AGRICULTURE DEPARTMENT

POLICY NOTE

Demand No. 5 - AGRICULTURE

2014 - 2015

Thiru. AGRI.S.S.KRISHNAMOORTHY
Minister for Agriculture

Policy Note 2014-2015
INDEX

INTRODUCTION

O'er many a land they'll see their monarch reign,
Whose fields are shaded by the waving grain.
(Thirukural: 1034)

Discovery of agriculture was one of the greatest milestones in the human history which led to rise of civilizations. Agriculture sector covers largest segment of livelihood and plays a significant role in the overall socio-economic fabric of the nation. Therefore, growth of the agriculture sector is now seen as an important part of any development strategy. Immense progress has been made since independence towards food security by evolving a scientific production mechanism to meet the food demand of growing population through adoption of improved farming methods, input management and innovative technologies. Agriculture sector is undergoing a paradigm shift - from a subsistence oriented, highly diversified production to a more specialized and market oriented commercial production. Since agriculture forms the resource base for a number of agro-based industries and agro-services, a higher priority to agriculture sector alone can help in achieving the goals of poverty & malnutrition reduction and inclusive growth.

A successful transition from subsistence to specialized farming depends on integrated on-farm activities with crop specific techniques of production that save time, cost and labour. Though fragmentation of operational holdings has widened the base of the agrarian pyramid, factors that determine agricultural productivity include an easy and reliable access to modern inputs, suitable technologies tailored for specific needs, presence of robust infrastructure and innovative marketing systems to aggregate and market the output from even these small holdings efficiently and

effectively to fetch a remunerative price. Tamil Nadu, through the **Second Green Revolution**, has initiated many path breaking initiatives at farm level which have resulted in enhanced agriculture productivity. The challenge ahead is now to broad base these initiatives to make the state agronomically the best in the country.

Agriculture Scenario of Tamil Nadu

Tamil Nadu has only 4 per cent of land area and 3 per cent of water resources of the country which have to be optimally used to feed a population of 7.21 Crores which is 6 per cent of the national population (2011 Census). But agriculture in Tamil Nadu still remains exposed to the vagaries of the monsoon and it is beset with a number of characteristics such as wide seasonal variations, scarcity of cultivable land and water resources, soil nutrient deficiency in the cultivable area, low productivity, predominance of small and marginal farmers (92%), etc.

The most decisive factor in agriculture is the availability of water for irrigation which decides the agriculture production and productivity. Tamil Nadu which is a lower riparian state forms a separate entity from the rest of the country as its major share of rainfall is received only during North East Monsoon season. The annual average rainfall is around 920 mm (48% during North-East monsoon, 35% during South-West monsoon, 14% during summer and 3% during winter) and the per capita availability of water resources is 750 cubic meters per year as compared to the all India average of 2,200 cubic meters. Hence the State is in dire need of economizing the scarce water resources available.

The Gross Cropped Area which was 62.26 L.Ha during 2001-02 has come down to 58.90 L.Ha during 2011-12. Of this, 35.19 L.Ha (60%) are under irrigated condition and 23.71 L.Ha (40%) are rainfed. The net cultivable area which was 51.72 L.Ha, during 2001-02 has come down to 49.86 L.Ha during 2011-12. Out of the net cropped area of 49.86 L.Ha, 29.64 L.Ha (59 per cent) is irrigated through different sources. The cropping intensity which was 120 percent during 2001-02 has declined to 118 per cent during 2011-12.

Agro Climatic Zones of Tamil Nadu

Tamil Nadu State has been classified into seven distinct agro-climatic zones based on rainfall distribution, irrigation pattern, soil characteristics, cropping pattern and other physical, ecological and social characteristics including administrative divisions.

