-3.45	-0.82
Cholam	-6.71	-9.57	-3.89
Total Pulses	15.09	17.87	2.41
Sugarcane	0.76	1.05	0.29
Cotton	-7.16	-7.52	-0.39
Groundnut	-4.57	-0.90	3.84
Chillies	-6.85	-9.92	-3.30
Banana	0.03	-2.35	-2.38

**Table 2.42. Growth rates of Area, Production and Productivity of Major Crops in Thiruvarur District****(Percentage)**

Crop	1997 to 2006		
	Area	Production	Productivity
Paddy	-0.75	-6.46	-4.83
Maize	1.28	-2.60	-1.62
Total Pulses	0.65	0.72	-3.00
Sugarcane	-2.82	-2.39	4.25
Cotton	3.42	0.60	-6.91
Groundnut	1.23	3.80	0.93
Chillies	-1.50	-0.99	2.51
Banana	-0.66	1.19	2.75

**Table 2.43. Growth rates of Area, Production and Productivity of Major Crops in Nagapattinam District****(Percentage)**

Crop	1994 to 2006		
	Area	Production	Productivity
Paddy	-6.04	-12.60	-6.95
Maize	-6.87	-17.59	-0.20
Total Pulses	-1.30	-6.40	-3.54
Sugarcane	-4.45	-9.72	0.27
Cotton	0.87	0.41	-1.56
Groundnut	-4.56	-8.26	2.15
Chillies	-5.72	-13.89	-1.39
Banana	-1.75	-2.24	1.81

**Table 2.44. Growth rates of Area, Production and Productivity of Major Crops in Erode District**  
(Percentage)

Crop	1980-81 to 2006		
	Area	Production	Productivity
Paddy	-3.88	-1.81	2.16
Maize	11.52	12.41	0.80
Cholam	-13.02	-12.19	0.95
Total Pulses	-1.05	-0.13	-0.36
Sugarcane	1.50	2.89	1.37
Cotton	-1.49	-2.03	-0.55
Groundnut	1.70	-0.13	1.61
Chillies	2.87	-0.71	2.23
Banana	2.98	5.53	2.48

**Table 2.45. Growth rates of Area, Production and Productivity of Major Crops in Dindigul District**

(Percentage)

Crop	1987 to 2006		
	Area	Production	Productivity
Paddy	-1.68	-1.28	0.08
Cholam	-3.25	-8.28	-1.63
Maize	17.25	5.25	-1.11
Total Pulses	-3.39	-3.58	1.92
Sugarcane	-0.49	0.80	2.70
Cotton	-5.08	-7.20	-2.75
Groundnut	-4.23	-6.54	5.07
Chillies	-2.56	-12.61	-0.35
Banana	1.37	-3.96	2.87

**Table 2.46. Growth rates of Area, Production and Productivity of Major Crops in Sivagangai District****(Percentage)**

Crop	1986 to 2006		
	Area	Production	Productivity
Paddy	-0.14	1.76	1.91
Cholam	-10.58	-12.60	-2.26
Total Pulses	-7.66	-5.00	-0.89
Sugarcane	0.36	2.38	-0.48
Cotton	-0.23	-2.12	-1.90
Groundnut	-4.30	-0.49	3.98
Chillies	3.13	-0.61	-3.62
Banana	1.98	4.04	2.02

**Table 2.47. Growth rates of Area, Production and Productivity of Major Crops in Virudhunagar District****(Percentage)**

Crop	1986 to 2006		
	Area	Production	Productivity
Paddy	1.13	0.40	-0.72
Cholam	-5.08	-1.73	-1.65
Maize	22.97	23.32	0.29
Total Pulses	-1.66	0.92	0.33
Sugarcane	4.08	9.12	-0.97
Cotton	-9.99	-5.49	-0.32
Groundnut	-1.85	-1.98	-1.98
Chillies	-3.51	-1.77	-1.77
Banana	-1.01	1.96	3.00

**Table 2.48. Growth rates of Area, Production and Productivity of Major Crops in Thoothukudi District****(Percentage)**

<b>Crop</b>	<b>1986 to 2006</b>		
	<b>Area</b>	<b>Production</b>	<b>Productivity</b>
Paddy	-3.44	1.32	1.14
Cholam	-1.87	-6.38	-4.59
Maize	28.04	34.39	4.95
Total Pulses	-4.05	0.23	-0.44
Sugarcane	8.05	11.96	3.62
Cotton	-11.94	-12.81	-0.99
Groundnut	-5.45	-4.00	1.54
Chillies	6.48	5.85	-2.91
Banana	2.25	5.97	3.63

**2.8.3.2 Implications**

The implications based on the growth rates are discussed below

**1. Paddy**

Paddy is cultivated in almost all the districts in Tamil Nadu State. The growth rate of area was positive only in two districts namely Tiruvannamalai and Virudhunagar. In all other 27 districts the trend was negative. The growth rate of productivity was found to be positive in 21 districts and negative in eight districts viz. Thiruvannamalai, Karur, Perambalur, Theni, Vilupuram, Thiruvarur, Nagapattinam and Virudhunagar. Similarly, the production trend was positive in eight districts of Thiruvannamalai, Dharmapuri, Pudukottai, Sivaganagi, Virudhunagar, Kanyakumari, Tirunelveli and Thoothukudi, while it was negative in all other 21 districts. This implied that the down trend in area under paddy in 27 districts (Table) must be arrested and the productivity trend must be stepped up especially in the eight districts, where negative trend has been observed, in order to increase production. In sum, the strategy must be to increase production through productivity increase in all the districts of Tamil Nadu.

## **2. Maize**

Maize crop was cultivated in about 20 districts during the period under study. With reference to area, 13 districts experienced positive growth, while seven districts have shown negative trend. Similarly, with regard to productivity, while 11 districts witnessed positive growth, seven districts had negative trend. The production witnessed uptrend in 14 districts and downtrend in six districts. The growth rates in area, productivity and production are quite perceptible in majority of the districts where maize is cultivated. Maize is one of the important crops introduced for crop diversification in Tamil Nadu State. Moreover, the growing feed industry keeps demanding maize, as it is an important ingredient in feed mix.

## **3. Cholan**

Cholan is grown in more than 21 districts in the state. The growth rate of area was positive only in three districts. Similarly, the productivity was positive only in four districts and production was positive only in one district. Thus, the negative trend in majority of the districts is a common phenomenon. Due to changing purchasing power and food habits, the consumption of cholan has drastically come down in majority of small farmer / labour households. One of the important crops that replaces cholan is maize. Therefore, these trends indicate that the development strategy for cholan must give full thrust on productivity increase only.

## **4. Total Pulses**

Pulse crop is cultivated invariably in all the districts, with the exception of the Nilgiris, in Tamil Nadu State. Majority of the districts experienced negative growth trends regarding area and production. More than half of the districts in Tamil Nadu had positive productivity growth. Pulses are the major sources of cheap protein particularly for the vegetarians and poor. Therefore, there is a need to keep producing more and more pulses. As pulses are more sensitive to excessive moisture the unusual continuous rain and flooding devastate the entire rice-fallow pulses once in 3 or 4 years, reducing production drastically. Therefore, the development strategy must focus not only on productivity increase, but also on the water management / flood management tactics.



## **5. Cotton**

Cotton is the raw material for the cotton industry, which is the largest manufacturing industry in the country. Traditionally cotton is cultivated more in the districts of Salem, Coimbatore, Erode, Madurai, Virudhunagar, Theni, Tirunelveli, etc. However, recently the area and production of cotton has been dwindling to the alarming level especially in Coimbatore, Salem, Erode, and Theni districts. The crop development strategy must aim at reversing the recent trend to that of the past, so as to keep increasing cotton production and feeding the cotton textile mills in the state. The pricing is an important factor that merit consideration in addition to assured market demand through contract farming etc.

## **6. Sugarcane**

Sugarcane is an important industrial crop grown in more than 26 districts in Tamil Nadu. It forms as the raw material for the sugar industry, which is the second largest manufacturing industry in the country. The growth was quite convincing with positive trend in more than 15 districts. The growth trend must be kept up to meet the growing demand for sugar. Therefore, the development strategy must focus on sugarcane productivity as well as area increase in the years to come, so as to keep increasing production in almost all the districts of Tamil Nadu State. However, the negative trend in area, production and productivity need to be reversed through proper strategy planning.

## **7. Groundnut**

Groundnut is yet another important food/oilseeds crop, whose production performance had shown negative growth in majority of the districts. A positive trend in growth of area, production and productivity in groundnut was observed in three, four and five districts respectively. Therefore, before reaching an alarming situation of down trends, strategy planning must aim at increasing growth trend, especially in area and production.

## **8. Chilli**

Chilli is an important horticultural / commercial crop grown in more than 25 districts in the state. In all these districts Chilli is grown in specified pockets only. The rainfed chilli is famous in Pudur / Vilathikulam areas of Thoothukudi district.

The Sathur samba of Virudhunagar district and Paramakudi gundu Chilli of Ramnad district are also popular in southern districts. Perusal of table , exhibits the fact that Sivagangai and Thoothukudi districts alone witnessed positive growth in area. Similarly, Thoothukudi district alone had positive growth in production. The productivity trend was positive in six districts. In all other districts, negative trend could be observed. This is really a critical situation that needs solution. In sum, the development of chilli crop in Tamil Nadu requires a thorough planning to increase area, productivity and production, as this crop has got export market as well.

### **9. Banana**

Banana is yet another horticulture crop that is used both as vegetable and fruit. However, it is consumed more as fruit. Fairly large number of districts shows positive growth regarding area, production and productivity. Yet, few districts show negative growth. As the level of living of people is changing due to per capita income increase, the demand for protective foods like banana fruit is also increasing in the recent times. Hence, there is an urgent need to keep increasing the production of banana. The export potential also indicates importance of boosting banana production. The strategy, therefore, must keep increasing productivity and production of banana in the state to meet the growing domestic and export demand.

The distribution of districts according to growth trends in area, productivity and production is exhibited in Table 2.49. The districts requiring special attention for crop development has also been indicated there in.

**Table 2.49. Crop-wise distribution of districts according to growth trends in Tamil Nadu State**

Sl. No	Crop	Area		Productivity		Production		District requires special attention
		Positive	Negative	Positive	Negative	Positive	Negative	
1.	Paddy	Tiruvannamalai Virudhunagar	All other 27 districts	All other 20 districts	Thiruvallur Karur, Theni Namakkal Perambalur Villupuram Thiruvarur Nagai Virudhunagar	Thiruvannamalai Dharmapuri Pudukottai Sivagangai Virudhunagar Thoothukudi Kanyakumari Tirunelveli	All other 20 districts	Thiruvallur, Karur, Theni Namakkal Perambalur Villupuram, Nagai
2.	Maize	Cuddalore Salem, Madurai Coimbatore Thirunelveli Namakkal Perambalur Theni, Erode, Thiruvarur Dindigul Virudhunagar Thoothukudi	Thiruvannamalai Dharmapuri Trichirapalli Pudukottai Thanjavur Nagai Vellore	Cuddalore Vellore, Salem Dharmapuri Coimbatore Thiruchirapalli Madurai Namakkal, Erode Virudhunagar Thoothukudi	Thiruvannamalai Tirunelveli Perambalur Theni Thiruvarur Nagai Dindigul	Cuddalore Vellore, Salem Dharmapuri Coimbatore, Theni Madurai, Namakkal, Tirunelveli Perambalur, Erode Dindigul, Virudhunagar Thoothukudi	Thiruvannamalai Thirichirapalli Pudukottai Thanjavur Thiruvarur Nagai	Thiruvannamalai Nagai Thiruvarur
3.	Cholam	Thiruvallur Namakkal Karur	Cuddalore, Vellore Thiruvannamalai Salem, Dharmapuri Coimbatore Pudukottai, Madurai, Ramanad, Tirunelveli Perambalur, Theni Thoothukudi Virudhunagar Sivagangai, Erode Vilupuram, Dindigul	Thirunelveli Ramnad Dharmapuri Madurai	Thoothukudi Namakkal, Salem, Cuddalore, Karur Thiruvannamalai Coimbatore, Erode, Dindigul, Pudukottai, Ramanad, Theni Thiruvallur, Virudhunagar Sivagangai Vilupuram, Perambalur	Namakkal	Thoothukudi Ramnad, Cuddalore Vellore, Thiruvannamalai Salem, Dharmapuri Madurai Coimbatore Erode, Pudukottai Thiruvallur, Thirunelveli Karur, Perambalur Theni, Villupuram	Thoothukudi Ramnad Cuddalore Thiruvannamalai Salem, Karur Coimbatore Erode, Pudukottai Thiruvallur, Theni Vilupuram Perambalur

Sl. No	Crop	Area		Productivity		Production		District requires special attention
		Positive	Negative	Positive	Negative	Positive	Negative	
4.	Total Pulses	Vellore Dharmapuri Thiruvallur Villupuram Thiruvannamalai	Kancheepuram Cuddalore Thiruvannamalai Salem Coimbatore Tiruchirapalli Pudukottai Thanjavur Madurai, Ramnad Tirunelveli Kanyakumari Namakkal Perambalur, Theni Nagai, Erode Dindigul, Sivagangai Virudhunagar Thoothukodi	Kancheepuram Cuddalore Salem Dharmapuri Kanyakumari Vilupuram Dindigul Virudhunagar Coimbatore Tiruchirapalli Pudukottai Thanjavur Madurai Ramnad Tirunelveli Namakkal	Vellore Thiruvannamalai Thanjavur Thiruvallur Karur Perambalur Theni Nagai Erode Sivagangai Thoothukudi Thiruvarur	Cuddalore Salem Dharmapuri Kanyakumari Vilupuram Virudhunagar Thoothukudi Thiruvarur	Kancheepuram Vellore Thiruvannamalai Thiruvallur Karur Perambalur Theni, Nagai Dindigul Sivagangai Coimbatore Tiruchirapalli Pudukottai Thanjavur Madurai, Ramnad Tirunelveli Namakkal, Erode	Vellore Thiruvannamalai Thanjavur Thiruvallur Karur Perambalur Theni Nagai Erode Sivagangai
5.	Cotton	Kancheepuram Vellore Thiruvannamalai Salem Dharmapuri Thanjavur Ramnad Namakkal Thiruvarur Nagai	Cuddalore Coimbatore Thoothukudi Tiruchirapalli Pudukottai Madurai Tirunelveli Karur Virudhunagar Perambalur Theni Villupuram Erode, Theni Dindigul Sivagangai	Kancheepuram Thiruvannamalai Tiruchirapalli Ramnad Tirunelveli Perambalur	Cuddalore Thoothukudi Vellore Virudhunagar Salem, Sivagangai Dharmapuri Coimbatore Pudukottai Thanjavur Madurai, Namakkal Karur, Theni Villupuram Thiruvarur Nagai, Erode Dindigul	Kancheepuram Vellore Salem Dharmapuri Tiruchirapalli Thanjavur Ramnad Thiruvarur Nagai	Cuddalore Thiruvannamalai Sivagangai Coimbatore Virudhunagar Pudukottai Thoothukudi Madurai Tirunelveli Namakkal Karur Perambalur Theni, Villupuram Erode Dindigul	Cuddalore Toothukudi Virudhunagar Sivagangai Coimbatore Pudhukottai Madurai Namakkal Karur Theni Villupuram Erode Dindigul

Sl. No	Crop	Area		Productivity		Production		District requires special attention
		Positive	Negative	Positive	Negative	Positive	Negative	
6	Sugar Cane	Kancheepuram Cuddalore Thiruvannamalai Dharmapuri Pudukottai Thanjavur Tirunelveli Namakkal Perambalur Villupuram Erode Sivagangai Virudunagar Thoothukudi	Vellore, Salem Coimbatore Tiruchirapalli Madurai, Ramnad Thiruvallur, Karur Theni, Thiruvarur Nagai, Dindigul	Kancheepuram Cuddalore, Vellore Dharmapuri Coimbatore Trichirapalli Pudukottai Thanjavur, Madurai, Ramnad, Tirunelveli Namakkal Perambalur Villupuram Tiruvarur, Nagai Erode, Dindigul Thoothukudi	Thiruvannamalai Salem Thiruvallur Karur Theni Sivagangai Virudhunagar	Kancheepuram Cuddalore Thiruvannamalai Dharmapuri Pudukottai Thanjavur Madurai Namakkal Perambalur Villupuram Dindigul, Sivagangai Virudunagar Thoothukudi	Vellore Salem Coimbatore Trichirapalli Ramnad Thiruvallur Karur Theni Thiruvarur Nagai Erode	Salem Thiruvallur Karur Theni
7	Ground nut	Dharmapuri Tiruchirapalli Thiruvarur	Kancheepuram Cuddalore Thoothukudi Vellore, Nagai Thiruvannamalai Salem, Sivagangai Coimbatore Pudukottai Thanjavur Madurai, Dindigul Ramnad, Namakkal Tirunelveli Virudunagar Kanyakumari Thiruvallur Karur, Erode Perambalur Theni, Villupuram	Kancheepuram Cuddalore, Vellore Thiruvannamalai Dharmapuri Tiruchirapalli Pudukottai Dindigul Thanjavur Thiruvarur Madurai, Ramnad, Sivagangai Tirunelveli Kanyakumari Thiruvallur Namakkal Thoothukudi Perambalur, Theni Villupuram Nagai, Erode	Salem Coimbatore Karur Virudunagar	Kancheepuram Thiruvannamalai Dharmapuri Pudukottai Thiruvarur	Cuddalore Vellore Salem Coimbatore Thiruchirapalli Thanjavur Madurai Virudhunagar Ramnad Thoothukudi Kanyakumari Thiruvallur Namakkal Karur, Erode Perambalur Dindigul Sivagangai	Salem Thiruvallur Karur Virudhunagar

Sl. No	Crop	Area		Productivity		Production		District requires special attention
		Positive	Negative	Positive	Negative	Positive	Negative	
8	Chillies	Sivagangai Thoothukudi	Kancheepuram Cuddalore, Vellore Thiruvanamalai Salem, Dharmapuri Coimbatore Tiruchirapalli Pudukottai Thanjavur Madurai, Ramnad Tirunelveli Thiruvallur Namakkal, Karur Perambalur Theni, Villupuram Thiruvarur Nagai, Erode Dindigul Virudhunagar	Thiruvanamalai Karur Perambalur Theni Thiruvarur Erode	Kancheepuram Cuddalore Vellore, Salem Dharmapuri Coimbatore Thiruvanamalai Pudukottai Thanjavur Madurai Ramnad Tirunelveli Thiruvallur Namakkal Villupuram Nagai, Dindigul Sivagangai Thoothukudi Virudhunagar	Thoothukudi	Kancheepuram Cuddalore, Vellore Thiruvanamalai Salem, Dharmapuri Coimbatore Tiruchirapalli Pudukottai, Thanjavur Madurai, Ramnad Tirunelveli, Thiruvallur Namakkal, Karur Perambalur, Theni Villupuram, Thiruvarur Nagai, Erode Dindigul, Sivagangai Virudhunagar	Kancheepuram Cuddalore Vellore Salem Dharmapuri Coimbatore Thiruvannamalai Pudukottai Thanjavur Madurai Ramnad Thirunelveli Thiruvallur Namakkal Villupuram Nagai Dindigul Sivagangai Virudhunagar
9	Banana	Cuddalore Vellore Thiruvanamalai Dharmapuri Coimbatore Pudukottai Thiruvallur Namakkal Perambalur Villupuram Erode, Dindigul Sivagangai Thoothukudi	Kancheepuram Salem Tiruchirapalli Thanjavur Madurai Ramnad Tirunelveli Karur Theni Thiruvarur Nagai Virudhunagar	Kancheepuram Cuddalore, Salem, Vellore, Virudunagar Thoothukudi Dharmapuri, Coimbatore Tiruchirapalli Pudukottai Madurai, Ramnad, Tirunelveli Namakkal, Theni, Thiruvarur, Nagai, Erode, Dindigul, Sivagangai	Thiruvanamalai Thiruvarur Karur Perambalur Villupuram	Cuddalore, Salem, Vellore, Tiruchy, Virudunagar Thiruvanamalai Thoothukudi Dharmapuri, Coimbatore Pudukottai Thanjavur, Ramnad Tirunelveli, Thiruvallur Namakkal, Perambalur Thiruvarur, Erode Sivagangai	Kancheepuram Madurai, Karur Theni Villupuram Nagai Dindigul	Karur Villupuram

In Paddy cultivation special attention is required to boost productivity and hence production in the districts of Thiruvallur, Karur, Namakkal, Perambalur, Theni, Villupuram and Nagapattinam. Similarly, to increase maize production, the districts like Tiruvannamalai, Nagapattinam and Thiruvarur require immediate attention. To increase cholam productivity and production, special thrust may be given to the traditionally cholam growing areas of Salem, Coimbatore, Erode, Karur, Perambalur and Virudhunagar.

To boost pulses productivity and production emphasis may be given in transferring technologies in the rice fallow districts as well as in districts indicated in the table. Again, cotton productivity and hence production need adequate attention in the traditionally cotton growing areas of Salem, Coimbatore, Erode, Theni, Virudhunagar, Thoothukudi, Tirunelveli districts etc.

The growth trends in sugarcane with reference to area, productivity and production are though convincing in most of the care growing districts, special care may be given in the districts like Thiruvallur, Salem, Karur and Theni. The growth rate in area is rather negative in 23 out of 26 groundnut growing districts and this needs immediate attention to arrest the disturbing trend. Moreover, the districts of Salem, Karur, Coimbatore and Virudhunagar need special attention to increase productivity and production of groundnut.

With reference to horticultural crops, chilli cultivation requires special attention almost in all the chilli growing districts in the state. Growth trends with reference to area, productivity and production are quite convincing in majority of the banana growing districts. However, the districts of Karur and Villupuram deserve special attention, as could be visualized from the table.

## **2.9. Horticulture**

Allied sectors including horticulture, animal husbandry would provide additional employment opportunities and additional income to the farm families. Thus the income of the farm families is supplemented by the allied sectors.

The State is endowed with agro-climatic conditions conducive for growing a wide range of horticulture crops such as fruits, vegetables, spices, plantation crops, flowers, medicinal and aromatic plants. Tamil Nadu shares 8.7 percent of the production of these crops and 5.3 percent of the area at All India level.

The area and yield rate of major horticultural crops increased marginally by 4.8 and 0.20 percent respectively during 2005-06. The total production of horticulture crops improved from 126.20 lakhs tonnes in 2004-05 to 135.68 lakhs tonnes in 2005-06.

The production of vegetables registered an increase of 7.8 percent from 63.08 lakhs tonnes in 2004-05 to 68.00 lakhs tonnes in 2005-06. Similarly, the production of spices and condiments and flowers increased to 7.8 and 8.0 percent respectively as compared to 2004-05. The production of plantation crops increased from 8.13 lakhs tonnes in 2004-05 to 8.30 lakh tonnes in 2005-06. The details of area, production and productivity of core groups in horticultural crops are furnished in Table 2.50.

**Table 2.50. Area, Production and Productivity of Horticulture Crops**

Sl. No.	Core Groups	2004-05			2005-06		
		A	P	Y	A	P	Y
1.	Fruits	2.36	44.98	19.07	2.55	48.56	19.07
2.	Vegetables	2.15	63.08	29.29	2.32	68.00	29.36
3.	Spices and condiments	1.43	8.05	5.62	1.54	8.68	5.64
4.	Plantation crops	2.57	2.57	8.13	3.43	2.49	8.30
5.	Flowers	0.23	1.87	8.06	0.25	2.02	8.11
6.	Medicinal plants	0.05	0.05	0.09	1.82	0.06	0.11
<b>Total</b>		<b>8.79</b>	<b>126.20</b>	<b>14.70</b>	<b>9.21</b>	<b>135.08</b>	<b>14.71</b>

*Note : Area: Lakh hectares P: Production lakh tonnes Y : Tonnes / ha  
Source: Commissioner, Department of Horticulture and Plantation crops, Chennai*



### 2.9.1. District-wise Performance of Select Horticulture Crops

(i) **Banana:** Banana is the third trinity of fruits and is also grown all over the State. Banana is the most widely consumed and is available in all seasons and in different varieties in the State. The total area under banana was 94,648 hectares during 2005-06. Thoothukudi, Tiruchirapalli, Coimbatore, Erode, Tirunelveli, Kanyakumari, Vellore and Thanjavur districts together accounted for 60.2 percent of the total area under banana during 2005-06. The area under banana increased to 81,498 hectares in 2005-06 registering an increase of 16.14 percent. Likewise, the productivity also exhibited an increase of 15.6 percent over 2004-05.

(ii) **Mango:** Mango is one of the trinity of fruits in Tamil Nadu and is a seasonal one. It is generally grown under rainfed conditions in the State. The area under mango increased from 1.18 lakhs hectares in 2004-05 to 1.25 lakhs hectares in 2005-06 (5.62 percent). However, the production and productivity of mango had declined to 0.3 and 5.6 percent respectively in 2005-06 as compared to 2004-05. Mango is generally grown all over the State and concentrated specifically in the districts of Salem, Krishnagiri, Dindigul, Vellore, Thiruvallur and Dharmapuri and they together accounted for 63.9 percent of the total area under mango during 2005-06.

(iii) **Jack:** Jack is yet another trinity fruit in Tamil Nadu. Mostly jack fruit is grown under rainfed condition. The area under jack fruit in 2005-06 was 2,911 hectares. Kanyakumari, Cuddalore, Dindigul, Pudukottai, Namakkal, Perambalur and Kancheepuram districts together accounted for 75.19 percent of the total area under jack in Tamil Nadu state.

(iv) **Guava:** Guava is yet another important fruit crop of Tamil Nadu State. It is grown both under irrigated and rainfed conditions. The concentration of area under guava was more pronounced in the districts of Dindigul, Madurai, Villupuram, Virudhunagar, Thiruvallur and Vellore and they together accounted for 54.18 percent of total area under guava in Tamil Nadu state in 2005-06.

v) **Sapota:** Sapota is yet another fruit crop of Tamil Nadu State and it is mostly grown under irrigated condition. The area under sapota was 6,011 hectares during 2005-06. The sapota was concentrated in the districts of Dindigul, Theni, Virudhunagar,

Coimbatore and Namakkal in that order and they together accounted for 57.14 percent of total area under sapota in 2005-06.

**vi) Grapes:** The area under grapes during 2005-06 was 2,611 hectares and it is grown under irrigated conditions only. The cultivation of grapes was mostly confined to Theni, Coimbatore and Dindigul districts and they together accounted for 92.30 percent of area under grapes in Tamil Nadu state.

**vii) Total Fresh Fruits:** Nearly 2.47 lakhs hectares were under fresh fruits in 2005-06. and 54.80 percent of the area under fresh fruits was grown under irrigated condition. The concentration of area under fresh fruits was found in the districts of Krishnagiri, Dindigul, Vellore, Theni, Thiruvallur, Coimbatore, Tirunelveli and Tiruchirapalli in that order.

**viii) Total Vegetables:** Nearly 2.29 lakh hectares were under vegetables in Tamil Nadu State during 2005-06. The concentration of vegetables was seen in the districts of Salem, Dharmapuri, Namakkal, Villupuram and Dindigul and they together accounted for 52.38 percent of the area under vegetables in Tamil Nadu State during 2005-06.

The details of production and yield of selected horticulture crops are furnished in Table 2.51. It could be seen that production of banana had increased from 25.15 lakh tonnes in 2003-04 to 46.48 lakh tonnes in 2005-2006. However there had been a decline in the production of mango from 6.15 lakh tonnes in 2003-04 to 5.38 lakh tonnes in 2005-06. In all the other fruit crops, there had been an increase in production. In the case of vegetables, with the exception of potato and brinjal, there had been an increase in production over years.

As regards the productivity, substantial increase in productivity was observed in all the fruit crops with the exception of mango. Among the vegetables, a reduction in productivity was observed in potato, onion and brinjal.

The low levels and high fluctuations in productivity in fruit trees and vegetables might be due to lack of knowledge among the farmers about high tech approach and also due to frequent failures of the monsoons and skewed distribution of rainfall. High investment requirements particularly in wasteland reclamation and irrigation facilities and long years of waiting time for an economic bearing of fruit trees are the important reasons that constrain the area expansion. Non-availability of ready market, the difficulties in having good access to nearby markets and lack of institutional support for marketing is yet another set of constraints that deter the farmers from venturing into the cultivation of horticultural crops.

**Table 2. 51. Production and Yield Rates of Horticultural Crops**

S.No	Crops	Production in '000 tonnes			Yield Rate (kgs/ha.)		
		2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
<b>Fruits</b>							
1	Banana	2515	3462	4648	35375	42477	49104
2	Mango	615	539	538	5354	4554	4299
3	Jack	26	25	38	9662	8943	12346
4	Guava	58	64	92	7021	7995	10904
5	Grapes	60	70	85	24112	28176	32488
<b>Vegetables</b>							
6	Potato	70	79	75	16149	15705	14901
7	Tapioca	3201	4584	4857	33691	41298	38211
8	Sweet Potato	10	21	30	14484	15117	20857
9	Onion	211	256	234	9004	9677	8015
10	Brinjal	101	101	76	11180	12650	10690
11	Tomato	225	322	278	10149	12705	12627

Source: *Tamil Nadu – An Economic Appraisal – 2005-06 Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.*

## 2.10. Agricultural Engineering

The machaization ensures reduction of drudgery associated with various farm operations as also to economize the utilization of inputs and thereby harnessing the

potential of available resources. The priorities for mechanization are decided as per the actual requirement of various agro-climatic zones and involve land preparation equipment and crop production techniques for cereal crops, cash crops, oil seeds, pulses, horticultural crops etc.

The constraints in the promotion of mechanization include the varied requirement of equipments for each agro-climate zone, the small and fragmented land holding, low investment capacity of the farmers, inadequate irrigation facilities, know how status of the farmers, repairs and maintenance facilities etc.

Tractors sales in Tamil Nadu along with the states like Maharashtra, Karnataka and Andrapradhesh have been showing consistent growth since mid 1980s. The details of agricultural machinery and implements in Tamil Nadu state are furnished in Table 2.52.

**Table 2.52. Details of Agricultural Machinery and Implements**

Sl. No.	Item	Number
1	Ploughs a) Wooden b) Iron Total	755183 330147 1085330
2	Bullock Carts	155857
3	Sugarcane Crushers a) Worked by Power b) Worked by Bullocks	1407 6550 7957
4	Tractors (Crawlers Tractors, Hand Tractors and Four wheeled Tractors)	69391
5	Oil Engines (Used for Irrigation and other Agricultural purposes)	237031
6	Oil Ghannis	1794
7	Plant Production Equipments a) Sprayer – dusters operated manually b) Sprayers – duster by Power c) Sprayers –dusters operated by Tractor	124241 79172 42685 2384

Source: 17<sup>th</sup> Livestock Census – 2004,

Department of Animal Husbandry and Veterinary Services, Chennai-6.

Statistical Handbook of Tamil Nadu – 2008, Special Commissioner and Director,  
Department of Economics and Statistics, Chennai-6.

## 2.11. Animal Husbandry

Activities allied to agriculture *viz.*, Animal Husbandry, Fisheries and Poultry have the potential 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 surplus labour from the agriculture sector.

The total livestock population of the State which stood at 249.42 lakhs in 2007 had declined by 3.85 percent over that of 1997 census. The bovine (Cattle and buffalo) population in the State had witnessed steady decline between 1982 and 2004. While Sheep population showed sign of decline, the goat population had steadily increased during the reference period. The details of livestock particulars are furnished in Table 2.53

**Table 2.53. Livestock Census of Tamil Nadu**

(in lakhs)

Year	Cattle	Buffalo	Sheep	Goats	Others	Total	Poultry
1982	103.66 (-4.03)	32.12 (4.35)	55.37 (4.69)	52.46 (24.85)	18.26 (135.31)	261.87 (8.45)	182.84 (27.88)
1989	93.53 (-9.77)	31.28 (-2.62)	58.81 (6.21)	59.20 (12.85)	20.85 (14.18)	263.66 (0.68)	215.70 (17.97)
1994	90.96 (-2.75)	29.31 (-6.30)	56.12 (-4.57)	58.65 (-0.93)	21.75 (4.32)	256.79 (-2.61)	238.52 (10.59)
1997	90.47 (-0.54)	27.41 (-6.48)	52.59 (-6.29)	64.16 (9.39)	24.76 (13.84)	259.39 (1.01)	365.11 (53.06)
2004	91.41 (1.03)	16.58 (-39.51)	16.58 (-6.35)	81.77 (27.45)	3.73 (0.00)	249.42 (-3.85)	865.90 (137.16)

*Figures in parentheses indicate the percent of growth over previous censuses.*

*Source: Commissioner and Director of Animal Husbandry and Veterinary Services, Chennai – 6.*

The district wise details of livestock particulars as per livestock census of 2004 are furnished in Table 2.54. Cattle accounted for 36.65 percent of the total livestock population. Next to cattle, goats accounted for 32.78 percent of the total livestock population. Sheep accounted for 22.43 percent of livestock population. Buffaloes, pigs and others accounted for 6.65, 1.28 and 0.21 percent of the total livestock population respectively.

**Table 2.54. District wise Livestock Census – 2004**

(in Numbers)

Sl.No.	District	Cattle	Buffaloes	Sheep	Goats	Pigs	Others	Total
1.	Chennai	3973	2736	301	3330	67	34	10441
2.	Coimbatore	362570	40912	206835	286499	12665	5721	915202
3.	Cuddalore	343131	38407	57607	251160	25137	1273	716715
4.	Dharmapuri	297796	100074	266720	277311	3063	538	945502
5.	Dindigul	245116	68112	214143	351211	6443	4890	889915
6.	Erode	398572	230004	506015	562270	7288	3904	1708053
7.	Kancheepuram	364813	115650	131183	173304	5467	1604	792021
8.	Kanyakumari	101712	6077	1143	100698	1266	15	210911
9.	Karur	117781	65486	218514	173591	10205	555	586132
10.	Krishnagiri	299512	18935	294230	149744	14118	893	777432
11.	Madurai	226507	12380	216416	238588	3260	1523	698674
12.	Nagapattinam	292335	56666	33054	429924	2650	873	815502
13.	Namakkal	222381	182202	146217	388832	23392	1500	964524
14.	Perambalur	284208	22341	96175	372142	21824	566	797256
15.	Pudukottai	333326	31958	151078	177816	2022	1464	697664
16.	Ramanatha puram	128566	3877	245304	234727	2804	630	615908
17.	Salem	593847	176521	371026	497814	33270	1691	1674169
18.	Sivagangai	280572	15183	227672	234746	5164	1849	765186
19.	Thanjavur	489693	34476	42123	339807	4781	151	911031
20.	Nilgiris	53075	3412	4593	18841	89	669	80679
21.	Theni	101683	11955	52247	83454	21574	2107	273020
22.	Thiruvallur	261915	111877	103821	197795	6056	2071	683535
23.	Thiruvanna malai	481443	23229	198318	150141	7259	295	860685
24.	Thiruvarur	332124	18286	13251	375318	2047	752	741778
25.	Thoothukudi	163343	20933	202419	342180	6941	3268	739084
26.	Tirunelveli	418694	78777	487273	390570	12752	1206	1389272
27.	Thiruchirap palli	354301	49577	257271	366753	14164	6719	1048785
28.	Vellore	501634	29392	295135	232315	12355	1159	1071990
29.	Villupuram	824136	49003	227455	471428	38672	2351	1613045
30.	Virudhunagar	262284	39977	325946	305111	14073	527	947918
	<b>Total</b>	<b>9141043</b>	<b>1658415</b>	<b>5593485</b>	<b>8177420</b>	<b>320868</b>	<b>50798</b>	<b>24942029</b>

Source: Commissioner and Director of Animal Husbandry and Veterinary Services, Chennai-6.

The cattle population was concentrated in 13 districts which together accounted for more than 60 percent of the total cattle population in the state. Of these districts, Villupuram topped the list and shared nine percent of the total cattle population followed by Salem (6.5 percent) and Vellore (5.5 percent) in that order.

Buffalo's population was found to be higher in the districts of Dharmapuri, Erode, Kancheepuram, Namakkal, Salem and Thiruvallur and they put together accounted for 55.25 percent of the total goat population of the State.

Sheep population was found to be higher in the districts of Coimbatore, Dharmapuri, Dindigul, Erode, Kancheepuram, Karur, Krishnagiri, Madurai, Namakkal, Pudukkottai, Ramanathapuram, Salem, Sivagangai, Thiruvallur, Thiruvannamalai, Thoothukudi, Thirunelveli, Tiruchirapalli, Vellore, Villupuram and Virudhunagar and they together accounted for 94.62 percent of the total sheep population of the state. Sheep population was found to be the highest in Erode (9.05 per cent) followed by Tirunelveli (8.71 per cent) and Salem (6.63 percent) districts in that order.

Tamil Nadu Livestock Agency has brought all breeding activities under a single umbrella and artificial insemination programme is being carried out effectively. As per livestock census of 2004, a decline in breedable population was noticed from 47.12 lakhs in 2001 to 41.17 lakhs in respect of cattle and from 15.15 lakhs to 9.01 lakhs in rest of buffaloes. The share of exotic and crossbred cattle accounted for 62.9 percent and that of indigenous and native pure worked out to 37.1 percent of the total breedable cattle population. Among the buffaloes population, the share of murreh and graded was 32.08 percent while indigenous buffaloes accounted for the remaining 67.92 percent in 2004. The details are furnished in Table 2.55.

**Table 2.55. Breedable Cattle Population**

(in lakhs)			
Category	1997	2001	2004
<b>Cattle</b>			
Exotic and Cross	12.61	18.78	25.89
Indigenous and Native Pure	32.02	28.34	15.28
<b>Total</b>	<b>44.63</b>	<b>47.12</b>	<b>41.17</b>
<b>Buffaloes</b>			
Murrah and Graded	3.74	4.97	2.89
Indigenous	13.64	10.18	6.12
<b>Total</b>	<b>17.38</b>	<b>15.15</b>	<b>9.01</b>

Source: Commissioner and Director/ of Animal Husbandry and Veterinary Services, Chennai – 6.

### Milk Production

Milk Production in Tamil Nadu rose from 47.53 lakh tonnes in 2003-04 to 47.84 lakh tonnes in 2004-05 and to 54.74 lakh tonnes in 2005-06. The state's share in total milk production at the All India level was 5.4 percent in 2003-04 and 5.3 percent in 2004-05. The percapita availability of milk per day which witnessed a marginal increase from 209 gms in 2003-04 to 210 gms in 2005-06 and further increased to 234 gms in 2005 -06. The details are furnished in Table 2.56.

**Table 2.56. Milk Production and Availability**

Year	Tamil Nadu	All India	Percentage Share of Tamil Nadu	Percapita availability (gms.per day)	
	(Lakh tonnes)			Tamil Nadu	All India
2003-04	47.53(2.8)	881(1.6)	5.4	209(2.5)	231(0.4)
2004-05	47.84(0.7)	907(2.9)	5.3	210(0.5)	232(0.4)
2005-06	54.74(14.4)	-	-	234(11.4)	-

(Figures in brackets indicates percentage change over the previous year)

Source: Commissioner and Director of Animal Husbandry and Veterinary Services, Chennai – 6.

The details of district wise milk production are furnished in Table 2.57. It could be seen from the table that milk production was found to be the highest in the districts of Salem (7.94 percent), Vellore (6.66 percent), Coimbatore (6.06 per cent), Erode (5.95 per cent), Tirunelveli (5.18 per cent) and Namakkal (4.90 per cent) and they together accounted for 36.69 percent of total milk production of Tamil Nadu State in 2005-06.



**Table 2.57. District wise Milk Production****(000' Tonnes)**

Sl.No.	District	2003-04	2004-05	2005-06
1.	Chennai	34.3	27.3	4.3
2.	Kancheepuram	216.2	231.2	141.7
3.	Thiruvallur	223.6	202.0	169.8
4.	Cuddalore	243.7	211.7	197.5
5.	Villupuram	267.7	275.6	211.2
6.	Vellore	306.4	320.4	364.5
7.	Thiruvannamalai	259.0	269.1	248.4
8.	Salem	254.6	248.1	434.5
9.	Namakkal	195.3	205.4	268.5
10.	Dharmapuri #	225.8	155.3	208.9
11.	Krishnagiri	0	92.0	178.4
12.	Coimbatore	255.8	247.8	332.0
13.	Erode	246.7	287.2	325.8
14.	Thiruchirappalli	172.5	163.3	222.6
15.	Karur	91.9	93.3	99.2
16.	Perambalur	136.9	129.4	149.1
17.	Pudukottai	121.1	146.8	115.7
18.	Thanjavur	129.7	131.1	188.9
19.	Thiruvarur	93.7	111.7	166.8
20.	Nagapattinam	134.2	120.1	140.6
21.	Madurai	167.9	153.2	170.8
22.	Theni	117.8	121.2	92.1
23.	Dindigul	216.4	191.7	178.2
24.	Ramanathapuram	74.1	72.4	64.2
25.	Virudhunagar	93.5	102.3	174.7
26.	Sivagangai	89.7	80.2	94.0
27.	Tirunelveli	153.5	160.9	283.9
28.	Thoothukudi	90.9	105.9	99.8
29.	Nilgiris	60.3	60.3	45.6
30.	Kanniyakumari	79.5	66.7	102.1
	<b>State</b>	<b>4752.70</b>	<b>4783.8</b>	<b>5473.6</b>

# Composite Dharmapuri district

Source: Commissioner and Director of Animal Husbandry and Veterinary Services, Chennai-6.

## Poultry

Poultry farming provides livelihood support besides contributing to nutritional requirements of the population. Poultry activity creates employment opportunities and provides income. The State ranks second in egg production in the country and accounts for 17.7 per cent of the total poultry population in India. The poultry population over different livestock census is furnished in Table 2.58.

**Table 2.58. Poultry Population of Tamil Nadu**

(in lakhs)

S.No	Year	Poultry
1	1982	182.84 (27.44)
2	1989	215.70 (17.97)
3	1994	238.54 (10.59)
4	1997	365.11 (53.6)
5	2004	865.9 (137.16)

*Figures in parenthesis are percentage changes over previous census*

*Source: Commissioner and Director of Animal Husbandry and Veterinary Service, Chennai*

The poultry population had increased from 182.84 lakhs in 1982 to 865.9 lakhs in 2004. In 2004, poultry population had recorded an increase of 137.16 per cent over previous census. Poultry rearing has become a commercial activity in the districts of Namakkal, Erode and Coimbatore. The district-wise poultry population along with population of Horses, Donkeys and Dogs as per 2004 census is furnished in Table 2.59.

**Table 2.59. District-wise Poultry and other Animals Population****(in numbers)**

<b>District</b>	<b>Poultry</b>	<b>Donkeys</b>	<b>Dogs</b>	<b>Fowls</b>	<b>Horses and ponies</b>
Chennai	33345	7	39878	24276	27
Kancheepuram	353844	1178	106369	328516	422
Thiruvallur	654317	735	120628	608673	1336
Cuddalore	333043	54	41264	323491	1219
Villupuram	732090	680	144690	732743	1671
Vellore	1155183	806	99894	1100428	353
Thiruvannamalai	252314	153	36575	246160	142
Salem	2678324	478	165716	2674079	1208
Namakkal	19275185	146	84913	19267146	1354
Dharmapuri	1549232	4040	90855	1546253	134
Krishnagiri	1293388	7323	47348	4289526	161
Erode	5270334	3074	152827	5180399	827
Coimbatore	42028686	3437	153685	41968683	2277
Nilgiris	75599	83	120592	74932	586
Tiruchirappalli	940619	5406	37699	932418	1309
Karur	498470	123	31746	493883	432
Perambalur	262330	477	34520	260483	89
Pudukottai	476110	1102	46994	472311	362
Thanjaur	634546	9	88402	626018	142
Nagapattinam	402045	9	83108	385633	864
Thiruvarur	339253	6	43076	336659	746
Madurai	685529	1046	58658	675968	477
Theni	517155	1213	18095	514278	894
Dindigul	2037985	569	86561	2030614	4321
Ramanathapuram	330309	230	15855	324317	396
Virudhunagar	890571	346	46520	881664	181
Sivagangai	720831	45	47169	715907	1800
Thirunelveli	1218583	961	67877	1205376	245
Thoothukudi	450229	2257	35400	447566	1011
Kanyakumari	463824	13	697175	451529	2
<b>State</b>	<b>86591273</b>	<b>25779</b>	<b>2716631</b>	<b>86119929</b>	<b>24988</b>

*Source: Tamil Nadu – An Economic Appraisal, 2005-06 Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.*

From the table, it could be seen that poultry population was found to be high in the districts of Coimbatore, Namakkal, Erode, Salem, Dindigul and Dharmapuri in that order and they put together accounted for 84.11 per cent of total poultry population of the State. Poultry population was found to be the least in the Nilgrisi district.

## Egg Production

Tamil Nadu is one of the leading states in egg production and export. The eco-friendly backyard poultry rearing is practiced along with commercial poultry farming in the State. The egg production in the State increased from 3,784 million numbers in 2003-04 to 6,395 million numbers in 2004-05 but declined marginally to 6,223 million numbers in 2005-06. The district-wise egg production details over years are furnished in Table 2.60

**Table 2.60. Details of Egg Production**

	(in lakh numbers)		
<b>District</b>	<b>2003-04</b>	<b>2004-05</b>	<b>2005-06</b>
Chennai	55.4	50.8	7.2
Kancheepuram	266.8	402.8	292.6
Thiruvallur	633.3	509.2	170.2
Cuddalore	201.4	153.1	109.8
Villupuram	239.7	451.8	246.2
Vellore	440.5	278.9	250.8
Thiruvannamalai	201.6	146.5	100.4
Salem	720.4	3316.3	2513.9
Namakkal	24686.1	40177.1	39828.9
Dharmapuri and Krishnagiri	1919.9	2041.2	1769.4
Coimbatore	2517.2	697	816.8
Erode	2268.9	10345.4	10924.7
Tiruchirappalli	437.7	1508.5	663
Karur	525.5	680.3	2110.5
Perambalur	107	93.3	136.7
Pudukottai	182.9	504.1	111.6
Thanjavur	245.8	455.8	440.2
Thiruvarur	187.9	176.1	123.3
Nagapattinam	131.2	146.7	87.9
Madurai	197.1	167.1	125
Theni	183.2	271.5	67.8
Dindigul	267.1	233.6	188.9
Ramanathapuram	75.5	80.7	80.1
Virudhunagar	168.2	255.5	358.7
Sivagangai	219.5	155.8	119.6
Thirunelveli	156.3	149.1	155.2
Thoothukudi	254.3	285.6	313.9
Nilgiris	20.1	15.9	18.7
Kanyakumari	326.3	198	93.6
<b>State</b>	<b>37835.8</b>	<b>63947.70</b>	<b>62225.4</b>

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

Namakkal district has become an “egg basket” and accounted for 65 per cent of total egg production in the State. Next to Namakkal district, Erode district accounted for 17.08 per cent of total egg production in the State. These two districts shared nearly 82.00 per cent of the total egg production of the State.

### **Veterinary Care Infrastructure**

In order to provide health care to animals, promote scientific breeding of cattle and control of diseases, the State has created and maintains the animal care institutions as detailed in Table 2.61.

Livestock health care prevents loss of lives and helps to improve the productivity of livestock. Development Programmes like “Kalnadai Padhukappu Thittam” is being implemented in the State. The number of animals treated in the State rose by 8.7 percent from 186.15 lakhs in 2004-05 to 202.41 lakhs in 2005-06. The vaccination and deworming done put together had increased from 426.60 lakhs in 2004-05 to 635.92 lakhs in 2005-06.

**Table 2.61. Details of Animal Health Care Activities**

**(in Lakh Numbers)**

<b>S.No</b>	<b>Items of Activities</b>	<b>2004-05</b>	<b>2005-06</b>
1	Animals Treated	186.15	202.44
2	Vaccination done	344.22	449.91
3	Deworming done	82.38	186.01
4	Castration done	6.58	6.44
5	Artificial Incrimination Performed	29.23	32.87

*Source: Commissioner and Indicator of Animal Husbandry and Veterinary Services, Chennai – 6.*

### **2.11. Fisheries**

Tamil Nadu has a coastal line of 1,076 kms sharing 13.3 per cent of the nation’s coast line of 8118 kms. The State possesses 0.19 million sq.km of Exclusive Economic Zone (EEZ) accounting for 9.7 per cent of the country’s Exclusive Economic Zone of

2.02 million sq.kms. The sector provides employment to 10.02 lakhs persons and contributes Rs.1,99,572 lakhs to foreign exchange. The inland fisheries sector in the State spread over 3.71 lakh hectares of water spread area comprising reservoirs, major irrigation and long seasonal tanks, short seasonal tanks and ponds, estuaries and backwaters.

### 2.11.1. Fish Production

Overall fish production during 2005-06 was estimated at 5.46 lakh tonnes which accounted for an increase of 38.2 percent over the production in 2004-05. More than 70 percent of total production was accounted for by marine fish. The details are furnished in Table 2.62.

**Table 2.62 Fish Production in Tamil Nadu**

**(in Lakh Tonnes)**

Sl.No.	Years	Inland	Marine	Total
1.	2003-04	0.77 (-24.5)	3.81 (0.50)	4.58 (-4.8)
2.	2004-05	0.87 (13.0)	3.08 (-19.2)	3.95 (-13.7)
3	2005-06	1.56 (79.3)	3.90 (26.6)	5.46 (38.2)

*Figures in parentheses indicate percent variation over previous year.*

*Source: Commissioner of Fisheries, Chennai-6*

### 2.11.2. Fish Export

The State has rich potential for fish culture and Tamil Nadu is one of the major fish exporting States in India. The quantity of fish and fish products exported was 0.68 lakh tonnes in 2003-04 which improved to 0.71 lakh tonnes in 2004-05 and 0.72 lakh tonnes in 2005-06. The share in fish export accounted for 15 percent of the total export of the country in 2005-06.

## 2.12. Agricultural Marketing

The entire thrust and efficiency of Agriculture sector is dependent on marketing support so that the farmer's risk is minimized besides getting assured and fair returns. An

efficient marketing system holds the key to the success of diversification of agricultural production. Market intelligence has a vital role to play. Tamil Nadu Agricultural University has a market intelligence unit which provides vital information to framers on marketing.

At present 21 market committees are functioning in Tamil Nadu at the district level. Under these market committees 273 regulated markets, 15 check posts, 108 rural godowns and 108 grading centers are functioning. Nearly 42 agricultural commodities, viz., cereals, oilseeds, pulses, cotton, turmeric etc. were notified. The total value of agricultural produce transacted through agricultural marketing cooperatives had improved and more than doubled from Rs. 307.25 crores in 2004-05 to Rs. 674.26 crores in 2005-06. The details are furnished in Table 2.63.

**Table 2.63. Value of Agricultural Produce sold by Marketing Co-operatives**

<b>(Rs. in Crores)</b>				
<b>S.No</b>	<b>Crops</b>	<b>2003-04</b>	<b>2004-05</b>	<b>2005-06</b>
1	Food grains	38.73	35.97	32.60
2	Cotton	90.43	94.59	69.81
3	Chillies	2.81	2.80	2.18
4	Sugarcane	92.72	79.74	466.72
5	Spices	0.11	44.84	28.79
6	Oilseeds	16.09	13.05	18.07
7	Others	99.99	36.24	56.08
<b>Total</b>		<b>340.88</b>	<b>307.25</b>	<b>674.26</b>

*Source: The Registrar of Cooperatives, Chennai*

A detailed analysis of infrastructure, administrative and operation constraints in 23 farmers markets was taken up by the Centre for Agricultural Rural Development Studies. The results showed that there is continued patronage from farmers as well as consumers and most of these markets could with stand the test of time against many odds, such as reduced support to the markets and political and official apathy towards the markets. The consumers are also benefited by good quality and freshness of the vegetables besides getting a wide variety of vegetables in a single place. The major infrastructure constraints faced by the farmers markets include the non availability of scientific storage

facilities, adequate number of stalls, canteens, rest room facilities and drinking water. Eventhough waste disposal is not a problem the utilization of waste for productive purposes remains elusive in most of the farmers markets.

### 2.13. Agricultural Inputs

Among the improved agricultural technologies, seeds, fertilizers and pesticides are the most important ones. The improved seeds have more genetic vigour for high yield potential and the fertilizers and the balanced nutrient management trigger the potentials for increasing the yield levels. Therefore, the timely and adequate availability of these inputs, that too at affordable prices to farmers, are the essentials to keep agriculture growing. The details of agricultural inputs supplied to the farmers in the State over a period of five years from 2001-02 to 2005-06 are briefly discussed in this section.

#### i) Seeds

The quantities of seeds distributed over five years period from 2001-02 to 2005-06 are presented in Table 2.64

**Table 2.64. Distribution of improved Seeds by Crops**

(in tonnes)

Sl. No.	Crops	2001-02	2002-03	2003-04	2004-05	2005-06
<b>I.</b>	<b>FOOD GRAINS</b>					
a.	Paddy	18799	15483	12985	10738	16681
b.	Millet	404	363	351	363	489
c.	Pulses	1544	941	1273	1340	1424
	<b>Total (I)</b>	<b>20747</b>	<b>16787</b>	<b>14609</b>	<b>12441</b>	<b>18594</b>
<b>II.</b>	<b>NON – FOOD GRAINS</b>					
a.	Oilseeds	4202	4269	3127	3261	4171
b.	Cotton	174	124	163	154	235
	Total (II)	4376	4393	3290	3415	4406
	<b>Grand Total (I + II)</b>	<b>25213</b>	<b>21180</b>	<b>17899</b>	<b>15856</b>	<b>23000</b>

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



It could be discerned from the table that 16,681 tonnes of paddy seeds were distributed to the farmers during 2005-06 and it was fairly higher than that distributed in the previous three years. However, as compared to 18,799 tonnes distributed in 2001-02 it was lower. About 489 tonnes of millets were distributed in 2005-06 and it is the maximum as compared to earlier years. Further 1,424 tonnes of pulses were distributed to the farmers in 2005-06 and it was higher as compared to earlier three years and lower as compared to that of 2001-02. Thus, a total of 18,594 tonnes of food grain seeds were distributed to the farmers in 2005-06 and it was higher than that of previous three years. As regards, non-food grains, oilseeds and cotton seeds were distributed to the tune of 4,406 tonnes of which oilseeds accounted for 4,171 tonnes and cotton accounted for 235 tonnes. Again, these quantities are lower than that of 2001-02 and higher than that of previous three years. The production as well as distribution of seeds was almost on par, with minor variations in all the five years under question. The minor variations in the quantities of seeds produced and distributed among the five years, might be mainly due to the variations in the behaviour of the monsoons.

Perusal of the details on seed replacement rates targeted and achieved in 2003-04 given in Table 2.65 indicate that the targets in paddy, varietal cholam, maize, pulses and oilseeds could not be achieved.

**Table 2.65. Seed Replacement by Crops - Percentage to Total Cropped Area**

	<b>Crop</b>	<b>2003-04</b>	
<b>A.</b>	<b>FOOD CROPS</b>	<b>Target</b>	<b>Actual</b>
1.	Paddy	17	13
2.	Varietal cholam	8	1.5
3.	Cumbu	6	7.49
4.	Ragi	6	10.57
5.	Maize	8	2.4
6.	Pulses	12.5	8.6

**Table 2.65. Contd.....**

	<b>Crop</b>	<b>2003-04</b>	
<b>B.</b>	<b>NON-FOOD CROPS</b>		
1.	Oilseeds	5	3.5
a.	Groundnut	15	9
b.	Gingelly	50	12
c.	Sunflower	20	5
d.	Soybean	30	1
e.	Castor	15 (Irri)	15 (Irri)
2.	Cotton	10 (RF)	10 (RF)

*Source: Statistical Handbook of Tamil Nadu, 2004*

The shortfalls indicate the need for increasing seed production particularly in State seed farms. Moreover, in the recent years, the farmers buying behaviour with reference to seeds have changed towards the use of more and more purchased seeds. This trend again reinforces the need for production and distribution of more quality seeds each year.

## **ii) Fertilizers**

The details given in Table 2.66 indicate the trend in fertilizer distribution in the State.

**Table 2.66. Distribution of Nitrogen, Phosphorus and Potash: by Districts****(in thousand tonnes)**

Sl. No	District	Nitrogen			Phosphorus			Potash		
		2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
1.	Kancheepuram	0.16	2.13	0.25	0.07	0.09	0.11	0.08	0.16	0.17
2.	Thiruvallur	0.15	0.18	0.20	0.07	0.07	0.09	0.04	0.06	0.07
3.	Cuddalore	0.22	0.26	0.30	0.08	0.10	0.12	0.09	0.13	0.14
4.	Villupuram	0.29	0.37	0.42	0.14	0.21	0.26	0.12	0.18	0.20
5.	Vellore	0.20	0.24	0.28	0.08	0.10	0.13	0.07	0.08	0.09
6.	Thiruvannamalai	0.17	0.22	0.26	0.07	0.09	0.11	0.05	0.08	0.09
7.	Salem	0.18	0.21	0.23	0.08	0.11	0.13	0.15	0.22	0.24
8.	Namakkal	0.04	0.05	0.05	0.02	0.02	0.03	0.01	0.02	0.02
9.	Dharmapuri	0.06	0.05	0.06	0.04	0.36	0.04	0.03	0.04	0.04
10.	Coimbatore	0.19	0.24	0.28	0.07	0.07	0.08	0.18	0.22	0.24
11.	Erode	0.18	0.22	0.25	0.11	0.15	0.18	0.08	0.11	0.13
12.	Tiruchirappalli	0.26	0.34	0.39	0.11	0.18	0.22	0.16	0.21	0.29
13.	Karur	0.03	0.04	0.05	0.01	0.02	0.02	0.02	0.02	0.02
14.	Perambalur	0.07	0.08	0.09	0.03	0.04	0.05	0.02	0.02	0.02
15.	Pudukottai	0.21	0.29	0.33	0.11	0.16	0.20	0.09	0.13	0.14
16.	Thanjaur	0.26	0.34	0.40	0.07	0.10	0.12	0.09	0.14	0.15
17.	Thiruvarur	0.15	0.21	0.25	0.05	0.07	0.08	0.03	0.06	0.07
18.	Nagapattinam	0.15	0.18	0.21	0.04	0.06	0.07	0.05	0.08	0.08
19.	Madurai	0.13	0.17	0.20	0.06	0.07	0.09	0.08	0.11	0.13
20.	Theni	0.10	0.13	0.15	0.05	0.06	0.08	0.06	0.08	0.09
21.	Dindigul	0.10	0.15	0.17	0.05	0.06	0.08	0.04	0.06	0.06
22.	Tamnathapuram	0.06	0.09	0.11	0.02	0.04	0.04	0.01	0.01	0.01
23.	Virudhunagar	0.05	0.07	0.09	0.02	0.02	0.03	0.03	0.05	0.06
24.	Sivagangai	0.05	0.06	0.29	0.01	0.03	0.11	0.01	0.01	0.14
25.	Thirunelveli	0.17	0.25	0.98	0.07	0.1	0.02	0.08	0.12	0.01
26.	Thoothukudi	0.05	0.09	0.09	0.02	0.02	0.03	0.01	0.03	0.03
27.	Nilgiris	0.05	0.03	0.14	0.01	0.01	0.01	0.04	0.04	0.04
28.	Kanyakumari	0.05	0.06	0.07	0.03	0.03	0.04	0.04	0.06	0.07
	<b>State</b>	<b>3.78</b>	<b>6.75</b>	<b>5.59</b>	<b>1.59</b>	<b>2.11</b>	<b>2.57</b>	<b>1.76</b>	<b>2.53</b>	<b>2.84</b>

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

It could be discerned from the table that the maximum of 42000 tonnes of 'N' was distributed in Villupuram district followed by Thanjavur, Tiruchirapalli, and Pudukottai. However, in the districts of The Nilgiris, Kanyakumari, Thoothukudi, Tirunelveli, and Virudhunagar less than 15,000 tonnes of Nitrogenous fertilizers were distributed.

A maximum of 26,000 tonnes of phosphatic fertilizers was distributed in Villupuram district, followed by the districts of Tiruchirapalli (22,000 tonnes), Pudukottai (20,000 tonnes), Erode (18,000 tonnes) etc. The distribution was hovering around 10,000 tonnes in the districts of Kancheepuram, Thiruvallur, Cuddalore, Vellore, Thiruvannamalai, Salem, Thanjavur, Madurai, Nagapattinam and Sivagangai, Coimbatore, Dindigul and Theni. In the remaining districts, the distribution of phosphatics fertilizers varied from 1000 to 5000 tonnes.

With reference to  $K_2O$  distribution, Tiruchirapalli had a record high of 29,000 tonnes followed by Coimbatore and Salem with 24000 tonnes each. The distribution was around 15,000 tonnes in the districts of Cuddalore, Erode, Pudukottai, Thanjavur and Madurai. It was around 10,000 tonnes in Thiruvallur, Vellore, Thiruvannamalai, Thanjavur, Nagapattinam, Theni and Kanyakumari. In all the other districts, the distribution of  $K_2O$  varied from 1000 tonnes in Tirunelveli and Ramanathapuram districts to 6000 tonnes in Dindigul district.

The disproportionate distribution of NPK among the districts in a way indicates the imbalanced application of fertilizers by the farmers. Therefore, the farmers have to be educated and trained in the application of proper proportions of NPK in the crop fields.

Introduction of bio-fertilizers is yet another recent land mark that adds to the increased crop productivity with the least cost. However, it is yet to gain momentum among farmers and hence a special thrust in the plan may be given for popularizing bio-fertilizers among the farmers of Tamil Nadu.

The research study carried out in the Department of Agricultural Economics, Tamil Nadu Agricultural University indicated that the Integrated Fertilizer Management

(IFM) through the use of judicious mix of Organic Manure, Bio-fertilizers, Green Manures and Chemical Fertilizers require urgent attention for minimizing the adverse environmental effects in the long run. Similarly, the study called for effective implementation of Integrated Pest Management (IPM) to internalise the pesticides externalities at the farm level.

### iii) Pesticides

The particulars on pesticides consumption in the State over a period of 23 years from 1982-83 to 2004-05 are furnished in Table 2.67.

**Table 2.67. Pesticide Consumption (Technical Grade in MT)**

Sl.No.	Year	Target	Achievement
1.	1982-83	8800	7437
2.	1983-84	9600	10367
3.	1984-85	10200	10926
4.	1985-86	10985	8667
5.	1986-87	11200	8642
6.	1987-88	11600	8237
7.	1988-89	12500	8594
8.	1989-1990	13000	9970
9.	1990-1991	10200	3923
10.	1991-92	10200	4840
11.	1992-93	10500	4890
12.	1993-94	10550	5010
13.	1994-95	9500	3394
14.	1995-96	4000	2080
15.	1996-97	3279	1851
16.	1997-98	2929	1809
17.	1998-99	2950	1730
18.	1999-2000	2782	1685
19.	2000-01	2735	1663
20.	2001-02	2820	1577
21.	2002-03	2934	1605
22.	2003-04	2564	1434
23.	2004-05	2592	2466

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

Perusal of the details in the above table, clearly exhibits the fact that the utilization of pesticides was around 10,000 tonnes upto 1989-90 and it started declining thereafter drastically reaching 2466 tonnes of technical grade in 2004-05. The drastic reduction in the pesticides use was primarily due to the advocacy of the concept of Economic Threshold Level (ETL) and the concept of Integrated Pest Management (IPM) as well. The introduction of biopesticides also reduced the chemical uses. Thus, the need-based plant protection measures are becoming popular among the farmers in the State, so as to reduce the cost of production of the crops and the unnecessary environmental pollution with chemicals. However, to make the concepts of ETL and IPM more popular among all categories of farmers, effective extension education with field demonstrations are the need of the hour, on which the planned activities have to be focused in the future.

Use of bio-pesticides on the other hand, is gradually increasing since 1997-98 as could be visualized from Table 2.68.

**Table 2.68. Bio-pesticides Distribution in Tamil Nadu State**

Sl.No.	Year	Quantities distributed	
		Dust in MT	Liquid in Lts.
1.	1997-98	16.80	103986
2.	1998-99	18.30	98890
3.	1999-2000	23.00	90320
4.	2000-2001	23.60	87400
5.	2001-2002	22666	72736
6.	2002-2003	23301	72736
7.	2003-2004	22507	67006
8.	2004-2005	20682	63593

Source: *Tamil Nadu An Economic Appraisal – 2005-06, Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.*

It could also be observed from the table that the demand for bio-pesticides in dust form is picking up as compared to that of liquid form.

The study on pesticide use efficiency of major pesticides consuming crops revealed that the pesticides had marginal negative impact on yield of paddy in thalady season and insignificant in other two seasons. The output elasticity for other crops were -0.25 in cotton, -0.079 in groundnut, 0.008 in chillies, -0.124 in brinjal and -0.105 in tomato. The important factors which influenced farmers' choice of chemicals were his previous experience with that chemical, recommendations of dealers, progressive farmers, department officials and field work of chemical companies. In Paddy cultivation farmers' awareness on the different recommended practices ranged from 20-100 percent but adoption was relatively low and it varied from nil to 60 percent for different Integrated Pest Management (IPM) practices.

## **2.14. Sericulture**

The state has a long tradition of producing silk fabrics. The silk sarees of Kancheepuram, Arni, Kumbakonam and Rasipuram have earned a niche in the world of fabrics. Mulberry cultivation in the State has declined from 11,060 hectares in 2000-01 to 6613.93 hectares as on 1.4.2006. An additional area of 2568.39 hectares has been brought under mulberry cultivation. The production of the cocoon in the State had increased from 3101.20 metric tonnes in 2004-05 to 524.90 metric tonnes in 2005-06 and the production of raw silk had increased from 443.00 metric tonnes to 738.80 metric tonnes in 2005-06. The production of raw silk was found to be high in the districts of Krishnagiri and Erode. The value of raw silk stood at Rs.8577.47 lakhs in Tamil Nadu State during 2005-06. The details are furnished in Table 2.69.

**Table 2.69. District wise Details of Mulberry Cultivation**

District	As on 01.04.2006							
	Irri-gated (ha.)	Rain-fed (ha.)	Total (ha.)	Mulberry Area newly Planted (ha.)	Pro-duction of Reeling Cocoon (MT)	Value of Reeling Cocoons (Rs.in lakhs)	Pro-duction of Raw Silk (MT)	Value of Raw Silk (Rs.in lakhs)
Kancheepuram	1.70	0.00	1.70	0.90	0.50	0.63	0.10	1.16
Thiruvallur	22.30	0.00	22.30	8.90	8.50	10.75	1.20	13.93
Cuddalore	17.10	0.00	17.10	12.50	5.50	6.96	0.80	9.29
Villupuram	92.08	1.24	93.32	35.88	64.80	81.97	9.00	104.49
Vellore	484.80	51.26	536.06	139.60	379.70	480.32	52.60	610.69
Thiruvannamalai	100.16	20.02	120.18	40.42	68.20	86.27	9.50	110.30
Salem	311.20	0.58	311.78	175.82	157.00	198.61	22.10	256.58
Namakkal	248.96	10.80	259.76	116.20	192.50	243.51	26.70	309.99
Dharmapuri	758.04	0.00	758.04	293.08	481.60	609.22	67.30	781.35
Krishnagiri	1479.66	0.00	1479.66	408.46	1445.40	1828.43	202.70	2353.35
Erode	1028.99	26.44	1055.43	431.33	1174.10	1485.24	167.60	1945.84
Coimbatore	730.18	0.00	730.18	288.80	556.00	703.34	81.00	940.41
The Nilgris	0.00	25.04	25.04	14.30	8.40	10.63	1.20	13.93
Thiruchirapalli	83.96	0.88	84.84	49.40	48.20	60.97	6.90	80.11
Karur	34.50	0.00	34.50	26.50	18.40	23.28	2.50	29.03



Table 2.69. Contd.....

District	As on 01.04.2006							
	Irri-gated (ha.)	Rain-fed (ha.)	Total (ha.)	Mulberry Area newly Planted (ha.)	Pro-duction of Reeling Cocoon (MT)	Value of Reeling Cocoons (Rs.in lakhs)	Pro-duction of Raw Silk (MT)	Value of Raw Silk (Rs.in lakhs)
Perambalur	22.00	0.00	22.00	12.80	9.20	11.64	1.30	15.09
Pudukkottai	89.20	0.00	89.20	37.20	51.00	64.52	7.00	81.27
Thanjavur	49.20	0.00	49.20	30.20	16.50	20.87	2.30	26.70
Nagapattinam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thiruvarur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Madurai	48.20	0.00	48.20	25.70	26.30	33.27	3.60	41.80
Theni	275.40	0.00	275.40	129.90	171.00	216.32	24.30	282.12
Dindigul	385.84	0.00	385.84	174.10	230.50	291.58	33.50	388.94
Ramanathapuram	10.60	0.00	10.60	4.80	1.90	2.40	0.30	3.48
Virudhunagar	38.80	0.00	38.80	20.80	21.20	26.82	2.90	33.67
Sivagangai	11.60	0.00	11.60	10.20	0.50	0.63	0.10	1.16
Tirunelveli	143.20	0.00	143.20	67.60	82.20	103.98	11.50	133.52
Thoothukudi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kanyakumari	6.52	3.48	10.00	13.00	5.80	7.34	0.80	9.29
<b>Total</b>	<b>6474.19</b>	<b>139.74</b>	<b>6613.93</b>	<b>2568.3.9</b>	<b>5224.90</b>	<b>6609.50</b>	<b>738.80</b>	<b>8577.47</b>

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

It could be seen from the table that the sericulture industry is yet to develop in Tamil Nadu State. Majority of the farmers are aware of the economic benefit of mulberry cultivation and silkworm rearing and the associated production technologies. The cultivation of mulberry is highly localized in the districts of Kanyakumari, Erode, Dharmapuri and Coimbatore that too with less than 1500 acres each and in all other districts, the area under mulberry is very meager. The rearing units are limited in numbers.

## **2.15. Mineral Wealth**

Tamil Nadu has significant amount of mineral reserves such as lignite (87%), vermiculite (66 per cent) garnet (42%), Zircon (38%), graphite (33%), limonite (28%), rutile (27%), monazite (25%) and magnesite (17%). India's leading steel producer SAK has a steel plant in Salem.

The rich and varied mineral resource of the Tamil Nadu has contributed handsomely towards the development and industrialization of the State. It is one of the leading States in the reserves of the following minerals: lignite, garnet, magnesite, quartz, feldspar, clay, limestone, baurite, graphite and granite. The mining in Tamil Nadu are industry-friendly and pro-active. The potential reserves of the various minerals offer good business opportunities for the investors.

Geographically, the hilly terrains and the middle level plain contain crystalline hard rocks such as charnokites, granite, gneiss, khondalites, leptynites, metamorphic gneisses with detached occurrence of crystalline limestone, iron quartzo feldspathic veins and basic intrusive such as doleintes and anorthosites.

Coastal zones contain sedimentary limestones, clay, laterites, heavy mineral sands and silica sands. The hill ranges are sporadically capped with laterites and bauxites of residual native.

Gypsum and phasphatic nodules occur as sedimentary veins in rocks of the creta age. Gypsum of secondary replacement occurs in some of the areas adjoining the foot

hills of the Western Ghats. Lignite occurs as sedimentary beds of tertiary age. The black granite and other hard rocks are able for high polish. These granites occur in most of the districts except the coastal area. Potential of gold deposits in Maharajakadai region of Dharmapuri district as southern extension of kolar gold fields and in the Gudalur –Devala region in the Nilgiris district exist.

### 2.15.1. Mineral Receipts

The diligent measures for mineral administration which have been taken by the Department of Logy and Mining find reflection in the generation of the sizeable revenue receipts for the State and the details are given in Table 2.70.

**Table 2.70. Revenue Receipts of Mines**

(Rs. in crores)

Year	Amount
1999 – 2000	124.86
2000 – 2001	163.12
2001 – 2002	254.26
2002 – 2003	317.20
2003 – 2004	474.81

The Department has to take strict measures to increase mineral revenue by better enforcement, guidance and encouragement to mineral based industries and with various explorations.

### 2.16. Agro-Based Industries

To the ideal climatic conditions, a strong agro-based food industry has emerged in the State. The State is a world leader in agricultural production with a high yield per hectare of sugarcane, rice and groundnut. The Madurai – Dindigul belt in Tamil Nadu has favourable climatic conditions for the cultivation of a variety of fruits and vegetables.

The floriculture industry is likely to get a thrust with the area around Coimbatore, Dharmapuri and the Nilgiris being earmarked as ideal locations for the cultivation of flowers such as rose and chrysanthemum. Its coastline (1000 kms), opportunities for marine products based industries exist.

Among the large and medium scale industries, more than 40 percent are depending on the agricultural sector as a source of their raw materials and almost half of the industries are agro-based. The major segments of the agro – based industries comprise of Coir retting units, dairies, edible oils of vanaspathi industries, fermentation industries (bistelleries, maltries and brevieries), flour mills, food and fruit processing industries, jute retting units, pulp and paper mill, starch (maize product industries), sugar mills etc.

Presently agro-based industries in Tamil Nadu have welcomed the measures to encourage the export of agri – produce and the proposals on setting up agri – export zones. This may enrich the scope for commercial agriculture.

SIPCOT has promoted an agro park at Nilakottai and Dindigul. Realizing the tremendous potential in the State, a number of joint ventures involving Dutch companies are, being set up in the area involving major corporate. TIDCO is developing a floriculture park; TANFLORA at Hosur and 6 B 10 – Valleys including an Economic centre and a Bio-incubator park in collaboration with Cornell University, USA.

## **2.17. Demographic Details**

Tamil Nadu is the seventh most populous state in India with a population of 66,396,000, as of July 1,2008 (approximately 5.79% of India's population). It is the eleventh most densely populated state in India. In 2008, its population density was 511 persons per square kilometer, having increased from 429 in 1991, significantly higher than the Indian average of 324 persons per square kilometer. 44% of the state's population lives in urban areas, the highest in India.

Tamil Nadu's population grew by 11.19% between 1991 and 2001, the second lowest rate for that period (after Kerala) amongst populous states (states whose population exceeded 20 million in 2001). Its decadal rate of population growth has declined in every decade since 1971, one of only three populous states (along with Kerala and Orissa) to show this trend. The state has registered the lowest fertility rate along with Andhra Pradesh and Goa in India in year 2005-06 with 1.8 children born for each woman, lower than required for population sustainability. According to National Family Health Survey-3 (NFHS-3), Tamil Nadu registered a fertility rate of 1.8, the lowest in India in year 2005-2006.

The salient features of population in Tamil Nadu State are given in Table 2.71. It could be seen that the population of Tamil Nadu State had increased from 30.12 millions in 1951 to 62.41 millions in 2001. The population had increased nearly 2.07 times over a period of six decades. The population growth was confined at lower levels: the rate of 1.83 per cent in 1981 came down to 1.44 per cent in 1991 and further to 1.11 per cent in 2001. The male population had increased from 22.79 millions in 1951 to 31.40 millions in 2001. Similarly the female population had increased from 7.33 millions in 1951 to 31.01 millions in 2001. There had been a gradual increase in female population unlike that of male population which witnessed a decline in 1961.

**Table 2.71. Salient Features of Population in Tamil Nadu**

Year	Population in million			Literacy rate (Percentage)			Decennial growth rate (Percentage)
	Total	Male	Female	Persons	Male	Female	
1951	30.12	22.79	7.33	20.9	31.7	10.1	14.7
1961	33.69	16.91	16.78	31.4	44.5	18.2	11.9
1971	41.2	20.83	20.37	39.5	51.8	26.9	22.3
1981	48.41	24.49	23.92	46.8	58.3	35	17.5
1991	55.86	28.30	27.56	62.7	73.8	51.3	15.4
2001	62.41	31.4	31.01	73.5	82.3	64.4	11.7

*Source : Tamil Nadu - An Economic Appraisal, Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.*

Tamil Nadu has long standing commitment to education and ranks third in terms of overall and female literacy rate due to the efforts made through various plans. The literacy rate had increased from 20.9 per cent in 1951 to 73.5 per cent in 2001. As regards the literacy rate of males, it had increased from 31.7 per cent in 1951 to 82.3 per cent in 2001. Similarly the literacy rate of females had increased from 10.1 per cent in 1951 to 64.4 per cent in 2001. The district-wise analysis shows that literacy rate was the highest in Kanyakumari district (87.55 per cent) and the lowest in Dharmapuri district (61.39 per cent).

There is a wide disparity between male and female literacy rates. As per 2001 census, the literacy rate was 64.4 per cent and 82.3 per cent for females and males respectively in the State. There also existed a rural – urban gender divide in literacy rate in Tamil Nadu. The rate was 76 per cent for Urban female whereas it was 55 per cent for its rural counterparts. Compared to Urban female literacy rates, the rural rate was lower

by 20.71 percentage points, whereas the percentage point difference among males in Urban and rural areas were only 11.82. The difference in the levels of literacy between males and females was significantly higher in rural areas than in urban areas. This indicates that specific interventions may be required for developing the literacy rates of the female population especially in rural areas.

A concomitant of economic development and growth has been Urbanisation. As per 2001 census, Tamil Nadu was the most urbanized among larger states with 44.0 per cent of urban population and ranked first in Urbanization among the 15 major states in the country. Tamil Nadu accounted for seven per cent of country's total population and 9.6 per cent of Country's urban population. While the country's Urban population increased from 17.3 per cent to 27.8 per cent during 1951-2001, that of Tamil Nadu increased from 24.4 per cent to 44.0 per cent.

Sex ratio, i.e., (the number of females per thousand males) is a significant indicator of the status of women. In Tamil Nadu, the ratio has registered continuous decline with the exception of 2001. According to 2001 census, the sex ratio stood at 987 as against 974 in 1991 census. The rural sex ratio was relatively favourable at 992 as compared to 981 in urban areas. It may also be noted that sex ratio in Tamil Nadu was consistently better than all India average.

### **2.17.1. District-wise Salient Features of Population**

District-wise salient features of census are furnished in Table 2.72. With the exception of Chennai, the density ranged from 275 per sq. km. in Sivagangai district to 800 in Tiruvallur district. Sex ratio was found to be the highest in Thoothukudi district (1050 females per 1000 males). The sex ratio was less than State average in the districts of Chennai, Kancheepuram, Thiruvallur, Cuddalore, Villupuram, Salem, Namakkal, Dhamapuri, Erode, Coimbatore, Madurai, Theni and Dindigul. The increase in population since 1991 was found to be at 11.72 per cent for the State as a whole and the increase in population was found to be varied from 4.25 per cent in Theni district to 23.06 per cent in Thiruvallur district. The increase in population in 2001 was found to be more than that of State level in the districts of Thiruvallur, Vellore, Salem, Namakkal, Dharmapuri, Coimbatore and Virudhunagar. Urban population in the State ranged from 11.36 per cent in Ariyalur district to 66.02 per cent in Coimbatore district. In the districts

of Cuddalore, Villupuram, Vellore, Thiruvannamalai, Salem, Namakkal, Dharmapuri, Karur, Perambalur, Ariyalur, Thanjavur, Nagapattinam, Thiruvarur, Pudukottai, Ramanathapuram, Sivagangai and Thoothukudi, the share of urban population to total population was less than the share of urban population to the total population at the State level. The literacy rate at the State level was found to be 73.45 per cent as per 2001 census and the same varied from 61.39 per cent in Dharmapuri district to 87.55 per cent in Kanniyakumari district.

**Table 2.72. District-wise Salient Features of Census 2001**

Sl. No.	District / State	Density per Sq.Km	Females per 1000 Males	Increase in Population since 1991 (%)	Urban Population (%)	Literacy Rate (%)
	<b>Tamil Nadu</b>	480	987	11.72	44.04	73.45
1	Chennai	24231	957	13.07	100	85.33
2	Kancheepuram	647	975	19.15	53.34	76.85
3	Tiruvallur	800	971	23.06	54.45	76.94
4	Cuddalore	626	986	7.66	33.01	71.01
5	Villupuram	406	984	7.43	14.42	63.80
6	Vellore	573	997	14.90	37.62	72.36
7	Tiruvannamalai	352	995	7.01	18.33	67.39
8	Salem	573	929	17.20	46	65.06
9	Namakkal	436	967	12.91	36.51	67.41
10	Dharmapuri	294	938	17.61	15.96	61.39
11	Erode	314	972	11.26	46.25	65.36
12	Coimbatore	566	963	21.76	66.02	76.97
13	The Nilgris	300	1014	7.31	59.65	80.01
14	Tiruchirappalli	542	1001	10.10	47.10	77.90
15	Karur	311	1010	9.54	33.27	68.08
16	Perambalur	278	1006	9.45	16.05	66.07
17	Ariyalur	358	1006	9.29	11.36	64.08
18	Thanjavur	649	1021	7.91	33.78	75.45
19	Nagapattinam	548	1014	8.07	22.18	76.34
20	Tiruvarur	538	1014	6.31	20.29	76.58
21	Pudukkottai	312	1015	9.98	17.02	71.12
22	Madurai	733	987	7.41	56.01	77.82
23	Theni	357	987	4.25	54.10	71.58
24	Dindigul	317	986	9.22	35.01	69.35
25	Ramanathapuram	287	1036	6.12	25.46	72.96
26	Virudhunagar	409	1012	11.90	44.39	73.70
27	Sivagangai	275	1038	4.74	28.22	72.18
28	Tirunelveli	411	1042	8.88	48.03	76.09
29	Thoothukudi	339	1050	7.99	42.28	81.52
30	Kanyakumari	992	1014	4.73	65.28	87.55

Source: Tamil Nadu - An Economic Appraisal, Evaluation and Applied Research Department, Government of Tamil Nadu, Chennai.

### 2.17.2. Decennial Growth of Population

The decennial growth of population of Tamil Nadu is furnished in Table 2.73. From the table, it could be seen that the percentage of variation of total population varied from 3.47 in 1921 to 41.75 in 1951. The percentage of variation of urban population in the state varied from 8.86 per cent in 1921 to 44.06 in 2001. A marked decline of rural population was observed in 2001.

**Table 2.73. Population of Tamil Nadu- Decennial Growth**

Period	Population			Percentage Variation since previous Census		
	Total	Rural	Urban	Total	Rural	Urban
1911	20902616	17753479	3149137	+8.57	+7.41	+15.57
1921	21628518	18200439	3248079	+3.47	+2.52	+8.86
1931	23472099	19241717	4230382	+8.52	+5.72	+23.40
1941	26267507	21093825	5173682	+11.91	+9.63	+22.30
1951	30119047	22785522	7333525	+41.75	+11.85	+8.39
1961	33686953	24696425	8990528	+11.85	+8.39	+22.59
1971	41199168	28734334	12464834	+22.30	+16.35	+38.64
1981	48408077	32456202	15951875	+17.54	+12.95	+27.98
1991	55858946	36781354	19077592	+15.39	+13.32	+19.59
2001	62405679	34921681	27483998	+11.72	-5.06	+44.06

*Source: Statistical Hand book of TamilNadu 2004*

According to the 2001 Census, Tamil Nadu has the highest level of urbanization (43.86%) in India, accounting for 6% of India's total population and 9.6% of the urban population and is the most urbanized state in India.

### 2.17.3. Population by Religion

The distribution of population by religion is furnished in Table 2.74. It could be seen that the population of Hindus accounted for 88.11 per cent in Tamil Nadu as compared to 80.46 per cent at country level. The population of Muslims in Tamil Nadu accounted for 5.56 and 13.43 per cent at state and country levels respectively. Nearly 6.07 per cent of the population was Christians in Tamil Nadu State as compared to 2.34 per cent at country level.



**Table 2.74. Population by Religion 2001**

Religion	Persons in Tamil Nadu (Nos.)	Variation Since 1991-2001 (Nos.)	Percentage	
			Tamil Nadu	All India
Hindus	54985079	5453027	88.11	80.46
Muslims	3470647	417930	5.56	13.43
Christians	3785060	605650	6.07	2.34
Sikhs	9545	4096	0.02	1.87
Buddhists Jains	5393	3265	0.01	0.77
Other Religions	83359	16459	0.13	0.41
Religions not stated	7252	4632	0.01	0.65
Total Population	59344	41674	0.09	0.07
Total Population	62405679	6546733	100.00	100.00

Source: Statistical Hand book of Tamil Nadu 2004

#### 2.17.4. Population by Industrial Categories

The distribution of population by broad industrial categories of workers is furnished in Table 2.75. It is evident from the table that the workers having economically gainful activity for the major part of the year classified as main workers numbered 237.58 lakhs in Tamil Nadu as per 2001 census and it accounted for 85.22 per cent of the total workers. The marginal workers accounted for 14.78 per cent of the total workers in Tamil Nadu state. At all India level, the main workers and marginal workers accounted for 77.8 and 22.2 per cent of the total workers respectively. The cultivators, agricultural labourers, workers engaged in house hold industry and other workers accounted for 18.4, 38.1, 5.3 and 45.2 per cent respectively of the total workers in Tamil Nadu State.

**Table 2.75. Population by Broad Industrial Categories of Workers**

S. No	Industrial Category	Tamil Nadu		All India	
		Persons	Percentage of Total workers	Persons	Percentage of Total workers
1	Main workers	23757783	85.22	313004983	77.8
2	Marginal Workers	4120499	14.78	89229741	22.2
	Total workers(1+2)	27878282	100.00	402234724	100.0
a	Cultivators	5116039	18.4	127312851	31.7
b	Agricultural Laborers	8637630	31.0	106775330	26.5
c	Household Industry, Manufacturing, Processing, Servicing and repairs	1499761	5.3	16956942	4.2
d	Other workers	12624852	45.2	151189601	37.6
3	Non-workers	34527397	-	877641173	-
	<b>Total Population</b>	<b>62405679</b>	<b>-</b>	<b>1028830774</b>	<b>-</b>

Source: Statistical Hand book of Tamil Nadu 2004

### 2.17.5. Poverty Level

There has been dramatic change in the level of poverty in the State during the last two decades due to implementation of various development programmes. During the period from 1973-74 to 1987-88, the proportion of rural population living below poverty line was higher in Tamil Nadu than the national average. Rural poverty which stood at 57.43 per cent in 1973-74 declined to 32.48 per cent in 1993-94 and further to 22.8 per cent in 2004-05. Similarly, the urban poverty declined from 49.40 per cent in 1973-74 to 22.2 per cent in 2004-05. The details of population below poverty line of Tamil Nadu are furnished in Table 2.76.

**Table 2.76. Status of Population below Poverty line in Tamil Nadu**  
(in percent)

Sl.No.	Year	Rural	Urban	Combined
1	1973-74	57.43	49.40	56.94
2	1977-78	57.68	48.69	54.79
3	1983-84	53.98	46.96	51.66
4	1987-88	45.80	38.64	43.39
5	1993-94	32.48	39.77	35.03
6	1998-2000	20.55	22.11	21.12
7	2004-05	22.8	22.2	22.5

*Source: Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.*

Incidence of poverty is still an important issue posing a challenge in terms of interventions required and ensuring outcomes.

The trend in incidence of poverty in Tamil Nadu and India is presented in Table 2.77.

**Table 2.77. Trend in Incidence of Poverty in Tamil Nadu and India**  
(in percent)

Year	Rural		Urban		Combined	
	Tamil Nadu	India	Tamil Nadu	India	Tamil Nadu	India
1973-1974	57.43	56.44	49.40	49.01	54.94	54.88
1977-1978	57.68	53.07	48.69	45.24	54.79	51.32
1983-1984	53.99	45.65	46.96	40.79	51.66	44.48
1987-1988	45.80	39.09	38.64	38.20	43.39	38.86
1993-1994	32.48	37.27	39.77	32.36	35.03	35.97
1999-2000	20.55	27.09	22.11	23.62	21.12	21.10
2004-2005	22.80	28.30	22.20	25.70	22.50	27.50

*Source: Tamil Nadu – An Economic Appraisal, 2005-06, Evaluation and Research Department, Government of Tamil Nadu, Chennai.*

It could be seen from the table that the incidence of poverty in rural areas in India was less than that of the State level upto 1987-88 and thereafter it showed an increasing trend than that of the State level. Similar phenomenon was observed in the case of urban poverty also upto 1993-94. In sum, the level of poverty in India exhibited an increasing trend than that of Tamil Nadu from 1993-94 onwards.