Sl. No	Agro Climatic Zones	Districts Covered	Soil Type	Rain fall (mm)
1	North Eastern Zone	Kancheepuram, Tiruvallur, Cuddalore, Vellore, Villupuram and Tiruvannamalai	Red sandy loam, clay loam, saline coastal-alluvium	1,105
2	North Western Zone	Dharmapuri, Krishnagiri, Salem and Namakkal (Part)	Non-calcareous red, non-calcareous brown, calcareous black	875

Sl. No	Agro Climatic Zones	Districts Covered	Soil Type	Rain fall (mm)
3	Western Zone	Erode, Coimbatore, Tirupur, Theni, Karur (Part), Namakkal (Part), Dindigul, Perambalur and Ariyalur (Part)	Red loam, black	715
4	Cauvery Delta Zone	Thanjavur, Nagapattinam, Tiruvarur,Tiruchirapalli,and parts of Karur, Ariyalur, Pudukkottai and Cuddalore	Red loam (new delta), alluvium (old delta)	984
5	Southern Zone	Madurai, Pudukkottai Sivagangai, Ramanathapuram, Virudhunagar, Tirunelveli and Thoothukudi	Coastal alluvium, black, red sandy soil, deep red soil.	857
6	High Rainfall Zone	Kanyakumari	Saline coastal alluvium, deep red loam.	1,420
7	Hilly Zone	The Nilgiris and Dindigul (Kodaikanal)	Laterite	2,124

Government of Tamil Nadu have been conferred with national awards at various points of time for its creditable performance in increasing the food grain production of the state. The state bagged the **Krishi Karman Award of Government of India for achieving highest ever production of 101.52 L.MT during 2011-12. The State also received the "State Agriculture Leadership Award 2013"** from the leading magazine, Agriculture Today for various new initiatives taken by the Government.

To emulate this feat of achievement, Government of Tamil Nadu has scaled up the initiatives such as System of Rice intensification, System of Pulses intensification, promotion of transplanted red gram, intensification of millets, sustainable sugarcane initiatives, precision farming, micro irrigation during **2013-14** besides special efforts to extend assistance under **Kuruvai special package** for increasing the coverage during Kuruvai season in Cauvery delta districts, bring fallow lands under cultivation, increase the area under rice fallow pulses and food grains during summer, implement food grain mission, Integrated Farming System under district saturation model, Invigorate Extension system through efficient use of ICT tools to step up agricultural production and improve the economic status of the farming community.

1. AGRICULTURE

1. Introduction

Agriculture, being a source of both livelihood and food security for a vast majority of our society, needs a higher priority to achieve inclusive growth. Agriculture is the key to poverty alleviation which contributes significantly to the GDP together with its allied sectors. Hence, it would be more meaningful to focus agriculture as a holistic and integrated value chain from farmer to consumer rather than farming alone.

The widening population day by day has created lot of pressure on agriculture by increasing the food demand, increasing the fragmentation of land holdings, decreasing the availability of cultivable land area and dwindling ground water resources. Vagaries of monsoon have necessitated formulation of a strategic vision for agriculture which encompasses factors such as conservation of land, water, soil and other biological resources, timely and adequate availability of inputs at needy places, development of innovative labour-saving technologies, farm mechanization, increase in the flow of sufficient credit particularly to the small and marginal farmers, support for creation of marketing infrastructure and value chain management.

In the circumstances, the Government's systematic approach to transform agriculture into a more profitable crop production intensification system by converging all subsectors of agriculture and revitalization of the extension mechanism have made the farmers more responsive and receptive in adopting all the technological innovations and latest developments thus paving way for increased food grain production of the State.

2. Season

2.1. Rainfall

The season wise rainfall received during 2012, 2013 and 2014 are as follows:-

(in mm)

Season	2012			2013			2014		
	Nor -mal	Actual	Dev (%)	Nor -mal	Actual	Dev (%)	Nor -mal	Actual	Dev (%)
Winter Season (Jan–Feb)	31.30	9.50	(-)70	30.70	34.40	(+)12	31.40	13.80	(-)56
Summer season (Mar-May)	128.00	86.20	(-)33	128.00	92.20	(-)28	128.00	157.20	(+)23
South West Monsoon (June–Sep)	321.30	245.90	(-)24	321.10	325.40	(+)1	78.90 (*)	82.20 (*)	(+)4
North East Monsoon (Oct–Dec)	440.40	370.50	(-)16	440.40	294.30	(-)33			
Total	**921.00**	**712.10**	(-)**23**	**920.20**	**746.30**	(-)**19**			

(*) Up to 16.07.2014

The state received normal rainfall during winter & South West Monsoon and deficit rains during summer & North East Monsoon period during 2013. Compared to 2012, the rainfall received during North East Monsoon is deficient with wide variation in spatial and temporal distribution which has affected the prospects of various crops. The rainfall received during winter and summer seasons of 2014 is deficient and excess respectively. So far, the state has received normal rainfall during South West Monsoon.