### 2.17.6. Human Capital Formation and Human Development

Human development is considered as a vital component of economic development. The human development index and the relative ranks reflected that Tamil Nadu has made significant improvement in human development index over the years. Tamil Nadu was positioned in seventh place in 1981 with a human development index value of point 0.343. The value had enhanced to 0.531 in 2001 which ranked Tamil Nadu third among the major states. The details are furnished in Table 2.78.

**Table 2.78. Human Development Index of Major States**

States	1981 value	Rank	1991 value	Rank	2001 value	Rank
Andhra Pradesh	0.298	9	0.377	9	0.416	10
Assam	0.272	10	0.348	10	0.386	14
Bihar	0.237	15	0.308	15	0.367	15
Gujarat	0.360	4	0.431	6	0.479	6
Haryana	0.360	5	0.443	5	0.509	5
Karnataka	0.346	6	0.412	7	0.478	7
Kerala	0.500	1	0.591	1	0.638	1
Madya Pradesh	0.245	14	0.328	13	0.394	12
Maharashtra	0.363	3	0.452	4	0.523	4
Orissa	0.267	11	0.345	12	0.414	11
Punjab	0.411	2	0.475	2	0.537	2
Rajasthan	0.256	12	0.347	11	0.424	9
Tamil Nadu	0.343	7	0.466	3	0.531	3
Uttar Pradesh	0.255	13	0.314	14	0.388	13
West Bengal	0.305	8	0.404	8	0.472	8
<b>All India</b>	<b>0.302</b>	<b>-</b>	<b>0.381</b>	<b>-</b>	<b>0.472</b>	<b>-</b>

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

## 2.18. State Income

Tamil Nadu's gross state domestic product for 2007 is estimated at Rs. 275,000 crores (70 billion USD) in current prices. The state experienced a GDP growth rate of 12.1% for this period. Possessing the third largest economy (2007-2008) among states in India, Tamil Nadu is also the most industrialized state in India. The per capita income for the period 2007 -2008 for the state was Rs.43,000 ranking second among the South Indian states. It ranks third in foreign direct investment approvals (cumulative 1991-2002) of Rs.225,826 million (\$5,000 million), next only to Maharashtra (Rs. 366,024 million (\$8,100 million) and Delhi (Rs.303,038 million (\$6,700 million) and the State's FDI investment constitutes 9.12% of the total FDI in the country. The details of Gross State Domestic Product over years are furnished in Table 2.79.

**Table 2.79. Gross State Domestic Product**

(Rs. in Crores)

Year	GSDP	Change (%)	Share of India (%)
1994-95	68,666	19.32	7.49
1996-97	89,237	19.96	7.18
1998-99	118,209	32.47	7.40
2000-01	141,100	19.36	7.33
2002-03	155,099	09.92	6.85
2004-05	188,921	21.81	6.61

The share of primary sector to gross domestic product at factor cost in Tamil Nadu is furnished in Table 2.80.

**Table 2.80. Contributions of Sub-sectors to Primary Sector at Constant Prices**

(Rs. in Crores)

Subsector	2003-04		2004-05		2005-06	
	Income	Growth (%)	Income	Growth (%)	Income	Growth (%)
Agriculture and Allied activities	15928	(-) 1.60	19035	19.51	20521	7.81
Forestry and Logging	596	(-) 5.33	594	(-) 0.31	589	(-) 0.71
Fishing	1983	(-) 2.08	1690	(-)14.76	2404	42.22
Mining and quarrying	992	22.58	1055	6.36	1102	4.45
Primary sector	19499	(-) 0.77	22374	14.75	24616	10.02

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

It could be seen from the table above that within the four sub-groups of primary sector, agriculture and allied activities was the largest component which registered a growth of 7.81 percent. Among the other three sectors, forestry and logging declined by 0.71 percent and mining and quarrying registered a growth of 4.45 percent. Though the income generation from fishing sub-sector was negative during the past few years; it turned positive and recorded an impressive growth in 2005-06.

### 2.18.1. Inter District Comparison

Estimates of income generation at district level are furnished in Table 2.81. It could be seen that between 1993-94 and 2002-03, income from all the districts rose at a compound growth rate of 5.3 per cent. Total income generation was more than Rs.4000 crores in eight districts and they together accounted for more than 50 percent of the total state income in 2002-03. The per capita income showed that Chennai ranked first followed by Coimbatore and Virudhunagar. The lowest percapita income was observed in Villupuram district. Further, a perusal of the relative performance of districts in terms of percapita income showed that eleven districts, viz., Chennai, Coimbatore, Virudhunagar, Kancheepuram, Tiruvallur, Theni, Thoothukudi, Erode, Namakkal, Madurai and Tirunelveli had percapita income above the State average.

**Table 2.81. District Income Estimates: GSDP at Constant (1993-94) Prices**

Districts	1993-94 (Rs. Lakhs)	2002-03 (Rs. Lakhs)	CGR (GDP)	Per capita GDP* (Rs.)	Rank (Per capita)
Chennai	627727	1045488	5.83	24069	1
Coimbatore	511299	899894	6.48	21066	2
Virudhunagar	227661	358885	5.19	20492	3
Kancheepuram	303132	549553	6.83	19098	4
Thiruvallur	277666	513660	7.07	18646	5
Theni	115105	188160	5.61	17200	6
Thoothukudi	178339	267982	4.63	17044	7
Erode	259544	415677	5.37	16102	8
Namakkal	163499	228883	3.81	15326	9
Madurai	226884	387509	6.13	15030	10
Tirunelveli	253725	400508	5.20	14703	11

**Table 2.81. Contd...**

Dindigul	170094	275982	5.52	14352	12
The Nilgiris	75119	106309	3.93	13949	13
Salem	266548	400949	4.64	13293	14
Trichy	195812	313328	5.36	12956	15
Karur	81443	118842	4.29	12701	16
Perambalur	106987	149516	3.79	12573	17
Vellore	284925	436065	4.84	12540	18
Kanniyakumari	150071	210025	3.81	12531	19
Ramanathapuram	89043	145912	5.64	12286	20
Sivagangai	84563	130957	4.98	11335	21
Nagapattinam	115157	166472	4.18	11181	22
Cuddalore	165291	245412	4.49	10738	23
Thanjavur	149751	235952	5.18	10647	24
Pudukkottai	96745	153066	5.23	10487	25
Thiruvarur	89576	118442	3.15	10128	26
Dharmapuri	182834	282943	4.97	9906	27
Thiruvannamalai	135288	192685	4.01	8814	28
Villupuram	171074	231270	3.41	7812	29
<b>State</b>	<b>5754902</b>	<b>9170326</b>	<b>5.31</b>	<b>14695</b>	

Note: \* Pertains to GDP 2002-03 and Population 2001 census

Source : Directorate of Economics and Statistics, Chennai – 6.

## CHAPTER – III

### SWOC ANALYSIS OF THE STATE

SWOC is an acronym for strengths, weaknesses, opportunities and challenges. An understanding of the strengths, weaknesses, opportunities and challenges of the various facets of the economy is a pre-requisite for effective development planning. The SWOC analysis is also an important management tool. Carrying out a SWOC analysis involves identifying internal strengths and weaknesses as well as examining external opportunities and challenges and then seeing how they relate to each other. Once the strengths are identified, they can be made use of for accelerating the development process. Weaknesses once brought to light, can be rectified or reduced so as to keep up the tempo of development. Always the opportunities must be uncovered, tapped or made use of at the earliest for toning up the economic activity. However, the challenges must be either avoided or counteracted, so as to keep the development process always on its right track. Therefore, the SWOC analysis has been attempted first for the state economy, as a whole and then for the agriculture sector as well as allied sectors like horticulture, agricultural engineering, agricultural marketing, animal husbandry, fisheries, and irrigation systems.

#### I. SWOC Analysis of the State Agricultural Economy

The SWOC analysis of the State agricultural economy is briefly indicated below.

##### A. Strengths

1. The day-time round the year sun-shine and the visititudes of both south-west and north-east monsoons are the boons to the living of human race and the animal kingdom on this part of the planet earth.
2. The State possesses varied types of agro-climatic conditions ranging from hot tropical through sub-tropical to temperate climate.
3. The major types of soils like red, black, alluvial, loamy and sandy loam found in the State are highly suitable for growing a variety of crops.
4. The State is fairly well endowed with water and land resources. Ground water potential is also fair in many parts of the State.
5. A wide range of crops starting from tropical cereals, pulses, oilseeds vegetables etc. to temperate fruits and vegetables are cultivated under varied agro-climatic conditions and elevations in the State.

6. The livestock population is sizable in the State. There exist very good potential for boosting milk production and sheep / goat / poultry meat in the State through scientific feeding, breeding and health management.
7. The long coastal length of 1,076 kms and the widely spotted inland water bodies indicate the high growth potential of fishery sector in the State.
8. Well-developed agri-based cotton and sugar-industries are the added strength for the rapid growth of the economy.
9. People in the State are always industrious and hard-working and hence a science-based technological back-up can go a long way in improving agricultural production.
10. The rail as well as road transport system, which are essentials for agricultural development, are also well – knitted in the State and
11. Both urban and rural electrification is almost 100 percent in the State and acts as the catalyst for the growth of the State economy.

#### **B. Weaknesses**

1. In spite of more than five decades of planning, the success of agriculture yet depends on the successful monsoons. Frequent monsoon failures, low and uncertain rainfall and its skewed distribution affect the tempo of agricultural growth.
2. Uneconomic size of very large number of marginal and small farms and poor economic status of the farmers and the low literacy level among farmers affect the full adoption of scientific technologies and hence the agricultural production and
3. Many of the irrigation systems and structures are in dilapidated conditions for want of funds. The tank and water ways are highly silted and filled with the growth of bushes. Heavy seepage losses and hindrance to the free flow of water are found in conveying the water through the irrigation canals from dams, reservoirs and big tanks. Moreover, unauthorized encroachment of catchment and water spread areas of the irrigation tanks is a common phenomenon throughout the State. Improper up-keep of canal and river bunds results in recurring breaches and consequent damages to the standing crops, livestock and human life in the villages during rainy seasons and flash flooding.



**C. Opportunities**

1. Normal quantity of rainfall and its even distribution provide scope for raising almost all field and horticultural crops round the year in most pockets of the State.
2. As the urbanization and industrialization is on the accent in the recent years, the market demand for quality agricultural products and protective foods like milk, fruits and vegetables is getting increased. These indicate the opportunities for increasing the yield per acre, the milk production, vegetables and fruits production etc. in the years to come. The demand for ready to cook as well as ready to eat foods is also increasing. Thus, there is ample opportunity for the agri-processing units to flourish in the years to come in the State.
3. The red, black, alluvial and loamy soils found in the State are highly productive soils. The capability can be sustained through the proper and planned nutrient management practices.
4. As the labour availability is becoming scarce, especially during peak agricultural operations like transplanting, harvesting etc. the farm mechanization is on the increase. However, the high investment requirement and non-affordability of the individual farmer, especially marginal and small farmers, gives way for custom services and evolution of small agri-business entrepreneurs in the State and
5. Large extent of land (about 24 lakh hectares) is considered as waste land in the State. This provides opportunities for reclamation and development of horticulture and plantation crops in the State.

**D. Challenges**

1. Low and skewed distribution of rainfall and heavy down-pour in a few days especially during north – east monsoon and consequent flash floods in frequent years and inadequate infrastructure to control and store the flood water, damages the standing crops heavily and spoils the level of production.
2. High fluctuations and non-remunerative prices of farm products and consequent non-profitability of the farm business perforce many farmers to quit the agricultural profession itself.
3. The out – break of pests and diseases are often recurring in certain endemic areas of the State. These pose the threat to destroy the crops leading to complete loss to many farmers.

4. In recent years, due to heavy pumping of ground-water especially in summer and early kharif seasons, the reversal of ground water flow results in sea-water intrusion in the inlands along the coastal belt and consequently making the bore wells as well as open well-water unfit for crop production and drinking. Many farmers infact abandoned the cultivation especially of the kharif crop.
5. The inter-state disputes on the major irrigation systems like Cauvery, Periyar etc. affect the agricultural growth of the State to a great degree by posing the threat of abandoning the crop production often and
6. Fast urbanization and industrialization and indiscriminate conversion of agricultural lands to non-agricultural purposes, pose a great threat of contraction of land put to agricultural uses and consequent reduction in production.

## **II. SWOC Analysis of Agriculture Sector**

### **A. Strengths**

- The agro-climatic and soil conditions of the State are highly favourable to raise a variety of field crops like paddy, sugarcane, cotton, pulses, millets, oilseeds etc. under three distinct seasons of kharif, rabi and summer.
- Most of the field crops are the food crops for human consumption and hence have recurrent demand.
- Sugarcane and cotton form the raw materials for the manufacturing industries like sugar and textile. These two products also have continuous demand from the sugar mills and cotton spinning mills in the State.
- The technologies of crop production are also constantly changing due to research and development activities of the TNAU in the State. Constantly changing technologies are the essentials for agricultural development.
- Many of the grains and the by-products are used to prepare the animal feed mix for both cattle (white + black) and poultry and hence demand for them is high for the development of livestock and poultry.
- The agricultural development department in the State is also well equipped with technical human power and the much needed infrastructure, to keep agricultural development going.

- There also exists an excellent growing export markets for fine rice, cotton, sugar, etc. that act as a strength in cultivating these field crops and
- The irrigation system and supply of irrigation water supports the cropping systems in the fields of Tamil Nadu.

**B. Weaknesses**

- Monsoon failures and consequent non-availability of irrigation water for the crop growth in the fields.
- Non-availability of inputs like fertilizers in time and their exorbitant prices.
- Post-harvest glut in commodities and price crashing
- Delayed issuing of cutting orders for sugarcane harvest by the sugar mills and the consequent sucrose losses and associated loss to farmers and
- Widely fluctuating cotton prices.

**C. Opportunities**

- The productivity of all the field crops can be increased through the application of latest production technologies.
- Export market potential can be tapped further especially for flowers, fruits and vegetables.
- Installation of agri-processing units can be taken up at an early date
- Crop diversification is possible especially under rainfed agriculture by the introduction of maize, sunflower, etc.
- The palm oil tree cultivation in wet and garden lands can also be tried and
- Intensive cotton cultivation in rice fallows can be encouraged.

**D. Challenges**

- Price risks associated with most of the field crops.
- Heavy down-pour of rainfall and flash flood and consequent loss of crops, livestock and human life.
- Scarcity of labour during peak seasons of operations, especially during transplanting and harvesting and
- Non-availability of important fertilizers and their exorbitant sale prices.

### **III. SWOC Analysis of Horticulture Sector**

#### **A. Strengths**

- Horticulture crops in general are high-earning crops in the State
- Soil and climatic conditions are highly favourable for raising many of the horticultural crops.
- The horticulture department in the State has got the much needed technical where-withal, supported by a separate College of Horticulture and Research Institute and few Research Stations in the State.
- Increasing industrialization and urbanization and consequent per capita income increase create an effective internal and external demand for horticultural products, which are supposed to be the protective foods in human nutrition.
- The hill stations spotted in the Western Ghats and in the middle of the state grow vegetables like carrot, cabbage, cauliflower, potato etc., temperate and sub-tropical fruits like plums, peaches, strawberries and plantation crops like tea, coffee, cardamom etc and
- The state support for growing horticultural products in the form of launching State horticultural mission, central horticultural mission, etc is an added strength to grow a variety of horticultural crops in the state.

#### **B. Weaknesses**

- The major weakness is the high-cost of high-tech horticultural crops.
- Most of the fruit crops are highly season-bound and hence the year-round production is not possible.
- Lack of adequate demand for processed fruit and vegetable products and infrastructure facilities for processing value-added products.
- Inadequate network of horticultural extension machinery in the State.
- Highly perishable nature of horticulture products and
- Lack of effective demand from low income and lower-middle income families for horticulture crops.

#### **C. Opportunities**

- As the urbanisation, industrialization and the family income are in the up-trend in the recent years, the effective demand for protective foods is growing.

Hence there exist ample opportunities to increase fruit and vegetable production in the State.

- The tempo of liberalization of the economies in the world and the functioning of WTO give importance to the export of horticultural products.
- Season-bound production, highly perishable nature of products and the year round demand provide excellent opportunity for the agro-processing entrepreneurs.
- Recent policy of reclaiming waste land and its allotment to landless labourers provide good opportunities to raise deciduous fruit trees like wood-apple, pomegranate, zizubus, jambulana, vegetables and bio-fuel plants like Jatropha, medicinal plants, etc and
- Crop diversifications from low-return field crops to high-earning crops and raising the horticultural crops are the other possible opportunities.

#### **D. Challenges**

- High-cost of high-tech involved in raising horticulture crops and low financial capability of majority of farmers
- Presence of rocky subsoils and unawareness of the farmers pose severe threat.
- High perishability and inadequate post-harvest care also pose threat to grow horticultural crops and
- Post-harvest glut of season-bound fruits and rock bottom prices are the other threats confronted by horticultural farmers.

### **IV. SWOC Analysis of Agricultural Engineering Sector**

#### **A. Strengths**

- Propensity of farmers to utilize the farm machineries like motor-pumpsets, tractors, tillers, thrashers, transplanters etc. is a positive strength gained in the recent years in farm mechanization front.
- Young enterprising farmers / rural youths are coming forward to provide custom services to all sections of the farmers, by taking the risk of heavy investment.
- Owning of the machineries by big farmers
- Effective water harvesting techniques and
- Proven soil and water conservation techniques are also available.

**B. Weaknesses**

- Large number of marginal and small farms
- Majority of the farmers are resource poor
- Lack of effective machineries for carrying out the farm operations like transplanting, weeding, etc.
- Inadequate number of water harvesting structures often led to flash floods and surface run-off of waste water.
- Farmers are yet to practice the scientific soil and moisture conservation activities especially in dryland areas and
- Seasonality of usage of machineries.

**C. Opportunities**

- Scarcity and high cost of labour and availability of machineries and their uses at low cost are providing opportunities for intensifying farm mechanisation.
- Financial institutions are coming up in a big way to help the rural youths and young entrepreneurs in owning the high priced machineries and render custom services to the fellow-farmers.
- There exists scope for organizing more number of entrepreneurial development programmes to the rural youths and to the innovative large farmers.
- There exists vast scope for soil and water conservation measures like contour-bunding, basin-listing, construction of waste-weirs etc.
- There are ample opportunities for the popularization and adoption of water harvesting techniques like farm ponds, percolation ponds etc and
- Researchers have innumerable opportunities for product / machinery development to meet the existing latent demand for effective farm equipments.

**D. Challenges**

- High price and heavy investment and lack of effective repairing workshops in the easy reach of the farmers
- Farmers are exploited by charging very high rates of hiring charges by owners of the machineries and
- Labour oppositions backed by political and trade-union supports affected the mechanization process till recently.

## **V. SWOC Analysis of Agricultural Marketing Sector**

### **A. Strengths**

- Network of periodic markets are functioning in the State.
- Well-knit regulated marketing system has been developed in the State.
- Co-operative marketing societies in certain pockets of the State render yeoman service to farming community
- Fairly a large number of commission mandies, wholesalers and retailers are eking out their livelihood through rendering marketing services to farmers and consumers.
- A large number of export agencies have become active in the recent years in exporting agricultural products, particularly in the context of recent economic liberalization.
- The functioning of TANFED, NAFED and CCI is an added strength to the marketing system, especially the export marketing system.
- Well established warehousing system by the CWC, SWC and co-operatives with three-tier approaches adds further strength to the marketing system in the State and
- Changing life style and food habits of the people especially in the contexts of urbanization, industrialization and Information Technology revolution.

### **B. Weaknesses**

- Presence of innumerable intermediaries between farmers and consumers weakens the marketing system.
- Perishable nature of the farm products and the high profit-motive tactics adopted by many of the intermediaries weaken the bargaining power of the farmers.
- Ineffective functioning of majority of the organized marketing institutions also adds to the weakness of the marketing system.
- Post-harvest glut and consequent low prices of agricultural commodities
- Ineffective storage structures at the farm level and consequent losses of food grains due to storage pests, including rats and dampness.
- The post-harvest losses have been estimated at 30 per cent for fruits and vegetables and 10 percent for food grains and
- Agri-processing system is yet to gain momentum in a big way.

**C. Opportunities**

- Strengthening the existing marketing organizations
- Effective regulation of marketing activities
- More construction of rural godowns at village level
- Gaining fillip to the growth of agro-processing industry
- Developing effective communication network
- Capacity building among farmers through training and exposure visits.
- Development of cold chains for perishables
- Strengthening storage system at farm level and
- Tapping the export markets.

**D. Challenges**

- Volatile prices / wide price fluctuations are the major threats that make the agricultural proposition non-profitable and hence perforce the farmers to exit agricultural profession once for all.
- Lack of proper thrashing floors in the village impede the preparation of quality products for the market and
- Lack of tarpaulins and exposure of produce to the sudden rainfall spoil the quality of the products.

**VI. SWOC Analysis of Animal Husbandry Sector**

Animal husbandry activities have been inextricably inter-woven with crop husbandry activities at the farm level from time immemorial. The two-way interdependence between crop husbandry and animal husbandry could be quite rewarding and appreciable. The livestock depended on crop husbandry for the feed and fodder, while crop cultivation depended on livestock for manure and draught power. In addition, the livestock enterprises provided the most important low-cost protective food *viz.*, milk for all ages of human survival. Livestock enterprise also provide supplementary income to the farm family intermittently to meet out the day-to-day family as well as cultivation expenses, while the crop husbandry yield once in a crop season in an year, depending on the cropping pattern. Animal husbandry activities like sheep and goat rearing and poultry farming provide meat for healthy living of mankind. Thus, the crop and livestock enterprises are complimentary enterprises in the farm sector.



In the recent years, due to accent in farm mechanization, the dependence of agriculture on animal draught power has started declining and hence the importance of rearing male calves of both cattle and buffalo has also started declining. On the other hand, the demand for milk and meat has started picking up due to the rise in the purchasing power of the households. Thus, these changing scenarios have resulted in declining livestock population and increasing milk and meat productivity per animal. Under such present changing situations, the SWOC analysis of animal husbandry sector has been attempted to understand the existing real world situation of animal husbandry activities in the State.

## **1. Dairy Sub-Sector**

### **A. Strengths**

- Sizable cattle population in the State
- Uptrend in cross-bred cows population
- Eagerness of Self Help Groups in dairying
- Readily available bank credit
- Ready market for fluid milk and its by-products
- Involvement of private dairy farmers is also on the increase in milk procurement and distribution
- Very high export potential for hides and skins.
- The availability of fairly large number of veterinary institutions along with infrastructure facilities
- Propensity of dairy farmers to market the surplus milk through co-operatives and excellent network of dairy co-operatives
- Availability of superior germ plasm with high exotic blood levels and
- Availability of fairly a large number of Artificial Insemination Centres in the state.

### **B. Weaknesses**

The weaknesses associated at present with the animal husbandry sector are as under:

- Shortage of green fodder to the tune of above 80 per cent of the requirement.
- Lack of scientific knowledge on enriching the available dry fodder with nutrient supplements.

- Lack of knowledge on hygienic milk production, scientific rearing of calves and management of cross bred cows during advanced pregnancy period.
- Insufficient cold chain management of vaccines
- Poor quality control system
- Problems in controlling the disease out-breaks
- Improper housing and frequent incidence of diseases
- Poor slaughter facilities
- Non-availability of veterinary services within the easy reach of the farmers due to insufficient technical manpower.
- Delayed conceivment, shy bearing in buffaloes and lesser percentage of artificial insemination success and
- Decreasing buffalo population

### **C. Opportunities**

- Constantly increasing demand for milk and milk products from both domestic and export markets.
- The performance of genetically up-graded non-descript local breeds are quite promising in terms of increased milk productivity
- Financial institutions, especially the commercial banks, are liberal in extending credit facilities for starting mini-dairy farms
- Technology empowerment on scientific dairy farming among farmers / rural women to boost milk production.
- Presence of well – knit Self Help Groups all over the State and
- Availability of well-knit co-operatives milk marketing system and the growth of private procurement and distribution business units.

### **D. Challenges**

- Diminishing grazing land area
- High incidence of mastitis and loss of milk productivity
- Increasing cost of feeds
- Non-availability of labour and high labour cost and
- Sudden outbreaks of epidemic diseases like Anthrax, black quarter, foot and mouth disease etc.

## **2. Small Ruminants Sub-sector**

### **A. Strengths**

- Additional sources of income to farmers
- Easy marketability and heavy demand
- Consumers' preference towards mutton and savnon is more
- Suitable climatic condition and the local breeds
- Low input requirement
- Easy flock / herd management
- Low investment requirement
- Sizable sheep and goat population and
- Availability of waste lands and fallow lands

### **B. Weaknesses**

- Unorganized / conventional slaughtering methods
- Pricing of sheep by subjective assessment and exploitation of farmers by the middleman
- Inadequate grazing land / seasonal grazing in cropped fields during off-season.
- Non recognized breeds of goat / sheep in the State
- Non-availability of veterinary aids within the easy reach of sheep/goat farmers
- Lack of quality germplasm
- Lack of technological interventions
- Lack of scientific method of feeding, breeding and health management
- Scarcity of fodder
- Improper / insufficient housing leading to low productivity and disease problems.
- Creation of social problems due to indiscriminate grazing at the gardens of neighbours and
- High susceptibility to mastitis due to nomadic type of herd farming.

### **C. Opportunities**

- Quality germ plasm production and distribution by private entrepreneurs.
- Popularizing proven improved and less labour intensive farming system
- Reducing mineral deficiency related problems and
- Adoption of technology interventions by illiterate shepherds.

**D. Challenges**

- Resistance to adopt new technologies by illiterate shepherds
- Reaching the nomadic type of shepherd with goat and sheep herd farming
- Non-availability of shepherds for tending the sheep / goat herd.
- Frequent occurrences of killer diseases like Blue tongue, sheep pox, PPR etc.
- Inadequate / non-availability of sufficient quantity of vaccines
- Cyclone, heavy and continuous downpour of rainfall and flooding and
- Inadequate disaster management infrastructure.

**VII. SWOC Analysis of Fishery Sector****A. Strengths**

- Tamil Nadu State is endowed with a coastal line of 1,076 kms, accounting for 13.3 per cent of the Nation's Coastal line of 8118 kms.
- State possesses 0.19 million sq.kms of Exclusive Economic Zone (EEZ) accounting for 9.7 per cent of the country's EEZ of 2.02 m.sq.kms and a continental shelf of about 41,412 sq.kms.
- Diversified flora and fauna estimated at more than 3,509 species to support marine fisheries.
- The inland fisheries is spread over 3.71 lakh hectares of water spread area comprising reservoirs, major irrigation and long seasonal tanks, short seasonal tanks and ponds, estuaries and backwaters.
- Many fishermen cooperatives and fisher women cooperatives are functioning in the State.
- Sizable number of mechanized boats, motorized FRP boats and traditional crafts are available in the State.
- Sizable fishermen / fisher women population in the State and
- Existence of a Fisheries College and Research Institute and a Fisheries Department is an added strength to accelerate fisheries development in the State.

**B. Weaknesses**

- Many water bodies received water only during north-east monsoon.
- Non-availability of adequate infrastructure facilities for seed production, rearing, fish landing and marketing.

- Fish culture in natural and small water systems is being practiced by stock and harvest method and not by scientific culture method.
- Lack of post-harvest facilities like cold storage and fish processing units at the shore.
- No self-sufficiency in fish seed production
- Low fish productivity of tanks.
- Non-availability of stock size quality fish seeds throughout the year.
- Lack of efficient fishing gears for operation in deep waters.
- Inadequate training packages on fish culture, breeding and seed rearing, feed formulation, fish diseases diagnosis etc.
- Paucity of funds to fish seed rearing centres.
- Insufficient area for fish seed production
- Lack of hygienic handling of fish in marketing
- Low infrastructure support for fisherman impede the growth in fish production
- Poor technology adoption in the mechanized crafts and low hygiene are the major bottle necks in promoting export oriented fishing and product development
- Under-utilization of short seasonal tanks and
- Absence of dead storage level in the reservoirs affects the natural fish stock.

### **C. Opportunities**

- Vast expansion of marine resources with diverse fishes in the off-shore area provides good opportunity for increasing marine fish catching.
- Large scale coastal aquaculture is possible.
- Mariculture, including pearl culture, spat production, lobster fattening and multiple newer fishing product preparations are possible.
- Rehabilitating the affected and unutilized shrimp farms for mari-culture activities.
- Ample opportunities for developing coastal / back water shrimp farming on large scale with much more vigour.
- Effective utilization of short seasonal tanks and ponds in the network of inland water ways for fish production and
- Establishment of large scale seed production and supply centres.

**D. Challenges**

- Frequent monsoon failures, visitities of cyclones and occurrence of tsunami are the natural hazards that pose major threats to the growth of the fishery industry as a whole.
- Inadequate infrastructure for seed production discourages the farmers in taking up inland fish culture
- Improper waste disposal and environmental pollution by coastal / brackish water shrimp farming act as the threat for their own survival and growth and
- High siltation of tanks and water ways and lack of periodic desilting activities.

**VIII. SWOC Analysis of Poultry Sub-sector****A. Strengths**

- Improved and high yielding breeds are available
- Development from subsistence commercial farming possible
- Introduction of integrated system by private entrepreneurs
- Growing demand for desi-chicken meat and eggs as well as for exotic chicken meat and eggs.
- Premium prices for desi chicken meat and eggs.
- Adequate Bank loan facilities and
- Development of well-knit SHGs throughout the State.

**B. Weaknesses**

- Reluctance on the part of the farmers in feeding the birds with nutrient rich feed
- Inability of small farmers in competing with the large commercial farms
- Wide price fluctuations of meat and eggs
- Dwindling of desi-line population and
- Inadequate veterinary aids to have full immunization coverage against Raniket disease.

**C. Opportunities**

- Renewal of technology support to encourage back-yard poultry farming.
- Fool proof health cover to the existing desi lines.
- Empowerment of poultry farmers / rural women with latest technologies
- Encouragement of custom hatching units in rural households.

- Supplementing micro-nutrients to boost up production
- Scope for Japanese quail and turkeys.
- Encouraging rural women / members of Self Help Groups to take up backyard poultry farming and
- Involvement of Self Help Groups in poultry farming through capacity building activities.

#### **D. Challenges**

- Newly emerging diseases like bird-flue devastates the whole industry in a locality, if it outbreaks and hence high level of risk is associated with poultry farming.
- High feed cost threatens the growth of poultry industry
- Wide fluctuations in prices of broilers and eggs
- Unhygienic slaughter of birds and
- Diminishing indigenous germ plasm

### **IX. SWOC Analysis of Irrigation Systems (PWD)**

#### **A. Strengths**

- The presence of major irrigation systems like Mettur dam, PAP, Sathanoor dam, Papanasam dam, Aliyar dam etc. and a large number of medium irrigation projects in the State indicates the good strength of the irrigation system in the State
- The ground water potential in many parts of the State is good and
- The State is endowed with a network of well developed irrigation tanks and canals.

#### **B. Weaknesses**

- Many of the water bodies including feeder channels and distribution channels are highly silted reducing the water holding capacity and the flow of water.
- Many of the irrigation structures are in dilapidated conditions resulting in wastage of stored water through seepage etc.,
- Paucity of funds to modernize most of irrigation systems and structures.
- Lack of awareness on the importance of maintenance of irrigation structures among the farmers, extra vagant use of water and meddling with structures and
- No organized flood control measures in the areas chronically affected by frequent flash floods.

**C. Opportunities**

- Modernization of irrigation systems
- Taking up repairing works of dilapidated water structures
- Desilting of reservoirs, tanks and canals.
- Strengthening the bunds of tanks, rivers, canals etc.
- Modernizing approach roads along and around the water bodies.
- Construction of check dams.
- Construction of barrages at the point of confluence of river water into the sea near seashore and irrigation shafts to prevent sea water intrusion in the coastal belt of the State and
- Taking up flood control measures with long-term perspective.

**D. Challenges**

- Heavy seasonal / monsoon down-pour in a short spell of time and the consequent flash floods and breaches of the bunds and associated crop, livestock and human losses.
- Social threat of unauthorized encroachment of catchment areas, water spread areas meddling with irrigation structures and devices and spoiling them wantonly
- Sea water intrusion in coastal areas and
- Inter-state disputes on river water sharing with neighbouring States of Karnataka, Kerala and Andhra Pradesh.

**3.3 Accommodating SWOC (Addressing Issues emerging out of the Analysis)**

- The agro-climatic conditions of the State is highly favourable for good growth of a wide range of crops from tropical through sub-tropical to temperate
- Through proper organization of land, labour and capital and application of agricultural technologies, the farm / agricultural production could be optimized.
- The farm mechanization, the soil and water conservation measures and water harvesting techniques would enhance the agricultural production to a greater degree
- Rehabilitation and modernization of the irrigation systems would be an insurance against crop failures



- The crop and livestock productivity could be enhanced through the application of constantly changing technologies
- The horticulture development can be given thrust in the years to come, particularly in the context of reclamation of vast areas of waste lands and
- The long coastal belt and well spotted inland water bodies with the application of scientific methods would provide ample scope for boosting the fishery production in the State.

## CHAPTER – IV

### DEVELOPMENT OF AGRICULTURE SECTOR

Keeping in view of the natural resource base potential and the inputs management practices, development issues in agriculture sector have been identified and highlighted. In addition, the on-going schemes have been listed and the constraints have been brought to light. Finally, the required interventions have been recommended in this chapter.

#### 4.1 Issues of Agriculture Sector

The issues of agriculture sector could be summarized as under:

1. Erratic and inadequate monsoon rain
2. Declining trend of net area sown
3. Diversion of fertile agricultural lands to non-agricultural purposes
4. Cropping intensity hovering around 115-119 per cent in the last five decades
5. Depletion of ground water
6. Increase of fallow lands
7. Deterioration of soil health
8. Unfavorable pattern of land ownership
9. Yield gap in majority of the crops
10. Slowdown in growth rate of yield
11. Inadequate seed availability and seed replacement rates for most of the crops
12. Over use of certain chemical fertilizers and leaching away of organic matter of the soil
13. Dissemination of appropriate agricultural technologies
14. Access to credit from organized financial institutions at reasonable interest rate
15. Promoting rational use and management of surface and groundwater
16. Strengthening of area under rainfed crops by introduction of drought resistant varieties
17. Incentivizing water saving techniques and
18. Timely availability of quality seeds, fertilizers and pesticides



Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)				% of Achmt. W.r.t B.E	% of Achmt. W.r.t R.E	% of Achmt. W.r.t FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Achmt. Upto 31.3.2008			
3	Vermicomposting											
	Demonstrations cum Trg.	Nos	91	90	99	4.710	4.720	4.720	4.700	100	100	100
	Farmers Trained	Nos	4550	4500	99	-	-	-	-	-	-	-
	2401-00-107-JA & 2401-00-789-JC											
4	Crop and Plant Protection		-	-	-	117.840	119.950	119.950	112.312	95	94	94
5	2401-CH-108-JD & 2401-CH-789-JE											
	Increasing the Production of Oilseeds		-	-	-	645.640	907.930	907.930	904.110	140	100	100
a)	Seed Procurement											
	Groundnut	MT	4142	3860	93	-	-	-	-	-	-	-
	Gingelly	MT	135	68	50	-	-	-	-	-	-	-
	Sunflower	MT	125	29	23	-	-	-	-	-	-	-
	Castor	MT	90	7	8	-	-	-	-	-	-	-
	Soyabean	MT	8	0	0	-	-	-	-	-	-	-

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)				% of Achmt. W.r.t B.E	% of Achmt. W.r.t R.E	% of Achmt. W.r.t FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Achmt. Upto 31.3.2008			
b)	<b>Seed Distribution</b>											
	Groundnut	MT	4142	3377	82	-	-	-	-	-	-	-
	Gingelly	MT	135	52	39	-	-	-	-	-	-	-
	Sunflower	MT	125	35	16	-	-	-	-	-	-	-
	Castor	MT	90	6	7	-	-	-	-	-	-	-
	Soyabean	MT	8	0	0	-	-	-	-	-	-	-
	2401-00-109-JC											
6	Documentary films in Agriculture		0	0	-	0.400	0.400	0.400	0.400	100	100	100
	2401-00-789-JB											
7	Procurement and Distribution of Pulses Seeds (SCP)											
	Procurement	MT	1800	1417	79	117.160	160.870	160.870	160.800	137	100	100
	Distribution	MT	1800	1468	82	-	-	-	-	-	-	-
	2401-CH-796-JD											
8	Tribal area sub plan (Adi Dravida Dept. allocation)		-	-	-	1.570	0.720	0.720	0.720	46	100	100

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)				% of Achmt. W.r.t B.E	% of Achmt. W.r.t R.E	% of Achmt. W.r.t FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Achmt. Upto 31.3.2008			
9	2415-01-004-JH											
	Production and Distribution of Micronutrients											
	Production	MT	1400	1475	105	357.010	357.010	355.810	355.350	100	100	100
	Distribution	MT	1400	1369	98	-	-	-	-	-	-	-
	2401-00-109-PF & PE & 2401-00-800 PC											
10	<b>IAMWARM</b>											
	Demonstrations	Nos.	14928	14475	97	452.410	452.205	449.310	307.288	-	-	-
	Input distribution		49068	41775	85	-	-	-	63.145	-	-	-
	Implements and equipments distribution	Nos.	4461	4666	105	-	-	-	32.644	-	-	-
	Training	Nos.	-	-	-	-	-	-	22.054	-	-	-
	Capacity building (HQ)		-	-	-	-	-	-	2.599	-	-	-
	<b>Total IAMWARM</b>								<b>427.730</b>	-	-	-



Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)				% of Achmt. W.r.t B.E	% of Achmt. W.r.t R.E	% of Achmt. W.r.t FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Achmt. Upto 31.3.2008			
15	Bio Conversion of Farm waste using pleurotus											
	Production of minikits	Nos.	5000	4650	93	7.000	7.000	6.000	5.900	84	84	98
	Distribution of minikits	Nos.	5000	4650	-	-	-	-	-	-	-	-
	2401-00-107-SG											
16	Pesticides Testing Laboratories											
	Samples Analysed	Nos.	14700	14700	100	-	0.010	0.010	0.010	0	100	100
17	2401-00-107-AH											
	Control of Cotton Bollworm using NPV											
	Area	Ha.	2000	2000	100	0.790	0.670	0.670	0.668	85	100	100
18	2401-00-108-AD											
	Integrated Cotton Development											
	Seed Production	MT	250	146	58	113.870	94.520	94.520	89.495	79	95	95
	Seed distribution	MT	250	161	64	-	-	-	-	-	-	-







Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)				% of Achmt. W.r.t B.E	% of Achmt. W.r.t R.E	% of Achmt. W.r.t FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Achmt. Upto 31.3.2008			
25	Sugarcane release of Parasite	Ha.	11000	11000	100	4.400	4.400	4.400	4.400	100	100	100
	Area											
	<b>Total (Non Plan)</b>		-	-	-	<b>763.630</b>	<b>666.890</b>	<b>658.800</b>	<b>628.014</b>	<b>82</b>	<b>94</b>	<b>95</b>
	<b>GRAND TOTAL</b>		-	-	-	<b>5848.540</b>	<b>6779.305</b>	<b>9277.690</b>	<b>8230.395</b>	<b>141</b>	<b>121</b>	<b>89</b>
	<b>PART II SCHEMES</b>											
	4401-00-103 JB											
1	Purchase of 4 Seed Processing Unit	Nos.	4	4	100	15.000	15.010	15.010	15.000	100	100	100
	2401-00-103 JB											
2	Strengthening of SPU - Repairing		-	-	-	10.000	10.000	10.000	10.000	100	100	100
	2401-00-103 JB											
3	Purchase of Bag closures for SPU and AECs	Nos.	61	61	100	3.000	3.000	3.000	3.000	100	100	100
	<b>Total Part II</b>		-	-	-	<b>28.000</b>	<b>28.010</b>	<b>28.010</b>	<b>28.000</b>	<b>100</b>	<b>100</b>	<b>100</b>
	<b>Total State Schemes (Part I &amp; II)</b>		-	-	-	<b>5876.540</b>	<b>6807.315</b>	<b>9305.700</b>	<b>8258.395</b>	<b>141</b>	<b>121</b>	<b>89</b>

**4.2.2 Centrally Sponsored Scheme :** The Schemes that are centrally sponsored and shared between Central and State are listed in Table 4.2.2.