2.2. Crop Status in Delta districts

The onset of South West and North East Monsoons, release of Cauvery water by Karnataka, sufficient storage and opening of Mettur reservoir influence paddy cultivation in canal irrigated delta areas of about 0.90 L.Ha (2.25 L.Ac),

whereas an area of about 0.40 L.Ha (1.0 L.Ac) is under filter point bore well irrigated area.

During **2011-12**, the water storage in Mettur reservoir was quite comfortable and Government ordered to **open** the **Mettur dam on 6th June, 2011**, as against the scheduled date of 12th June, which is the first time in history since Independence due to which Kuruvai cultivation was taken up well in advance in an area of 1.367 L.Ha (**3.418 L.Ac)** which is over and above the normal area.

In the next two years, one or the other factors played truant in the destiny of the farmers due to which the cultivation prospects were affected. During **2012-13**, the timely intervention of the **Hon'ble Chief Minister** in extending **12 hrs three phase power supply** for raising Kuruvai to the farmers in delta areas besides announcement of **Samba Special Package** for an amount of Rs.137.98 Crores for Thanjavur, Nagapattinam, Tiruvarur and parts of Cuddalore and Trichy districts had a major impact on samba cultivation. An area of 4.613 L.Ha (11.533 L.Ac) was covered during samba with an **additional coverage of 0.831 L.Ha (2.078 L.Ac)** compared to the normal area of 3.782 L.Ha (9.455 L.Ac).

An amount of Rs.68.10 Crores was allotted for distribution of critical inputs and organising community nursery to motivate the farmers to take up samba paddy cultivation in a larger area , Rs.39.88 Crores towards provision of diesel subsidy, water carrying pipes & mini portable sprinklers, spraying of Pink Pigmented Facultative Methylotrophs (PPFM) using Multi-purpose boom sprayers for protection of Samba/ Thaladi crop from withering and Rs.30 Crores exclusively for payment of farmers' share of premium cost for universal coverage under Crop Insurance.

2.2.1. Kuruvai paddy crop 2013-2014

The Mettur dam was opened belatedly on 2.8.2013 due to poor storage and non-release of water by Karnataka Government. Inorder to motivate the Delta farmers to take up paddy cultivation utilizing the available ground water near the filter points, **Hon'ble Chief Minister** announced to provide **12 hrs three phase power supply** followed by **Kuruvai Special package** in Delta Districts viz.,Thanjavur, Nagapattinam, Tiruvarur and parts of Cuddalore, Ariyalur and Trichy that motivated the farmers to take up paddy cultivation in an area of **0.816 L.Ha** (**2.040 L.Ac**)utilizing the available ground water near the filter points. The farmers were supplied with biopesticides , Micro Nutrient Mixture, Bio-fertilizer, Gypsum and HDPE pipes at free of cost at an outlay of **Rs.18 crores**.

2.2.2. Kuruvai paddy crop 2014-2015

Uncertainity in the onset of South West Monsoon, inadequate rainfall in the catchment areas, change in the rainfall pattern due to El Nino influence the opening of Mettur reservoir. Hence, the **Hon'ble Chief Minister** has announced a package for Rs.32.95 Crores consisting of distribution of conveyance pipes to increase water use efficiency, productivity enhancement inputs, unique concept of raising community nursery of short duration/ extra short duration paddy varieties to be transplanted under System of Rice Intensification (SRI) with provision of Paddy transplanters and power weeders to farmers' groups to encourage mechanization. A contingency plan to maximixe the Kuruvai coverage has also been drawn depending on the time of release of water from the Mettur Dam.

3. Area, Production and Productivity:

During 2012-13, an acute rainfall deficiency coupled with terminal drought caused large scale crop damage. The Government declared the entire state except Chennai as drought affected. The estimate of area, production and productivity for 2012-13 is as follows

Crop	Area (L.Ha.)		Production (L.MT)		Productivity (kg/Ha)	
	Target	Achmt (*)	Target	Achmt (*)	Target	Achmt (*)
Rice	22.00	14.93	86.50	40.50	3932	2713
Millets	11.00	6.42	26.95	13.42	2450	2090
Pulses	10.40	5.11	6.55	2.13	630	417
Total food grains	**43.40**	**26.46**	**120.00**	**56.05**		
Oilseeds	6.60	3.90	15.00	8.16	2273	2092
Cotton (L.Bales)	1.55	1.33	4.20	2.55	461	326
Sugarcane (MT)	3.60	3.48	493.50	340.14	137	98
Total	**55.15**	**35.17**				

(*) Final estimate 2012-2013

Popularisation of crop specific agricultural practices such as SRI, System of Pulses intensification(SPI), intensification of millets and red gram (through transplantation), Sustainable Sugarcane Initiatives(SSI), precision farming, micro irrigation, integrated farming system besides efforts such as distribution of Farmers integrated hand book, effective dissemination of good practices to farmers through Uzhavar Peruvizha and development of suitable crop plan at farm level through Farm Crop Management System have made a significant impact in salvaging the production of food grains during 2012-13.

The year **2013-14** which opened on a positive note with good rainfall during winter season was subsequently affected due to poor storage of reservoirs, delayed opening of Mettur dam, skewed distribution of rainfall during South West Monsoon inspite being Normal as per IMD norms resulting in failure of achieving the programmed area during Kharif 2013 besides affecting the prospects of Kuruvai paddy crop in Delta districts. Further deficient rainfall in North East Monsoon had a major impact on the crop coverage especially in southern districts. However, Government took up series of initiatives such as implementation of Kuruvai Special package 2013, bringing back fallow lands for cultivation, rejuvenating soil health, Launching of food grain mission to bring paradigm change from "food security to food surplus", adoption of SRI and SPI as a whole village concept in newly identified villages, promotion of transplanted red gram cultivation in a larger extent coupled with micro irrigation, cultivation of Rice fallow Pulses with improved practices, intensification of millets cultivation, SSI, precision farming, micro irrigation, integrated farming system as a district saturation model and Invigorating Extension System through efficient use of ICT tools to increase the area, production and productivity of all crops during 2013–14.

Despite poor rains during 2013-14, various path breaking initiatives by the Government has resulted in an all time high estimated production of food grains. The area, production and productivity as per **fourth advance estimate is given below.**

Crop	Area (L.Ha.)		Production (L.MT)		Productivity (kg/Ha)	
	Target	Achmt (*)	Target	Achmt (*)	Target	Achmt (*)
Rice	20.00	17.86	78.50	69.62	3925	3898
Millets	11.00	9.81	26.95	35.96	2450	3666
Pulses	10.40	8.80	6.55	5.07	630	576
Total food grains	**41.40**	**36.47**	**112.00**	**110.65**		
Oilseeds	6.60	4.22	15.00	10.52	2273	2493
Cotton (L.Bales)	1.55	1.52	4.20	4.08	461	456
Sugarcane (MT)	3.60	3.27	396.00	317.60	110	97
Total	**53.15**	**45.48**				

(*) Fourth Advance Estimate 2013-14

3.1. Milestone achievements in three years:

The Government launched crop and site specific strategies propelled by farm level interventions for the terminal year of XI Five Year Plan and also for XII Five Year Plan to accelerate growth in Agriculture sector and to usher in **Second Green Revolution** to increase the production and productivity of major crops and a host of welfare schemes were introduced and implemented in the last three years.