**4.2.2 Plan Schemes - Centrally Sponsored Scheme shared between State and Centre**

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
	<b>2401-00-114-UB &amp; 2401-00-789-UH</b>												
<b>I.</b>	<b>ISOPOM (including spillover)</b>												
<b>1</b>	<b>ISOPOM - Oilseeds</b>												
	Purchase of Breeder seed	Qtls	280	433	155	-	-	-	12.600	12.831	102	-	-
	F seed production	Qtls	7000	8894	127	-	-	-	35.000	59.875	171	-	-
	C seed production	Qtls	35000	22563	64	-	-	-	175.000	197.232	113	-	-
	C seed distribution	Qtls	35000	24563	70	-	-	-	280.000	241.060	86	-	-
	Pipe for carrying water from sources to field	Nos.	738	935	127	-	-	-	110.700	114.652	104	-	-
	Infrastructure development for irrigation facilities	LS	-	-	-	-	-	-	40.000	6.600	17	-	-
	Compact Block Demon. for Groundnut	Nos.	1000	813	81	-	-	-	40.000	27.934	70	-	-
	Compact Block Demonstration for Gingelly	Nos.	450	346	77	-	-	-	6.750	4.818	71	-	-
	Compact Block Demon. for Sunflower	Nos.	102	91	-	-	-	-	2.550	2.257	89	-	-
	IPM demonstration	No.	100	94	94	-	-	-	22.680	20.305	90	-	-
	Distribution of gypsum	Ha.	34216	24061	70	-	-	-	181.616	167.611	92	-	-
	Distribution of biofertiliser	Ha.	120000	123588	103	-	-	-	60.000	57.661	96	-	-
	Disbn. of bio pesticides	Ha.	6000	6670	111	-	-	-	15.000	14.472	96	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
	Block demn. in Groundnut (Polythene mulch)	Nos.	714	481	67	-	-	-	49.980	40.571	81	-	-
	Disbn. of PP equipments	Nos.	1500	2476	165	-	-	-	12.000	18.697	156	-	-
	Distribution of Power Sprayers	Nos.	500	794	159	-	-	-	10.000	17.825	178	-	-
	Distribution of Weedicide	Ha.	100	59	59	-	-	-	0.500	0.291	58	-	-
	Farmers Training	Batch	200	195	98	-	-	-	30.000	29.396	98	-	-
	Officers Training	Batch	5	5	100	-	-	-	0.800	0.808	101	-	-
	Publicity	Ls.	0	0	0	-	-	-	0.500	0.500	100	-	-
	Staff and Other contingencies	Ls.	0	0	0	-	-	-	80.000	54.264	68	-	-
	<b>Innovative Components</b>												
	Provision of Audio Visual aids for crop campaign	Nos.	11	0	0	-	-	-	22.000	21.220	96	-	-
	Combined Nutrient Spray for Groundnut	Ha.	1510	1096	73	-	-	-	3.020	5.330	176	-	-
	<b>TOTAL OILSEEDS</b>					<b>1004.400</b>	<b>1175.410</b>	<b>1190.750</b>	<b>1190.696</b>	<b>1116.210</b>	<b>94</b>	<b>95</b>	<b>94</b>
	<b>2401-00-112-UA &amp; 2401-00-789-UC</b>												
<b>2</b>	<b>PULSES</b>												
	Breeder seed Purchase	Qtls	115	103	90	-	-	-	5.750	6.371	111	-	-
	Foundation seed production subsidy	Qtls	1440	1945	135	-	-	-	7.200	17.547	244	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
	Production of Certified Seed	Qtls	18800	8688	46	-	-	-	94.000	90.560	96	-	-
	Distribution of Certified seed	Qtls	18800	8690	46	-	-	-	150.400	107.580	72	-	-
	Block Demonstration to achieve yield potential	Nos.	4000	3557	89	-	-	-	80.000	68.586	86	-	-
	IPM Demonstration	Nos.	200	250	125	-	-	-	24.630	22.109	90	-	-
	Distribution of Biofertiliser	Ha.	56336	66796	119	-	-	-	28.168	28.500	101	-	-
	Distribution of Biopesticide	Ha.	2160	2611	121	-	-	-	5.000	4.755	95	-	-
	Distribution of NPV virus	L.Ha.	1000	1418	142	-	-	-	2.500	3.168	127	-	-
	Distribution of Hand operated sprayers	Ha.	5000	6859	137	-	-	-	40.000	52.816	132	-	-
	Pipe for carrying water from sources to field	Nos	553	1091	197	-	-	-	82.950	112.180	135	-	-
	Farmers Training	Batch	200	193	97	-	-	-	30.000	28.747	96	-	-
	Officers Training	Batch	4	4	100	-	-	-	0.640	0.640	100	-	-
	Publicity	LS							0.500	0.438	0	-	-
	Staff contingencies								20.000	15.936	80	-	-
	<b>Innovative Components</b>												
	Provision of Audio Visual aids for crop campaign	Nos.	15	0	0	-	-	-	30.000	29.919	100	-	-
	DAP Spraying	Ha.	30050	32820	109	-	-	-	30.050	28.895	96	-	-
	Micro Nutrient Spray	Ha.	70714	22966	32	-	-	-	49.500	18.094	37	-	-
	<b>TOTAL PULSES</b>		-	-	-	<b>670.500</b>	<b>685.820</b>	<b>699.780</b>	<b>681.288</b>	<b>636.841</b>	<b>93</b>	<b>93</b>	<b>91</b>

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
	<b>2401-00-114-UE &amp; 2401-00-789-UD</b>												
<b>3</b>	<b>OILPALM</b>												
1	Assistance for Planting Materials (Advance) @ 160 Nos/Ha.	Ha.	3000	1826	61	-	-	-	96.000	57.780	60	-	-
2	Assistance for Planting Materials @ 143 Nos./Ha.	Ha.	3956	1780	45	-	-	-	169.710	74.680	44	-	-
3	Area expansion	Ha.	3956	1780	45	-	-	-	276.920	121.719	44	-	-
4	Cultivation Maintenance Subsidy												
	II Year	Ha.	1748	1457	83	-	-	-	42.830	33.810	79	-	-
	III Year	Ha.	1140	910	80	-	-	-	31.920	25.361	79	-	-
	IV Year	Ha.	565	395	70	-	-	-	18.362	12.795	70	-	-
5	Establishemnt & Maintenance of seed garden	Ha.	15	-		-	-	-	10.000	0.000	0	-	-
6	Drip Irrigation												
	SF/MF/SC/ST	Ha.	80	19	24	-	-	-	5.920	1.748	30	-	-
	Other Categories	Ha.	45	12	27	-	-	-	2.340	0.744	32	-	-
7	Promotional component												
	Farmers Training	Batch	2500	2025	81	-	-	-	10.000	8.700	87	-	-
	Officers training	Batch	6	6	100	-	-	-	1.200	1.200	100	-	-
	Block demonstration	Nos.	10	5	50	-	-	-	1.700	0.850	50	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
8	Precision farming	Ha.	100	0	0	-	-	-	100.000	-	-	-	-
9	Conversion of Biomass into Organic manure (Vermicompost)	Nos.	5	4	80	-	-	-	0.750	0.600	80	-	-
10	Oil Palm Leaf/Chaff cutter	Nos.	10	-	-	-	-	-	1.000	-			
11	Covering wiremesh to avoid rat menace	Hac.	750	258	34	-	-	-	21.450	7.471	35	-	-
12	Publicity and seminar	LS		-	-	-	-	-	0.500	0.400	80	-	-
13	Review, Workshop, Study Tour	Ls.	114	114	100	-	-	-	1.750	1.750	100	-	-
	<b>TOTAL OILPALM</b>					<b>306.470</b>	<b>773.740</b>	<b>773.720</b>	<b>792.352</b>	<b>349.608</b>	<b>44</b>	<b>45</b>	<b>45</b>
<b>4</b>	<b>2401-00-102-UB 2401-00-793-UA &amp;2401-00-102-SA</b>												
	<b>ISOPOM - MAIZE</b>												
1	Production of Breeder seed	Qtls.	2	0	0	-	-	-	0.180	0.000	0	-	-
2	Productin of C seeds through Dept.	Qtls.	200	318	159	-	-	-	1.000	2.084	208	-	-
3	Distribution of C seed	Qtls.	300	592	197	-	-	-	2.400	3.904	163	-	-
4	Distribution of Minikits	Nos.	1000	862	86	-	-	-	1.000	1.000	100	-	-
5	Block demonstration	Nos.	275	279	101	-	-	-	11.080	10.872	98	-	-
6	IPM by Dept.	Nos.	36	36	100	-	-	-	8.165	7.977	98	-	-
7	POL	LS	20	0	-	-	-	-	6.300	3.936	62	-	-
8	Training to farmers	Nos.	1800	1800	100	-	-	-	5.466	5.390	99	-	-



Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
9	Officers training	Nos.	300	150	50	-	-	-	1.600	0.800	50	-	-
10	Seminar	Nos.	36	34	94	-	-	-	5.400	5.068	94	-	-
11	State Level Workshop	Nos.	1	1	100	-	-	-	0.200	0.200	100	-	-
12	Pipe line carrying water from Water source to the field	Nos.	150	127	85	-	-	-	17.500	13.726	78	-	-
	<b>Innovative component</b>												
13	Contract farming	Batch	6	0	0	-	-	-	6.750	6.750	100	-	-
14	Provision of Audio Visual aids for Crop Campagin	Nos.	15	0	-	-	-	-	30.000	29.987	100	-	-
	Publicity	LS	-	-	-	-	-	-	0.500	0.464	93	-	-
	<b>Total Maize</b>		-	-	<b>53.070</b>	<b>97.540</b>	<b>97.520</b>	<b>97.541</b>	<b>92.158</b>	<b>94</b>	<b>94</b>	<b>95</b>	-
	<b>GRAND TOTAL (ISOPOM)</b>		-	-	<b>2034.440</b>	<b>2732.510</b>	<b>2761.770</b>	<b>2761.877</b>	<b>2194.817</b>	<b>79</b>	<b>80</b>	<b>79</b>	-
<b>II</b>	<b>Technology Mode Mission</b>												
	<b>(2401-00-108-UC &amp;2401-00-789-UB)</b>												
	<b>ICDP - COTTON</b>												
1	Production of Breeder seed	Qtls	200	171	86	-	-	-	0.260	0.115	44	-	-
2	Distribution of Certified seeds	Qtls.	1000	1325	133	-	-	-	20.000	21.753	109	-	-
3	Seed delinting	Qtls.	1	1	100	-	-	-	40.000	40.000	100	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
4	Farmers Field School	Nos.	700	688	98	-	-	-	119.000	95.791	80	-	-
5	Seed treatment with chemicals	Qtls.	700	688	98	-	-	-	0.420	0.323	77	-	-
6	Surveillance and monitoring pest and disease	Nos.	1500	1200	80	-	-	-	15.000	11.580	26	-	-
7	Distribution of Pheromone traps	Ha.	4000	2840	71	-	-	-	5.600	3.941	70	-	-
8	Supply of Bio agents	Ha.	4000	3514	88	-	-	-	18.000	12.575	70	-	-
9	Manually operated sprayers	Nos.	4000	6529	163	-	-	-	32.000	49.182	154	-	-
10	Power Operated sprayers	Nos.	5000	3223	64	-	-	-	100.000	73.442	73	-	-
	<b>Human Resource Development</b>												
11	State level training	Nos.	20	20	100	-	-	-	3.000	3.000	100	-	-
	<b>New Interventions</b>			-		-	-	-		-		-	-
12	Distribution of biofertilisers	Pock	200000	203746	102	-	-	-	3.000	3.371	112	-	-
13	Distribution of Micro Nutrients	MT	30	19	63	-	-	-	1.800	1.307	73	-	-
14	Intercropping with Pulses	Ha.	6000	6000	100	-	-	-	3.900	2.486	64	-	-
15	Farmers Training	Nos.	750	689	92	-	-	-	37.500	35.800	95	-	-
16	Contingencies					-	-	-	16.000	10.120	63	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
<b>Components under 100% assistance by GOI</b>													
17	Production of F seed												
	Production by Dept.	Qtl	100	344	344	-	-	-	5.000	14.214	284	-	-
	Production by SIMA, CD & RA	Qtl	374	374	100	-	-	-	18.700	18.700	100	-	-
18	Production of certified seeds												
	Production by Dept.	Qtl	1000	1031	103	-	-	-	15.000	11.489	77	-	-
	Production by SIMA, CD & RA	Qtl	1740	1740	100	-	-	-	26.100	26.110	100	-	-
19	Electronic Print Media / Seminar / Workshop		3	3	100	-	-	-	2.250	2.250	100	-	-
20	FLD on production technology	Nos.	750	791	105	-	-	-	37.500	39.350	105	-	-
21	FLD on farm implements by SIMA CD&RA	Nos.	5	5	100	-	-	-	5.000	5.000	100	-	-
	<b>TOTAL ICDP - Cotton</b>		-	-	-	<b>450.010</b>	<b>525.030</b>	<b>525.030</b>	<b>525.030</b>	<b>481.899</b>	<b>107</b>	<b>92</b>	<b>92</b>
<b>III</b>	<b>Macro Management Mode Schemes</b>												
	<b>Cereal Development</b>												
	<b>(2401-00-102-UA &amp; 2401-00-789-UA)</b>												
<b>1</b>	Paddy Certified Seed Distribution	MT	15000	13216	88	-	-	-	300.000	259.864	87	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
2	Promotion of SRI technology (New Innovative)	Nos.	1132	1169	103	-	-	-	283.000	290.463	103	-	-
3	Promotion of IPM	Nos.	590	590	100	-	-	-	100.300	104.912	105	-	-
4	Contingency / POL	LS							9.000	7.680	85	-	-
	<b>TOTAL (Cereal Dev. Programme)</b>		-	-	-	<b>691.040</b>	<b>691.700</b>	<b>691.680</b>	<b>692.300</b>	<b>662.919</b>	<b>96</b>	<b>96</b>	<b>96</b>
	2402-101-UA & 2401-00-105-UJ												
<b>2</b>	<b>Balanced and Integrated Use of fertilisers</b>												
1)	Purchase of Analytical instrument to new FCL	Centres								-			
2)	Purchase of Analytical instrument to new PTL	Centres	6	6	100	-	-	-	300.000	300.000	100	-	-
3)	Purchase of Analytical instrument to new STL	Centres	11	11	100	-	-	-	77.000	76.950	100	-	-
4)	Strengthening of MSTL through purchase of AAS	Nos.	8	8	100	-	-	-	80.000	80.000	100	-	-
5)	Printing of Soil Health Card	L.Nos.	10	10	100	-	-	-	10.000	10.000	100	-	-
	<b>TOTAL (BIUF)</b>		-	-	-	<b>26.230</b>	<b>467.020</b>	<b>466.990</b>	<b>467.000</b>	<b>466.950</b>	<b>100</b>	<b>100</b>	<b>100</b>

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
<b>3</b>	<b>INNOVATIVE SCHEMES</b>												
	<b>2402-00-102-UR</b>												
<b>1</b>	<b>Farmers Interest Group</b>												
	Foromation of new FIGs for Paddy, Millets, Pulses, Cotton and Oilseeds	Groups	1200	1200	100	-	-	-	60.000	59.500	99	-	-
	Training to Farmers	Groups	1200	1200	100	-	-	-	48.000	48.000	100	-	-
	Issue of ID cards	Groups	1200	1200	100	-	-	-	4.800	4.750	99	-	-
	District level meeting	Groups	74	74	100	-	-	-	14.800	14.800	100	-	-
	State level meeting	Nos.	4	4	100	-	-	-	2.000	2.000	100	-	-
	Contingency / Documentation / Communication		1200	1186	99	-	-	-	18.000	17.780	99	-	-
	<b>Total FIG</b>		-	-	-	<b>0</b>	<b>147.600</b>	<b>147.600</b>	<b>147.600</b>	<b>146.830</b>	<b>99</b>	-	-
<b>2</b>	<b>TANWABE</b>												
a)	Distribution of machineries and equipments	LS											
b)	Promotion of Micro Enterprise activities	LS	725	725	100	-	-	-	72.450	72.450	100	-	-
	<b>Total TANWABE</b>		-	-	-	-	-	-	<b>72.450</b>	<b>72.450</b>	<b>100</b>	-	-



Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
	<b>2401-00-108-VF</b>												
b)	Estt. of Regional Coconut Nurseries												
	Seedlings distribution	L.Nos.	2.50	1.76	70	27.790	30.740	30.730	80.740	43.173	53	100	100
c)	<b>2401-00-108-VC</b>												
	Control of Eriophyid mite		-	-	-	0.000	0.000	400.000	400.000	400.000	100	100	100
	<b>TOTAL (CDB schemes)</b>		-	-	-	<b>49.190</b>	<b>49.490</b>	<b>446.690</b>	<b>499.490</b>	<b>459.994</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>V.</b>	<b>Centrally sponsored scheme 100% assistance</b>												
	<b>2401-00-114-SB</b>												
<b>1</b>	Integrated farming in Coconut holding for productivity improvement												
a)	Maintenance of disease affected palms	Nos.	25766	25766	100	-	-	-	64.415	64.415	100	-	-
b)	Demonstration Plots		980	980	100	-	-	-	171.500	171.500	100	-	-
c)	Organic Manure pits	Units	25	25	100	-	-	-	5.000	5.000	100	-	-
d)	Estblishmt. of product diversification trg.Centre		-	-	-	-	-	-	41.350	20.675	50	-	-





Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)					% of Achmt. Approved outlay	% of Achmt. W.r.to R.E	% of Achmt. W.r.to FMA
			Annual Target	Achmt. Upto 31.3.2008		BE 2007-08	RE 2007-08	FMA 2007-08	Approved Allocation	Achmt. Upto 31.3.2008			
<b>3</b>	<b>Seed Village Programme</b>												
a)	Distribution of Seeds												
	Paddy	MT	3000	1920	64	-	-	-	210.000	127.000	60	-	-
	Oilseeds	MT	400	189	47	-	-	-	80.000	18.000	23	-	-
	Pulses	MT	100	39	39	-	-	-	20.000	20.000	100	-	-
b)	Training	Nos.	600	300	50	-	-	-	90.000	45.000	100	-	-
	<b>Total Seed Village Scheme</b>		-	-	-	<b>100.100</b>	<b>200.000</b>	<b>424.460</b>	<b>400.000</b>	<b>210.000</b>	<b>53</b>	<b>105</b>	<b>49</b>
	<b>Total CSS 100% assistance</b>		-	-	-	<b>746.080</b>	<b>808.010</b>	<b>733.410</b>	<b>700.940</b>	<b>486.265</b>	<b>69</b>	<b>60</b>	<b>66</b>
	<b>Grand Total (Centrally sponsored scheme)</b>		-	-	-	<b>4436.740</b>	<b>5731.090</b>	<b>6082.890</b>	<b>6106.687</b>	<b>5066.474</b>	<b>83</b>	<b>88</b>	<b>83</b>

Source: Commissioner of Agriculture, Chennai

**4.2.3 Plan Schemes - State Scheme Part I and II for the Period ending 31.08.2008**

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
	<b>PART I SCHEME</b>									
	2401-00-102-JD									
<b>1</b>	Crop Yield Competition		-	-	-	14.070	14.070	-	-	-
a)	State level competition	Nos.	6	-	-	-	-	-	-	-
b)	District level competition	Nos.	62	-	-	-	-	-	-	-
	2401-00-103-JB & 2401-00-789-JA									
<b>2</b>	Procurement and Distribution of Paddy and Millet Seeds		-	-	-	2584.500	2874.530	526.750	20	-
	Paddy seed Procurement	MT	18000	4064	23	-	-	-	-	-
	Millet seed procurement	MT	450	64	14	-	-	-	-	-
	Paddy seed distribution	MT	18000	8495	47	-	-	-	-	-
	Millet seed distribution	MT	450	141	31	-	-	-	-	-

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
	2401-00-105-JQ									
<b>3</b>	Vermicomposting									
	Demonstrations cum Trg.	Nos	300	5	2	8.990	11.550	0.193	2	-
	Farmers Trained	Nos	15000	250	2	-	-	-	-	-
	2401-00-107-JA & 2401-00-789-JC									
<b>4</b>	Crop and Plant Protection		-	-	-	118.340	118.340	2.522	2	-
<b>5</b>	2401-CH-108-JD & 2401-CH-789-JE									
	Increasing the Production of Oilseeds		-	-	-	913.000	913.000	199.280	22	-
a)	Seed Procurement									
	Groundnut	MT	4232	827	20	-	-	-	-	-
	Gingelly	MT	105	5	5	-	-	-	-	-
	Sunflower	MT	65	6	9	-	-	-	-	-
	Castor	MT	90	0	-	-	-	-	-	-
	Soyabean	MT	8	-	-	-	-	-	-	-



Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
8	Tribal area sub plan (Adi Dravida Dept. allocation)		-	-	-	1.210	1.210	-	-	-
9	2415-01-004-JH									
	Production and Distribution of Micronutrients									
	Production	MT	1400	548	39	350.310	350.310	151.140	43	-
	Distribution	MT	1400	300	21	-	-	-	-	-
	2401-00-109-PF & PE & 2401-00-800 PC									
10	<b>IAMWARM</b>									
	Demonstrations	Nos.	6575	663	-	-	288.430	16.140	-	Demonstrations are being laid during Aug - Oct.
	Implements and equipments distribution	Nos.	2062	-	-	-	36.086	7.352	-	Procurement of farm implements is in progress.

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
	Training	Nos.					66.210	3.508		
	Capacity building (HQ)		-	-	-	-	4.000			-
	<b>Total IAMWARM</b>					<b>529.870</b>	<b>394.726</b>	<b>27.000</b>	7	-
	2401-00-110-JE									
<b>11</b>	National Agricultural Insurance Scheme	L.Nos.	33	0.42		3000.000	3000.000	59.416	2	-
	2401-00-800-KF									
<b>12</b>	NADP									
<b>a)</b>	Precision farming	Ha.	6100	-	-	2578.130	2959.900	-	-	5690 Ha. identified, 284 clusters formed, 5980 beneficiaries selected, 64 farmers' association registered. Preparation of Estimates and loan sanction work is in progress.

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
b)	Agri Clinic	Nos	224	-	-	604.800	694.400	-	-	224 applications received, 152 candidates selected, remaining 72 candidates yet to be selected. Training by TNAU has been imparted to 63 candidates.
c)	Dryland development	Ha.	-	-	-	218.650	-	-	-	
i)	Cultivation Expenses(Ha)		6000	950	16	-	150.000	-	-	Beneficiaries selected from all 40 blocks and training conducted.
ii)	Distribution of dryland machineries(Nos)		892	-	-	-	101.000	-	-	The sowing operation for balance area will be done in October - November season. Approved rates and firms for the supply of dryland machineries received from TNAU and communicated to the districts

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
d)	Land resource Inventory - GIS	Ha.	360000	13000	4	181.010	208.110	21.000	10	Survey work in all 10 blocks of 10 focus districts is under progress. 2 SRFs, 28 JRFs are recruited for the field study.
e)	Promotion of Organic farming and Organic manure production									
	Vermicompost Unit	Nos.	645	2	-	-	290.250	-	-	12900 Beneficiaries selected and 9900 farmers trained. Training completed in all the focus districts except Krishnagiri and Coimbatore.
	Municipal compost Unit	Nos.	129	-	-	623.770	264.450	-	-	The self help groups list have been received by TNAU from all focus districts and training scheduled in Sept. 08.
	Bio input Production Unit	Nos.	129	-	-	-	161.250	-	-	



Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
f)	e-Agriculture	Computers	300	43	14	118.200	118.200	118.200	100	Amount released to ELCOT and supply awaited to AECs.
g)	Strengthening of Quality seeds									
	Infrastructure Development to State Seed Farms	Nos.	253	-	-	257.170	420.200	-	-	AED is finalizing the estimates for irrigation facilities, land development, etc in SSFs. Work Order will be issued in Sep. 08.
	Purchase of 20 Seed Processing Unit and repairing of SPUs	Nos.	-	-	-	48.000	168.000	-	-	Target communicated to district JDAs. Tender formalities initiated to purchase 20 SPUs. Funds allotted to districts to take up repair work of SPUs.







Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
<b>20</b>	Prodn and Distribution of Biofertilisers									
	Production of Biofertilisers	MT	1600	657	41	319.020	319.020	98.250	31	
	Distribution of Biofertilisers	MT	1600	300	19	-	-	-	-	
	<b>Total (Non Plan)</b>					<b>622.780</b>	<b>694.030</b>	<b>166.550</b>	<b>27</b>	
	<b>GRAND TOTAL</b>					<b>15017.800</b>	<b>15438.366</b>	<b>1313.051</b>	<b>9</b>	
	<b>PART II SCHEMES</b>									
	4401-00-103 JB									
<b>1</b>	Repairing of 77 AECs and construction of 220 toilets	Nos.	-	-	-	291.500	291.500	-	-	Work has been entrusted to CE (PWD) Buildings.
	2401-00-103 JB									
<b>2</b>	Purchase of Furniture and Materials to 219 AECs		-	-	-	74.460	74.460	32.400	44	Supply order given to TANSI. Supply will be completed before Sept.08

Sl. No	Head of Account / Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. In lakhs)			% of Achmt. W.r.t B.E	Remarks
			Annual Target	Achmt. Upto 31.08.08		BE 2008-09	Amt. proposed / sanctioned	Achmt. Upto 31.08.08		
3	Providing Telephone Connection to 265 Block AECs	Nos.		-	-	68.900	68.900	1.325	2	Deposit amount paid to BSNL along with list of AECs to be provided with telephone. Concerned JDAs contacting the Telephone Exchange for getting connection.
	<b>Total Part II</b>			-	-	<b>434.860</b>	<b>434.860</b>	<b>33.725</b>	<b>8</b>	
	<b>Total State Schemes (Part I &amp; II)</b>			-	-	<b>15452.660</b>	<b>15873.226</b>	<b>1346.776</b>	<b>9</b>	

Source: Commissioner of Agriculture, Chennai

**4.2.4 Plan Schemes - Centrally Sponsored Scheme shared between State and Centre for the Period Ending 31.08. 2008**

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved/sanctioned allocation	Achmt. Upto 31.8.2008	
	<b>2401-00-114-UB &amp; 2401-00-789-UH</b>								
<b>I.</b>	<b>ISOPOM</b>								
<b>1</b>	<b>ISOPOM - Oilseeds</b>								
1	Purchase of Breeder seed	Qtls	280	36	13	-	12.600	1.620	-
2	F seed production	Qtls	6000	1546	26	-	60.000	15.140	-
3	C seed production	Qtls	28000	5899	21	-	280.000	58.690	-
4	C seed distribution	Qtls	28000	7184	26	-	336.000	84.000	-
5	Pipe for carrying water from sources to field	Nos.	500	74	15	-	75.000	6.690	-
6	Infrastructure development for irrigation facilities	LS	-	-	-	-	20.000	-	-
7	Compact Block Demon. for Groundnut	Nos.	250	28	11	-	10.000	1.000	-
8	Compact Block Demonstration for Gingelly	Nos.	100	2	2	-	1.500	0.020	-
9	Compact Block Demon. for Sunflower	Nos.	100	1	1	-	2.500	0.025	-
10	IPM demonstration	No.	100	9	9	-	22.680	1.360	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
11	Distribution of gypsum	Ha.	20000	6000	30	-	150.000	51.000	-
12	Distribution of biofertiliser	Ha.	64000	15066	24	-	64.000	10.890	-
13	Disbn. of bio pesticides	Ha.	5000	1	0	-	12.500	0.002	-
14	Disbn. of PP equipments	Nos.	1000	4	0	-	8.000	0.032	-
15	Distribution of Power Sprayers	Nos.	500	-	-	-	10.000	-	-
16	Distribution of Weedicide	Ha.	100	-	-	-	0.500	-	-
17	Farmers Training	Batch	200	12	6	-	30.000	1.800	-
18	Officers Training	Batch	5	-	-	-	0.800	-	-
19	Publicity	Ls.	0	-	-	-	0.500	-	-
20	Staff and Other contingencies	Ls.	0	-	-	-	75.976	9.202	-
	<b>Innovative Components</b>		-	-	-	-			-
21	Combined Nutrient Spray for Groundnut	Ha.	2500	25	-	-	5.000	0.050	-
	<b>TOTAL OILSEEDS</b>		-	-	-	<b>1208.740</b>	<b>1177.556</b>	<b>241.521</b>	<b>21</b>



Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
	<b>2401-00-112-UA &amp; 2401-00-789-UC</b>								
<b>2</b>	<b>PULSES</b>								
1	Breeder seed Purchase	Qtls	115	18	16	-	5.750	0.660	-
2	Foundation seed production subsidy	Qtls	1440	452	31	-	14.400	4.400	-
3	Production of Certified Seed	Qtls	18000	1375	8	-	180.000	12.540	-
4	Distribution of Certified seed	Qtls	18000	1118	6	-	216.000	13.420	-
5	Block Demonstration to achieve yield potential	Nos.	4000	202	5	-	80.000	3.560	-
6	IPM Demonstration	Nos.	200	11	6	-	24.630	-	-
7	Distribution of Biofertiliser	Ha.	50000	6141	12	-	50.000	3.892	-
8	Distribution of Biopesticide	Ha.	2000	35	2	-	5.000	0.080	-
9	Distribution of NPV virus	L.Ha.	1000	18	2	-	2.500	0.050	-
10	Distribution of PP equipments		3000	-	-	-	24.000	-	-
11	Pipe for carrying water from sources to field	Nos	500	37	7	-	75.000	3.650	-
12	Farmers Training	Batch	200	9	5	-	30.000	1.400	-
13	Officers Training	Batch	4	-		-	0.640	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
14	Staff contingencies	LS	0	-	-	-	20.000	-	-
15	Publicity		0	-	-	-	0.500	-	-
16	DAP Spraying	Ha.	30000	1463	5	-	30.000	1.400	-
17	Micro Nutrient Spray	Ha.	70000	2145	3	-	49.000	1.500	-
	<b>TOTAL PULSES</b>		-	-	-	<b>711.680</b>	<b>807.420</b>	<b>46.552</b>	<b>6</b>
	<b>2401-00-114-UE &amp; 2401-00-789-UD</b>								
<b>3</b>	<b>OILPALM</b>								
1	Assistance for Planting Materials@ 143 No./Ha.	Ha.	4000	595	15	-	171.600	25.500	-
2	Area expansion	Ha.	4000	595	15	-	280.000	41.620	-
3	Cultivation Maintenance	Ha.	-	-	-	-	-	-	-
a)	II Year	Ha.	1795	515	29	-	43.978	12.620	-
b)	III Year	Ha.	1456	375	26	-	40.768	10.500	-
c)	IV Year	Ha.	910	228	25	-	29.575	7.410	-
4	Establishment & Maintenance of seed garden	Ha.	15	-	-	-	10.000	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
5	<b>Promotional components</b>								
a)	Farmers Training	Batch	2500	-	-	-	10.000	-	-
b)	Officers training	Batch	6	-	-	-	1.200	-	-
c)	Block demonstration	Nos.	5	-	-	-	0.123	-	-
6	<b>Innovative component</b>								
a)	Precision Farming	Ha.	200	-	-	-	-	-	-
b)	Conversion of Biomass into Organic manure (Vermicompost)	Nos.	5	-	-	-	-	-	-
c)	Covering wiremesh to avoid rat menace	Hac.	2500	-	-	-	-	-	-
d)	Review, Workshop, Study Tour	Ls.	-	-	-	-	1.750	-	-
e)	Publicity and Seminar	Ls.	-	-	-	-	-	-	-
f)	Assistance for purchase of bunch / leaf chopping machine	Nos.	-	-	-	-	-	-	-
	<b>TOTAL OILPALM</b>		-	-	-	<b>780.800</b>	<b>588.994</b>	<b>97.650</b>	<b>17</b>

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
<b>4</b>	<b>2401-00-102-UB 2401-00-793-UA &amp;2401-00-102-SA</b>								
	<b>ISOPOM - MAIZE</b>								
1	Production of Breeder seed	Qtls.	2	-	-	-	0.180	-	-
2	Productin of C seeds through Dept.	Qtls.	400	20	5	-	4.000	0.200	-
3	Distribution of C seed	Qtls.	400	39	10	-	4.800	0.470	-
4	Distribution of Minikits	Nos.	1000	-	-	-	-	-	-
5	Block demonstration	Nos.	404	32	8	-	16.160	1.480	-
6	IPM by Dept.	Nos.	40	2	5	-	9.072	0.454	-
7	Farmers Training	Nos.	40	2	5	-	6.000	0.300	-
8	POL	LS	20	-	-	-	6.000	-	-
9	Seminar	Nos.	40	-	-	-	-	-	-
10	Officers training (30 officers / Batch)	Batch	5	-	-	-	0.800	-	-
11	Publicity		-	-	-	-	0.500	-	-
12	State Level Workshop	Nos.	1	-	-	-	0.200	-	-
13	Pipe line carrying water from Water source to the field	Nos.	150	9	6	-	22.500	0.825	-
14	Village Campaign	Nos.	800	-	-	-	-	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
	<b>Innovative component</b>								
15	Contract farming	Batch	6	-	-	-	6.750	-	-
	<b>Total Maize</b>		-	-	-	<b>30.940</b>	<b>76.962</b>	<b>3.729</b>	<b>5</b>
	<b>GRAND TOTAL (ISOPOM)</b>		-	-	-	<b>2732.160</b>	<b>2650.932</b>	<b>389.452</b>	<b>15</b>
<b>II</b>	<b>Technology Mode Mission (75:25)</b>								
	<b>(2401-00-108-UC &amp;2401-00-789-UB)</b>								
	<b>ICDP - COTTON</b>								
1	Production of Breeder seed	Qtls	200	-	-	-	0.260	-	-
2	Distribution of Certified seeds	Qtls.	1250	150	12	-	25.000	3.000	-
3	Farmers Field School	Nos.	700	60	9	-	119.000	10.370	-
4	Seed treatment with chemicals	Qtls.	700	60	9	-	0.420	0.036	-
5	Surveillance and monitoring pest and disease	Qtls.	10	-	-	-	10.000	-	-
6	Distribution of Pheromone traps	Ha.	2680	-	-	-	3.500	-	-
7	Supply of Bio agents	Ha.	3000	-	-	-	13.500	-	-
8	Power Operated sprayers	Nos.	4407	-	-	-	120.000	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
9	Manually operated sprayers	Nos.	3000	-	-	-	24.000	-	-
10	State level training	Nos.	20	-	-	-	3.000	3.000	-
11	Distribution of biofertilisers	Pock	2	0.15	8	-	3.000	0.225	-
12	Distribution of Micro Nutrients	MT	30	-	-	-	1.800	-	-
13	Intercropping with Pulses	Ha.	60	-	-	-	3.900	-	-
14	Farmers Training	Nos.	850	35	4	-	42.500	1.320	-
15	Contingencies		-	-	-	-	18.000	-	-
16	FLD on production technology	Nos.	1000	35	4	-	20.000	0.580	-
	<b>Components under 100% assistance by GOI</b>								
17	Production of F seed								
	Production by Dept.	Qtl	100	-	-	-	5.000	-	-
	Production by SIMA, CD & RA	Qtl	374	30	8	-	18.700	1.500	-
18	Production of certified seeds								
	Production by Dept.	Qtl	1000	-	-	-	15.000	-	-
	Production by SIMA, CD & RA	Qtl	1740	125	7	-	26.100	7.500	-



Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
<b>2</b>	<b>Balanced and Integrated Use of fertilisers</b>								
1	Popularisation of Leaf colour chart	Nos.	-	-	-	25.000	-	-	-
2	Printing of Soil Health Card	L.Nos.	6.5	1.6	25	-	10.000	-	-
3	Training to Technical officers	Nos.	10	-	-	-	0.600	-	-
	<b>TOTAL (BIUF)</b>		-	-	-	<b>25.000</b>	<b>10.600</b>	<b>0.000</b>	-
<b>3</b>	<b>INNOVATIVE SCHEMES</b>								
	<b>2402-00-102-UR</b>								
<b>1</b>	<b>Farmers Interest Group</b>								
	Formation of new FIGs for Paddy, Millets, Pulses, Cotton and Oilseeds	Groups	1000	163	16	-	50.000	8.150	-
	Training to Farmers	Groups	1000	33	3	-	40.000	1.320	-
	Issue of ID cards	Groups	1000	33	3	-	4.000	0.132	-
	District level meeting	Groups	70	-		-	14.000	-	-
	State level meeting	Nos.	2	-		-	1.000	-	-
	Contingency / Documentation	Groups	1000	3	0	-	15.000	0.045	-
	POL	L.S	-	-	-	-	2.800	0.015	-
	<b>Total FIG</b>		-s	-	-	<b>147.600</b>	<b>126.800</b>	<b>9.662</b>	<b>8</b>



Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
<b>2</b>	<b>TANWABE</b>								
a)	Promotion of micro enterprises through FWG	Nos.	2025	13	1	-	202.500	1.300	-
b)	One day EDP training	Nos.	2025	13	1	-	16.700	0.098	-
c)	Contingencies	LS							
	<b>Total TANWABE</b>					<b>100.000</b>	<b>219.200</b>	<b>1.398</b>	<b>1</b>
	<b>Total Innovative Schemes</b>					<b>247.600</b>	<b>346.000</b>	<b>11.060</b>	<b>3</b>
	<b>Total Macro Mangement Mode Schemes</b>					<b>1422.690</b>	<b>1573.120</b>	<b>261.793</b>	<b>17</b>
<b>IV</b>	<b>ATMA (90:10)</b>								
	Training	Nos.	1905	504	26	-	-	-	-
	Demonstration	Nos.	19050	4330	23	-	-	-	-
	Exposure visit	Nos.	381	72	19	-	-	-	-
	Farmers Scientists interaction	Nos.	33	18	55	-	-	-	-
	<b>Total ATMA (State Share)</b>		-	-	-	<b>187.280</b>	<b>201.930</b>	<b>46.820</b>	<b>23</b>

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
<b>V.</b>	<b>Coconut Dev. Board Schemes (50:50)</b>								
<b>1</b>	<b>2401-00-108-UD</b>								
a)	TxD Production at Navlock								
	TxD seedlings Procurement	L.Nos.	1.07	0.58	54	70.640	18.750	8.750	<b>47</b>
	TxD seedlings disbn.	L.Nos.	0.75	0.48	64	-	-	-	-
b)	Estt. of Regional Coconut Nurseries								
	Seedlings distribution	L.Nos.	2.00	0.25	13	0.010	50.000	6.250	<b>13</b>
<b>2</b>	<b>2401-00-108-VC</b>								
	Control of Eriophyid mite		-	-	-	1877.400	1877.400	100.000	5
	<b>TOTAL (CDB schemes)</b>		-	-	-	<b>1948.050</b>	<b>1946.150</b>	<b>115.000</b>	<b>6</b>
<b>V.</b>	<b>Centrally sponsored scheme 100% assistance</b>								
	<b>2401-00-114-SB</b>								
<b>1</b>	Integrated farming in Coconut holding for productivity improvement								
a)	Maintenance of demonstration laid during 2007-08	Nos.	250	90	36	-	43.750	15.750	-
b)	Establishmt. of product diversification trg.Centre		-	-	-	-	20.675	-	-

Sl. No.	Head of account Scheme	Unit	Physical		% Achmt. W.r.t Annual Target	Financial (Rs. in lakhs)			% of Achmt. W.r.to sanctioned amount
			Annual Target	Achmt. Upto 31.8.2008		BE 2008-09	Approved / sanctioned allocation	Achmt. Upto 31.8.2008	
c)	Root Wilt initial survey		-	-	-	-	4.000	-	-
d)	Control of Blackheaded caterpillar		-	-	-	-	5.746	-	-
	<b>Total</b>		-	-	-	<b>500.000</b>	<b>74.171</b>	<b>15.750</b>	<b>21</b>
	<b>2401-00-102-SB</b>								
<b>2</b>	<b>Seed Village Programme</b>								
a)	Distribution of Seeds								
	Paddy	MT	1977	185	9	-	138.600	18.000	-
	Oilseeds	MT	800	49	6	-	80.000	4.800	-
	Pulses	MT	100	3	3	-	20.000	0.660	-
b)	Training	Nos.	641	-	-	-	96.150	-	-
	<b>Total Seed Village Scheme</b>		-	-	-	<b>200.000</b>	<b>334.750</b>	<b>23.460</b>	<b>7</b>
<b>3</b>	<b>National Food Security Mission</b>								
a)	National Food Security Mission - Paddy		-	-	-	-	3714.610	139.562	4
b)	National Food Security Mission - Pulses		-	-	-	-	186.682	28.130	15
	<b>Total NFSM</b>		-	-	-	-	<b>3901.292</b>	<b>167.692</b>	<b>4</b>
	<b>Total CSS 100% assistance</b>		-	-	-	<b>700.000</b>	<b>4310.213</b>	<b>206.902</b>	<b>5</b>

Source: Commissioner of Agriculture, Chennai

The details on area covered under SRI during 2007-08 and coverage planned in 2008-09 are presented in Ttable 4.2.5.

**4.2.5. SRI Coverage details of 2007-08 and Target for 2008-09**

					(lakh ha)
S.No	District	2007-08	Kur 08 Tar.	Samba 08 Tar	Total
1	Kancheepuram	0.359	0.170	0.335	0.505
2	Thiruvallur	0.220	0.200	0.187	0.387
3	Cuddalore	0.344	0.170	0.309	0.479
4	Villupuram	0.325	0.260	0.345	0.605
5	Vellore	0.074	0.100	0.080	0.180
6	Thiruvannamalai	0.207	0.110	0.336	0.446
7	Salem	0.031	0.040	0.100	0.140
8	Namakkal	0.093	0.012	0.054	0.096
9	Dharmapuri	0.037	0.050	0.050	0.100
10	Krishnagiri	0.032	0.030	0.050	0.080
11	Coimbatore	0.028	0.010	0.022	0.032
12	Erode	0.170	0.050	0.148	0.198
13	Trichy	0.175	0.060	0.208	0.268
14	Perambalur	0.066	0.010	0.159	0.169
15	Karur	0.039	0.000	0.068	0.068
16	Pudukkottai	0.123	0.030	0.238	0.268
17	Thanajvur	0.355	0.280	0.587	0.837

(lakh ha)

	<b>District</b>	<b>2007-08</b>	<b>Kur 08 Tar.</b>	<b>Samba 08 Tar</b>	<b>Total</b>
18	Thirivarur	0.553	0.266	0.458	0.724
19	Nagapattinam	0.520	0.280	0.456	0.736
20	Madurai	0.109	0.090	0.120	0.210
21	Theni	0.035	0.050	0.034	0.084
22	Dindigul	0.031	0.010	0.045	0.055
23	Ramnad	0.000	0.010	0.000	0.010
24	Virudhunagar	0.025	0.000	0.090	0.090
25	Sivaganga	0.000	0.000	0.200	0.200
26	Tirunelveli	0.175	0.130	0.209	0.339
27	Tuticorin	0.045	0.040	0.042	0.082
28	Kanyakumari	0.038	0.042	0.070	0.112
	<b>Total</b>	<b>1.209</b>	<b>2.500</b>	<b>5.000</b>	<b>7.500</b>

Source: Commissioner of Agriculture, Chennai

### 4.3. Productivity Level of Select Crops and Constraints

Rice plays an important role in providing food security to the people of Tamil Nadu. Rice production has come to stagnation in recent years due to many constraints with almost no scope for increasing area under rice cultivation. This could be achieved through increasing the productivity of rice grown under rainfed and correcting the imbalances in adoption of various technological inputs. Evidences indicate that at 1.9 percent population growth and 5 percent income growth, the demand projection for sustaining the present level of calorie supply would need 158 million tonnes of grain production by 2010 in India which accounts to annual productivity growth of 2.4 percent.

A comparison of rice productivity among various States in India reveals that productivity of paddy in Tamil Nadu is much above that of the All India average. The share of rice to total area under food grains in the State ranged from 50 to 62 percent and the contribution of rice production to total food grain produced in the State ranged from 75 to 85 percent. The area under rice is fluctuating around 20 lakh hectares in the State for the last ten years. Similarly, rice production in the State was 73.66 lakh tonnes during 2000-01 and it declined to 52.10 lakh tonnes during 2005-06. The rice productivity which was around 3500 kg per hectare during 2000-01 has declined to 2500 kg per hectare during 2005-06.

The details on the district-wise variations of productivity of select crops for the period from 1998-99 to 2005-06 are furnished in Table 4.3.1.

**Table 4.3.1. District-wise Productivity Level of Selected Crops - 1998-99 - 2005-2006****(Kg/ha.)**

Sl. No.	Districts	Paddy	Maize	Cholam	Total pulses	Sugar cane	Cotton *	Chillies	Ground nut	Banana
1	Coimbatore	3376	1134	368	421	108159	241	829	1379	36019
2	Cuddalore	2953	--	518	585	118729	195	520	1947	44574
3	Dharmapuri	4117	1595	1255	642	78580	263	2132	1825	41212
4	Dindigul	4037	1885	1188	530	105016	381	675	2249	29497
5	Erode	4309	2332	653	676	120233	351	686	1675	39861
6	Kancheepuram	3127	--	--	920	120768	371	620	2768	39968
7	Kanniyakumari	4139	--	--	377	--	--	--	1367	35093
8	Karur	3301	--	157	388	96207	307	642	1852	35019
9	Madurai	3647	1897	1087	827	116781	155	618	1388	45317
10	Nagapattinam	1802	--	--	315	99920	339	656	3335	32769
11	Namakkal	4699	1841	1032	601	143711	412	648	1764	50843
12	Nilgiris	3682	--	--	--	--	--	--	--	37145
13	Perambalur	2565	1177	995	526	100136	252	476	1413	43330
14	Pudukottai	2760	1915	989	601	115779	272	619	1472	46933
15	Ramnad	1617	--	763	368	110194	178	1217	1334	39973
16	Salem	3934	1775	1009	467	107370	300	982	1472	40188
17	Sivagangai	2012	--	850	385	95327	278	480	1407	40563
18	Thanjavur	2970	2487	--	423	107713	388	1075	2024	32016
19	Theni	3808	1893	1417	517	113072	316	713	1584	50461
20	Thiruvallur	3360	--	1340	569	114164	--	1608	2998	42392
21	Thiruvannamalai	2865	1602	801	328	89053	365	858	1307	34333
22	Thiruvarur	2091	--	--	292	116029	340	611	2629	38779
23	Thoothukudi	4300	655	932	506	111528	135	429	2257	62732
24	Tirunelveli	4135	--	1753	510	109472	324	964	1926	38768
25	Trichy	3602	1317	619	629	109143	281	1023	1747	45186
26	Vellore	3623	1605	1215	450	83810	253	869	1531	41076
27	Villupuram	3217		820	599	107999	340	581	1675	30130
28	Virudhunagar	3178	1904	867	487	114400	197	710	1058	41095
	<b>Average</b>	3330	1688	938	516	108204	289	817	1829	40546

\* 170 kg of Lint

As regards paddy, the average productivity at the State level was 3330 kg per hectare. In Coimbatore, Dharmapuri, Dindigul, Erode, Kanniyakumari, Madurai, Namakkal, Nilgiris, Salem, Theni, Thiruvallur, Thoothukudi, Tirunelveli, Tiruchirapalli and Vellore districts, the productivity of paddy was found to be higher than the State Level Productivity. However, the potential yield was found to be 6000 kg/ha. Hence there is considerable scope for furthering the productivity of paddy. In Cuddalore, Kancheepuram, Karur, Nagapattinam, Perambalur, Pudukkottai, Ramanathapuram, Sivagangai, Thanjavur, Thiruvannamalai, Thiruvarur, Villupuram and Virudhunagar districts, the productivity of paddy was found to be less than that of State level productivity.

As regards pulses, production of pulses which was 1.03 lakh tonnes during 1950s, increased to three lakh tonnes during 1999-2000 and it declined to about 2.00 lakh tonnes during 2005-06. The average productivity of the pulses is fluctuating around 520 kg per hectare which is less than the All-India productivity of more than 550 kg per hectare. In Cuddalore, Dharmapuri, Dindigul, Erode, Kancheepuram, Madurai, Namakkal, Perambalur, Pudukkottai, Theni, Thiruvallur, Tiruchirappalli and Villupuram districts the productivity of pulses was higher than the State level productivity. In the remaining districts, the productivity of pulses was found to be lesser than the State average. The productivity of pulses was found to be the least in Thiruvarur district with 292 kg/hectare.