- **Uzhavar peruvizha, an Intensive multidisciplinary awareness campaign** launched by **Hon'ble Chief Minister** in 2012-13 involving Agriculture, Allied and Line Departments was conducted in all the revenue villages of all 385 blocks and was continued during 2013-14. The mass campaign helped in bridging the knowledge gap of the farming community at revenue village level besides enabling the Department to collect 18.35 Lakh soil samples, distribute 9.35 Lakh Farmers Integrated Hand books, suggest 6.67 Lakh crop plans & provide inputs worth Rs.37.99 Crores. About 80.86 Lakh farmers participated and an amount of Rs.78.48 Crores was spent.

- **Farm Based Interventions** were introduced during 2011-12 to bridge the yield gap at farm and village level. **Hon'ble Chief Minister** launched series of new initiatives such as **Farm Crop Management System (FCMS), Farmers Integrated Handbook, Touch Screen Kiosks** and a number of new software modules for effective individual farm planning, management of inputs and speedy transfer of extension activities under AGRISNET platform fully exploiting the power of information technology in Agriculture**.**
- **SRI** & **SPI** were adopted as a **whole village concept** from 2011-12 onwards.
  - In the past three years, about **5,880 villages** were brought under **SRI** covering an area of 5.675 L.Ha This technology has increased the productivity of rice and in the last 10 years, the highest productivity of 3,918 kg/ha was obtained during 2011-12.
  - To bridge the production - demand gap in pulses, improved pulses production technologies with more focus on application of **Pulse Wonder** were advocated in **5,102 Pulses villages** covering an area of 3 L.Ha.
- **As a part of massive farm mechanization to ensure timely farming activities, Farm machineries** (Power tillers) were distributed **free of cost** for development of **SC & ST farmer group** with preference to the youth in 385 blocks at a cost of Rs.4.29 Crores.

- For the first time, the State Government sanctioned a sum of Rs.10.48 Crores during 2011-12 towards **Micro irrigation exclusively for pulses** in an area of 5,000 Ha. out of which, a sum of Rs.10.25 Crores was spent covering an area of 4,931 hectares. Judicious use of water combined with the use of DAP spray and pulse wonder increased the productivity of pulses by 44% (554 kg/Ha) during 2011-12, when compared to 2010-11.
- An innovative concept viz., **Intensive Redgram cultivation through transplantation** was taken up in 69,891 Ha. across the state at a cost of Rs.29.46 Crores to organize free demonstrations, provide inputs with subsidy and grant production incentives so as to increase the production of redgram. During 2013-14, this technology was **coupled with micro irrigation** in an area of 3,857 Ha. had increased the area of pulses to 8.80 L.Ha which is the **highest in the past decade**. Inspite of the water stress condition, an appreciable productivity of 576 kg / Ha was obtained.
- Promotion of high end technologies such as **Precision Farming and micro irrigation**, contributed to increase in production of pulses, millets, cotton and sugarcane through increased yield, quality and input use efficiency.
  - In the past three years, precision farming was taken up in 6,100 Ha. of agricultural crops at a cost of Rs.15.90 Crores.
  - Micro irrigation was adopted in an area of 31,822 Ha. for which an amount of Rs.123.07 Crores was spent.
- **SSI,** an exclusive comprehensive technology package for increasing the productivity of sugarcane was adopted in an area of 13,522 Ha. in the last three years at a cost of Rs.41.07 Crores. Tamil Nadu stands second at all India level in productivity.

- **1,182 Integrated Farming System models** were organized for wet land, garden land and dry land @ 1 model per block at a cost of Rs.8.84 Crores.
- As a part of bringing a rapid transformation in agriculture by encouraging farmers in adoption of innovative technologies, a **cash prize of Rs.5 Lakhs** and **a medal** worth of Rs.**3,500/-** are being given by the **Hon'ble Chief Minister** on the Republic Day function from 2011-12 onwards to the farmer who obtains the highest yield in paddy by adopting SRI technology.
- Government to ensure food security in the state recognized the efforts of the farmers who had contributed significantly for increasing the productivity of food grains by rewarding them with special awards for which an amount of Rs.**6.05 Lakhs** was spent.
- During **2013-14**, in spite of monsoon aberrations and erratic rainfall, efforts were taken by the Government to expand the area and production of food grains by bringing **additional area during summer** using the available water resources for which an amount of **Rs.18 Crores** was spent.

All these initiatives culminated in increased food grain production. The results were overwhelming in the first year itself as the state which is surging ahead in all fronts, obtained the highest food grain production of 101.52 L.MT during 2011-12. Though severe drought prevailed across the State during 2012-13, a food grain production of 56.05 L.MT was attained due to the special efforts taken by the Government. Inspite of deficit rains that continued during **2013-14,** sincere efforts of the Government have resulted in a food grain production of **110.65 L.MT** as estimated by the

Department of Economics and Statistics, which is unprecedented in the annals of agriculture in Tamil Nadu. This has instilled confidence to aim for a production of 145 L.MT of food grains during 2014-15.

Area and Production Programme for 2014-2015

Crop	Area (L.Ha)	Production (L.MT)	Productivity (Kg/ha)
Rice	21.00	92.00	4381
Millets	12.00	45.00	3750
Pulses	11.00	8.00	727
Total food grains	**44.00**	**145.00**	
Oilseeds	6.60	15.00	2273
Cotton (L.Bales)	1.70	6.70	670
Sugarcane (MT)	3.60	400.00	111
Total	**55.90**		

4. Big Leap towards profitable agriculture:

In pursuance of achieving ambitious goals of second green revolution, the Government is initiating various innovative strategies such as **"Planning to weather proof Food grain area"** for various monsoon scenario, Crop diversification, integrated approach to enrich the soil fertility, Effective water resources management, Increasing the Water Use Efficiency through promotion of precision farming, Micro Irrigation and crop specific technologies, input supply management, farm based interventions, whole village concept for paddy and pulses to develop model villages, SSI, group extension approach by invigorating the extension system, Integrated Farming System approach, weather, crop and market advisories to farmers, IT based farm level interventions & Capacity building for excellence, Formation of commodity groups, Farmers Producer Organisations (FPOs), imparting knowledge on cleaning, grading and value addition, linking them with aggregators

and meticulously executing these approaches under various crop oriented schemes for market led agriculture.

The Government has framed the following strategies for 2014-15 to intensify the cropping area and production:

- **Improving Land Resources**
  - Appropriate agro-ecologic zoning
  - Designing profitable cropping pattern
  - Increasing the gross cropped area and cropping intensity
  - Stabilize / enhance production in rainfed and dry land farming systems
  - Identification and bringing back fallow land under cultivation.
- **Nutrient Conservation and farm soil preservation**
  - Soil survey and land use
  - GIS based soil mapping to economise fertilizer use
  - Reclamation of problem soils
  - Site specific and need based nutrient management
  - Organic farming
- **Judicious utilisation of Water Resources for crop intensification**
  - Crop specific technologies in irrigation management to increase water use efficiency
  - Increasing irrigation intensity
  - Augmenting water harvesting resources such as farm ponds, percolation ponds, check dams, subsurface dykes, etc.,
- **Integrated Resource Management**
  - Strengthening input delivery system
  - Farming system and crop based technological interventions
  - Integration of livestock, horticulture, silvi-pastures, fisheries, sericulture, apiary etc., with crop husbandry

  - Grower clusters for a cohesive and multifaceted approach for optimal use of resources.
- **Agriculture Infrastructure Management**
  - Identifying farmers' vital needs, developing and maintaining rural infrastructure by teaming up the local communities, farmers and traders.
  - Rebuilding agriculture infrastructure for seed production, storage & processing, production of other inputs such as biofertilizers, biopesticides etc., quality control of all inputs, capacity building besides transfer of technologies.
  - Encouraging private investments in farm development.
  - Deriving maximum efficiency in the use of key inputs including water, nutrients, bio-pesticides, energy, land and labour.
- **Alternative Energy sources to increase farm efficiency**
  - Tapping solar energy to increase the farm output
  - Drudgery, time & labour saving technologies - Farm mechanization
- **Invigorating the Agricultural Extension machinery**
  - Perk up the Extension delivery system
  - Establishment of Knowledge and Training centres
  - IT based Extension deliverance
- **Human Resource Management**
  - Entrepreneurship development
  - Capacity building for excellence
  - Instituting Awards and rewards
- **Calamity Relief**
  - Mitigating crop loss due to climatic stress and establishing a resilient cropping system
  - Crop Insurance