As regards maize, the average productivity at the State level was found to be 1688 kg/hectare and it varied from 655 kg per hectare in Thoothukudi district to 2487 kg per hectare in Thanjavur district. In Coimbatore, Dharmapuri, Perambalur, Thiruvannamalai, Thoothukudi, Tiruchirapalli and Vellore districts the productivity of maize was found to be lesser than the State average productivity of 1688 kg/ha.

The State average productivity of groundnut was found to be 1829 kg per hectare as against the potential of 2850 kg per hectare. Only nine districts viz., Cuddalore, Dindigul, Kancheepuram, Karur, Nagapattinam, Sivagangai, Thiruvallur, Thiruvarur and Thoothukudi districts had exhibited productivity higher than the State average. In all the remaining districts the productivity of groundnut was lesser than the State average productivity by groundnut.



As regards sugarcane, the average productivity at State level was 108.204 tonnes per hectare as against the potential of 146.00 tonnes per hectare. In Dharmapuri, Dindigul, Karur, Nagapattinam, Perambalur, Salem, Sivagangai, Thanjavur, Thiruvannamalai, Vellore and Villupuram districts, the productivity of sugarcane was found to be lesser than the State average productivity of sugarcane.

In the case of Chillies, the state productivity was found to be 817 kg per hectare and it varied from 429 kg per hectare in Thoothukudi district to 2132 kg per hectare in Dharmapuri district. Dharmapuri, Ramanathapuram, Thanjavur, Thiruvallur and Tiruchirappalli districts had exhibited a productivity level of more than 1000 kg per hectare. Perambalur, Sivagangai and Thoothukudi districts had exhibited a productivity level of less than 500 kg per hectare.

As regards cotton, the State average productivity was found to be 289 kg of lint per hectare. The average productivity of cotton at the district level varied from 135 kg of lint per hectare in Thoothukudi district to 412 kg of lint per hectare in Namakkal district. Dindigul, Erode, Kancheepuram, Karur, Nagapattinam, Namakkal, Salem, Thanjavur, Theni, Thiruvannamalai, Thiruvarur, Tirunelveli and Villupuram districts had exhibited higher productivity as compared to the State level productivity.

The productivity of banana at State level was found to be 40.546 tonnes per hectare. The highest productivity was observed in Thoothukudi district with a productivity level of 62.732 tonnes per hectare and the lowest in the productivity of banana was observed in Dindigul district with a productivity level of 29.497 tonnes per hectare. The yield gap at the district level was observed to the level of 50 per cent of potential yield in the case of paddy and more than 50 per cent in the case of cotton. This is largely because of non-adoption of new / improved technology in the cultivation of crops.

#### **4.4 Interventions Recommended**

The interventions recommended for augmenting the productivity of the crops and achieving the desired growth rate of four percent in agriculture are summarized district wise as under:

### **Ariyalur**

- Integrated rice productivity improvement programme (IRPIP)
- Integrated soil health management
- Problem soil management by adopting reclamation methods.
- Dry farming techniques
- Market led extension
- Integrated pest management
- Use of improved implements
- Provision of community thrashing floor
- Distribution of Hybrid seed, micronutrient mixture, green manure seeds and biofertilizer.
- Organizing maize marketing group
- Establishment of market intelligence cell in regulated market and
- Establishing seed testing laboratory

### **Coimbatore**

- Seed production and distribution subsidy for SHGs
- Distribution of green manure seeds
- Assistance to vermi compost production
- Distribution of paddy transplanter and power thresher
- Construction of thrashing floor
- Seed processing machine for State Seed Farm Pappankulam
- Distribution of Bt. Cotton seeds
- Distribution of groundnut decorticator
- Pheromone trap distribution for rhinoceros beetle
- Subsidy for tree climber for harvesting coconut
- Tall x Dwarf coconut seedling distribution
- Study tours
- Enriched FYM preparation and demonstration and
- 2% DAP for pulses

### **Cuddalore**

- Integrated development of major food crops viz., paddy, maize, groundnut, gingelly and sunflower.
- Activities related to enhancement of soil health.
- Establishment of Agri-clinics-cum-mini soil testing labs.
- Integrated pest management.
- Strengthening and promotion of extension activities and
- Support to State seed farms.

### **Dharmapuri**

- Land development measures with technology and credit facilities
- Wasteland development programmes with active participation of local community
- Establishment of model farms to demonstrate latest technologies
- Improving the use of organics and biofertilizers and
- Enhancing the production and productivity of the crops

### **Dindigul**

- Hybrid seed distribution for major crops
- Distribution of micronutrient mixture
- Promotion of SRI
- Distribution of Tarpaulins
- INM and IPM in pulses
- Distribution of gypsum
- Distribution of water soluble inorganic fertilizer and
- Establishment of seed testing laboratories

### **Erode**

- Strengthening of state seed farm
- Strengthening of Parasite Breeding Stations
- Strengthening of soil testing and pesticide testing laboratories
- Strengthening of extension activities
- Developing marketing infrastructure

- Special projects on harnessing and conservation of water resources and
- Farm mechanization

### **Kancheepuram**

- Use of improved seed, INM, IPM and new machinery for cultivation of paddy, maize, pulses, groundnut, (rainfed and irrigated) gingelly
- Establishment of agri-clinics
- Exposure visit of farms – Interstate / Intrastate
- Farmers training
- Organising district level exhibitions / kissan melas
- Hybrid rice seed production and distribution subsidy
- Assistance to start vermi compost units
- Distribution of soil health cards
- Distribution of gypsum / micronutrient mixture
- Farmers field school for Rat control publicity and training.
- Promotion of SRI – Distribution of marker, transplanter and conoweeder
- Precision farming by sprinkler
- Construction of rural godowns and
- Establishing agri-clinics-cum-mini soil testing laboratories

### **Kanyakumari**

- High yielding and high quality varieties of paddy
- Improving soil health and crop nutrition
- Mechanisation
- Integrated farming system
- Plant protection intensification
- Transfer of technology and
- Human resource development

### **Karur**

- Supply of quality seeds at subsidized price
- Technological innovation

- Development of varieties and management practices for salinity and alkalinity tolerance in rice.
- Cultivation of high value crops under precision farming
- INM and IPM
- Supply of machines and equipments and
- Scaling up extension activities

#### **Krishnagiri**

- Integrated development of paddy, groundnut and ragi
- Extension activities
- Community godowns and
- Establishing seed testing laboratories

#### **Madurai**

- Integrated development of Paddy, Pulses, cotton, groundnut and millets
- Distribution of soil health cards
- Distribution of certified seeds
- Integrated nutrient management
- Integrated pest management
- Use of machinery like power tiller, paddy planter, paddy harvester
- Establishing seed processing unit in State seed farm
- Establishing state seed farm at Vinayakapuram
- DAP spray for pulses
- Establishing farmers field school
- Exposure visit to officers / inside / outside the country and
- Farmers training and study tours

#### **Nagapattinam**

- Certified seed production and distribution
- System of Rice Intensification (SRI)
- Integrated pest management
- Integrated nutrient management
- DAP spray for pulses

- Back ended subsidy to TANWABE group
- Rodent control
- Training farmers and
- Farmers field schools

### **Namakkal**

- Certified seed production and distribution – for paddy
- Seed minikit of new high yielding varieties
- Hybrid rice seeds distribution
- Distribution of green manure seeds
- Distribution of soil health cards
- Assistance for vermi compost production
- Distribution of micronutrient mixture gypsum and biofertilizers
- Rat control campaign
- Promotion of SRI – Distribution of marker, conoweeder
- Distribution of phenomenon trap for red palm weevil control
- Establishment of agri clinic and agri business by unemployed agri graduates and
- Video facilities at district headquarters

### **Perambalur**

- Strengthening state seed farms, Parasite Breeding Station, Soil Testing Laboratories and pesticide testing laboratories
- Strengthening extension activities
- Developing marketing infrastructure
- Farm Mechanisation
- Reclamation of soil and water resources affected by water logging and
- Increasing the productivity of sorghum, blackgram, greengram and horsegram

### **Pudukottai**

- Formation of agri-clinics
- Strengthening of STAMIN
- FSS on soil health care
- Strengthening of Government Farms

- Exposure visit to farmers and officials and
- Quality seed materials and encouragement to produce adequate quantity of certified seeds

### **Ramanathapuram**

- INM and IPM technologies and
- Organizing Training Programmes, District Level Workshops and Inter State Exposure visits

### **Salem**

- Grant to certified seed production and distribution
- Distribution of soil health card
- Vermi compost production unit
- Massive Rat eradication campaign in village
- Promotion of SRI paddy cultivation
- Provision of community thrashing floors
- Precision farming with sprinkler irrigation
- DAP spray for pulses
- Construction of rural godowns
- Establishment of Agri-clinics and agri business units.
- Exposure visit to inside / outside the state for officers
- Farmers training and
- Establishing seed testing laboratory

### **Sivagangai**

- Establishment of village knowledge centres
- Preparation of land resources interventions and GIS data base
- Establishment of automatic weather stations
- Establishment of agri clinics and mini soil testing units to be run by unemployed graduates
- Upgradation of existing seed processing units
- Upgradation of farmers training centres
- Maximizing crop productivity in drylands

- Precision farming in agricultural crops
- Promotion of organic farming and establishing organic manure and vermi compost production unit
- *In situ* water harvesting through farm pond cluster
- Establishing solar fencing for stray animals
- Establishment of prosopis biofuel units
- Promotion of jatropha bio-diesel crops
- Establishment of community fodder plots by SHGs / FIGs
- Establishment of cold storage unit for chillies
- 2% DAP spray for pulses and
- Establishment Seed Testing Laboratory

#### **Thanjavur**

- Increasing the productivity levels of paddy, groundnut, pulses, gingelly and cotton
- Strengthening the support system of agricultural extension machinery
- Capacity building of the farmers and
- Farm mechanization to reduce the cost of cultivation

#### **Theni**

- Distribution of hybrid seeds in maize, cumbu and cotton
- Distribution of green manure seeds in paddy
- Distribution of micronutrient mixture
- Distribution of bio-fertilizers
- Distribution of gypsum for groundnut
- Farmers exposure visits within the state and outside the state
- Exposure visit / officials to MANAGE / ICRISAT Hyderabad, IARI, New Delhi, successful NGOs
- Exposure visit to CHINA to study the advanced production techniques and dissemination of cultivation practices of rice (including Hybrid rice, SRI)
- 2% DAP spray for pulses
- Strengthening infrastructure facilities in State Seed Farm and
- Establishment of seed testing laboratory



**Thiruvallur**

- Assistance to agripreneurs for setting up agri clinics / agri business centres.
- Distribution of soil health cards.
- Distribution of vermi compost.
- Distribution of green manure seeds
- Production of foundation and certified seeds
- Integrated nutrient management
- Integrated pest management
- Improving existing seed processing units
- Distribution of biopesticides / weedicides
- Technology demonstration
- Distribution of improved farm machinery and
- Establishing seed testing laboratory

**Thiruvarur**

- Integrated development cotton – rice fallow
- Distribution of hybrid cotton seeds
- Farmers field school
- Micronutrient mixture distribution
- Seed subsidy for trap crops viz. maize, cowpea, sunflower
- Distribution of gypsum for soil reclamation
- Distribution of seed treatment chemical
- Farmers field school for training in IPM technology
- Establishing coconut nursery state seed farms
- Distribution of combine harvester / rice transplanter, drum seeder, cono weeder, SRI marker @ 75% subsidy farmers training in running and maintenance of farm machinery
- Recharging ground water using old and new bore wells
- Organizing micronutrients demonstration
- Digging farm ponds
- Fencing state seed farms
- Setting up bio-control lab through TANWABE / FIG

- Organizing farmers training / extension workers training
- Exposure visits
- Study tour farmers / officials
- Eradication of Ipomea in river banks and channels and
- Establishing seed testing laboratory

### **Thoothukudi**

- Integrated Farming System
- Crop diversification
- Soil health management
- Incentive for seed production to self-help-group
- Supply of quality certified seeds at nominal cost
- Distribution of soil health card
- Technology demonstration including minor millets
- Distribution of bio-fertilizers
- Hybrid seed distribution for maize (Rainfed and sunflower)
- Extension activities
- Training to TANWABE women
- Organic farming system
- Introduction of multi-purpose traces in community / private and
- Capacity building to officials / stake holders

### **Tiruchirappalli**

- Quality seed development and production
- Integration of farmers and farmer groups in seed multiplication
- Nutritional management
- Soil testing and distribution of soil health card
- Water budgeting and water-use efficiency
- Crop diversification
- Bio-fertilizers
- Technology demonstration
- Precision farming in groundnut and
- Establishment of agri-clinic and other extension activities

### **Tirunelveli**

- Supply of quality certified seeds at nominal cost
- Distribution of green manure seeds and nutrient mixture
- Demonstration of SRI
- Precision farming for pulse crops
- Technology demonstration and
- Community thrashing floor

### **Tiruvannamalai**

- Seed production and distribution of paddy, groundnut, gingelly, millets and maize.
- Provision of certified seeds at subsidized rate to replace the seeds of farmers choice
- Incentives to TANWABE for hybrid seed production
- Assistance to vermi compost unit
- Distribution of green manure seeds and
- Subsidized to MNM and gypsum

### **Vellore**

- INM and IPM technologies
- Supply of quality certified seeds at nominal prices
- Hybrid seed distribution for major crops
- Strengthening of extension activities and
- Developing marketing infrastructure

### **Villupuram**

- Technology adoption
- Distribution of soil health cards
- Vermi composting
- Increasing productivity with minimum usage of water
- Distribution of MN mixture, micro nutrients, gypsum and green manure seeds
- Supply of implements at subsidized prices
- Distribution of hybrid sunflower mini-kits

- Farmers training and
- Strengthening of state seed farms

**Virudhunagar**

- One time grant to TANWABE / FIG to take up certified seed production and distribution
- Seed distribution subsidy for the seeds produced by Self Help Groups
- Distribution of Soil Health Cards
- Assistance to start vermi-compost production unit
- Distribution of Micro Nutrient Mixture
- Farmers Field School
- Community thrashing floor and
- Distribution of Tarpaulin

## **CHAPTER - V**

### **DEVELOPMENT OF ALLIED SECTORS**

The focus of the plan is to bring about economic development and improve the quality of public services with emphasis on the poor and the marginalized. In this regard, careful planning is essential to achieve integration across sectors associated with agricultural sector. In what follows, a brief account of issues, ongoing schemes, constraints and interventions recommended in horticulture, agricultural engineering, agricultural marketing and agri business, animal husbandry, fisheries and irrigation systems are presented.

#### **5.1 Horticulture Sector**

##### **5.1.1 Issues**

- Raising orchards and vegetables is a high investment proposition and many farmers with poor resource-base are unable to take up cultivation of horticultural crops
- Immediate post-harvest glut slashes down the unit prices and erodes the profit of the farmers
- Highly perishable nature of horticultural products and lack of adequate cold storage facilities at cheaper cost
- Horticultural crops are high-tech oriented and many farmers lack knowledge of the same
- Long gestation period from planting to economic bearing of fruit trees
- Seasonal aberrations due to erratic monsonic behavior affects the crop yields drastically
- Highly fluctuating prices and slashing down of prices to the lowest ebb especially during harvest season
- Lack of appropriate transport mechanisms and remoteness of production centres result in huge transportation cost
- Non-availability of adequate farm labourers especially during harvest seasons pose a major threat to the farmers and
- Ill-developed cold chain system also result in huge spoilage of raw fruits and vegetables

### 5.1.2 On-going Schemes

The details of schemes implemented by the Department of Horticulture and Plantation Crops are presented below in the Table 5.1.2

#### 5.1.2. Schemes Implemented by the Department of Horticulture

Physical: Area in Ha. Financial: Rs. In lakhs

S. No.	Name of the Scheme	Physical (2007-08)		Financial (2007-08)		Physical (2008-09)		Financial (2008-09)	
		Target	Achmt.	Target	Achmt.	Target	Achmt. As on 31.7.08	Target	Achmt. As on 31.7.08
<b>I</b>	<b>State Plan Schemes</b>								
1	Integrated Horticulture Development Scheme								
	A) Scheme	16779	17309	266.010	262.357	21792.58	0	273.143	0.000
	B) Horticulture Training Centre	2600	2600	7.610	7.610	2600	0	10.000	0.000
2	Integrated Tribal Development Programme	904.54	904.54	40.005	40.003	904.00	0	40.005	0.000
3	Western Ghat Development Programme	25	25	58.380	46.701	75.00	0	58.000	0.000
4	Hill Area Development Programme	2067	2067	204.160	140.583	0.00	0	152.000	0.000
5	City Vegetable Development Programme	100	100	3.500	3.500	200.00	0	10.000	0.000
6	State Horticulture Farms (Production in Lakh Nos)	106.88	88.08	742.38	670	115	20.89	906.626	98.809
7	Precision Farming	735	735	992.950	857.682	-	-	-	-
	Precision Farming- National Agriculture Development Programme	-	-	128.99	0	6100.00	0	2264.740	0.000
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>2443.99</b>	<b>2028.44</b>	<b>-</b>	<b>-</b>	<b>3714.514</b>	<b>98.809</b>

**Physical : Area in Ha.  
Financial: Rs. In lakhs**

S. No.	Name of the Scheme	Physical (2007-08)		Financial (2007-08)		Physical (2008-09)		Financial (2008-09)	
		Target	Achmt.	Target	Achmt.	Target	Achmt. As on 31.7.08	Target	Achmt. As on 31.7.08
<b>II</b>	<b>Centrally Sponsored Schemes</b>								
1	National Horticulture Mission (80:15)	52930*	54393	10386.81*	10396.61	50822	0	18079.35	0.00
2	Micro Irrigation (80:20) (This includes funds allotted in the year 2005-06, 2006-07 and 2007-08)	46714	9484	9064.350	1559.910	46714	9949	9064.350	953.97
3	IAMWARM Project	6139	6047	659.06**	634.77	9564	60	1630.03	139.64
4	National Bamboo Mission	-	-	258.32	0.00	950	110	258.32	38.40
	<b>Total</b>	-	-	<b>20368.54</b>	12591.29	<b>108050</b>	<b>10119</b>	<b>29032.05</b>	<b>1132.01</b>
	<b>GRAND TOTAL</b>	-	-	<b>22812.53</b>	<b>14619.72</b>	<b>108050.00</b>	<b>10119.00</b>	<b>32746.56</b>	<b>1230.82</b>

\* Cumulative target from 2005-06 to 2008-09

\*\* Since the fund was released during the fag end of the year achievements could not be made and the amount have been revalidated for the year 2008-09

Source: Commissioner of Horticultural and Plantation Crops, Chennai

### **5.1.3 Interventions Recommended**

1. Provision of Net house structure
2. Nursery/ vegetable production
3. Pandal for vegetable production
4. Package for plant protection
5. Plastic crates (Banana, Vegetables)
6. Bore well with casing pipe
7. Banana bunch cover
8. Banana sucker treatment kit
9. Humic acid / Effective E.M.
10. Support System for crops – Banana
11. Sales outlet-cum-information centre
12. District level farmers workshop
13. Inter state exposure visit (5days)
14. 10 Ha Mega demo plot for the district
15. Enterprising farmers associations
16. Support for Betel vine growers and
17. Model fertigation plot for vegetables

### **5.1.4 Constraints**

- High investment cost
- Long gestation period
- High tech involved
- Non-availability of good quality seeds and planting materials and
- Lack of awareness among farmers on the profitability of horticultural crops.



## **5.2 Agricultural Engineering**

### **5.2.1 Issues**

- The development of agricultural engineering in the State is still in its infancy and is yet to gain momentum
- Peak seasonal operations and scarcity of labour promote ample opportunities for hastening the process of farm mechanization.
- Water and soil conservation works are to be intensified especially in dryland tracts
- There exists vast scope for the development of water harvesting structures and
- Farmers need training in the up-keep of the machineries and implements.

## 5.2.2 On-going Schemes of Agricultural Engineering

### 5.2.2.1 Progress under Plan Schemes during 2008-2009 (Upto August 2008)

Sl. No.	Name of the scheme	Physical				Financial ( Rs. In lakhs)			Remarks
		Unit	Annual Target	Achievement upto August'08	% w.r.to Annual target	Annual Target	Achievement upto August'08	% w.r.to Annual target	
<b>I</b>	<b>Centrally Sponsored Schemes</b>								
<b>a)</b>	<b>Schemes shared between Centre and State (90 : 10) (Macro Management Mode)</b>								
1	Soil and Water Conservation in the catchments of River Valley Project	Ha.	7723	2871	37.2%	1064.12	284.98	26.8%	Government of India have approved an outlay of Rs.1064.12 lakhs for 2008-09. G.O. is awaited. Works are under progress.
		Nos.	1167	610	52.3%				
2	Agricultural Mechanisation Programme	Nos.	585 Nos.	-	-	99.75	-	-	Approval from Government of India is awaited for the revised programme for 2008-09.

Sl. No	Name of the scheme	Physical				Financial ( Rs. In lakhs)			Remarks
		Unit	Annual Target	Achievement upto August'08	% w.r.to Annual target	Annual Target	Achievement upto August'08	% w.r.to Annual target	
<b>b)</b>	<b>Schemes Shared between Centre and State (50 : 50)</b>								
1	Command Area Development and Water Management Programme								
a)	Construction of field channels	Ha.	9650	4227	43.8%	3901.56	1666.38	42.7%	Works are under progress.
b)	Rotational Water Supply Works	Ha.	18200	7882	43.3%				
c)	Construction of field drains	Ha.	66800	46228	69.2%				
<b>II</b>	<b>Central Sector Schemes with 100% Central Assistance</b>								
1	<b>Demonstration of Agricultural Implements/ Machinery at Farmer's Field</b>								
a).	Demonstration	Demo. in Nos.	1562	177	11.3%	38.65	3.16	8.2%	Government has released a sum of Rs.9.84 lakhs and demonstrations are under progress.
b).	Purchase of implements for demonstrations	Implements in Nos.	95	-	-	51.33	-	-	Government has released Rs.12.71 lakhs for the purchase of implements for demonstration. Approval is awaited from the Government of India for the purchase of implements.

Sl. No.	Name of the scheme	Physical				Financial ( Rs. In lakhs)			Remarks
		Unit	Annual Target	Achievement upto Aug.'08	% w.r.to Annual target	Annual Target	Achievement upto Aug. '08	% w.r.to Annual target	
2	Training programmes to farmers in the field of Agricultural Mechanisation	Trainings in Nos.	180	13	7.2%	45.00	0.75	1.7%	Government have released a sum of Rs.11.25 lakhs and training programmes are under progress.
<b>III</b>	<b>State Plan Schemes</b>								
1	Soil and Water Conservation under Hill Area Development Programme	Ha.	130	-	-	434.45	16.26	3.7%	Government orders are awaited. Expenditure incurred is towards staff component.
		Nos.	588	-	-				
2	Soil and Water Conservation under Western Ghat Development Programme	Ha.	1580	19	1.2%	747.00	18.05	2.4%	Government have issued orders vide G.O.Ms. No.77 P&D dept.dated 21.8.08. Works are under progress.
		Nos.	1940	104	5.4%				
3	Soil Conservation Schemes in Tribal Areas under ITDP	Ha.	757	16	2.1%	142.00	-	-	Government have issued orders vide G.O.(3D).No.210 Agri (AE 2) Dept. dated 13.8.08 Works are under progress.
		Nos.	91	-					

Sl. No.	Name of the scheme	Physical				Financial ( Rs. In lakhs)			Remarks
		Unit	Annual Target	Achievement upto August'08	% w.r.to Annual target	Annual Target	Achievement upto August'08	% w.r.to Annual target	
4	Rain Water Harvesting and Runoff Management Programme	Nos.	3314	-	-	1657.67	-	-	Government have issued orders vide G.O .Ms. No.272 Agri (AE 2) Dept. dated 4.9.08. Works are under progress.
5	NABARD assisted Scheme for Rain Water Harvesting Programme	Nos.	2650	-	-	969.57	-	-	Government Orders are awaited.
6	Scheme for Replacement of old Pumpsets	Nos.	16420	-	-	1000.00	-	-	Government Orders are awaited.
7	Programme for Artificial Recharge to Ground water	Nos.	3298	-	-	2500.00	-	-	Government orders are awaited.

**5.2.2.2 World Bank Assisted IAMWARM Project**

Sl. No	Name of the scheme	Physical		Financial ( Rs. In lakhs)			Remarks
		Annual Target	Achievement upto August'08	Annual Target	Achievement upto August'08	% w.r.to Annual target	
a.	Micro Irrigation	24052 Ha.	-	3185.62	-	-	Work orders issued for 241.97 Ha. as against an interim target of 2000 Ha.
b.	Pipe laying	15 Packages	-	153.09	-	-	The programme will be implemented after evaluation as per the direction of Projcet officer, MDPU.
c.	Farm Pond	1264 Nos.	-	500.49	-	-	150 Farm Pond works are under progress.
d.	Farm Mechanisation	1259 Nos.	-	833.61	-	-	Tender notified.
e.	Information, Education, Communication (IEC) and Capacity Building	-	-	145.04	1.88	1.3%	The programmes are under progress.
	<b>Total (IAMWARM)</b>	-	-	<b>4817.85</b>	<b>1.88</b>	<b>0.04%</b>	

**5.2.2.3 Expenditure of Agricultural Engineering Department**

Sl. No.	Details	2008-2009		
		(Financial Rs. in lakhs)		
		Annual Target	Achievement upto August'08	% W.r.to Annual Target
1	Centrally Sponsored Schemes Shared between centre and State	5065.43	1951.36	38.52%
2	Central Sector Schemes	135.00	3.91	2.90%
3	State Plan Schemes	8750.75	222.90	2.55%
<b>Total</b>		<b>13951.18</b>	<b>2178.17</b>	<b>15.61%</b>

**5.2.3 Constraints**

- Heavy investment requirement for agricultural machineries, implements and tools
- Usage of machineries for seasonal operations only
- Exhorbitant rental charges charged by the custom service providers
- Timely non-availability of machine labour
- Inadequate repairing facilities / workshop with trained manpower in rural areas and
- Size of holdings in majority of the areas, restrict the usage of mechanical power.

**5.2.4 Interventions Recommended**

1. Popularisation of Agricultural mechanisation through conventional machinery / Equipments
2. Water Harvesting Structures
3. Soil Conservation works
4. Water Management works
5. Introduction of newly developed Agricultural machinery / Implements
6. Innavotive water harvesting structures
7. Promoting the concept of mechanized villages
8. Control of sea water intrusion in coastal belt

9. Special scheme for the beneficiaries of land reforms – Innovative Scheme for OFD with special focus in SC land holdings
10. Western Ghat Development Programme and
11. Farmers Training.

### **5.3 Agricultural Marketing and Agri business Sector**

#### **5.3.1 Issues**

1. Dominance of unorganized non-formal channels
2. Institutional innovation for efficient alternative system responsive to market signals
3. Developing wholesale markets by providing necessary facilities
4. Prevention of wastage at pre-harvest and post-harvest levels
5. Construction of roads linking villages with nearby assembling and wholesale markets
6. Encouraging private investment in revamping agricultural marketing
7. Developing commodity exchanges
8. Prior knowledge on post-harvest management, value addition and processing among the farmers and
9. Strengthening of marketing Intelligence and Information system

#### **5.3.2 On-going schemes**

The details of district-wise on-going schemes other than the schemes covered under NADP with physical and financial targets for 2007-08 and 2008-09 are furnished in what follows.



**1. TAMIL NADU IAMWARM PROJECT – WORLD BANK AIDED****Department of Agrl. Marketing and Agri Business****District-wise Target for the Year 2007-08****(Amount in Rupees)**

Sl. No.	District	IEC & CB		Civil works		Machinery & Equip.		Publicity & Advt.	Grand Total
		Physical	Finance	Physical	Finance	Physical	Finance	Physical	Finance
1.	Coimbatore	12	97556	7	2500000	156	422560	0	3020116
2.	Erode	42	1156603	85	7000000	1844	3912400	0	12069003
3.	Villupuram	11	336979	11	1500000	200	1127572	0	2964551
4.	Pudukottai	42	757200	32	4300000	70	1041580	0	6098780
5.	Sivagangai	36	231400	21	3700000	261	218998	0	4150398
6.	Salem	12	330300	18	2000000	138	1570195	0	3900495
7.	Virudhunagar	12	328300	18	2100000	37	1417848	0	3846148
8.	Chennai (H/Qtrs)	0	1025800	0	100000	0	980000	700000	2805800
	<b>Total</b>	167	4264138	192	23200000	2706	10691153	700000	38855291

- Note : IEC & CB : 1. Exposure visit inside and outside the State, 2. Interface workshop, 3. Post Harvest tech training
- Civil works : 1. Storage shed, 2. Drying yard, 3. Agricultural Business Centre, 4. Collection centre and 5. Pack house.
- Machinery and Equipments : 1. Moister meter, 2. Weighing scale, 3. Goods Auto and Minilorry, 4. Tarpaulin, 5. Dunnage, and Professional service

**District-wise Target for the Year 2008-09**

(Amount in (Rupees))

Sl. No.	District	IEC & CB		Civil works		Special services		Publicity and Advt.	Grand Total
		Physical	Finance	Physical	Finance	Physical	Finance	Physical	Finance
1.	Coimbatore	4	200000	0	0	1	120000	--	320000
2.	Erode	13	900000	0	27000000	2	240000	--	28140000
3.	Villupuram	4	200000	0	3130000	1	120000	--	3450000
4.	Pudukottai	11	750000	4	8500000	2	360000	--	9610000
5.	Sivagangai	10	600000	0	4440000	2	120000	--	5160000
6.	Salem	7	300000	2	4950000	1	360000	--	5610000
7.	Virudhunagar	7	300000	0	4600000	1	240000	--	5140000
8.	Thanjavur	10	600000	0	0	--	240000	--	840000
9.	Perambalur	7	300000	3	0	--	120000	--	420000
10.	Krishnagiri	4	200000	4	0	--	120000	--	320000
11.	Madurai	8	400000	0	0	--	120000	--	520000
12.	Theni	6	200000	4	0	--		--	200000
13.	Tirunelveli	6	200000	0	0	--	120000	--	320000
14.	Veelore	8	400000	7	0	--	240000	--	640000
15.	Chennai (H/Qtrs)	--	250000	0	19180000	1	3525000	1000000	23955000
	<b>Total</b>	105	5800000	24	71800000	11	6045000	1000000	84645000

- Note : IEC & CB : 1. Exposure visit inside and outside the State, 2. Interface workshop, 3. Post Harvest tech training
- Civil works : 1. Storage shed, 2. Drying yard, 3. Agricultural Business Centre, 4. Collection centre and 5. Pack house.
- Special services : Appointment of Marketing Facilitator in sub basins and senior Marketing Facilitator in Head quarters and other allied works.

**2. Uzhavar Sandhais (District-wise Target)**

S. No.	District	2007-08		2008-09	
		Establishment of Uzhavar sandhais	Finance (in lakhs)	Cold storage facility at Uzhavar sandhais	Finance (in lakhs)
1.	Kancheepuram	Madhuranthaham	32.24	--	--
2.		Medavakkam	25.22	--	--
3.		Alandur	Estimate under preparation	--	--
4.	Tiruvallur	Paruthippattu	22.5	--	--
5.		Naravadikuppan	Estimate under preparation	--	--
6.	Vellore	Tirupattur	22.5	--	--
7.		Natrampalli	19.9	--	--
8.		--		Vaniyampadi	6.05
9.		--		Gudiyatham	6.05
10.	Tiruvannamalai	Chengam	22.01	--	--
11.		Vandavasi	21.13	--	--
12.		--		--	--
13.	Cuddalore	Vadular	22.5	Cuddalore	6.05
14.	Villupuram	Ulundurpet	18.22	--	--
15.		Gingee	36.8	--	--

**Uzhavar Sandhais (District-wise Target) contd...**

S. No.	District	2007-08		2008-09	
		Establishment of Uzhavar sandhais	Finance (in lakhs)	Cold storage facility at Uzhavar sandhais	Finance (in lakhs)
16.		--		--	--
17.	Salem	Ellampillai	22.5	Sooramangalam	6.05
18.		Hasthampatti	22.5	Ammamet	6.05
19.		--	--	Athur	6.05
20.		--	--	Thathakapatti	6.05
21.	Namakkal	Paramathivelur	22.5	Namakkal	6.05
22.		Moganur	22.5	--	--
23.		--	--	Rasipuram	6.05
24.	Dharmapuri	Palacode	22.5	--	--
25.		Penngaram	21.4	--	--
26.		Harur	20.8	--	--
27.	Krishnagiri	Kaveripattinam	22.5	Hosur	6.05
28.		Denkanikottai	22.5	--	--
29.	Coimbatore	Sulur	22.5	Kovai R.S.Puram	6.05
30.		--	--	Singanallur	6.05
31.		--	--	Tiruppur (North)	6.05

**Uzhavar Sandhais (District-wise Target) contd...**

S. No.	District	2007-08		2008-09	
		Establishment of Uzhavar sandhais	Finance (in lakhs)	Cold storage facility at Uzhavar sandhais	Finance (in lakhs)
32.	Nilgiris	Kothagiri	22.5	--	--
33.	Erode	Periyar Nagar	22.5	--	--
34.		Karumandi chellipalayam	22.5	--	--
35.	Tiruchi	Musiri	22.5	Tiruchi Anna Nagar	6.05
36.		BHEL – Trichy	22.5	Tiruchi K.K.Nagar	6.05
37.	Perambalur	Jeyankonadam	21.35	--	--
38.	Karur	Pallapatti	22.5	--	--
39.	Thanjavur	Papanasam	16.4	--	--
40.		Tirukattupalli	22.5	--	--
41.	Nagapattinam	Sirkazhi	22.5	--	--
42.	Tiruvarur	Needamangalam	16.71	--	--
43.		Muthupet	22.5	Mannarkudi	6.05
44.	Pudukottai	Keeranur	22.38	--	--
45.		Gandarvakottai	21.53	--	--
46.	Madurai	Anaiyur	22.35	Madurai Anna Nagar	6.05

**Uzhavar Sandhais (District-wise Target) contd...**

S. No.	District	2007-08		2008-09	
		Establishment of Uzhavar sandhais	Finance (in lakhs)	Cold storage facility at Uzhavar sandhais	Finance (in lakhs)
47.		Naganakulam	Estimate under preparation	Chokkikulam	6.05
48.	Dindigul	Batalakundu	22.5	--	--
49.		Kodaikanal	22.5	--	--
50.	Theni	Andipatti	22.1	Theni	6.05
51.		Chinnamanur	22.5	Cumbum	6.05
52.		Devaram	21.41	--	--
53.	Sivagangai	Tirupathur	20.59	--	--
54.		Singampuneri	Estimate under preparation	--	--
55.	Virudhurnagar	Kariyapatti	21.5	--	--
56.	Ramanathapuram	Kamuthi	22.5	--	--
57.		Thalavaipuram	22.5	--	--
58.	Tirunelveli	Melapalayam	22.5	--	--
59.		Ambasamudram	Estimate under preparation	--	--
60.	Tuticorin	--	--	Tuticorin	6.05
61.	Kanyakumari	--	--	Vadaseri	6.05

**3. Market Committee****District-wise Target for Issue of Pledge Loan in  
Rural Godown of Regulated Markets**

Unit : Rs. in lakhs

Sl. No.	Name of the Market Committee	Pledge loan to farmers		Pledge loan to traders	
		Target for 2007-08	Target for 2008-09	Target for 2007-08	Target for 2008-09
1.	Kancheepuram	40.00	87.00	30.00	60.00
2.	Vellore	50.00	87.00	4.00	80.00
3.	Tiruvannamalai	50.00	122.00	6.00	120.00
4.	Cuddalore	50.00	104.00	2.00	40.00
5.	Villupuram	100.00	235.00	8.00	160.00
6.	Salem	100.00	174.00	5.00	100.00
7.	Dharmapuri	60.00	139.00	5.00	100.00
8.	Coimbatore	250.00	304.00	10.00	200.00
9.	Erode	250.00	330.00	10.00	200.00
10.	Trichy	80.00	217.00	9.00	180.00
11.	Thanjavur	150.00	200.00	5.00	110.00
12.	Thiruvarur	80.00	35.00	2.00	40.00
13.	Nagapattinam	60.00	75.00	1.00	60.00
14.	Pudukottai	20.00	270.00	2.00	200.00
15.	Madurai	80.00	191.00	3.00	100.00
16.	Theni	40.00	78.00	3.00	60.00

**Market Committee contd...**

Unit: Rs. in lakhs

Sl. No.	Name of the Market Committee	Pledge loan to farmers		Pledge loan to traders	
		Target for 2007-08	Target for 2008-09	Target for 2007-08	Target for 2008-09
17.	Dindigul	50.00	99.00	3.00	60.00
18.	Ramanathapuram	125.00	104.00	10.00	60.00
19.	Tirunelveli	60.00	112.00	5.00	40.00
20.	Kanyakumari	30.00	37.00	3.00	30.00
	<b>Total</b>	<b>1725.00</b>	<b>3000.00</b>	<b>1000.00</b>	<b>2000.00</b>

**4. National Horticulture Mission**

Under National Horticulture Mission the following components have been proposed for subsidy.

**I. Physical and Financial Target for 2007-08**

Sl. No.	Particulars	Physical (in Nos.)	Total Project cost (Rs. in lakhs)	Subsidy from NHM (Rs. in lakhs)
1.	Pack House*	50.00	125.00	31.25
2.	Controlled Atmosphere Cold storage	4.00	2400.00	600.00
3.	Cold Storage units**	10.00	2000.00	500.00
4.	Terminal Markets	3.00	20000.00	5000.00
5.	Creation of infrastructural facilities on rural markets / rural business hubs / rural market facilitation centres	50.00	3600.00	900.00
6.	Fruits and retarding / ripening chambers	10.00	600.00	150.00



**Physical and Financial Target for 2007-08**

Sl. No.	Particulars	Physical (in Nos.)	Total Project cost (Rs. in lakhs)	Subsidy from NHM (Rs. in lakhs)
7.	Fruits and vegetables display cabinets with coolers	100.00	100.00	25.00
8.	Market Intelligence and information Centres (Computers for Farmers' Markets)	58.00	145.00	145.00
	<b>Total</b>	<b>285.00</b>	<b>28970.00</b>	<b>7351.25</b>

Note : : All the components are project based (except Market Intelligence and Information Centre) and DPRs are to be obtained from entrepreneurs and sent to TANHODA.

\* 2 Applications for pack house have been sent to TANHODA for approval and release of fund.

Sl. No.	Particulars	Physical (in Nos.)	Total Project cost (Rs. in lakhs)	Subsidy from NHM (Rs. in lakhs)
1.	Wholesale Markets *	2	24000.00	5000.00
2.	Market Intelligence and Information Centres (Computers for farmers' markets)	45	90.00	90.00
	<b>Total</b>	<b>47</b>	<b>24090.00</b>	<b>5090.00</b>

\* The preliminary project reports for setting up of wholesale markets received from two firms have been sent to TANHODA. The firms are yet to submit the DPR and once the DPRs are received the same will be sent to TANHODA.

## STATE GOVERNMENT SCHEMES

## 5. Part – II Schemes

**Announcement Year : 2006-07 (10<sup>th</sup> Plan)**

Sl. No.	Name of the scheme	Physical (in Nos.)	Financial (Rs. in lakhs)		Present stage
		Target	Project Estimate	Token Provision	
1.	Creation of Market Complex Infrastructure with Cold Storage facilities for Mango at Krishnagiri for the benefit of Small and Marginal Farmers.	1	200.00	10.00	The Request For Qualification (RFQ) and Bid proposal submitted by m/s. Premium Farm Fresh and Bharat Hotels. New Delhi was evaluated by the technical consultant – Tamil Nadu Technology Development and Promotion Centre (a unit of CII) Chennai and found to be eligible. The draft Request For Proposal (RFP) and draft operation, Management and Development Agreement (OMDA) has been submitted to the Government for vetting. Meanwhile the eligible Consortium has been asked to submit RFP. The pre-bid proposal meeting is scheduled to be conducted on November 2008.
2.	Creation of Marketing Infrastructure with Cold Storage facilities for onion at Pongalur in Coimbatore district.	1	200.00	10.00	
3.	Creation of Market Complex with cold storage facilities for Grapes in Odaipatti, Theni district.	1	375.00	100.00	
4.	Setting up of Terminal Markets at Metro regions of Chennai, Madurai and Coimbatore	3	20000.00	300.00	The evaluation report, draft RFP document and operation, Management and Development Agreement copy submitted by the Consultancy agency have been sent to Government and M/s. ITCOT, Chennai, for perusal. The matter is under active consideration. Based on Evaluation report, action is being taken to issue RFP to the eligible private entrepreneurs.

**STATE GOVERNMENT SCHEMES**

**6. Announcement Schemes**

**Announcement Year : 2006-07 (10<sup>th</sup> Plan)**

Sl. No.	Name of the scheme	Physical (in Nos.)	Financial (Rs. in lakhs)		Present stage
		Target	Project Estimate	Token Provision	
1.	Setting up of marketing complex for coconut at Pattukottai in Thanjavur district	1	400.00	---	The Request For Qualification (RFQ) and Bid proposal submitted by m/s. Premium Farm Fresh and Bharat Hotels, New Delhi was evaluated by the technical consultant – Tamil Nadu Technology Development and Promotion Centre (a unit of CII) Chennai and found to be eligible. The draft Request For Proposal (RFP) and draft operation, Management and Development Agreement (OMDA) has been submitted to the Government for vetting. Meanwhile the eligible Consortium has been asked to submit RFP. The pre-bid proposal meeting is scheduled to be conducted on November 2008.
2.	Setting up of Market Complex with cold storage facilities for Tomato in Hosur, Krishnagiri district.	1	200.00	---	

### **5.3.3. Constraints**

- Lack of proper and adequate storage facilities at farm level
- Exploitation of farmers by the middleman
- High seasonal fluctuations in prices of major agricultural commodities
- Market information and intelligence activities are still in its infancy
- Regulated markets in many districts are yet to improve their functional efficiency
- Cooperative marketing system is yet to develop in a big way and
- Lack of adequate processing infrastructure

### **5.3.4. Interventions Recommended**

- Establishment/ organization of commodity groups for marketing in the state with financial assistance from NADP
- Facilitation of Contract Farming between farmers and bulk buyers in the state with financial assistance from NADP
- Dissemination of Market intelligence
- Arrangement of Buyers - Sellers Meet
- Organizing the exposure visits to important markets within the state and out side the state by commodity groups / farmers and extension functionaries and
- Strengthening of market extension centre at each district/ block level for capacity building and dissemination of marketing information

## **5.4. Animal Husbandry**

### **5.4.1 Issues**

1. The gap between requirements and supply of green fodder is rather wide and needs bridging or atleast narrowing
2. Diminishing pasture / grazing lands and their poor quality
3. Lack of knowledge on balanced feeding of animal especially cross breed cows and on supplementary micro nutrients
4. Infertility problem among cross-bred cows and low/delayed conceivment among buffaloes
5. Heifer rearing on scientific lines

6. Scientific calf rearing to avoid calf mortality
7. Lack of adequate genetically superior male breeder and buck
8. Non availability of superior Rams and bucks
9. Population of rabbit farming and Japanese animal farming
10. Strengthening of veterinary institutions
11. Insufficient processing and marketing facilities in most of the Milk Producers Unions
12. Production of milk products like butter, ghee, ice cream, palpeda etc., on large scale and
13. Improving infrastructure for collection, transportation ,handling and procurement of milk and processing, packing and marketing of milk and milk products.

#### **5.4.2. Ongoing Schemes of Animal Husbandry Sector**

Livestock rearing is an important economic activity for the rural people. It generates more value both economically and socially. The growth in human population, availability and cost of agricultural lands, limited water sources and introduction of better yielding livestock have led farmers to shift to some kind of livestock rearing to earn their livelihood. Hence to provide employment, to enhance the participation of the poor in livestock rearing and as a part of poverty alleviation programmes, the Department is implementing various livestock oriented schemes.