The Way Forward

- ❖ Intensifying the net cultivable area
- ❖ Revitalizing soil health to increase farm productivity
- ❖ Promoting more rational and efficient conjunctive use of irrigation water
- ❖ Precise Input Supply System which serves as a network of production technologies and management strategies to improve the delivery mechanism
- ❖ Increasing the total efficiency of the inputs to increase the agricultural output
- ❖ Improving the Farmers Development Index
- ❖ Creation of robust Agriculture Infrastructure Network besides capacity augmentation by retrofitting the existing ones
- ❖ Maximizing the production potential of rainfed areas in all agroclimatic zones

Strategic Action plan to achieve the Goal

- Block wise plan of action for 3 types of scenario viz., normal, deficit and excess rainfall has been chalked out as **Weather proofing for food grain production**.
- A **comprehensive Seed action plan** has been developed for the different scenario.
- Making available sufficient 'C' seeds by developing three year seed rolling plan involving TNAU for new varieties with short duration, abiotic and biotic stress tolerance, less nutrient uptake and market preference in time.
- **A Village level Soil mapping booklet and soil fertility based Nutrient Management matrix** indicating village wise, crop wise nutrient application to improve the soil organic matter and soil health will be developed for attaining potential yield.

- Action has been initiated to **strengthen infrastructure** for soil testing, production of MN mixture, bio-fertilizers, liquid bio-fertilizers and bio-control agents.
- The **Extension System** is being **invigorated** to become farmer oriented with fixed Village visit schedule and close interaction with grower clusters.

The Government of Tamil Nadu is pioneer in planning, designing and implementing several unique initiatives under State Sponsored Schemes, Centre-State Shared Schemes, Centrally Sponsored Schemes and Externally Aided Projects to meet the demands of farming community and for a holistic development of the State Agriculture. The Government which is promoting eco-friendly and profit oriented agriculture without compromising with its traditional aspects, is developing novel projects every year for soil health management, crop improvement and management of food grains, oilseeds, cotton and sugarcane, crop protection, crop insurance etc., which have created a huge positive spin-off benefits.

4.1. Improving Land resources

Appropriate Land Resources planning and management should facilitate allocation of land to the uses that meet out the demands of the burgeoning population besides providing the greatest sustainable benefits to the farmers. Government is in the process of improving land utilization based on Agro Ecological Zoning for which the major crops in each agro-ecological zone will be identified and the details on cultivation practices, productivity, marketing, post harvest etc will be collected and analyzed. Crop workshops will be organized with the participation of department officials, scientists, experts and progressive farmers to arrive at the best management practices for increasing the production potential of each crop,

recommend suitable cropping pattern for effective use of natural resources and suggest appropriate post harvest technologies for each crop.

Government encourages the smallholders to adopt sustainable crop production intensification by recommending suitable and profitable cropping system, reclamation of problem soils, identification and conversion of fallow lands for agriculture, increasing the productivity of agricultural lands by village-based Integrated Nutrient Management through stratified soil sampling and analysis, promotion of organic farming, Integrated Farming, diversified farming, Rainfed Area Development and appropriate market linkages.

NABCONS, a consultancy agency under NABARD has been assigned with the task of preparing a Detailed Project Report for Integrated Farming system for Villupuram district on district saturation model.

An extent of 100 acres of fallow lands has been brought back to cultivation at a cost of Rs.5.60 Lakhs during 2013-14 through land development measures, creation of irrigation structures and input distribution.

Government with an aim to stabilize and enhance the production in dry land and rainfed areas implemented Rainfed Area Development Programme under National Agriculture Development Programme at a cost of Rs.9.95 crores for organizing cropping system based demonstrations, establishment of vermicompost units, in-situ moisture conservation and post harvest management. The scheme will be continued under National Mission on Sustainable Agriculture during 2014-15.