##### **1. Kalnadai Padukappu Thittam**

- Kalnadai Padukappu Thittam is a novel scheme inaugurated on 18.01.2000 by the
  - Hon'ble Chief Minister Dr. Kalaingar at Thirukazhukundram in Kancheepuram district.
- As per this scheme, total health cover is provided to livestock and poultry reared by farmers in remote villages by conducting special camps.
- The special camps are conducted at the rate of one camp per month in all the 385 Panchayat unions at a total cost of Rs.5,000/- per camp.
- On the day preceding the camp, wide publicity is given regarding the place where the camp is to be conducted in the village and surrounding villages. During the process, pamphlets and leaflets are also distributed regarding various activities that are undertaken in the camp.

- Moreover, the help of local village panchayat president, chairman and interested animal husbandry workers are also sought in publicity and propaganda campaign.
- In these camps, activities like health care, disease prevention, deworming, castration, artificial insemination, pregnancy verification, infertility treatment, etc. are carried out free of cost.
- An exhibition depicting various livestock diseases and preventive measures, fodder development measures are also conducted for creating awareness among the farmers. This year a new activity called calf-rally was included and prizes worth Rs.400/- per camp is being distributed to best calves.
- During 2007-08, 5,500 camps have been conducted. 67.00 lakh livestock and poultry were provided with veterinary health services and protected against various animal diseases and 16.98 lakh farmers were benefitted.
- The beneficiaries are all animal growers in the villages and near by villages where the camps are conducted. The scheme is very popular among the rural farming community as all the facilities are provided at the farmer's doorsteps free of cost.
- During 2008-09, it is proposed to conduct 5,500 camps at a cost of Rs.5,000/- per camp.

## **2. Tamil Nadu Irrigated Agricultural Modernization and Water-Bodies Restoration Management Project (TNIAMWARM)**

Animal Husbandry Department is one of the line departments involved in implementation of the World Bank assisted Tamil Nadu Irrigated Agricultural Modernisation and Water-bodies Restoration and Management Project. The project is being implemented in the State from 2007 for a period of six years. The main aim of the project is to improve the productivity per unit of water in agriculture and allied activities and enhance the farm income ultimately. For animal husbandry component, World Bank has allotted Rs.3,938 lakhs for implementing various schemes in the 63 sub-basins during the project period.

The objectives of the project are:

- To improve the production potentialities of livestock in the sub-basin
- To provide veterinary services and breeding support at the farmers' doorsteps or nearest to the farmers

- To ensure total health cover-both preventive and curative
- To improve conception and calving rate in bovines
- To reduce the gap between requirement and availability of green fodder and
- To improve the knowledge level of the farmers on best animal husbandry practices / techniques.

The interventions by the department in the sub-basins are:

- Delivery of veterinary services and breeding support to livestock reared by farmers in unserved areas by establishing Sub-basin Veterinary Units, utilising the services of unemployed veterinary graduates
- Improving the quality in delivery of veterinary services and diagnosis by strengthening the essential and needy infrastructure of veterinary institutions
- Utilising the high-yielding frozen semen straws for artificial insemination.
- Increasing the availability of green fodder by bringing more area under fodder cultivation
- Ensuring total health care and improving the conception rate by conducting Infertility cum total health care camps and distribution of mineral mixture and
- Improving the know-how level of farmers on best animal husbandry practices / techniques by conducting various information, education, communication and training programmes

During 2007-08, the project is to be initially implemented in nine sub-basins Viz., Varahanadhi, Upper Vellar, South Vellar, Palar (Parambikulam Aliyar Project), Aliyar (Parambikulam Aliyar Project), Pambar, Arjunanadhi, Manimuthar and Kottakaraiyar at a cost of Rs.262.62 lakhs.

The following activities are carried out during 2007-08:

- Breeding support and veterinary services are made available at the farmer's door steps or nearest to the farmers by establishing 27 Sub-basin Veterinary Units, utilising the services of unemployed veterinary graduates
- Around 770 hectares of land have been brought under fodder cultivation by supply of fodder inputs like Co3 slips, kolukattai etc
- 600 Infertility-cum-total health care camps have been conducted

- 800 night meetings have been conducted
- Information, education and communication campaigns are being carried out by distribution of pamphlets and leaflets, erection of hoardings and carrying out wall paintings and
- 3,600 farmers have been trained on best animal husbandry practices

During 2008-09, in addition to the nine sub-basins, 15 more sub-basins namely Koundinyanadhi, Poiney, Swethanadhi, Chinnar, Anaivari odai, Agniyar, Ambuliyar, Therkar, Upper Vaigai, Upper Gundar, Sengotaiyar, Kalingalar, Nichabanadhi, Ponaiyar and Varratar-Nagalar have been planned to be taken up for implementation.

The activities planned are:

- Establishment of 15 Cluster Sub-basin Veterinary Units to provide breeding support and veterinary services at the farmer's door steps or nearest to the farmers, utilising the services of unemployed veterinary graduates on Public Private partnership
- Bringing 580 hectares of private land under fodder cultivation by supply of fodder inputs like Co3 slips, kolukattai, fodder cholam, fodder maize, etc., free of cost
- In addition Azolla cultivation will be propagated
- Bringing in the practice of periodical deworming by carrying out deworming of 14 lakh sheep and goats free of cost
- Proper identification of breedable bovines by tagging them free of cost
- Improving the fertility and health care by conducting Infertility-cum-health care camps
- Improving the know-how level of farmers by conducting farmer's interactive meetings half yearly
- Carrying out information, education and communication campaigns by distribution of pamphlets and leaflets, erection of hoardings and carrying out wall paintings
- Training of farmers on best animal husbandry practices and
- Providing refresher training to veterinarians



### 3. Assistance to States for Control of Animal Diseases (ASCAD)

To control economically important diseases affecting livestock, "Assistance to States for Control of Animal Diseases programme (ASCAD) is being implemented with 75% central assistance except for one component "Training / Seminar" for which assistance is 100%.

During 2007-08, the following works have been carried out:

- 20.00 lakhs cattle covering Thiruvallur, Kancheepuram, Vellore and Villupuram districts have been protected against **Haemorrhagic Septicaemia** disease
- 20.00 lakhs cattle covering Kancheepuram, Pudukottai, Sivagangai, Villupuram and Cuddalore districts have been protected against **Black Quarter** disease
- 31.51 lakhs cattle, sheep and goats covering Dindigul, Madurai, Thanjavur, Villupuram, Thiruvannamalai, Theni, Tirunelveli and Vellore districts have been protected against **Anthrax** disease
- **Foot and Mouth Disease (FMD)** is a viral disease affecting livestock resulting in economic loss to the farmers. During 2007-08 outbreaks, the Department had intensively covered the State with Foot and Mouth disease vaccination. A total of 82.06 lakhs cattle in the State have been covered and the disease has been brought under control. During 2008-09, it is proposed to cover 95% of the livestock under FMD vaccination
- 43.44 lakhs sheep and goats in the State have been protected against **Pesti-des-petitsruminant disease**
- Rs.155 lakhs have been allotted for upgrading the Poultry Vaccine Laboratory to Good Manufacturing Practices standards at the Institute of Veterinary Preventive Medicine, Ranipet and the work is in progress
- 60 Veterinary Assistant Surgeons will be given capacity building training on various disease diagnostic methods and
- Rs.4.88 lakhs has been provided for purchase of materials required for preparedness and training of Rapid Response Teams against Avian Influenza.

In addition, various pamphlets, leaflets and booklets on various diseases and prevention measures have been distributed to farmers.

#### **4. Western Ghats Development Programme**

**Implementation Areas:** 135 watersheds in eight Western Ghats districts viz., Coimbatore, Dindigul, Theni, Madurai, Tirunelveli, Kanyakumari, Erode and Virudhunagar.

During 2008-09, the scheme will be implemented with the following activities:

- Fodder Development
- Training to farmers
- Distribution of Giriraja poultry units
- Distribution of crossbred heifer calves
- Distribution of goat and sheep units and
- Conducting infertility camps

#### **5. Hill Area Development Programme**

**Implementation Areas:** The Nilgiris district

**Mode of functioning:**

- Reclamation of uncultivable land for fodder production
- Supply of Giriraja birds at 25% subsidy
- Supply of high pedigree crossbred bulls for breeding and crossbred heifer calf to ST beneficiaries
- Construction of new Veterinary Dispensary at Sholurmattam and repairs to Veterinary Sub-centres at Erumadu and
- For 2007-08, Government have released a sum of Rs.16.91 lakhs to carryout the above scheme

#### **6. Foot and Mouth Disease Control Programme**

**Implementation Area:** Kanyakumari district since 2004.

**Mode of functioning:**

- Systematic coverage of Foot and Mouth disease vaccination in all susceptible cattle in the project area as per the guidelines provided by the Government of India.

- Upto 2004-05, Foot and Mouth disease vaccination have been carried out in four phases.
- During 2005-06, Government have provided a sum of Rs.40.61 lakhs and one lakh doses of Foot and Mouth Disease vaccine for vaccination in the project area and the work was completed.
- For 2006-07, Government has released a sum of Rs.12.88 lakhs to carryout the above scheme.
- For 2007- 08, Government have released a sum of Rs.10.00 lakhs to carryout the above scheme in Kanyakumari District.

## 7. Integrated Sample Survey Scheme

**Implementation Areas:** All districts since 1977

**Mode of functioning:**

- Integrated Sample Survey Scheme is a 50% centrally assisted scheme covering all the districts. It provides timely and reliable statistical data on major livestock products like milk, egg, meat, etc.
- It also studies livestock management practices annually and seasonally in a regular and continuous manner. Estimation of milk production and other livestock products is done by analysing the data collected from the field and
- During 2007-08, the Department has taken up a study on estimation of yield rate of Meat by products in different species.

### **Estimated Production of Milk, Egg and Meat during 2006-07 and Target for 2007-08**

<b>Item</b>	<b>Achievement (2006-07)</b>	<b>Target (2007-08)</b>
Milk (Lakh metric tonnes)	55.60	55.90
Egg (Million Nos.)	8,044	8,366
Meat (Million Kgs)	220	229

This scheme helps to assess and monitor the impact of development activities of Animal Husbandry sector initiated and implemented by the Department. Besides, the survey provides base level data, which helps in planning future programmes.

**Performance of Schemes during 2007-08**

1. 40 new Veterinary Dispensaries have been opened, to expand the veterinary health services, to benefit more number of farmers and to protect the livestock of poor farmers from diseases
2. Orathanad and Abishekapatti District Livestock Farms have been sanctioned with a sum of Rs.21.50 lakhs and Rs.16.09 lakhs respectively, to improve their fodder production. Chaff cutter and green fodder harvester have been purchased. Erections of borewell and Sprinkler Irrigation works have been entrusted to Agricultural Engineering Division and the work is being undertaken
3. To store excess quantity of eggs produced in flush season and to avoid losses in times of disturbances in transport and Ban on export of eggs in time of out breaks of Avian Influenza in India, which leads to stagnation of large quantities of eggs, it is proposed to construct a Cold Storage Unit for storage of eggs at Namakkal at a cost of Rs.10.00 crores as a Joint Venture project under public-private partnership. For this the Government have released Rs.1.00 crore as Government's equity to TIDCO
4. To generate gainful self-employment, improve nutrition and to satisfy the considerable urban demand that exist for pork and pork products, this department is encouraging pig rearing among the rural poor. For this purpose, Piggery Unit at District Livestock Farm, Abishekapatti in Tirunelveli district is being strengthened at a cost of Rs.33.92 lakhs
5. A new Regional Joint Director's office for Namakkal district has been established at a cost of Rs.3.42 lakhs for better administration
6. To improve the services of Mobile Veterinary Units, the vehicles in Coimbatore, Erode, Mannargudi, Kovilpatti, Sirkazhi and Myladuthurai Mobile units are replaced at a cost of Rs.20.85 lakhs.
7. For effective monitoring and control of livestock diseases, an Animal Disease Intelligence Unit has been opened in Dharmapuri district. Supply of necessary chemicals and equipments to be effected by Tamilnadu Medical Services Corporation.
8. To provide communication facilities, to 385 Veterinary Dispensaries functioning at Block headquarters, cell phones at a cost of Rs.18.10 lakhs have been purchased and distributed to veterinarians in these dispensaries.

9. The Small Animal Pet Clinic in Adyar, Chennai is being strengthened by providing essential infrastructure like X-ray, operation table, etc., at a cost of Rs.20.00 lakhs.
10. To improve the first-aid and breeding coverage, 55 Visiting Sub-centres have been opened.
11. Government has permitted to recruit and to train 425 individuals and post them as Livestock Inspectors. Training for 110 individuals who were selected on compassionate grounds, is under progress at District Livestock Farm, Hosur.

### **New Programmes for 2008-09**

#### **Under National Agricultural Development Project**

A sum of **Rs.1.57 crores** has been sanctioned towards identification and traceability of breedable bovine population so as to monitor and improve the conception rates of the bovines. Implementing the scheme to 9 lakh bovines will benefit large number of farmers.

#### **Under Part II Scheme**

1. It is proposed to provide, Sheep units each unit comprising of 20 ewes and one ram, with 50% subsidy to Self Help Groups in the districts of Thoothukudi and Ramanathapuram in all the 23 blocks with the Government's share of **Rs.60.00 lakhs**.
2. It is proposed to create sustainable livelihood opportunities to the rural poor by providing backyard poultry units to Self Help Groups at a cost of **Rs.15.00 lakhs** in Dindigul, Pudukottai, Ramanathapuram, Sivagangai and Thoothukudi districts.
3. It is proposed to undertake vector control operations for control of Blue Tongue disease in Tirunelveli, Thoothukudi, Madurai, Dindigul and Erode districts at a cost of **Rs.15.00 lakhs**, since it is a viral disease affecting Sheep and is particularly prevalent in the southern districts of Tamilnadu causing economic losses through mortality and morbidity of small ruminants. So far there is no sufficient vaccine available for protecting the Sheep population and hence, vector control measures are the only way to prevent the disease.
4. 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 at a cost of **Rs.6.00 lakhs** that will chop the fodder there by reducing the wastage.

5. It is proposed to provide telephone facilities to 16 Animal Disease Intelligence Units (ADIU) which are not having the telephone facility at a cost of **Rs. 2.24 lakhs**. By this, the information regarding disease outbreaks can be immediately passed on to the ADIU's so that necessary control and containment operations can be undertaken immediately. Further, since all the ADIU's are being provided with computers with internet connectivity, availability of a telephone connection will help in accessing the latest information regarding the guidelines and protocols for disease control measures.
6. It is proposed as a pilot programme to provide Genetic upgradation of Goats by artificial insemination in Vellore and Thoothukudi districts in collaboration with Tamil Nadu Veterinary and Animal Sciences University at a cost of **Rs.2.00 lakhs**.

### **State and Central Government Schemes:-**

#### **Centrally Sponsored Scheme**

#### **Support to Training and Employment Programme for Women (STEP)**

The Government of India introduced 'STEP' scheme at a total cost of Rs.649.464 lakhs to improve socio economic conditions of poor rural women belonging to SC / ST, asset-less women and self help groups. The grant in aid of Rs.584.518 Lakhs will be met by GOI as its 90% share and the balance 10% share of Rs.64.946 Lakhs to be met by the implementing Agency.

This Scheme is implemented in seven District Co-operative Milk Producers' Unions viz. Salem, Erode, Dharmapuri, Vellore, Villupuram, Coimbatore and Trichy comprising 14 Revenue Districts.

The Government of India has released so far a sum of Rs.425.838 lakhs grant-in-aid for 1st and 2nd year and the amount was utilized. The third year grant-in-aid of Rs.158.680 lakhs is awaited from GOI for completion of the scheme.

The targeted 145 Women Dairy Co-operative Societies have been organized and 10150 women members have been enrolled. The average milk procurement from STEP societies is 22,439 Litres per day with an average income of Rs.61/- per day per beneficiary.

**Intensive Dairy Development Programme**

The Government of India has accorded sanction for Rs.312.15 lakhs to Sivagangai District Co-operative Milk Producers' Union as 100% grant to implement 'Intensive Dairy Development Programme' in Sivagangai and Ramanathapuram Districts. During this year Rs.102.14 lakhs has been received and utilized. The objective of this programme is to improve milk procurement, milk sales, creation of infrastructure required for milk processing and marketing, extension of input activities and manpower development in districts for a period of five years.

During the current year, Government of India has sanctioned Rs.554.06 lakhs to Tirunelveli and Rs.291.77 lakhs to Kanyakumari DCMPUs. So far Rs.204.53 lakhs has been received for Tirunelveli union and fully utilized. Kanyakumari union has received Rs.49.83 lakhs grant and fully utilized.

Similarly, the Government of India has accorded administrative approval on 11.10.2007 for the implementation of 'Intensive Dairy Development Programme' in Thanjavur DCMPU for the benefit of Thanjavur, Thiruvarur and Nagapattinam Districts at an outlay of Rs.867.624 Lakhs. As against first year grant of Rs.210.284 Lakhs, Thanjavur union has received Rs.125 Lakhs and utilized.

The above programme has benefited 2.24 lakhs milk producers of 849 functional societies in eight Revenue Districts. The average milk procurement by Unions is 1.31 LLPD and average milk sales to consumers are 1.17 LLPD. In the above southern districts, 71 new milk societies have been organized and 54 dormant milk societies have been made functional. In total, 2518 milch animal loans have been sanctioned and released to improve milk procurement.

**Strengthening Infrastructure for Quality and Clean Milk Production**

The Government of India sponsored a scheme called 'Strengthening Infrastructure for Quality and Clean Milk Production' to strengthen infrastructure facilities and to ensure Clean milk production at village level on 100% grant. The period of the scheme is two years and above.

The objective of the scheme is to train farmers on clean milk production, to provide chemicals and utensils to members, to strengthen district union dairies / chilling centres laboratory and to install bulk milk coolers at societies to improve initial quality of milk.

The amount was utilized for training, provision of antiseptic solutions, and supply of stainless steel utensils and modernization of Quality Control Laboratories at Dairies / Chilling Centres. The Government of India gives 75% as grant for installation of bulk milk coolers and the remaining 25% is met by the concerned beneficiary District Unions.

So far under this scheme, Rs.1351.37 lakhs was sanctioned to Vellore, Villupuram, Trichy, Dharmapuri, Salem, Kancheepuram-Tiruvallur, Erode, The Nilgiris, Madurai and Dindigul milk Unions. Out of the total project cost sanctioned, Government of India grant portion is Rs.1102.45 lakhs and balance Rs.248.93 lakhs has been contributed by implementing union. 1st year grant of Rs.445.15 lakhs has been received and utilized. Second year grant of Rs.507.80 lakhs and balance of Rs.24.19 lakhs is awaited from Government of India.

### **Field Performance Recording Programme**

Field Performance Recording system is being implemented by the Federation with the financial assistance of Government of India through the Tamilnadu Livestock Development Agency (TNLDA) for production of crossbred bulls required for breeding milch animals belonging to Milk Producers. It is implemented in seven milk unions viz, Vellore, Salem, Erode, Coimbatore, Trichy, Madurai and Tirunelveli.

Under this programme, cows with a peak milk yield of 14 litres and above per day are identified, impregnated and on calving, their milk yields are recorded. Among the milk recorded animals, the high yielding cows are used as Bull Mothers for production of crossbred bulls.

Milk recording has been completed in 810 animals. 62 male calves are born and nineteen male calves have been purchased as breeding bulls and reared by TNLDA.

Government has released its share of Rs.100 lakhs and a matching sanction is expected from Government of India. The Dindigul District Co-operatives Milk Producers' Union has submitted proposal of the same scheme for Rs.180 lakhs.



## State Government Schemes

### Tsunami Emergency Assistance Programme Schemes

- 160 Milk Producers' Co-operative Societies are functioning in Tsunami affected coastal districts. Stainless steel milk cans, stainless steel milk collection kit, milk testing equipments, furniture, display board along with books and forms are provided to facilitate milk procurement economic activities.
- 9230 litres of milk per day is produced and marketed by self-help-group members generating regular daily income. Out of Rs.80 lakhs received as 100% grant from Asian development bank through rural development and panchayatraj department Rs.31 lakhs has been utilized. The scheme is under progress and anticipated for completion soon.
- Nine Bulk milk coolers are under process of establishment with Rs.153 lakhs financial support from Asian Development Bank through Tsunami Emergency Assistance Project implementation unit of Rural Development and Panchayatraj Department
- Infrastructure assistance worth of Rs.169.39 lakhs is provided to 37 marketing skill developed self help group members for the sale of milk and milk products. 14 Self-Help-Group members received infrastructure like milk parlours and started milk and milk product sales. Three Self-Help-Group members started milk sales economic activity. Rs.108 lakhs is being utilized and balance utilization is under progress.
- Orientation training by National Dairy Development Board Training Center at Erode to 49 district level tsunami scheme implementing officials and non-government agency representatives has been provided at a total cost of Rs.1.79 lakhs
- Exposure training for 641 members, orientation and skill development workshop for 381 members and Study tour to Salem and Erode milk product producing dairies for 377 members of self help groups selected for parlour economic activity have been completed at a total cost of Rs.4.31 lakhs.
- Exposure training to 660 members, clean milk production and dairy animal management training to 3936 members of Self-Help-Groups selected for milk society economic activity have been completed at a total cost of Rs.5.30 lakhs.

## **Part - II Schemes for the Year 2007-2008**

For the year 2007-08, an amount Rs.418.00 lakhs was sanctioned for the benefit of milk producers of Tamil Nadu. This is the highest allocation under part II in recent times. State Government's Share is Rs.218.00 lakhs and balance amount of Rs.200.00 lakhs is met by the beneficiary Unions / Societies. The scheme is under progress at various stages.

- a) 5000 Stainless Steel Milk Cans will be purchased at the rate of Rs.4000 per can and supplied to 1000 Milk Producers' Co-operative Societies at a total cost of Rs.200 lakhs. The Government sanctioned Rs.100 lakhs as subsidy.
- b) The Government have provided 50 Stainless Steel Milk Collection Kit containing Stainless Steel Materials like Stainless Steel Collection Trays, Funnel, Filter Units, Measures and Sample bottles for milk testing at the rate of Rs.6000 per kit to the 50 Milk Producers' Co-operative Societies. The total cost of the above kit works out to Rs.3.00 lakhs.
- c) The Government has sanctioned money for the installation of 10 Bulk Milk Coolers of 5000 litre capacity at Milk Producers' Co-operative Societies. The cost of each Bulk Milk Cooler is Rs.20 lakhs and the total cost works out to Rs.200 lakhs out of which Rs.100 lakhs is the Government grant.
- d) The Government has sanctioned money for the installation of 10 PC based milk collection station at the rate of Rs.1.50 lakhs to 10 MPCS. The entire amount of Rs.15 lakhs is Government grant.

### **Thiruvannamalai Dairy and Milk Powder Plant**

The Government has given administrative approval for the establishment of two lakhs litre handling capacity dairy and a powder plant with capacity of 20 MTs. The total project cost is Rs.2931 lakhs of which the Government share is Rs.146.57 lakhs. The remaining portion is NABARD loan. Out of the total project cost Rs.1076.52 lakhs have been released by Government during the year 2007-08.

## **Vision for the Year 2008-09**

### **New Schemes**

1. **“Perarignar Anna Centenary Dairy Scheme for Rural Women”** (PACDSRW). To increase the milk production in Tamil Nadu as well as to increase income of the Milk Producers, a new scheme called “Perarignar Anna Centenary Dairy Scheme for Rural Women” will be implemented.

Under the scheme 10,000 cross bred milch animals will be provided to rural women self-help-groups at a cost of Rs.22.00 crores for a period of two years through Tamil Nadu Co-operative Milk Producers' Federation Limited which will benefit 5,000 women in 200 villages.

2. It is proposed to create a welfare fund named "Peraringnar Anna Centenary Milk Producers' Welfare Fund" for the benefit of Milk Pouring Members from this financial year. The Milk Pouring Members have to pay Re.1/- per month for the fund and matching fund will be shared and paid by the MPCS and the District Unions. The fund will be utilized to help the Milk Pouring Members and their families during the time of dislocation in milk supplies to the Societies owing to fatal accidents, hospitalization of the members, disability and also expenses towards marriage of the member's daughter and education expenses of their children.

#### **Organization / Revival of Mpcs**

It is proposed to organize 250 MPCS and revive 100 MPCS during the year 2008- 09.

#### **Milk Procurement**

It is proposed to procure 28 Lakh litres of milk per day during the year 2008-09.

#### **Milk Marketing**

It is proposed to market 10.30 LLPD of milk in Chennai metro during 2008-09. At District union level, it is proposed to market 10.00 LLPD of milk.

#### **Expansion of Processing Capacity**

Rs.2364 lakhs worth of equipments and related work for creation of additional infrastructure for increasing milk handling, processing, packing etc., will be completed in the year 2008-09. Feeder Balanced Dairies will be strengthened to act as regional suppliers of milk and milk products.

#### **Installation of Bulk Milk Cooling Centres**

131 bulk milk coolers is proposed to be installed and made operational during the year 2008-09.

### **Training of Milk Producers**

29,600 milk producers will be trained at a cost of Rs.37 lakhs under clean milk production activities. 8000 milk producers will be trained at a total cost of 30.00 lakhs on Dairy animal management activities.

### **Animal Health**

It is proposed to set apart with a minimum of 2.5 paise in every 10 paise deducted from administrative cost for purchase of medicine to take care of milch animals belonging to member producers and also for creating 100 mobile veterinary units to provide health cover by engaging veterinarians on contract basis.

### **Technical Training**

It is proposed to establish a technical training centre at Madhavaram to train technical staff of Milk Unions and Federation.

### **Proposed Part- II Schemes 2008-09**

It is proposed to implement the following schemes at a total cost of Rs.110.85 lakhs, out of which Rs.22 lakhs is being the beneficiary share under part II scheme as detailed below:-

- a) Provision of 2000 Stainless steel milk cans @ Rs.2200/- per can to 500 MPCs. The total cost works out to Rs.44 lakhs out of which Rs.22 lakhs is the Government grant and the remaining Rs.22 lakhs will be met by the beneficiary societies.
- b) Provision of 150 stainless steel kits at Rs.6,000/- each to 150 MPCs. The cost works out to Rs.9 lakhs.
- c) Provision of softy ice cream units to three MPCs @ Rs.60,000/-, per unit, Khoa Pan to three MPCs at Rs.25,000/- per unit and Paneer making machine to two MPCs at Rs.50,000/- per unit. The entire amount is Government Grant.
- d) Provision of five Mobile milking machines at Rs.3.25 lakhs per unit to five MPCs. It includes one milking machine and one mini door auto. The cost works out to Rs.16.25 lakhs.
- e) Purchase of computers, Xerox and Fax machines for development of Governance at Commissioner's office at a financial out lay of Rs.7.50 lakhs.
- f) Renovation of training hall in the Commissioner's Office, Dairy Development Department for a financial outlay of Rs.3 lakhs.

- g) Provision of fruit storage-cum-implementation shed for 125 acres orchard at Madhavaram Milk Colony at a cost of Rs.10 lakhs.
- h) Provision of two bore wells with motors to irrigate the usufruct trees in the orchard at a total cost of Rs.3 lakhs.
- i) Provision of four Iron grill gates for fodder farm and orchard at Madhavaram Milk Colony at a cost of Rs.1.60 lakhs.
- j) Establishment of whey drink manufacturing unit in The Nilgiris District Co-operative Milk Producers' Union Ltd., with a financial outlay of Rs.35 lakhs.

#### **5.4.3. Constraints**

- Heavy shortage of fodder
- Non-availability of good pedigree herds
- Distance to dispensaries / hospitals
- Ignorance of farmers on quality milk production
- Lack of knowledge among farmers on scientific calf rearing.
- Sudden Outbreaks of epidemic diseases
- Lack of adequate grazing lands / areas and
- Non-availability of organized markets for selling the animals.

#### **5.4.4. Interventions Recommended**

The district-wise interventions recommended are furnished in what follows.

##### **Coimbatore**

- Feed and Fodder Development of cattle, buffalo, sheep and goat.
- Augmentation of fodder production through SHGs / women entrepreneurs.
- Supply of mineral mixture to dairy cows.
- Supply of by-pass protein feed to the milch animals
- Fodder development activities in 25 IDF villages and 50 acres in farmers field
- Programmed breeding indigenous cattle and buffalo to increase conception rate.
- Strengthening of veterinary institutions with basic facilities
- Buffalo calf development programme
- Control of parasitic diseases through treatment to enhance vaccine response
- PC based automatic milk collection station and
- Supply of stall fed goat unit to SHGs

### **Cuddalore**

- Fodder production by SHGs
- Popularizing mineral mixture to improve livestock production
- Disaster management
- Strengthening of veterinary institutions
- Supply of By-pass protein feed to the milch animals
- Revival of dormant MPCs
- Bulk milk and walk in coolers
- AC based automatic milk collection station to IDF village / milk producer co-operation and
- District level livestock farmers workshop

### **Dharmapuri**

- Fodder production by SHGs
- Popularizing mineral mixture to improve livestock production
- Establishment of 6 x 6 x 4 feet silo to ensile sugarcane tops
- Semi – intensive sheep / goat farming to improve meat production by SHGs
- Renovation of existing veterinary dispensaries
- Programmed breeding of indigenous cattle and buffalo calf development programme
- Supply of mineral mixture to milch animals
- Supply of by-pass protein feed to the milch animals
- Bulk – milk and walk in coolers
- Milk weighing machine for milk producers cooperative societies
- Establishment of model livestock village for educating farmers and
- Renovation of training hall at VUTRC

### **Dindigul**

- Feed and fodder development for cattle, sheep and goat
- Genetic upgradation for cattle, sheep, goat and poultry
- Improvement of livestock health for cattle, sheep, goat and poultry
- Strengthening of Department of dairy development and
- Extension activities

### **Erode**

- Feed and fodder development for cattle and small ruminants
- Genetic upgradation for bovines and small ruminants
- Improvement of livestock health
- Processing and marketing facilities
- Extension facilities for livestock farming
- Supply of stall fed goat and
- Strengthening of PDDL, Erode

### **Kancheepuram**

- Augmentation of fodder production through SHGs / Women entrepreneurship
- Strengthening of veterinary institution with basic facilities
- Control of parasitic diseases through treatment to enhance vaccine response
- Establishment of mobile veterinary clinic
- Programmed breeding of indigenous cattle and buffalo to increase consumption rate
- Buffalao calf development programme
- Bulk milk and walk-in-colleres
- Strengthening of buffaloe breeding farm and
- Strengthening of pig breeding farm

### **Kanyakumari**

- Feed and fodder development for cattle, sheep, goat, poultry and pigs
- Genetic upgradation for cattle, buffalo, sheep, goat, poultry and pigs
- Improvement of livestock health for cattle, buffalo and poultry
- Processing facilities for cattle and buffalo and
- Extension facilities for cattle, buffalo, sheep, goat and poultry

### **Karur**

- Feed and fodder development for cattle and buffalo
- Genetic upgradation for cattle and buffalo
- Improvement of livestock health for cattle and buffalo
- Processing facilities for cattle and buffalo
- Extension facilities and
- Development of Chinese hatches in Thirukampuliyur, Government Fish farm

### **Krishnagiri**

- Feed and fodder development for cattle, buffalo, sheep, goat, poultry, pig and others
- Genetic upgradation for cattle and buffalo and
- Extension activities

### **Madurai**

- Augmentation of fodder production through SHGs / livestock farmers
- Fodder development activities in 100 IDF villages and in farmers field
- Establishment of cattle feed plant
- Supply of by-pass protein feed to the milch animals
- Control of parasitic diseases through treatment to enhance vaccine response
- Walk-in and bulk milk coolers
- PC based automatic milk collection stations to IDF villages / milk producers cooperative societies and
- Semi intensive sheep / goat farming to improve meat production by SHGs

### **Nagapattinam**

- Popularizing mineral mixture to improve milk production
- Fodder production by SHGs
- Supply of mineral mixture to milch animals at subsidized rate
- Supply of by-pass protein feed to the milch animals
- Mobile veterinary clinic
- Disaster management
- Control of parasitic diseases through treatment to enhance vaccine responses
- Infrastructure improvement of veterinary institution
- Programmed breeding of indigenous cattle and buffalo to increase conception rate and
- Bulk milk and walk – in coolers

### **Namakkal**

- Fodder production by SHGs
- Popularising mineral mixture to improve live stock production
- Establishment of AIDU along with mobile veterinary diagnostic laboratories.
- Semi-intensive goat farming to supply germ plasm by SHGs
- Identification and traceability of Breedable bovine population



- Renovation of existing veterinary dispensaries
- Supply of ELISA kits to PDDL to establish NAI free poultry farms
- Programmed breeding of indigenous cattle and buffalo to increase conception rate
- Buffalo calf development programme
- Supply of by-pass protein feed to the milch animals
- Fodder development activities in 100 IDF villages and in farmers' fields
- Milk weighing machine for milk producers co-operative societies
- Strengthening of infrastructure for sheep and goat at VC & RI, Namakkal farm to distribute germ plasm
- Establishing model livestock villages for educating farmers and
- Establishment of value added symbiotic and conventional dairy food manufacturing unit cum instructional dairy plant at VC & RI, Namakkal.

**Perambalur (including Ariyalur)**

- Perennial fodder production and 10 acre / block / year and for four years
- Mobile veterinary clinics at @ one per taluk for ten taluks
- Distribution of bucks and rams
- Fodder development activities in IDF villages and in Farmers fields
- Popularizing mineral mixture to improve livestock production
- Control of parasitic diseases through treatment to enhance vaccine response
- Animal intelligence unit for health cover
- Identification and traceability of bovines
- Supply of mineral mixture to milch animals at subsidized rates
- Supply of by-pass protein feed to milch animals
- Bulk-milk and walk-in-coolers
- Infrastructure development of veterinary institution
- Revival of dormant milk producers co-operative societies and
- Milk weighing machine to milk producers cooperative societies

**Pudukottai**

- Feed and fodder development for cattle and buffalo
- Genetic upgradation for cattle and buffalo
- Improvement of livestock health for cattle and buffalo

- Processing facilities for cattle and buffalo and
- Extension facilities

### **Ramanathapuram**

- Fodder development for cattle, buffalo, sheep, goat and poultry
- Mobile input units
- Supply of mineral mixture and by pass protein feed
- Portable milking machines for farmers
- Bulk and walk in milk
- Farmers study tour
- Skill development for technical staff and
- Establishment of training centre for capacity building

### **Salem**

- Fodder production by SHGs
- Popularizing mineral mixture to improve livestock production
- Identification and traceability of breedable bovine population
- Semi-intensive goat farming to supply germplasm by SHGs
- Control of parasitic disease through treatment to enhance vaccine response
- Renovation of existing veterinary dispensaries
- Programmed breeding of indigenous cattle and buffalo to increase conception rate
- Buffalo calf development programme
- Supply of mineral mixture to milch animals at subsidized cost
- Revival of dormant milk produces co-operative societies
- Milk weighing machine for milk producers cooperative societies
- PC based automatic milk collection stations in IDF villages / MPCs
- Strengthen infrastructure for sheep at Mecheri sheep research station
- Fodder development at Mecheri Sheep Research Station and
- Establishing model livestock village for educating farmers.

### **Sivagangai**

- Fodder production by SHGs
- Mobile veterinary clinics
- Popularizing mineral mixture to improve livestock production

- Renovation of existing veterinary dispensaries
- Improvement of District Livestock Farm (livestock and fodder component)
- Programmed breeding indigenous cattle and buffalo to increase conception rate and
- Bulk milk coolers

#### **Thanjavur**

- Fodder development at District Livestock Farm, Orathanad
- Fodder production by SHG
- Supply of by-pass protein feed to the milch animals at 50 per cent subsidized cost
- Production of fodder seed / sheep in dairy or chilling centres and land of DDD
- Control of parasitic disease through treatment to enhance vaccine response
- Programmed breeding indigenous cattle and buffalo to increase conception rate
- Bulk and walk in milk coolers
- P.C. based automatic milk collection station to IDP villages / MPCS
- Establishment of quarantine facilities, strengthening of bull sheds, calf sheds and semen production at Exotic cattle breeding farm at Eanchankottai and
- Renovation of existing veterinary institutions

#### **Theni**

- Augmentation of fodder production through SHG / livestock farmers
- Fodder development activities in 100 SDF villages and in farmers field
- Mobile veterinary clinics
- Supplementation of mineral mixture to prevent infertility and augment production to farmers
- Supply of bypass protein feed to the milch animals
- Control of parasitic diseases through treatment to enhance vaccine response
- Bulk and walk-in milk protein
- PC based automatic milk collection station to IDF villages / MPCs
- Strengthening of veterinary institution with basic facilities and
- Semi-intensive sheep / goat farming to improve meat production by SHGs.

#### **Thoothukudi**

- Augmentation of fodder production through SHGs / women entrepreneurs
- Fodder development activities in IDF villages and farmers field

- Supply of mineral mixture to dairy cows
- Supply of by-pass protein feed to the milch animals at 50 percent subsidized cost
- Establishment of mobile veterinary clinics in each taluk
- Strengthening of veterinary institution with basic facilities
- Control of parasitic diseases through treatment to enhance vaccine response
- Bulk and walk-in-coolers
- Supply of Nandanam chicken backyard worth to SHG and
- Supply of piggery units to farmers.

### **Tiruchirappalli**

- Fodder development for cattle, buffalo, sheep and goat
- Genetic upgradation for cattle, buffalo, sheep, goat and poultry
- Improvement of livestock health
- Processing facilities and
- Extension facilities for cattle, buffalo, sheep, goat and poultry.

### **Tirunelveli**

- Feed and fodder development for cattle, buffalo, sheep and goat
- Genetic upgradation for cattle, buffalo, sheep, goat and poultry
- Improvement of livestock health for cattle, buffalo and poultry and
- Processing facilities for cattle and buffalo

### **Tiruvallur**

- Augmentation of fodder production through SHGs / women entrepreneurs
- Supply of mineral mixture to dairy cows
- Identification and traceability of breedable bovines
- Establishment of mobile veterinary clinics
- Strengthening of veterinary institutions with basic facilities
- Establishment of Animal Disease Intelligence Unit
- Supply of stall-fed goat units to SHGs
- Programmed breeding indigenous cattle and buffalo to increase conception rate
- Buffalo calf development
- Mobile input units

- Revival of dormant MPCs
- Fodder development activities
- Sensitization of public on dairy activities
- Product production and delivery facilities
- Operational efficiency improvement for dairying
- Strengthening of University Research Farm, Madhavaram Milk Colony
- Establishment of livestock and poultry entrepreneurship development complex
- Improving the productivity of the sheep through introduction of exotic germplasm
- Strengthening of infrastructure for Central University Laboratory and
- Development of inactivated vaccine for Avian infectious Bronchitis.

### **Tiruvannamalai**

- Fodder production by SHGs
- Popularizing mineral mixture to improve livestock
- Intensive sheep / goat farming
- Traceability of breedable bovines
- Strengthening of veterinary institutions
- Buffalo calf development programmes
- Supply of mineral mixture to the milch animals
- Revival of Dormant MPCs
- Milk weighing machine for milk producers cooperative societies
- P.C. based automatic milk collection stations and
- Establishment of VVTRC at Tiruvannamalai.

### **Tiruvarur**

- Fodder development at District Livestock Farm
- Perennial fodder production
- Popularizing mineral mixture to improve livestock production
- Supply of mineral mixture to milch animals at subsidized price
- Supply of by-pass protein feed to the milch animals at subsidized price
- Control of parasitic diseases through treatment to enhance vaccine responses
- Mobile veterinary clinics

- Disaster management
- Programmed breeding of indigenous cattle & buffalo to increase conception rate
- Establishment of Animal Disease Intelligence Unit and
- Bulk and Walk in milk coolers.

#### **Vellore**

- Fodder production by SHGs
- Popularising mineral mixture
- Strengthening of veterinary institutions
- Identification and traceability of Breedable bovine population
- Genetic upgradation of livestock in Mukundarayapuram sheep farm
- Buffalo calf development programmes
- P.C.based automatic milk collection stations and
- Creation of infrastructural facilities for conduct of farmers' meet at VVTRC, Vellore.

#### **Villupuram**

- Augmentation of fodder production through SHGs / women entrepreneurs
- Supply of mineral mixture to dairy cows
- Identification and traceability of breedable bovines
- Establishment of mobile veterinary clinics
- Strengthening of veterinary institution with basic facilities
- Strengthening of sheep farm at Chinna Salem
- Supply of stall fed goat units to SHGs
- Programmed breeding of indigenous cattle and buffalo to increase conception rate
- Mobile input units
- Buffalo calf development programme
- Supply of mineral mixture to the milch animals at subsidized rate
- Supply of by-pass protein feed to the milch animals at subsidized rate
- Bulk and walk-in-milk coolers
- Revival of dormant MPCs
- Milk weighing machine for MPCs and
- Milk pouch film manufacturing facilities

**Virudhunagar**

- Fodder production by SHGs
- Identification and traceability of breedable bovine population
- Mobile veterinary clinics
- Popularizing mineral mixture to improve livestock production
- Control of parasitic disease through treatment to enhance vaccine response
- Renovation of existing veterinary dispensaries
- Improvement of sheep farm, Sattur (Livestock component) and
- Bulk and walk-in-milk coolers.

**5.5. Fisheries Sector****5.5.1. Issues**

- Inland fisheries development is yet to make a headway
- Socio-economic upliftment of the fisher men and fisher women
- Improvement of processing infrastructure facilities
- Development of cold / refrigerated / insulated transport facilities
- Development of retailing services and retail points
- Provision of fishing gadgets at subsidized prices
- Training of farmers venturing into fish farming and
- Training to the fisher-folk on scientific fish farming / sea ranching etc.
- Sustainable fish production
- Strengthening infrastructural facilities for fish landing
- Reduction of post-harvest losses
- Encouragement of integrated fish farming, cage farming and several leg fish farming and
- Production of sea ranching and artificial reefs

**5.5.2. Ongoing Schemes**

Tamil Nadu is one of the important coastal States in the East coast, having a coastline of 1,076 kms with 13 Coastal Districts and 591 fishing villages. It ranks fourth in fish production in the country. It has a continental shelf of 41,412 sq. kms and an Exclusive Economic Zone spreading over 0.19 million sq. kms. Tamil Nadu has a total

fishermen population of 0.69 million of which 0.262 million are actively engaged in fishing. The Fisheries department is implementing the following schemes for the welfare of the fishermen (both inland and marine).

### **1. Fishermen Free Housing Scheme**

Under the Fishermen Free Housing Scheme, Government sanctions 2000 houses yearly to marine and inland fishermen who are below the poverty line, subject to the following conditions:

- the fisherman should be a member of the Fishermen Co-operative Society and should be below the poverty line
- the fisherman should live in huts or Katcha houses and
- the fisherman should own three cents of land

Apart from this, the Government of India sanctions the construction of houses, community halls and tube wells under the centrally sponsored scheme of “Development of Model Fishermen Village” shared between the State and Central Governments on 50: 50 basis.

### **2. National Savings-cum-Relief Scheme for Marine Fishermen**

Under this scheme, as per Government of India norms, a sum of Rs.75/- per month shall be collected from the beneficiary fisherman for a period of eight months in a year. The total sum of Rs.600/- thus collected will be matched with 50% contribution i.e. Rs.300/- each by the State and Central Governments. Thus, a sum of Rs.1200/- will be disbursed to the beneficiary during the four lean months.

### **3. Savings-cum-Relief Scheme for Fisherwomen**

Under this scheme, a sum of Rs.75/- per month should be collected from the beneficiaries for eight months in a year. The total sum of Rs.600/- thus collected will be matched with 100% contribution i.e., Rs.600/- by the State Government. Hence, a sum of Rs.1200/- (Beneficiary contribution and State Government share) will be disbursed to the beneficiary during the four lean months at the rate of Rs.300/- per month.



#### **4. Tamil Nadu Fishermen Group Insurance**

Under this scheme, both the State and Central Government will pay the total annual Insurance premium of Rs.14/- per beneficiary fisherman. No premium is collected from the fishermen. The premium is being shared equally on a 50:50 basis by the State and Central Governments. Under this scheme, the fisherman will be given Rs.50,000/- in case of death / permanent disability and Rs.25,000/- for partial disability.

#### **5. Assistance to fishermen for purchase of Diesel**

To alleviate the sufferings of the mechanised fishing boat operators, the Government reimburses the excise duty by way of subsidy towards the purchase of HSD to bring down the running cost of mechanised fishing boats. Government of India has sanctioned Rs.3.00 crores as subsidy for 2007-08 as 100% assistance.

#### **6. Sales Tax Exemption on sale of High Speed Diesel to Fishermen**

A scheme for the fishermen of Tamil Nadu involved in fishing activities with mechanised boats and motorised country crafts was announced with 100% exemption of payment of Sales Tax for the purchase of High Speed Diesel. Accordingly, 15,000 litres of sales Tax Free Diesel per Mechanised Boat per year and 3000 litres of Sales Tax Free Diesel per country craft per year is supplied.

#### **7. Construction of mechanised fishing boats**

The Government is providing subsidy of Rs.20,000 towards the purchase of outboard motors to be fitted in the traditional crafts of fishermen. So far, the Department has provided 18,470 OBM / IBE to the fishermen.

#### **8. Tamil Nadu Fishermen Welfare Board**

A new scheme for establishing a separate Welfare Board for the welfare of fishermen, on the same lines as the Welfare Board for Agricultural Labourers was announced in the Tamil Nadu Legislative Assembly on 20.1.2007 by His Excellency the Governor of Tamil Nadu. In the Budget Speech on 23.3.2007 the Hon'ble Minister for Finance announced that all benefits given under the landless agricultural labourers and farmers (social security and welfare schemes) will be extended to the fishermen also. Women who are engaged in activities like drying and sale of fish will also be covered under the above scheme. Government has sanctioned a sum of Rs.500.00 lakhs for this purpose.

**9. Work under Tsunami Emergency Assistance Project - (TEAP)**

The following works are carried out under TEAP.

- a) Repairs and Rehabilitation of FLCs/FH
- b) Dredging works and
- c) Investigation Studies on Cuddalore backwaters

**10. World Bank aided Emergency Tsunami Reconstruction Project (ETRP)**

An amount of Rs.80.60 crores has been allotted under World Bank aided ETRP for the following works:

- a) Reconstruction and modernisation of four fishing harbours
- b) Permanent opening of four bar mouths
- c) Construction of two new fish landing centres
  - (i) Nagoor
  - (ii) Annankoil
- d) Seamless communication Network in 13 Coastal Districts and
- e) Assistance to aqua farms / hatcheries

**11. Establishment of Fish Farmers' Development Agency (75:25)**

Tamil Nadu is having 12 FFDA's covering most of the districts to promote the inland fish culture activities. The main objective of the FFDA is to popularise scientific fish culture activities by giving training, technical guidance and subsidy so as to encourage the farmers to venture into this profession as well.

**12. Brackishwater Fish Farmers' Development Agency (50:50)**

The changing scenario in the shrimp industry has made it necessary to take up a 'Census of Coastal Aqua Farms'. From the year 2006-07, the Department initiated steps to take census of shrimp aqua farms. To promote shrimp aquaculture, the Government is providing necessary subsidy assistance under Centrally Shared Scheme at Rs.40,000/- per hectare to small farmers having land holding of less than two hectares.

There are five Brackishwater Fish Farmers Development Agencies in the State at Thoothukudi, Nagapattinam, Thiruvallur, Ramanathapuram and Cuddalore Districts.

### **13. Extension and Training**

Department of Fisheries is carrying out various extension activities such as conducting training on various culture activities, demonstration of mud crab fattening, lobster fattening, seaweed culture, etc., Under Centrally Sponsored shared Scheme (80:20), it is proposed to establish one awareness centre and three training centres in the State.

### **14. Swarna Jayanthi Gram Swarozgar Yojana (SGSY)**

The SGSY project has been funded by Department of Rural Development at a cost of Rs.28.16 crores. The project will be implemented in the 12 Coastal Districts of Tamil Nadu in two phases within three years.

### **15. World Bank funded IAMWARM Project**

IAMWARM, envisions at improving the productivity of water and agriculture for enhancing the farm income by convergence of the line Department activities using water in an integrated approach. The IAMWARM project is a World Bank funded project,

- to improve the efficiency of water use
- to improve sustainable farm income and
- to improve water resources management

With these objectives, it is proposed to develop the line department activities in 63 sub-basins, and a base cost of Rs.17.3 crores has been approved by World Bank towards fisheries component.

The following activities are undertaken in this project.

1. Aquaculture in Farm ponds
2. Fish Seed rearing in cages
3. (a) Improvement to Govt. Fish seed farm (b) Construction of Fish Seed Bank
4. Ornamental fish culture
5. Supply of fishing implements
6. Kiosks and
7. IEC & CB, HQ cell etc.,

Nine sub basins Spill over works and Implementation of fisheries activities in 16 sub basins will be undertaken during the year 2008-09.

## **16. National Agriculture Development Programme**

Under this scheme, the following components have been taken up for implementation.

1. Fish Culture in Check Dams under Forest Department involving Village Forest Council.
2. River Ranching as a measure of conservation of endangered / endemic species
3. Repair and renovation of existing fish seed farms
4. Creation of additional space for fish seed production and rearing
5. Cage culture of fishes in Inland water bodies
6. Study tour of farmers
7. Upgradation of extension centres in Tamil Nadu and
8. Setting up of modern fish stalls in major cities in Tamil Nadu

## **17. Development of Landing Facilities**

- a) Construction of Fishing Harbour at Thengapattinam in Kanniyakumari District
- b) Construction of Fishing Harbour at Colachel in Kanniyakumari District and
- c) Fishing Harbour at Poompuhar

## **18. Restoration works in the Fishing Harbour/Fish Landing Centre in Tamil Nadu**

Restoration work in FLC at Mudasalodai, Kottaipattinam, Nagapattinam, Mallipattinam and Fishing Harbours in Cuddalore, Thondi, Thoothukudi and Chinnamuttom were completed.

## **19. Restoration & Reconstruction Works at Chennai Fishing Harbour**

The restoration and reconstruction works in Chennai Fishing Harbour is being carried out through Chennai Port Trust.

## **20. New Schemes- 2008-09**

The following schemes have been sanctioned under Part II Schemes for the year 2008-09.

1. Setting up of Distress Management Cell in Head Office
2. Pilot Project on issue of Smart Cards to fishermen of Rameswaram in Ramanathapuram District
3. Supply of inverters to the Offices of the Assistant Director of Fisheries (Marine) in 13 Coastal Districts
4. Provision of two solar lights each in 11 Fish Landing Centres
5. Installation of artificial reefs in the inshore areas of Tamil Nadu Coast
6. Sea Ranching of Shrimp Seeds for Stock Enhancement
7. Pilot Project on Demonstration of Cage Farming in Inland Water Bodies
8. Seed Transport Facility for Government Fish Seed Farm
9. Upgradation of the Existing Fish Seed Farm at Krishnagiri and
10. Subscribing to All International Magazines relevant to Fisheries to Central Library of Commissionerate.

## **21. New Announcements 2008-09**

### **1. Establishment of Fishers Institute of Tamil Nadu**

To provide technical assistance and training to marine fishers to take up activities in diversified fishing methods, marine cage culture and crab culture including sea weed farming and for adoption of proper fish processing technique by fisherwomen, a Fishers Institute of Tamil Nadu would be established as a World class facility with the participation of major corporates like TATA Group.

The following are the major activities that would be taken up by the proposed Fishers Institute of Tamil Nadu.

- ❖ Sea farming
- ❖ Sea weed culture for the Self Help Groups
- ❖ Fish processing in value-added consumer pack and
- ❖ Diversified fishing with carrier vessel Operation

### **22. Grant of Relief Assistance to Marine Fishermen Families during Fishing Ban Period**

A sum of Rs.500/- has been paid to the families of the fishermen during the ban period as relief assistance.

**23. Tamilnadu State Apex Fisheries Co-Operative Federation Ltd.**

Tamil Nadu State Apex Fisheries Co-operative Federation Ltd was registered and started functioning from 6.11.1991 with head quarters at Chennai. At present, 589 Primary Fishermen Co-operative Societies and nine district Fishermen Co-operative Federations have become members in TAFCOFED and have paid Rs.89.055 lakhs as share capital. To uplift the socio-economic status of traditional fishermen, TAFCOFED had been implementing Integrated Marine Fisheries Development Project with financial assistance from NCDC. Under this project, TAFCOFED distributed fishing inputs consisting of fishing crafts, engines and gears to the members of the Fishermen Co-operative Societies.

**24. Tamil Nadu Fisheries Development Corporation Ltd.**

Tamil Nadu Fisheries Development Corporation Limited was established in 1974 with authorized Share Capital of Rs.500.00 lakhs and the paid up Share Capital as on date is, Rs.445.52 lakhs.

The Corporation undertakes the following activities:

1. Fish culture in Reservoirs
2. Fish Seed Production
3. Fish Processing
4. Diesel outlet
5. Fish Marketing
6. Fish net making factory
7. Shrimp Hatchery at Neelankarai
8. Model Shrimp farm at Karangadu
9. Production and marketing of Ornamental fishes and
10. Supply of OBM / IBE under subsidy to motorised the traditional fishing crafts

## 5.5.2.1 Ongoing Schemes-Fisheries Sector

Sl. No.	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
<b>I. SCHEMES UNDER TSUNAMI RELIEF</b>							
World Bank assisted schemes under Emergency Tsunami Reconstruction Project (ETRP)							
1	a) Reconstruction and modernisation of 4 fishing Harbours 1) Mallipattinam fishing harbour 2) Nagapattinam fishing harbour 3) Pazhayar fishing harbour 4) Chinnamuttom fishing harbour	2005-06	G.O.Ms.No:603, Revenue (NC4) Dept Dated:25.10.2005 G.O.Ms.No:56, Revenue (NC4) Dept Dated:4.2.2008	1861.88	21.6	--	Consultancy service for reconstruction and modernization of Fishing Harbour work was entrusted to M/s. SMEC International (P) Ltd., Australia. The contract agreement was signed on 6.9.2007. M/s. SMEC International (P) Ltd., Australia submitted the final inception report, existing condition and conceptual design of four fishing harbours. Further studies are in progress. After completion of studies, the project will be completed in a period of 18 months.  Project Cost: Rs.35.48 crores Amount sanctioned and released: Rs.18.618 crores
	b) Permanent opening of 4 bar mouths 1) Pulicat lake 2) Uppanar river 3) Vellar river 4) Tamaraparani river	--	G.O.Ms.No:603, Revenue (NC4) Dept Dated: 25.10.2005	100	14.6	--	Consultancy service for permanent opening of bar mouths was entrusted to M/s. WAPCOS, Gurgaon. The contract agreement was signed on 13.3.2007. The firm has completed the studies and furnished Draft final report along with BOQ and Draft EIA report on Pulicat lake, Uppanar river, Vellar rive and Tamaraparani river after incorporating the comments / remarks made by the Department for the project. But the firm didn't attend many of the remarks pointed out by the Department. The comments / remarks made by the field engineers were sent to Consultancy firm for rectification and to send final report.  Project Cost: Rs.19.60 crores Amount sanctioned and released: Rs.1.00 crores

Sl. No	Name of the Scheme	Commenting year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
	c) Construction of 2 new fish landing centres (i) Nagoor	--	G.O.Ms.No:603, Revenue (NC4) Dept Dated:25.10.2005	230	1.2	--	<p>Consultancy service for construction of new fish landing centres was entrusted to M/s. Mahindra Consulting Engineers, Chennai. The contract agreement was signed on 4.5.2007. Final Detailed Project report on the study and EIA report was received from M/s.Mahindra consulting Engineers Ltd on 17.4.2008. District coastal zone management Committee has given environmental clearance for the project and recommended to state coastal zone management Committee for its clearance. Meanwhile District Collector Nagapattinam has sent proposal to Special commissioner &amp; commissioner of land administration for transfer of land required for the project to this department. The Chief Engineer (Regional) WRO, PWD has been addressed for issuing NOC. Tender document was prepared based on the final DPR and sent to PMU for onward transmission to World Bank. On receipt of approval from World Bank, Project will be completed in 18 months.</p> <p>Project Cost: Rs.2.30 crores</p> <p>Amount sanctioned and released: Rs2.30 crores Administrative sanctioned requested for Rs.10.80 crores</p>



Sl. No	Name of the Scheme	Comme-ncing year	G.O. No. and Date	Funds allocated	Achieve-ment	U.C Details	Present Stage
	ii) Annankoil	--	G.O.Ms.No:603, Revenue (NC4) Dept Dated:25.10.2005-	230		--	The consultancy work was awarded to M/s. WAPCOS Gurgon along with consultancy work of permanent opening of bar mouths. The firm has completed the studies and furnished Draft DPR along with BOQ and Draft EIA report for the project and the same were scrutinized and sent to the consultant to attend to the observations made by the department. The consultant has submitted DPR for Fish landing centre at Annakoil on 16.7.2008. After scrutiny, it was found that the consultancy firm has not at all considered this best suitable option (viz Diaphragm wall) for the site condition. Hence the firm has been asked to redo the studies and to furnish report based on the comments furnished by the Department. and the same are under scrutiny by the field engineers for finalization. Project Cost: Rs.2.30crores Amount sanctioned and released: Rs2.30 crores
	d) Project implementation and support		1) G.O.Ms.No.590 Rev.(NC.4) Dept. 21.10.2005 2) G.O.Ms.No.295 Rev.(NC.4) Dept. 24.4.2006. 3)G.O.Ms.No. 542,. Rev. (NCIV.1) dt. 19.9.07.				
	I) Non-recurring	--	--	69.5	27.87	--	
	(a) Computers and accessories	--	--	27.3	19.62	--	Additional computers were purchased through DGS&D.
	(b) Marine Engineering equipments	--	--	24.3	0	--	Work dropped

Sl. No	Name of the Scheme	Commen- -cing year	G.O. No. and Date	Funds allocated	Achiev e-ment	U.C Details	Present Stage
	(c) Survey and levelling equipments	--	--	9.5	0	--	
	(d) Office refurbishing	--	--	8.4	8.25	--	Work completed.
	ii) Recurring	--	--	32.1	29.9	--	
	f) Seamless communication Network for 13 coastal districts (equipments and Office)	--	G.O. yet to be issued	--	--	--	Based upon the EOI the technology suitable to the Marine fishermen for providing the Seamless communication base stations have been finalised. Proposal for sanction of Rs.57.60 crores was sent to OSD for placing before the Empowered committee. The project was considered by the Empowered Committee and after discussion the committee accepted the project in principle and directed the Department of Fisheries to execute the project in 2 phases. In the phase I, a pilot project covering 3 coastal districts covering about 10% of the crafts proposed to be provided with seamless communication facilities can be taken up under TRP. Depending upon the success of the pilot project, the same can be up scaled. As instructed by the Committee, it was decided to implement pilot project in Ramnad District for which proposals has been formulated at a cost of Rs.7.73 crores in consultation with ELCOT. The proposals has been submitted to GOI for approval under TRP by the Government.

Sl. No	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
2	<b>Works under Tsunami Emergency Assistance Project (TEAP) with loan assistance from Asian Development Bank - Fisheries</b>						
	A. Repairs and Rehabilitation of FLCs/FH-	2005-06	G.O.Ms.No. 602 Rev.(NC.4) Dept. 25.10.2005	78.4	76.4	--	All works completed. Reimbursement claim for Rs.76.40 lakhs has been filed with PMU upto the expenditure incurred as on 18.10.2007. After obtaining bank guarantee from the contractor withheld amount was released.
	B. Dredging works 1. Mudasalodai FLC-80.00 lakhs 2. Pazhayar FH -300.00 lakhs 3. Sethubhavachatram-50.00 lakhs and Mallipattinam FLC 4. Kottaipattinam-53.00 lakhs and Jagathapattinam FLC-84.00 lakhs 5. Punnkayal FLC-61.00 lakhs 6. Chinnamuttom FH-72.00 lakhs	2007-08	G.O. to be issued	680	--	--	Estimates to a total value of Rs. 6.80 crores have been sent to PMU for placing before the Empowered Committee for approval. Environmental clearance from the Government of India Ministry of Environment and Forest has been obtained based on the reports obtained from Anna University. Government orders has been issued based on the recommendations of the Empowered Committee to form technical committee with experts. The technical Sub committee met on 2.7.2008 and reviewed the IEE / EMP reports furnished by Anna University. The committee has approved the reports furnished by Anna University with suggestions to be followed during execution.

Sl. No	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
							Necessary proposal for sanction of the works for Rs.7.05 crores was sent to Project Director (ETRP/TEAP) on 8.7.2008. then it was revised based on the instructions of OSD (R&R) to Rs.2.93 crores by dropping the works at Pazhayar, Chinnamuttom and Tamaraparani which are to be taken up under ETRP for construction of Fishing harbours and Bar mouths. Meanwhile, Draft bid documents have been prepared for obtaining ADB's approval. Tenders will be floated as soon as approval from ADB.
	C. Investigation Studies on Cooum, Adayar and Cuddalore	2005-06	G.O.Ms.No. 146, Rev. (NCIV.1) dt. 27.2.2006.	25	0	--	It is planned to conduct study only in Cuddalore backwaters. ADB has approved the evaluation report for conducting studies at Cuddalore backwater through Mahindra Consulting Engineers Ltd. Study consist of Initial Environment Evaluation and Environment Management Plan and preparation of DPR. Agreement executed with the consultancy services on 16.8.2007. M/s. Mahindra consulting Engineers has completed the studies and furnished draft techno economic feasibility report, Bill of quantities, layouts, design calculation and site investigation report on 19.5.2008. The reports received from M/s. Mahindra are under scrutiny.

Sl. No	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
<b>3</b>	<b>RESTORATION WORKS</b>						
	1) Restoration works in the Fishing Harbour/Fish Landing Centre in TamilNadu		G.O.Ms.No. 143, Revenue (NCIII) Department, Dated 3.3.2005. G.O.Ms.No. 189, Revenue (NCIII) Department, Dated 6.4.2005.	718.5	621.1	U.C for Rs.558.50 lakhs was sent to OSD / Government	Restoration work in FLC at Mudasalodai, Kottaiappattinam, Nagapattinam, Mallipattinam and Fishing Harbours in Cuddalore, Thondi, Thoothukudi and Chinnamuttom were completed. In Pazhayar Fishing Harbour, all works had been completed except administrative office building which is nearing completion. Dredging in Ammanar river at Chinnankudi river completed. Superintending Engineer, FHPC, Chennai has been instructed to complete the work immediately and to furnish completion report and Utilization certificate. The balance amount will be surrendered after finalisation of accounts and receipt of completion report.
	2) Restoration & reconstruction works at Chennai Fishing Harbour Sanctioned Amount - Rs.430.50 lakhs. Revised sanction Rs.250.50 lakhs	2004-05	G.O.No.197 Rev. (NC.III) Dept. dt. 8.4.05	250.5	266.39	Utilization certificate for a sum of Rs.221.99 Lakhs has been furnished to OSD by the Chief Engineer, Chennai Port Trust.	The restoration and reconstruction work in Chennai Fishing Harbour is being carried out through Chennai Port Trust. Out of sanctioned Rs.180.00 lakhs, an amount of Rs.172.00 lakhs was remitted back to OSD (R&R) Chennai being the unspent amount allotted for dredging work and Rs.8.00 lakhs was adjusted vide G.O.No.382 Rev. (NC.III) Dept. dt. 18.7.2007. Restoration works were completed by the Chennai Port Trust.

Sl. No.	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
		2005-06	G.O.No.382 Rev. (NC.III) Dept. dt. 18.7.2007	1956.9	56.6	--	During the meeting held on 14.2.2008 the Chennai Fishing Harbour Management Committee had approved the total revised estimate of Rs.35.555 crores and a resolution was passed that the excess of the sanctioned estimate will be from the CFHMC funds and progress of development of works has to be reviewed once in a month. The work on carryingout extension of eastern breakwater was finalized for a value of Rs.11.49 crores and the same is in progress. In respect of rehabilitation and extension of trawler wharf and finger jetties tenders invited by CPT.
	3) New 10 Fish Landing Centres under Tsunami Rehabilitation Programme	--	--	5000	71.40	--	Consultancy work towards carrying out studies and preparation of Detailed project report were entrusted to M/s Mahindra Consulting Engineers for a sum of Rs.118.48 lakhs. The agreements for all the ten places were executed during April 2007. The consultancy service has furnished final DPR and EIA report and Bill of quantities for the 10 sites during the end of April 2008. The firm has also applied for extension of time for the above work upto 31.7.2008. The reports received from the consultancy firm are being finalized technically. Based on the report, the cost of each work to construct FLC has been finalized to a tune of 49.97 crores. The proposal for administrative sanction and release of funds to a tune of Rs.49.97 crores was considered and approved by the Empowered Committee on 15.7.2008 G.O. is awaited in this regard. The DCZMA has cleared the proposals for the FLC viz. Annamalaichery, Periyamangodu, Kadalore Periyakuppam, Keezhakarai, Threspuram, Ekkiyarkuppam and forwarded to SCZMA for consideration and issuing necessary clearances. Follow up action is being taken to get the clearance for other centres also. Meanwhile project was cleared by the Empowered Committee for issuing of Administrative Sanction and release of funds.

Sl. No.	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
<b>4) Under Rajiv Gandhi Tsunami Rehabilitation Package</b>							
	(i)Supply of Handy rechargeable lanterns	2006-07	G.O.Ms.No. 532, Revenue Dept., dt 14.8.2006.	110036	3076.00	UC for Rs. 11036.00 lakhs will be sent to Government after distribution of the additional relief to fishermen.	Government have sanctioned Rs. 110.36 crore under Rajiv Gandhi Tsunami Rehabilitation Programme. Out of sanctioned amount, SC & CRA has released a sum of Rs.77.248 crores in two instalments. Tokens have been handed over to all the Assistant Directors of Fisheries and will be issued to 36942 fishermen and these relief materials will be supplied in due course at 32 distribution centers in 13 districts by TNFDC and TAFCOFED.
	(ii)Supply of Heavy duty bi-cycles						
	(iii)Supply of Life Jackets						
	(iv) Supply of Ice Boxes						
							42000 H.D bicycles 1,50,000 life jackets, 34000 rechargeable lantern, 6000 Nos of insulated ice boxes of 50lts, 70 lts and 100 lts have been supplied by the successful tenderers. So far, payment of Rs.30.76 crores has been made for the supplied material. Further distribution is in progress.
	v) Supply of nets (webbings)		G.O.No.320 Rev. (NC.III) Dept. dt. 2.6.2008		4163.50		(i) Based on the approval and recommendations of the CRF committee Government have accorded sanction for cash assistance towards purchase of nets at the rate of Rs.10000- per beneficiaries. In accordance to the Govt order a sum of Rs.41.635 crores was released to 13 coastal district collectors for disbursing the amount to the beneficiaries. The relief amount will be released in two instalments through respective District Collectors. Modalities and conditions have to be approved by the Government. Amount released- Rs.77.24 crores. Expenditure as on date - Rs.72.40 Crores.

Sl. No.	Name of the Scheme	Commencing year	G.O. No. and Date	Funds allocated	Achievement	U.C Details	Present Stage
<b>5) Schemes availing assistance from Prime Ministers National Relief Fund</b>							
	1) Sports equipments	2006-07	G.O.(3D) No.8, AHD&F .(FSIII) Dept., Dated 12.3.2007.	59.1	37.2	--	Government have sanctioned a sum of Rs.59.10 lakh from the Prime Minister's National Relief Fund towards the purchase of Cricket kits, Volley ball, Foot ball and materials for Kabadi, Carrom and Chess. Under the above scheme the sports materials has been distributed to 591 fishing villages of 13 coastal districts of Tamil Nadu.
	2) Under Support of Social Infrastructure to marine fishermen - First Aid Box Kit worth Rs.2000/-	2006-07	--	940	830.01	UC for Rs. 830.01 lakhs has been sent to Officer on Special Duty	Government have sanctioned a sum of Rs.9.40 crores towards the purchase and issue of 47,000 First Aid Boxes under Prime Minister National Relief Fund. Tamilnadu Medical Services Corporation was entrusted to procure and supply 47000 First Aid Boxes. So far 34273 nos of First Aid Boxes were distributed to the fishermen along with the Tsunami additional relief materials. Remaining first aid boxes is being distributed. Remaining amount of Rs.109.99 lakhs was received from Tamilnadu Medical Services Corporation Ltd, Chennai and the amount was remitted back to officer on special duty.

Source: Commissioner of Fisheries, Chennai



## 5.5.2.2 SGSY Special Projects

Sl. No.	Name of the Scheme	G.O. No & Date	Total Amount allocated (Rupees in lakhs)			Amount released for 2006-07	Expenditure upto 30.6.2008	U.C. Details	Nodal Agency
			Central share (75%)	State share (25%)	Total				
7)	<b>SGSY SPECIAL PROJECTS</b>								
	(a) Intensive Training, Skill upgradation and livelihood support for the Tsunami affected fisherfolk in aquaculture and value addition	Government of India No:24015/21/2005-SGSY-II (Spl. Projects) Ministry of Rural Development & Panchayat Raj Department, dated 02.01.06 and Government of Tamilnadu No:65, Rural Development & Panchayat Raj Department (CGS-II Dept), dated 30.06.06.	1077.87	359.29	1437.16	574.864 (40% towards first instalment)	88.34	U.C. for the SGSY special project I has been sent to DRDA, Chennai-15 for the utilized amount of Rs. 13.53 lakhs during 2006-07	Project Officer, DRDA, Nagapattinam
	(b) Training and livelihood support in fin fish cage culture and value addition to fish catch for the fisherfolk of Tamil Nadu	Government of India No:24015/21/2005-SGSY-II (Spl. Projects) Ministry of Rural Development & Panchayat Raj Department, dated 02.01.06 and Government of Tamilnadu No:66, Rural Development & Panchayat Raj Department (CGS-II Dept), dated 30.06.06.	1034.62	344.87	1379.49	551.79(40% towards 1st instalment)	250.62	--	Project Officer, DRDA, Thiruvallur

Source: Commissioner of Fisheries, Chennai

**5.5.2.3 TN-IAMWARM Project - Progress of Activities as on 5.9.08 (Phase II 16 Sub-Basins - 2008-09)**

Sl.No	Components	Physical			Financial		Status
		Target	Achievement		Amount (Rs. in lakhs)	Expendi- ture (Rs. In lakhs)	
			Taken Over	Stocked			
1	Aquaculture in farm ponds	217	0	0	31.46	0.00	70% of IInd phase ponds location identified
2	Aquaculture in irrigation tanks by establishing fish seed bank	1			16.00	0.00	Estimates under preparation
3	Aquaculture in irrigation tanks	3000 Ha			29.42	0.00	In Swethanadhi Sub-basin 3 tanks stocked with 53000 fish seeds
4	Fish seed rearing in cages	17			5.10	0.00	Centralised Procurement in progress
5	Ornamental fish culture	9			20.97	0.00	Beneficiary selection and site selection is in progress
6	Construction and improvement to Government Fish seed farm	3			98.00	0.00	Estimates under preparation
7	Supply of fishing implements	55			10.10	0.00	Beneficiaries identified
8	Kiosks	6			24.00	0.00	75% locations identified. Sample NCB document is under preparation
9	IEC / CB				16.98	0.00	
9	Transport Charges	–			2.90	0.00	
10	IAMWARM cell in Head Office	–			4.10	0.21	
	<b>Total</b>		<b>0</b>	<b>0</b>	<b>259.03</b>	<b>0.21</b>	

**5.5.2.4 Schemes Implemented by Fisheries Department Under Various Sectors and the Details of Progress Upto 31.8.2008****(Rupees in lakhs)**

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
<b>DEPARTMENTAL PLAN SCHEMES</b>							
<b>1)</b>	<b>State Plan Schemes</b>						
<b>1</b>	<b>Fishermen Free Housing Scheme for fishermen</b>	2005-06 S.E (FHPC)	G.O.Ms.No. 85, AHD & F (FS.III) Dept., dt. 29.8.2006	740.00	9.25	--	For the year 2005-06, a sum of Rs.740.00 lakhs had been sanctioned. 25 houses have been allotted to Vattanvalasai FCS Ramanathapuram District as per High Court Judgement and a sum of Rs. 9.25 lakhs released to DRDA, Ramanathapuram and under various stages. Govt. vide G.O.Ms.No. 4, dated 8.1.2008 nominated FHPC Chennai as Executive Agency from 2005-06 onwards. As per the orders funds released to Executive Engineer, FHPD, Nagercoil and Nagapattinam through SE, (FHPC) to release the funds based on the construction of houses by the beneficiaries themselves.(stagewise) Proposals for raising the unit cost and ratification for the action taken to permit the beneficiaries themselves to construct their houses and to release funds on stage payments by EEs, FHPD is sent to Government. Orders are awaited.

(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
--	--	2006-07 S.E (FHPC)	G. O. Ms No. 196 AHD & F (FS III) Dept dt. 01.12.2006 & G. O. Ms No. 26 AHD & F (FS III) Dept dt. 05.02.2007. G.O. No. 226, AH, D & F (FSIII) Department, Dated 26.7.2007.	789.26	49.26	--	For the year 2006-07, Government have nominated S.E. (FHPC) Chennai as Executive Agency from 2005-06 onwards vide G.O.Ms.No.4, AHD & F Department, Dated 8.1.2008. Accordingly, funds (Rs.740.00 lakhs) for the constructions of 2000 houses were released to the E.E. FHPD, Nagercoil and Nagapattinam through S.E (FHPC) Chennai along with the beneficiary list. Also the E.E. (FHPD) concerned were requested to release the stage payment to the beneficiaries for the construction of houses by themselves.
--	--	2007-08 S.E (FHPC)	--	800.81	39.37	--	As per the allotment of funds in BE 2007-08, proposals sent to Govt. for the allotment of 2000 houses vide letter No..20493/C1/2007 dt13.6.2007. Since no orders were received from the Govt., the funds allotted was surrendered. No Scheme.
		2008-09	--	740.00	0.00	--	In continuation to the Budget allotment of Rs.740.00 lakhs in B.E. 2008-09, proposals sent to Govt. requesting for the sanction for the 2000 houses under Fishermen Free Housing Scheme for a sum of Rs. 1100.00 lakhs Orders awaited.

(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
2	<b>Savings cum Relief Scheme for Fisherwomen</b>	2007-08	G.O. Ms.No.275 AHD & F Department, Dt.19.9.2007	1260.00	1258.62	UC for Rs.8,50,91,100/- for 71,213 beneficiaries has been sent. UC for Nagai Region will be sent in a weeks time.	Government have sanctioned a sum of Rs.1260.00 lakhs. The scheme has been completed for 12 Districts . In respect of Thoothukudi District, a proposal has been sent to Govt. for Rs.103.51 lakhs. It will be completed on receipt of G.O. Total No. of beneficiaries in 12 Districts 1,05,534.
		2008-09	--	1261.00	--	--	Subscription from the fisherwomen beneficiaries in 13 districts is in progress. Proposal will be sent to Government by September 2008. 1,19,046 beneficiaries has been enrolled in 13 Districts.
3	<b>Tamil Nadu Fishermen Group Insurance</b>	2007-08	G.O.Ms.No.185, AHD & F (FSIII) Department, Dated 19.11.2007.	40.00	38.90	UC for an amount of Rs.38.90 has been sent to Government on 19.12.2007. Balance amount surrendered.	During 2007-2008, 5,55,744 active marine and inland fishermen and fisherwomen were insured in FISHCOFED, New Delhi for the period from 10.12.2007 to 9.12.2008 at a total premium amount of Rs.38.90 lakhs. 127 members have been benefitted and Rs.60.82 lakhs had been disbursed. As on 30.8.2008 31 members have been benefitted and Rs.15.25 lakhs.

(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
4	<b>Sea Ranching Programme</b>	2004-05	G.O.Ms.No. 155, A H & F Dept., dt., 23.12.2004.	128.40	110.00	U.C. for Rs.96.40 lakhs has been sent to Government on 9.3.2007. For the balance amount, UC will be sent to Government shortly	Government have sanctioned Rs.128.40 lakhs for stocking 18 million PL seeds. Due to the tender rate, it has been decided to stock 53 million PL seeds. So far, Rs.110.00 lakh has been utilized for rearing and stocking of seeds. 48 million shrimp seeds have been reared and stocked under this scheme and the remaining 5 million shrimp seeds are to be reared and to be ranched soon. 2.0 million seeds by ADF (Aqua) Thoothukudi and 3.0 million seeds by ADF (Aqua) Nagai have to be lifted. Now, the ADF (Aqua) Nagai and Thoothukudi are not in a position to lift the seeds. Moreover 4 years have been passed after the introduction of this scheme. Hence, we may complete the scheme now itself.
<b>2) Centrally Sponsored Schemes</b>							
1	<b>Assistance to fishermen for purchase of Diesel</b>	2007-08	G.O.Ms. 163 , A H D & F (FS.III) Dept., dt. 14.10.2007.	500.00	300.00	UC for Rs.300.00 lakhs have been sent to Govt.	. A sum of Rs.300.00 lakhs has been sanctioned by Government of India. This amount has also been disbursed and UC has been sent to Government. So far, 1537 mechanised fishing boat owners have been benefited.

(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
		2008-09	--	500.00	--	--	A proposal has been sent to Government for Rs.2949.35 lakhs in this Office Lr.No.18889/J4/2008 dt. 7.5.2008. Government of India has released a sum of Rs.3.00 crores. Based on this proposal has been sent to Government for financial sanction. Order from Government is awaited.
2	<b>Implementation of C.S.S on development of post harvest infrastructure during</b>	2006-07 and 2007-08	G. O. Ms No. 46 AHD & F (FS IV) Dept dt. 29.03.2007	50.00	50.00	U.C. will be sent to Government shortly	Four insulated trucks were purchased and put into use. Installation of modern fish sales outlets were completed. Works are in different stages and remaining works will be completed shortly.
		--	G.O.Ms.No.14, AHD & F Department, Dated 4.2.2008.	26.25	26.25	U.C. will be sent to Government shortly	Amount has been received. Action to be taken to fix the target and distribute the money.
<b>3) Shared Schemes (State and Centre)</b>							
1	<b>Model fishermen village scheme under centrally sponsored shared scheme</b>	2005-06 S.E (FHPC)	G. O. (D) Ms No. 157 AHD & F (FS III) Dept dt. 01.06.2006	74.76	0.00	--	For the year 2005-06, Government have sanctioned a sum of Rs.74.76 lakhs (including 50% Govt. of India's share of Rs.37.38 lakhs) towards first instalment for construction of 2000 houses, 96 tube wells and 7 community halls (at an estimated cost of Rs.840.05 lakhs). Since no further release of funds received from Government the scheme could not be implemented. In this regard, Govt. was requested to clarify whether the funds released may be surrendered back to Govt. Orders awaited from Govt.

(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
	--	2006-07 S.E (FHPC)	--	765.30	0.00	--	For the year 2006-07, administrative approval has been received from Govt. of India. Based on this, proposals for the allotment of houses, bore wells and community halls at an estimated cost of Rs.840.05 lakhs has been sent to State Government. Government of Tamil Nadu have forwarded the proposals to Government of India. Orders awaited.
	--	2007-08 S.E (FHPC)	--	740.00	0.00	--	For the year 2007-08, administrative approval has been received from Govt. of India. Based on this proposals to the allotment of 3000 houses, 100 tube wells, 10 community halls at an estimated cost of Rs.1247.50 lakhs has been sent to State Government. Government of TamilNadu has forwarded the proposal to Government of India. Since no orders from Govt. were received, the funds were surrendered back to Govt.
		2008-09	--	740.00	0.00	--	Administrative sanction has been received from Government of India. Action taken to send proposal to Government.
2	<b>National Savings cum Relief Scheme for marine fishermen</b>	2007-08	G.O.(4D).No. 9. A H D & F (FS.III) Dept dated 13.8.2007 G.O.(4D) No.1, AH D & F Dept, dated 14.1.2008 and G.O.(4D) No.2, AH D & F Dept, dated 14.1.2008.	2083.29	2083.29	UC for Rs.11,39,81,250 for 95713 beneficiaries have been sent. UC for Nagai region will be sent in a weeks time.	For the year 2007-08, a sum of Rs.2083.29 lakhs has been sanctioned by Government of Tamil Nadu. 1,76,017 members have received benefits in 13 coastal districts.



(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U. C Details	Present Stage
		2008-09	--	2200.00	--		For 2008-09, collection of subscription from 13 districts is in progress. Proposal for the First Phase i.e. for 10 districts will be sent on completion of subscription is over by September 2008. 1,23,771 beneficiaries have been enrolled in 10 Districts.
3	<b>Construction of mechanised fishing boats (50:50)- Motorisation of Traditional Crafts(OBMs)</b>	2007-08	G.O.Ms.No. 45, A H D & F (FS.I) Dept., dated 29.3.2007	210.00	210.00	UC for Rs.105.00 lakhs has been sent to Government on 18.3.2008	Government of India have permitted to utilize the unspent amount of Rs.210.00 lakhs sanctioned for the year 2006-2007 for distribution of 1050 OBMs to mechanised fishing Boat Owners. A sum of Rs.210.00 lakhs had been utilised and 1050 OBMs had been supplied.
		2008-09	--	320.00	--	--	Proposal for Rs. 400.00 lakhs towards the supply of OBMs for the year 2008-09 have been sent to Government. Orders from GOI is awaited.
4	<b>Development of Inland Fisheries and Cold Water Fisheries Udhagamandalam Avalanchi</b>	2006-07	G.O.(3d).No 6 AH,D & F Dept., dated 04.01.2007	17.38	0	--	Proposal sent to Government for releasing the balance amount.
5	<b>Establishment of Fish Farmers' Development Agency (75:25)</b>	2006-07	G.O.Ms.No. 47, A H D & F (FS.VI) dept., dt. 29.3.2007 G.O.Ms.No. 173, A H D & F (FS.VI) dept., dt. 19.6.2007	66.67	66.67	UC for Rs. 50.00 lakhs has been sent to Government on 27.12.2007.	Rs.61.97 lakh has been utilised to 163 beneficiaries (147.93 ha.). Action is being taken to disburse the balance amount also.

(Rupees in lakhs)

Sl. No	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C.Details	Present State
		2007-08	G.O.(D).No.42, AH D & F Department, Dated 4.2.2008	66.25	66.25	U.C. will be sent to Government shortly	Amount has been sent to various FFDA's for disbursement to beneficiaries.
6	<b>Brackishwater Fish Farmers' Development Agency (50:50)</b>	--	G.O.Ms.No. 183, A H D & F (FS.IV) dept., dt. 2.11.2006	88.07	57.60	UC for Rs.44.035 lakhs has been sent to GOI.	<p><b>ADF (Aquaculture) Chidambaram</b>-So far 39 registration certificates have been given.</p> <p><b>ADF (Aquaculture) Ponneri</b>-So far 83 registration certificates ;have been given. Subsidy was given to 27 beneficiaries (Thiruvallur-2 &amp; Kancheepuram-25)</p>
							<p><b>ADF (Aquaculture) Nagapattinam-693</b> registration certificates have been given so far. Subsidy was given to 136 beneficiaries.</p> <p><b>ADF (Aquaculture) Ramanathapuram-48</b> registration certificates have been given. Subsidy amount has been released to 4 eligible beneficiaries.</p> <p><b>ADF (Aquaculture) Thoothukudi-1</b> registration certificate was given by CAA.</p>

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
7	Extension and Training	2007-08	G.O. Ms. No.187, AH,D& F Dept., Dated 20.11.2007	65.00	39.00	UC will be awaited from EE PWD concerned	Government of India have accorded administrative sanction for Rs.65.00 lakhs in its letter No. 35015/28/95, FY(T&E) dated 20.8.2007 for the construction of one awareness centre at Pulicat (Thiruvallur District) and 3 training centres at Rameswaram (Ramnad District) Colachel (Kanniyakumari District) and Thoothukudi . Government of India has released Rs. 26.00 lakhs as it's first instalment of share (80%) and Government of TamilNadu has released 20% share of Rs. 13.00 lakhs. It has been decided to entrust the work to PWD. Concerned EEs have been addressed for execution. Amount has been distributed to EEs concerned.
<b>4 (a) ANNOUNCEMENTS -2006-2007</b>							
1	Touch Screen	2006-07	G. O. Ms No. 174 AHD & F (FS I) Dept dt. 27.09.2006	2.00	1.27	U.C will be sent to Government shortly	In order to facilitate students, research, scholars and public especially fishermen to know about the various Schemes of the Government, fisheries technology, fisheries statistics and related information, Government of Tamil Nadu have sanctioned Rs.2.00 lakh for installing an advanced Touch Screen facility at the Library of Directorate of Fisheries on pilot basis. Touch screen has been purchased from ELCOT on 9.5.2007. All the available information about the Departmental activities and welfare schemes in static form have been installed in the touch screen. Special software arrangements with animation and photo images are to be developed, for which firm has been finalised Proposal requesting for funds for installation of software is being sent to Government.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
<b>4 (b) ANNOUNCEMENTS -2007-08</b>							
1	<b>TAMIL NADU FISHERMEN WELFARE BOARD</b>	2007-08	G.O.Ms.No. 91, AH,D & F (FSIII) Department, Dated 12.6.2005. G.O.Ms.No. 190, AHD & F (FSIII) Dept., Dated 3.12.07	500.00	--	UC for Rs. 500.00 lakhs will be sent to Government by Fishermen Welfare Board.	Government have sanctioned a sum of Rs.500.00 lakh for this purpose. The Act came into force with effect from 29.6.2007 for giving relief. First Board meeting has been conducted. Rules and regulations for this Act has been approved by the Government. Application forms were printed and distributed to the Regional JDFs and DDFs and ADFs for enrollment of members for the Welfare Board. The enrollment is in progress and 4,26,800 fishermen have been enrolled as members. The Office for Fishermen Welfare Board is getting ready for occupation. The Office will be opened and relief measures will be given soon.
2	<b>Maritime Education and Employment Opportunities to Fisher youth</b>	2007-08	G. O. Ms No. 25 AHD & F (FS I) Dept dt. 7.03.2008	50.00	1	--	Sanction has been received from the Government towards the implementation of the scheme of creating employment opportunities to under educated fishermen youths through upgradation of skills in maritime education and nautical sciences at a cost of Rs.50.00 lakh every year @ Rs.50,000/- per student. A sum of Rs.25,000/- each is paid to 4 trainees being the 50% of the training amount. Balance amount of Rs. 25,000/- will be paid to each trainee after completion of the training.
3	<b>Ornamental Techno-Park</b>	2007-08	--	0.00	--	--	2 meeting of Experts committee has been conducted and report has been sent to Government.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
4	<b>Tuna Resource potential and Exploitation</b>	2007-08	--	0.00	--	--	It is proposed to create awareness among the fishermen about Tuna fisheries and financial assistance for conversion of vessels for the same and to train 110 fishermen (Chennai-40, Cuddalore-15, Nagapattinam-55) through MPEDA. It was also proposed to train 15 fishermen on Tuna fishing at Chennai Fishing Harbour. A number of the 14 fishermen were trained in Chennai and Nagapattinam. Further, a meeting was held with MPEDA and other officials on 20.5.2008 and decided to impart training on Tuna fishing in 3 phases. In the first phase a number of 12 fishermen were trained in Chennai. Further, a committee has been formed for conversion of vessels of Tuna fishing.
5	<b>Amendments to be made in TNMFR Act 1983</b>	2007-08	--	0.00	--	--	In the last assembly session, Hon'ble Minister for Fisheries made an announcement to the effect that the Tamil Nadu Marine Fishing Regulation Act 1983 has to be amended incorporating the various amendments issued subsequently and based on the need for diversification of fisheries. To reduce the fishing pressure in the inshore areas which has been over exploited and to tap the deep sea and offshore resources, the Act has to be amended taking into consideration, the present fleet strength, motorisation of traditional crafts, existing fishery resources in the post Tsunami period, need for fishing Tuna fishes as the export of Shasmi grade tuna yield foreign exchange etc., Draft amendment was prepared and discussions were held on 28.7.2007, 25.10.2007 and 29.1.2008. with JDsF / DDsF.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
							Expert committee was constituted by Government. Stake holders meeting was also convened on 14. 12.2007 and their views were obtained on the proposed amendment. Presentation with revised amendment was made on 29.1.2008 to the Special Commissioner and Secretary to Government, AHD & F Department. Draft amendment suggestion of Regional Officers/Fishermen representatives need to be examined, discussed and finalised with the Expert Committee . A revised draft amendments to TNMFR Act 1983 has been sent to Government for approval.
6	Self Sufficiency in Fish Seed Production (NFDB/ NADP FUND)	2007-08	--	--	--	--	A proposal has been sent to Government for availing subsidy from NFDB for establishing 10 Nos. of Fish seed hatchery with a production capacity of 8 to 10 million early fry each and also for training of farmers and the total outlay would be Rs.105.00 lakhs and Government orders are awaited.
7	Leasing of Inland and Coastal Land and Waterbodies for Aquaculture	2007-08	--	0.00	--	--	A meeting was conducted with the stake holders on 9.5.2008 at Thanjavur. The consolidated leasing draft policy will be sent to Government by the end of July 2008.
8	Establishment of Modern Fish Stalls	2007-08 TNFDC	--	60.00	--	--	Anna Nagar and Nandhanam -work has been completed. Places identified for Ashok Pillar and Kilpauk Garden. Fish stall with Aquarium-cum-restaurant at Teynampet is under progress.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
<b>(c) ANNOUNCEMENTS -2008-09</b>							
1	<b>Grant of relief assistance to marine fishermen families during fishing ban period</b>	2008-09	G.O.Ms.No. 76, AHD & F (FSIII)Dept. dated 30.5.2008	1008.00	640.00	--	Amount has been drawn and kept in the SB account. A sum of Rs. 1004.00 lakhs have been allocated to the Asst. Directors of Fisheries in 13 coastal districts. Hon'ble Minister for Fisheries has inauguated the function and distributed relief amount on 3.6.2008. Now, the disbursement of relief amount is in progress. So far, a number of 1,27,218 cheques were distributed to the fishermen families.
2	<b>Establishment of Modern Fishers Training Institute</b>	2008-09	--	100.00	100.00	--	The society was registered on 17.8.2008. A sum of Rs. 1.00 crore was drawn and will be deposited in to name of FIT society. MOU between Government and TATA Consulancy was executed on 2.9.2008 in the presence of Hon'ble Chief Minister of TamilNadu.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
3	<b>Fisheries Management for Sustainable Livelihood Project (FIMSUL)</b>	2008-09	G.O.Ms.No:81, Revenue (NC4) Dept. Dated:14.2.2008	2.50 million \$	--	--	Government have issued administrative order for the project on Fisheries Management for sustainable Livelihood (FIMSUL) project in Tamilnadu funded by the World Bank Tsunami Economic Recovery credit and to enter into agreement on behalf of Government of Tamilnadu and Puduchery with Food and Agriculture Organization (FAO) and world Bank and to transfer of necessary funds to Government of Puducherry. Government have also issued orders for formation of a steering committee under the chairmanship of Secretary to Government, AH,D & F dept with officials from Ministry of Agriculture, Government of India, Revenue Dept, Finance Dept, FAO, NFDB, MPEDA and Government of Puduchery. Further, Govt of India, Ministry of Economic Affairs has been requested to address World Bank for extension of one year time to enter into an agreement between the Government of India and FAO of UN for the implementation of the FIMSUL project in Tamilnadu and Puducherry
5) A	<b>PART II SCHEMES 2007-08</b>						
1	<b>Installation of Artificial Reefs</b>	2007 - 08	G.O Ms. No. 83, AHD & F (FS IV) Dept., dt. 29.5.2007.	20.00	20.00	UC will be sent on completion of the scheme.	The work on installation of 2 artificial reefs in Thanjavur and Kanniyakumari District at a sanctioned cost of Rs.10.00 lakh each unit was entrusted to TAFCOFED. to execute the work availing the assistance of JE/AEE of FHPC. Report from TAFCOFED is awaited.



(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
2	<b>Subsidy assistance to Inland Fishermen for fishing inputs</b>	2007 - 08	G.O.Ms.No.80, AHD&F (FS I) Dept., dated 29.5.07	10.00	10.00	UC will be sent on completion of the scheme.	The following target has been fixed for implementing the scheme, 1. ADF Erode-100, 2. Madurai Region - 50, 3. ADF Krishnagiri -50. 97 coracles have been supplied in Erode & Krishnagiri and orders have been placed for 44 coracles.
3	<b>Upgradation of existing fish seed farms by carrying out repairs to 3000 sq. m area of nurseries</b>	2007 - 08	G.O. Ms.No. 82, AHD & F (FS.V) dt. 29.5.2007	30.00	30.00	UC will be sent on completion of the scheme.	Thirunelveli for Gadana fish farm Rs.21.60 lakh has been allotted. Repair works have been completed in nursery tanks and the remaining works (Pipe line) will be completed by July 2008. Work at Bhavanisagar for Rs. 8.40 lakhs has been completed.
4	<b>Special repairs to 1680 sq.m. nursery area and also to make water supply arrangements at Aliyar fish farm in Coimbatore</b>	2007 - 08	G.O.Ms.No.81, AHD&F (FS V), dated 29.5.07	18.80	18.80	UC will be sent on completion of the scheme.	Plan and estimate approved and sent to TNFDC for implementation. Amount drawn and sent to TNFDC for carrying out of work. Revised estimate has been prepared as per 2008-09 schedule of rates. Work is to start soon.
5	<b>Development of larvicidal fish stock for control and eradication of mosquitos</b>	2007 - 08	G.O.Ms.No.85, AHD & F Dept, dated: 29.05.07	5.00	5.00	UC will be sent on completion of the scheme.	Amount drawn and disbursed to the implementing officers (ADF (Research) Chennai, ADF (Inland) Trichy and ADF (Inland) Metturdam. ) 75,350 Nos. of Gambusia fish from Chennai, 2,71,250 from Trichy and 4,23,700 Nos. from Metturdam were supplied to private and various Municipalities.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
6	<b>Improvement of Library in the Fisheries Directorate</b>	2007 - 08	G. O. Ms No. 84 AHD & F (FS I) Dept dt. 29.05.2007	8.00	2.97	UC will be sent on completion of the scheme.	Action has been taken to carry out the upgradation of the Central Library. Computers and Printers have been purchased. Binding work of books are undertaken by the firm and four sets of books has been received from the firm after binding and another set of books are handed over to the concerned firm. (Computer purchase Rs.1,99,610/- Book binding Rs.1,19,540/- )
<b>B</b>	<b>PART II SCHEMES 2008-09</b>						
1	<b>Installation of Artificial Reefs</b>	2008-09	G.O. Ms. No. 74, A H D & F (FS.3) Dept dt. 30.5.2008	20.00	--	--	Installation of artificial reefs in two places are identified. Action is being taken to implement the scheme through CMFRI.
2	<b>Setting up of Distress Management cell at Head Office</b>		G.O. (D) No. 155, A H D & F (FS.6) Dept dt. 29.5.2008	6.00	--	--	Computer, Fax machine, Telephone with broad band connection have been purchased and installed. Supply orders issued to TANSI. The cell will be started soon.
3	<b>Pilot Project on issue of Smart Cards to fishermen of Rmeswaram in Ramanathapuram District</b>		G.O. Ms. No. 75, AHD & F (FS.3) Dept dt. 30.5.2008	10.00	--	--	Tender received on 1.9.2008 and is being processed.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
4	Supply of invertors to the Office of the Assistant Director of Fisheries (Marine) in 13 coastal districts		G.O.Ms.No. 77, AHD & F Dept., 2.6.2008	7.00	--	--	Action is being taken to purchase of invertors to supply of the Asst. Directors of Fisheries (Marine) .
5	Provision of 2 solar lights each in 11 fishlanding centres		G.O.Ms.No. 78, AHD & F (FSI) Dept., dated 2.6.2008	7.00	--	--	The installation of solar lights will be taken up soon. The work was entrusted to S.E. (FHPC) Chennai to implement the scheme.
6	Sea Ranching of shrimp seeds for stock enhancement		G.O.Ms.No. 79, AHD & F Dept., dated 3.6.2008	20.00	--	--	Tenders has to be called for soon.
7	Pilot Project on Demonstration of Cage farming in inland water bodies	2008-09	G.O.(D) No:156, AHD & F (FS.VI) Dept., dated. 29.05.2008	4.80	0.00	--	Action to be taken for the purchase of cages.
8	Seed transport facility for Government fish seed farm	2008-09	G.O.(D) No:157, AHD & F (FS.VI) Dept., dated. 29.05.2008	10.00	0.00	--	Action to be taken to purchase a vehicle
9	Upgradation of the existing fish seed farm at Krishnagiri	2008-09	G.O.(D) No:158, AHD & F (FS.VI) Dept., dated. 29.05.2008	20.00	0.00	--	Action to be taken to draw the amount.

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
10	Subscribing to all international Magazines relevant to Fisheries Central Library of Commissionerate	2008-09	G. O. Ms No. 78 AHD & F (FS IV) Dept dt. 3.06.2008	2.00	--	--	Action will be taken to purchase international magazines.
6)	<b>WORLD BANK FUNDED TN IAMWARM PROJECT</b>						
1	<b>World bank funded IAMWARM project. Implementation of fisheries activities in a sub basin during the year 2007-08</b> 1) Varahanadhi, 2) Upper Vellar, 3) South Vellar, 4) Pambar, 5) Arjunanadhi, 6) Manimuthar, 7) Kottakaraiyar, 8) Palar and 9) Aliyar	2007-08	G. O. Ms No. 97 AHD & F (FS IV) Dept dt. 25.06.2007 (IAMWARM) and G.O.Ms.No.119, Public Works (WR1) Department dated 10.5.2007	313.67	143.56	UC will be sent to Government after completion of the scheme.	It is proposed to develop the line department activities in 63 sub-basins and a base cost of Rs.17.30 crore has been approved by World Bank towards fisheries component. During 2007-08, 9 sub-basins have been selected for the above activities. The following activities are undertaken in this project. 1. Aquaculture in Farm ponds 2. Fish Seed rearing in cages 3. (a) Improvement to Govt. Fish seed farm (b) Construction of Fish Seed Bank 4. Ornamental fish culture 5. Supply of Fishing implements 6. Kiosks 7. IEC & CB, HQ cell etc.,

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
	<b>Implementation of fisheries activities in 9 sub basins during the year 2007-08 Spill over works and Implementation of fisheries activities in 16 sub basins during the year 2008-09</b>	2008-09	G.O. Ms. No.90, AH,D& F Dept., Dated 27.6.2008	424.65	18.40	--	<p>1. Koundinyanadhi, 2. Poiney, 3. Upto Krishnagiri, 4. Swethanadhi, 5. Anaivari odai, 6. Chinnar, 7. Agniyar, 8. Ambuliyar, 9. UpperVaigai, 10. Varattar Nagalar, 11. Upper Gunder, 12. Therkar, 13. Nichabanadhi, 14. Kalingalar, 15. Sindapalli uppodai, and 16. Sinkottaiyar.</p> <p>For the year 2008-09, administrative sanction for Rs. 424.65 lakhs have been received from Government. Details of Budgetary allocation and abstract of estimates for spill over works of first phase 9 sub-basins and second phase 16 sub-basins for the year 2008-09 is enclosed in the Annexure. Action is being taken to implement the scheme.</p>

(Rupees in lakhs)

Sl. No.	Name of the Scheme	Commencing year	G.O. and Date	Funds allocated	Achievement	U.C. Details	Present State
<b>7) Schemes availing assistance from Prime Ministers National Relief Fund</b>							
	<b>Waiver of loan (prior to formation of TAFCOFED)</b>	<b>2007-08</b>	--	336.00	<b>0.00</b>	--	Tsunami Loan waiver proposal for loans outstanding as on 31.12.2007 issued to fishermen prior to the formation of TAFCOFED amounting to Rs.3,36,80,321/- was sent to Prime Minister's Office through Special Commissioner and Commissioner of Revenue Administration and the Prime Minister's Office has approved the waiver of principal amount and the amount was released by Officer on Special Duty (Relief and Rehabilitation) Chennai-5, vide cheque No. 948770 dated 21.05.2008 for Rs.3,36,00,000/- and cheque No. 948771 dated 11.06.08 for Rs.80,321/-. These cheques were deposited in the P.D. account of the Commissioner of Fisheries. Separate proposal for waiver of Interest and Penal Interest amount to Rs.6,36,80,991/- have been submitted to Government, Animal Husbandry, Dairying and Fisheries Department vide Commissioner of Fisheries Lr.No. 28467/D4/2007 dated 4.6.2008 and the same is under perusal of Government.

#### **5.5.4. Constraints**

- Lack of adequate and appropriate infrastructural facilities in catching and landing especially in marine fishing
- Lack of adequate necessary facilities
- Lack of awareness and interest among majority of the farmers in taking up fish farming
- Seasonal water availability in the inland water bodies and
- Inadequate marketing infrastructure including retail outlets.

#### **5.5.5. Interventions Recommended**

The district-wise interventions recommended are furnished in what follows.

##### **Coimbatore**

- Strengthening of Thirumuthur, Amaravathy and Aliyar dams
- Establishment of wholesale fish market at Coimbatore and
- Establishment of GIF Tilapia breeding unit at Aliyar

##### **Cuddalore**

- Subsidy assistance to private fish seed rearing farmers
- Modernization of existing fishing fleet to tap the off shore fishery and
- Repairs to halpet fish farm.

##### **Dharmapuri**

- Repair and renovation of fish seed farm
- Creation of additional nursery space
- Farmers training for capacity building and
- Establishment of fish culture and post harvest technology

##### **Dindigul**

- Creation of additional nursery space at Anaipatti
- Supply of fishing outlets
- Expansion of fish culture in hitherto unutilized water bodies
- Subsidy assistance to private fish seed rearing and
- Moped-cum-insulated ice box for fish marketing.

### **Kancheepuram**

- Seed stocking in open waters
- Sea ranching
- Artificial fish habitats
- Marketing value added product and
- Modernization of indigenous FRT long liner.

### **Kanyakumari**

- Repair and renovation of nurseries at Chittar
- Creation of additional nursery space at Chittar
- Insulated vehicle for fish transport
- Provision of moped with ice box for fish marketing
- Construction of landing centre at Pechiparai
- Development of artificial habitat
- Training programme on advanced technologies
- Assessment of productivity for enhancing fish production
- Breeding of ornamental fishes
- Ornamental fish park and
- Training fish farmers.

### **Karur**

- Supply of fishing implements
- Setting of modern retail outlet for fish and
- Supply of moped with ice box for fish marketing

### **Krishnagiri**

- Strengthening of government fish rearing centre, Krishnagiri
- Development of post harvest infrastructure in selected landing centres
- Supply of fishing implements
- Supply of fish culture
- Retail outlet
- Supply of moped with ice box
- Culture for fish rearing



- Creation of farm ponds
- Desilting of tanks
- Establishment of endemic ornamental fish culture unit
- River ranching and
- Farmers training

#### **Madurai**

- Custom hatching units + cage units
- 50% subsidy to ornamental fish cultures
- Fish market infrastructure development at Madurai and
- Modern fish retail unit

#### **Nagapattinam**

- Establishing rural herbal nursery units for SHG women solar powered units
- Introduction of modern fishing fleet to help the off shore resources
- Sea ranching
- Artificial rocks and
- To sustain / retain the existing infrastructure facility for aquaculture

#### **Namakkal**

- Supply of fish seeds with 50% subsidy
- Supply of fishing implements with 90% subsidy
- Setting up of modern fish stall and
- Establishment of fish culture and post harvest technology demonstration unit.

#### **Perambalur (including Ariyalur)**

- Subsidy assistance to private fish seed rearing / fish seed production and
- Moped with ice box.

#### **Pudukottai**

- Repairs to existing rearing nurseries in Thattamannaipatti government fish seed farms
- Supply of fishing implements
- Supply of moped with ice box
- Development of artificial fish habitats
- Sea farming – sea weed culture

- Capacity building and
- Strengthening of ornamental fish unit at regional research centre

### **Ramanathapuram**

- Promotion of mariculture activities
- Development of integrated model for coastal aquaculture
- Infrastructure development for modern market
- Fishermen training and
- Expansion of fish culture by streaking fingerlings.

### **Salem**

- Creation of additional nursery space for fish seed production
- Supply of fish seeds at 50 per cent subsidy
- Private fish farming with 50 per cent subsidy
- Introduction of fish culture in cages with 90 per cent subsidy
- Supply of fishing implements with 90 per cent subsidy
- Development of landing centre with 100 per cent grant
- Setting up of modern fish stall
- Desilting of Kannankurichi, Mookaneri, Elambirnji and Servaiputhru lake and
- Breeding endemic ornamental fishes regime training centre.

### **Sivagangai**

- Expansion of fish culture in unutilized water bodies by stocking fingerlings.

### **Thanjavur**

- Subsidy assistance to private fish seed rearing/fish seed production
- To sustain / retain the existing infrastructure facilities for aquaculture
- Infrastructure development to conserve the endangered native fish
- Development of integrated model for coastal aquaculture
- Desilting of Samuthiram lake and Naadiamman kulam lakhs
- Capacity building of fish farmers and
- Establishment of water and soil testing laboratory

### **Theni**

- Custom hatching units + cage units + candles for poultry
- Renovation of nurseries at Manjalar Dam
- Development of fish landing centre
- Distilling of Manjalar Dam and
- Farmers training

### **Thoothukudi**

- Modernization of mechanized fishing vessels
- Modernization of traditional fishing vessels
- Pre-processing and chill worm facilities
- Establishment of multi species hatchery
- Deployment of artificial reefs
- Sea ranching for stock enhancement
- Development of E-Extension facility for stakeholders
- Development of sperm bank for production of quality fish seeds
- Production of transgenic fish
- Fisheries bio-diversity reference unit for conservation and
- Resource mapping of marine and inland fisheries.

### **Tiruchirappalli**

- Creation additional nursery area in Asur government seed farm
- Supply of fishing implements
- Establishment of wholesale markets
- Supply of moped with ice box
- Capacity building and
- Development of market strategies for fish.

### **Tirunelveli**

- Extension facilities
- Complete renovation of old department fish seed farm with infrastructure facility at Manimuthar

- Creation of additional rearing space in National fish seed farm, Manimuthar
- Development of landing centre
- Sea ranching
- Development of artificial reefs
- Modern fish retail outlet
- Desilting of Kadana tank
- Provision of insulated van and moped with ice box and
- Assessment of productivity for enhancing fish production in Manimuthar reservoir.

#### **Tiruvallur**

- Modernization of FRP boats with OBM
- Sea ranching
- Artificial habitats
- Strengthening of Fisheries Research and Extension Centre and
- Strengthening of Fish Diseases laboratory.

#### **Tiruvannamalai**

- Subsidy assistance to private fish seed rearing units and
- Repair of existing fish seed rearing ponds and creation of additional rearing space for landing centre.

#### **Tiruvarur**

- Subsidy assistance to private fish seed rearing / fish seed production
- To sustain / retain the infrastructure facilities for aquaculture
- Provision of subsidy for the purchase of drag net
- Sea ranching for stock enhancement
- Development of ornamental fish and Algal culture unit and
- Demonstration unit at Muthupet.

#### **Vellore**

- Establishment of three fish landing centres for three reservoirs existing in Vellore district and
- Installation of modern fish stalls at Vellore

### **Villupuram**

- Sea ranching programme
- 50 percent subsidy assistance to provide fish seed / fish seed production
- Creation of additional fish rearing facilities
- Expansion of fish culture in open water system and
- Development of Marakkanam back water.

### **Virudhunagar**

- Expansion of fish culture in hither to unutilized water bodies by stocking and
- Modern fish retail outlet (50 percent subsidy).

## **5.6. Irrigation Systems (Public Works Department)**

### **5.6.1. Issues of Water Resource Utilization / PWD**

1. Efficient management of available water resources
2. Conservation of rainfall received and efficiency of water use
3. Water shed management through extensive soil conservation, preservation of forest and construction of check dams
4. Stepping up tank rehabilitation
5. Restoration and maintenance of existing water bodies
6. Identification of deficiencies and carrying out the improvements in the canals and other control and measuring structures
7. Creation of public awareness and training activities on water management and
8. Desilting, widening and strengthening of water bodies.

### **5.6.2 Ongoing Schemes of Public Works Department**

#### **5.6.2.1. Irrigated Agriculture Modernisation and Water Bodies Restoration and Management (IAMWARM) Project**

The World Bank assisted Tamil Nadu Irrigated Agriculture Modernisation and Water Bodies Restoration and Management project (IAMWARM) was approved by the Government with an outlay of Rs.2, 547 crores, over a period of six years from 2007.

### **5.6.2.2. Objective of the Project**

The IAMWARM project aims to improve the service delivery of irrigation systems and productivity of irrigated agriculture with effective integrated water resources management in a sub-basin framework.

### **5.6.2.3. Specific Components of the Project**

#### **5.6.2.3.1. Irrigation Systems Modernisation in a Sub-basin Framework**

This component seeks to improve bulk water delivery through modernisation of irrigation systems in 63 selected sub-basins with an ayacut of 6.17 lakhs hectares. Activities involve tank system modernisation by restoring and repairing water bodies and improving canal irrigation system through repair and rehabilitation.

#### **5.6.2.3.2. Agricultural Intensification and Diversification**

This component builds on the improved bulk water delivery to increase the productivity of agriculture-related activities through improved agricultural intensification and diversification of crops, micro irrigation, Animal Husbandry & Fisheries.

#### **5.6.2.3.3. Institutional Modernisation for Irrigated Agriculture**

It is sought to improve the institutional capacity for irrigation service delivery through the Water Resources Department and the Water Users Associations (WUAs) with technically better designs and in a socially sustainable manner. The Water Users Association would be utilized to implement Participatory Irrigation Management (PIM) by involving farmers.

#### **5.6.2.3.4 Water Resources Management**

The institutional arrangements and capacity for sustainable water resources management is proposed to be improved by the Water Resources Department through the creation of a State Water Resources Management Authority (SWaRMA). Apart from this, topical water research would be taken up through Water Resources Research Fund (WRRF).

### **5.6.2.4. Project Implementation (2007-2008)**

The project covers an area of 6.17 lakhs hectares spread over in 63 sub-basins out of the 127 sub-basins in the State. In the first year i.e., in 2007-2008, implementation was

initiated in nine sub-basins covering an extent of 2.94 lakhs hectares at a cost of Rs.714.94 crores in respect of all departments put together. In the first year itself, works have been successfully initiated by all the Departments.

#### **5.6.2.4.1. Water Resources Department:**

In respect of Water Resources Department, for the nine Sub-basins of the first year, necessary bids have been finalised for 58 packages with a bid value of Rs.344.64 crores. Works have been commenced in 39 packages and rehabilitation initiated in Canals, Tanks, Supply channels etc. Under Participatory Irrigation Management, preliminary work has been completed and election is planned for nearly 1250 Water Users Associations in 2008-2009.

#### **5.6.2.4.2. Agriculture Department**

Crop Demonstrations for paddy, pulses, maize, groundnut etc were conducted in 13,795 hectares. Significant improvement of 20 to 40 percentages in the yield was achieved in Maize and Rice. An impact area of 1,21,177 hectares has been identified. Critical inputs were distributed for 44,009 hectares along with 2,075 farm implements like sprayers, weeders etc. Exceptional yields were recorded in Hybrid Maize Demonstrations in Arjunanadhi Sub-basin, Athikulam Village – 8,750 Kg per hectare as compared to 4986 Kg per hectare in the previous year.

Palar Sub basin, Pothipalayam Village – 13,150 Kg per hectare as compared to 5,210 Kg per hectare in the previous year.

#### **5.6.2.4.3. Horticulture Department**

Both by way of Diversification and Transfer of Technology, an additional area of 4,310 hectares has been brought under fruits, vegetables and other horticultural crops.

#### **5.6.2.4.4. Tamil Nadu Agricultural University**

The new System of Rice Intensification (SRI) demonstration was introduced in an area of 1,248 hectares with an impact area of 2,595 hectares. It has been planned to take up demonstrations in another 1660 hectares during 2008-09. With the SRI technique, rice yields have shown 40 to 80 percentage improvement over the conventional practice. In some areas, exceptional yields have been achieved.

Manimuthar Sub-basin, Mahibalanpatti Village – 8,750 Kg per hectare as compared to 4,750 Kg per hectare in the previous year. Upper Vellar Sub-basin, Thumbal Village – 9,750 Kg per hectare as compared to 6,560 Kg per hectare in the previous year.

#### **5.6.2.4.5. Agricultural Marketing**

To assist the farmers to get better price, 250 Commodity Groups for diversified crops like Chillies, Maize, Groundnut, Banana etc, have been formed. Eleven Interface Workshops involving farmers and traders have been conducted. Besides, seven Memorandum of Understandings (MoUs) between farmers and companies for different commercial crops like maize, mango and chillies have been facilitated.

#### **5.6.2.4.6. Animal Husbandry Department**

To increase the conception rate, 578 Infertility-cum-total Veterinary Health care camps were conducted. To improve milk yield, the availability of green fodder was increased and an additional area of 697 hectares was brought under fodder cultivation.

#### **5.6.2.4.7. Fisheries Department**

The Department has promoted Aquaculture in 36 farm ponds by farmers as additional income generating activities. Carp seed rearing in 20 units of net cages has also been promoted.

#### **5.6.2.5. Project Implementation (2008-2009)**

During the financial year 2008-2009, 16 more Sub-basins with an ayacut of about 80,000 hectares are proposed to be taken up. The proposed outlay in this year for the 25 Sub Basins is Rs.585 crores for all the departments put together.

##### **5.6.2.5.1. Water Resources Department**

In these Sub-basins, Water Resources Department is proposing to take up rehabilitation works in 1,102 Tanks, 186 Anicuts and 554 k.m. of Supply Channel. Special Sub-basin plans based on consultation with the stakeholders have been prepared for all the 16 new sub-basins.

##### **5.6.2.5.2. Agriculture Department**

Crop Demonstrations for paddy, pulses, maize, groundnut and ragi are proposed in 4,558 hectares with an impact area of 39,097 hectares.



**5.6.2.5.3. Horticulture Department**

Both by way of diversification and transfer of technology, an additional area of 6,375 hectares has been proposed under fruits, vegetables and other crops. It is expected that the Agricultural Engineering Department will cover an area of 11,500 hectares including the horticulture area with Micro Irrigation.

**5.6.2.5.4. Tamil Nadu Agricultural University**

It has been programmed to take up demonstration in 1,660 hectares of System Rice Intensification (SRI) in 16 Sub-basins. Rice fallow pulses are proposed in these areas as a special drive for increasing pulse production. Crops like Sunflower and Thornless bamboo are being introduced on a mission mode.

**5.6.2.5.5. Agricultural Marketing**

It is proposed to construct eight Agribusiness Centres, 15 Collection Centres, 19 Drying yards and seven Storage Godowns. Along with this, software activities like formation of Commodity Groups, Exposure visits and trainings are proposed to be taken up.

**5.6.2.5.6. Animal Husbandry Department**

It is proposed to establish 15 Cluster Sub-basin Veterinary Units in the gap area to improve production potentialities of livestock. To increase the availability of green fodder, an additional area of 580 hectares is proposed to be brought under fodder cultivation. To improve the productivity in small ruminants, the practice of de-worming is being introduced.

**5.6.2.5.7. Fisheries Department**

Aquaculture will be promoted in 250 farm ponds. Ornamental fish culture units will be promoted to generate income and rural employment. Model fish Kiosks (six) will be established to get better price for inland fish. Further, fishing implements will be provided for more efficient inland fish capture.

**5.6.2.6. Project Implementation (2009-2010)**

During 2009-2010, the last batch of 38 sub-basins covering an extent of 2.28 lakhs hectares is proposed to be taken up. Thus, all the works in the 63 sub-basins under the IAMWARM project should have been initiated by 2009-2010.

#### **5.6.2.7. Dam Rehabilitation and Improvement Project (DRIP)**

There is a constant need to strengthen and maintain the dams in view of certain general factors like ageing, maintenance and sometimes low compliance with Dam safety standards and practices. Due attention should be shown to all the Dams irrespective of their size, as even the small Dams with considerable water storage capacity if not maintained well will have the potential to cause damage to people's livelihood and environment. It is, therefore, important to ensure that Dam structures and systems are properly maintained and are backed by regular monitoring, rehabilitation and modernization.

The Dam Rehabilitation and Improvement Project, therefore, propose to introduce a holistic approach to Dam safety, rehabilitation and modernization. The project also includes provision of general infrastructure like training facilities, parks, better environment etc, at a few Dam sites. This project is expected to be funded by the Government of India with the assistance of World Bank.

The Tamil Nadu Government, in the first instance, approached the Government of India for rehabilitation and improvement of 22 Dams at a cost of Rs. 94.22 crores. In the meanwhile, as per discussions held with the representatives of World Bank Mission in February 2008, the number of Dams is likely to be increased and similarly the scope amplified. Based on this, a revised project proposal is being prepared. As per the indications given by the Government of India, the project may commence during 2009-2010.

#### **5.6.2.8. Hydrology Project-II**

The Hydrology Project-II (HP-II) is a vertical extension of the Hydrology Project-I (HP-I), which was earlier implemented during 1995-2003. The implementation of Hydrology Project-II at a cost of Rs.25.27 crores commenced in Tamil Nadu on 05.04.2006 with the funding assistance of World Bank through the Ministry of Water Resources. Under this project, the Decision Support System (DSS) will be developed with Hydrological Information System comprising reliable Hydrological and Hydro-Meteorological data to optimize the use of available groundwater potential and water resources among all the sectors like irrigation, drinking and industrial use. As a pilot

study, three different applications of water resources planning using Integrated Water Resources Management (IWRM) concept will be taken up as under:

- Drought Monitoring assessment and Management in Vaippar Basin in Virudhunagar and Thoothukudi districts.
- Flood Management in Tambirabarani Basin in Tirunelveli and Thoothukudi districts and
- Conjunctive use of Surface and ground water in Agniyar Basin in Pudukottai district.

The consolidation of Hydrology Project-I activities like strengthening of monitoring Network and the Awareness Raising Activities is in progress.

#### **5.6.2.9. Cauvery-Modernisation Project**

The gross extent of irrigation in the Cauvery basin is 28 lakhs acres and a major part of the area is under paddy cultivation. The irrigation systems in the Cauvery basin like the Cauvery Delta System, the Lower Coleroon Anicut System, Salem Trichy channels, Bhavani and Amaravathi channels are all in existence from time immemorial. Besides these ancient irrigation systems, the Cauvery Mettur Project came into existence in 1934 with the construction of Mettur reservoir and the major projects of Lower Bhavani and Amaravathi reservoirs came during the 1st and 2nd Five Year Plans.

The major irrigation systems like Cauvery Delta, Lower Coleroon etc., need extensive rehabilitation of the infrastructures and modernization of existing irrigation structures. The Cauvery Delta is a natural formation and the river Cauvery branches off into 36 rivers spreading and irrigating over 10 lakhs acres. Since these are natural rivers and meant to carry drainages also, modernization of this Delta has been long over due and attempts to undertake this with the help of external funding could not materialize in the past as Karnataka opposed to this on the plea that the water dispute was pending, even though the proposals were technically found acceptable to the Government of India. None of the rehabilitation works in the Cauvery basin could be taken up either in the WRCP or in the IAMWARM Projects for the same reason.

Now that the Cauvery Dispute has reached the final stage, the Government thought it fit to initiate steps to get the Cauvery basin irrigation improvements carried out. For this purpose, the Government has constituted a Task Force to undertake a study and submit its report, so that the same can be examined and posed for external funding. The Task Force is expected to submit its report before July 2008.

#### **5.6.2.10. Irrigation Schemes**

##### **5.6.2.10.1. Long Pending Schemes - Thrust on Completion**

A few schemes sanctioned in the early 90's and thereafter could not be completed for a long time owing to one reason or the other. In order to speed up the completion of the projects, a special thrust was given by the Government in the past two years to complete the works by providing all requisite resources and through better strategies.

Of the 18 long pending schemes, seven schemes have been completed during the year 2007-2008; nine Schemes are expected to be completed during 2008-2009; the remaining two schemes viz. Bathalapalli reservoir and Improvements to New Veeranam Project are programmed to be completed during 2009-2010.

#### **State Funded Schemes**

##### **5.6.2.10.2. Rehabilitation of Tanks identified by MLAs**

As announced on the floor of the Assembly during the Public Works Grant 2007-2008, the Government sanctioned rehabilitation of 365 Non-System Public Works Department tanks at an estimated cost of Rs.34.81 crores. All these tanks have been identified by the MLAs in 190 rural Assembly Constituencies. Even though, as per the original proposal the rehabilitation of tanks was to be taken up with NABARD assistance, the Government has since sanctioned the required amount for taking up the works immediately in anticipation of funding approval by NABARD. Some of these works have just commenced and major part will be implemented in 2008-2009.

##### **5.6.2.10.3. Other Schemes**

Schemes sanctioned in the later part of 2007-08 at a project cost of Rs.10.03 crores, will commence soon.

#### **5.6.2.10.3. NABARD Assisted Schemes**

All the schemes and Minor Irrigation tank works taken up with the assistance of Rural Infrastructure Development Fund (RIDF) of NABARD upto RIDF VIII have since been completed during the year 2007-2008. The Schemes and tank works under RIDF IX, X, XI, XII and XIII are at various stages of execution.

#### **5.6.2.10.4. Part II Schemes**

##### **I. 2006-2007**

Under Part II Schemes for 2006-2007, 19 schemes at a total cost of Rs.36.62 crores were approved, out of which nine schemes have already been completed. five Schemes are at various stages of implementation, three schemes are to be taken up shortly and two schemes are proposed for dropping due to land acquisition problems.

#### **5.6.2.10.5. National Agriculture Development Project (NADP)**

The works under the Irrigation component of the NADP was sanctioned in March 2008 at a cost of Rs.12.08 crores. The works include rehabilitation and improvements to tanks, canals and supply channels.

#### **5.6.2.11. Flood Mitigation Schemes**

NABARD has sanctioned a sum of Rs. 224.19 crores during October 2007 / February 2008 for 25 flood mitigation works under NABARD (RIDF XIII).

#### **5.6.2.12. Anti Sea Erosion Works**

Under the Grants-in-Aid Programme recommended by the 12th Finance Commission, the State received Rs.50 crores towards 33 Anti sea erosion works. Out of these, 25 works have been completed. The remaining eight works are in progress. Apart from this, the State Government sanctioned Rs.1.98 crores for three new works, which are also expected to be completed by June 2008.

#### **5.2.6.13. Emergency Tsunami Reconstruction Project (ETRP)**

Under the World Bank assisted project, nine works at a cost of Rs.19.271 crores was sanctioned for the re-construction of Water Resources infrastructure affected by Tsunami in Nagapattinam district. The components of works are desilting, widening and strengthening of banks of canals, drains, straight-cuts and reconstruction of drainage regulators. Seven works have been completed and other two works are in progress.

**5.6.2.14. Chennai City Waterways**

In order to keep the City Waterways clean and free from pollution, the State Government approved a multi disciplinary project, viz., Chennai City River Conservation Project at a total cost of Rs. 300 crores in 1998. The Tamil Nadu Slum Clearance Board and Corporation of Chennai are partnering with Water Resources Department in this work.

**5.6.2.15. Artificial Recharge of Groundwater through Check Dams**

Following the announcement in the Governor's Address in the Legislative Assembly, a master plan has been prepared by the State Ground & Surface Water Resources Data Centre (SG&SWRDC) for implementation of artificial recharge to ground water through check dams and other suitable structures at a cost of Rs.565 crores over a period of three years from 2008-2009. The works under the programme are proposed to be executed by Water Resources Department (WRD), Agriculture Engineering Department (AED), Tamil Nadu Water Supply and Drainage Board (TWAD) and Forest Department. The Nodal Agency for the implementation of this programme will be State Ground & Surface Water Resources Data Centre of the Water Resources Department. The project will be initially funded by the State Government. Meanwhile, the possibility of funding by the Government of India will be explored.

**5.6.2.16. Krishna Water Supply Project (KWSP)**

As per the Agreement entered into between the Governments of Tamil Nadu and Andhra Pradesh in 1983 for drawal of water from river Krishna for Chennai City drinking water supply, the Andhra Pradesh Government has to release and reach at zero point a quantity of 12 TMC of water annually. This is programmed to reach in two installments i.e., eight TMC of water from July to October and four TMC of water from January to April every year.

The Andhra Pradesh Government has released 27.58 TMC of water up to February 2007 since its inception in the year 1996. During the year 2007-08, 4.60 TMC of water has been realised from 3.8.2007 to 6.11.2007. Sri Sathya Sai Central Trust has come forward to renovate the Kandaleru – Poondi canal, Link canal and feeder canal at an estimated cost of Rs.50.00 crores. The renovation work has been commenced in the

Kandaleru-Poondi canal on 14.5.2007 and 10.25 km. of canal bund on both sides sectioned and construction of retaining wall for a length of 1005 metres have been completed. Remaining works are in progress.

#### **5.2.6.17. Tamil Nadu Protection of Tanks and Eviction of Encroachment Act, 2007**

It has become imperative to protect the water bodies from encroachments and disuse. The tanks and their components, if not protected and restored to their original capacity, may cause reduction in area of cultivation and thereby food grains production, depletion of ground water and environmental degradation.

In order to protect the tanks under the control of Water Resources Department, an Act entitled “Tamil Nadu Protection of Tanks and Eviction of Encroachment Act 2007” (TN Act: 8 of 2007) was legislated as per the announcement made on the floor of Assembly while moving the Demand for grant for the year 2007-2008. The Act and Rules have since come into force from 1.10.2007.

As a first step for purposeful and effective implementation of this Act, action has been taken for creating awareness among the general public especially at village level about the provisions of the Act and Rules and the need to keep the tanks in original shape through hand bills, wall posters, print media and tom-tom. Further follow up action has already been initiated for delineation of tank boundaries with the help of Survey staff, eviction of encroachments and planting of RCC poles along the tank boundaries as a measure of preventing potential encroachments. In the last three months of the year 2007-08, boundary delineation works, eviction of encroachment and planting RCC poles along the boundaries have been completed in respect of 316 tanks. The work will be intensively carried out during 2008-2009.

#### **5.2.6.18. Linking of Rivers within the State**

The Hon'ble Chief Minister in the 53rd National Development Council (NDC) Meeting urged the Hon'ble Prime Minister to provide funds for inter-linking of rivers within the State (intra linking) under the Accelerated Irrigation Benefit Programme (AIBP). In response to this, the National Development Council resolved that Inter linking of river projects within the State would also be extended with funding assistance under Accelerated Irrigation Benefit Programme. The Government of India based on this, has

come forward to extend funding for inter-linking of rivers under Accelerated Irrigation Benefit Programme.

In the meanwhile, the Government has taken the initiative to link the rivers within the State to primarily serve as flood carriers and as a measure of flood mitigation and to prevent water wastage and for the flood flows to reach the drought prone areas. In this direction, the following three links have been investigated into:

- i. Cauvery – Agniar - South Vellar – Manimuthar – Vaigai – Gundar
- ii. Tambiraparani – Karumeniar –Nambiar and
- iii. Pennaiyar – Cheyyar

The Detailed Project Report (DPR) for Tambiraparani-Karumeniar-Nambiar link has been prepared. Similarly, the DPR for the first component of Cauvery-Vaigai-Gundar has been completed and for the other component it is under preparation. The DPR for Pennaiyar-Cheyyar is expected to be completed before June 2008. Taking the opportunity of the Government of India coming forward to extend funding under AIBP, these schemes will be posed to Government of India for consideration and sanction of the required financial assistance.

The Tamil Nadu Government in the Budget speech of March 20, 2008 announced to take up Tambiraparani-Karumeniar-Nambiar link project and construction of Kattalai Barrage across Cauvery during 2008-09 at a cost of Rs.369 crores and Rs.165 crores respectively from the State's own fund in anticipation of the funds from the Government of India.

### **5.6.3. Constraints**

- Prevention of sea water intrusion in costal regions
- Heavy budget outlay requirements
- Lack of timely repairing / modernizing efforts
- Ineffective management of irrigation systems
- No effective flood control measures taken up
- No exploratory studies for taking up new projects of small and medium nature
- Wastage of water at various levels including fields and



- Poor maintenance of distribution, irrigation and field channels leading to inefficient management of water.

#### **5.6.4. Interventions Recommended**

- Modernization of irrigation systems
- Taking up of repairing works of dilapidated water structures
- Desilting of reservoirs, tanks and canals
- Modernizing approach roads along and around water bodies and
- Taking up flood control measures with long term perspective.

### **5.7. Agricultural Credit**

#### **5.7.1. Credit Disbursement**

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

#### **I. Policy Innovations of Government of India:**

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

## **II. Policy initiatives of Reserve Bank of India:**

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

## **III. Policy and Development Initiatives of NABARD:**

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

## **IV. Policy Initiatives of Government of Tamil Nadu:**

1. Rs.1150 crores allocated in 2008-09 for compensating co-op. banks for waiver of crop loans.

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

Activity wise credit disbursement and projection under agricultural and allied sectors in Tamil Nadu State is furnished in Table 5.7.1.1.

**Table 5.7.1.1. Activity Wise Credit Disbursement and Projection under Agricultural and Allied Sectors in Tamil Nadu State**

(Rs in lakhs)

Districts	2008-09	2009-10	2010-11	2011-12	Total	Percentage
Ariyalur	38097.94	40002.85	42002.97	44103.12	164206.88	1.07
Coimbatore	675500.01	709275	744738.75	781975.69	2911489.45	18.94
Cuddalore	111718.15	117304.06	123169.27	129327.72	481519.20	3.13
Dharmapuri	62884.29	66028.5	69329.93	72796.42	271039.14	1.76
Dindigul	117879.31	123773.28	129961.95	136460.03	508074.57	3.30
Erode	270329	283845.45	298037.68	312939.58	1165151.71	7.58
Kancheepuram	104598.94	109828.89	115320.33	121086.35	450834.51	2.93
Kanyakumari	127383.45	133752.62	140440.25	147462.28	549038.60	3.57
Karur	103061.29	108214.34	113625.08	119306.33	444207.04	2.89
Krishnagiri	93363.59	98031.77	102933.36	108080.03	402408.75	2.62
Madurai	148069.56	155473.04	163246.69	171409.03	638198.32	4.15
Nagapattinam	61348.26	64415.68	67636.46	71018.27	264418.67	1.72
Namakkal	109498.08	114972.99	120721.63	126757.71	471950.41	3.07
Perambalur	23506.16	24681.48	25915.55	28571.86	102675.05	0.67
Pudukkottai	77492.09	81366.69	85435.03	89706.78	334000.59	2.17
Ramanathapuram	63468	66641.4	69973.5	73472.16	273555.06	1.78
Salem	118057.35	123960.22	130158.22	136666.13	508841.92	3.31
Sivagangai	85189.47	89448.94	93921.39	98617.45	367177.25	2.39
Thanjavur	117154.96	123012.72	129163.35	135621.51	504952.54	3.28
Theni	81050.57	85103.11	89358.27	93826.17	349338.12	2.27
Thiruvallur	71234	74795.7	78535.52	82462.26	307027.48	2.00
Thiruvarur	55744.11	58531.34	61457.88	64530.8	240264.13	1.56
Thoothukudi	166035.09	174336.86	183053.68	192206.38	715632.01	4.65
Tirunelveli	149001.45	156451.53	164274.09	172487.81	642214.88	4.18
Thiruvannamalai	77792.08	81681.68	85765.78	90054.05	335293.59	2.18
Tiruchirappalli	117555.51	123433.28	129604.94	136085.19	506678.92	3.30
Vellore	120023.58	126024.75	132325.98	138942.29	517316.60	3.36
Villupuram	100569.72	105598.2	110878.13	116422.01	433468.06	2.82
Virudhunagar	119152.76	125110.39	131365.93	137934.23	513563.31	3.34
<b>Total</b>	<b>3566758.77</b>	<b>3745096.76</b>	<b>3932351.59</b>	<b>4130329.64</b>	<b>15374536.76</b>	<b>100.00</b>

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 respectively Rs. 3745096.76, Rs. 3932351.59 and Rs.4130329.64 lakhs respectively. In sum, Rs.153745.37 crores would be required for disbursement for agriculture and allied sectors during the eleventh plan period. The credit requirement is more pronounced in Coimbatore district as compared to other districts of Tamilnadu State.