4.2. Nutrient Conservation and farm soil preservation

Soil degradation is one of the biggest challenges in increasing the farm productivity. Hence agriculture must be brought back to its roots by emphasizing on the importance of soil health through natural sources of plant nutrition and judicious use of mineral fertilizers.

Government is giving thrust to retrieve and preserve soil health through detailed soil survey, reclamation of problem soils, soil sample collection and analysis, GIS based soil mapping, Site and crop specific need based nutrient management through **Farmers Integrated Handbook (FIHB) ,** increasing soil organic matter in soils and biological nitrogen fixation to enrich N-poor soils and correcting micro nutrient deficiencies.

4.2.1.Soil survey and Land use organization

Soil survey & **soil mapping** is the process of classifying soil types and other soil properties in a given area and geo-encoding such information. This information is very useful in identifying the land suitability and risks of land use for sustainable and profitable use of soil and land resources. Government in order to develop appropriate land use planning has completed Reconnaissance soil survey at taluk level and detailed soil survey at village level to demarcate the area into soil order & series, study the characteristics of the soil, nutrient status, Land irrigability, Land capability, Crop suitability etc. is being carried out. As per the Internationally recognized system of United States Department of Agriculture (USDA), the soil is classified, extent is mapped on standard topographic base maps and interpreted to develop a more suitable cropping system at farm level by formulating appropriate technologies to increase the farm productivity. Comprehensive inventory on soil resources is prepared by conducting detailed soil survey

through four Soil Survey Units at Coimbatore, Thanjavur, Vellore and Tirunelveli. The detailed soil survey will be taken up in an area of 0.99 L.Ha during 2014-15.

4.2.2. Soil Nutrition-care

Soil degradation which is one of the biggest challenges in agriculture is caused due to erosion, nutrient imbalance, compaction, salinization, water-logging, decline in soil bio-diversity, urbanization, contamination with heavy metals & pesticides and adverse impact of climate changes resulting in loss of organic matter (declined to 0.45% in 2010-11 from 1.26% in 1980s) and multi-nutrient deficiencies.

Government to manoeuvre this, has taken up series of initiatives such as conservation agriculture, integrated nutrient management, erosion control, saline and alkaline soil management, development of remote sensing and Global Positioning System (GPS) - based Decision Support System (DSS) and amelioration of polluted soil for soil health management which is fundamental for food, water and environmental security.

The deterioration in soil organic content has created a serious concern which has necessitated to revisit the policy of organic farming for which Government is taking slew of measures to build up the organic matter in the soil.

- **Farmers Integrated Hand book** has been distributed on fast track approach to 45.62 lakh farm holdings after detailed soil sampling and analysis in a period of three years by expending an amount of Rs.10 crores. During 2014-15, 35.56 lakh FIHB will be distributed.
- During 2013-14, **GIS soil mapping** was done on pilot basis in 6 blocks of selected 6 districts to identify soil properties and nutrient removal pattern of crops based on which recommendations will be provided to restore

the soil health and reduce the cultivation expenses**.** During 2014-15 & 2015-16, it is programmed to complete the GIS soil mapping for 16,732 revenue villages in Tamil Nadu at a financial outlay of Rs.7.76 crores under National Mission on Sustainable Agriculture (NMSA).

- 30 Soil Testing Laboratories functioning in the state have been modernized by providing IT infrastructure besides recruiting JRF to expedite the soil analytical works. The soil sample results of all the farm holdings are being uploaded in the **AGRISNET,** the web portal of Agriculture Department. During 2014-15, it is programmed to analyse 8.382 Lakh samples.
- 16 Mobile Soil Testing Laboratories have been provided with fully equipped mobile vans to provide service at farmers' doorstep for spot analysis of soil macro & micronutrient status and also advice on the cropping system to be adopted. During 2014-15, it is programmed to analyse 2.88 Lakh samples.
  - Government with an aim to expedite soil sample analysis with more precision and accuracy will **strengthen the soil testing and mobile soil testing laboratories.**
- The Central Control Laboratory located at Kudumianmalai, is the Apex Organization which serves as a watchdog on quality parameters, precision and accuracy of analysis in the laboratories besides providing widespread awareness on soil-test–based fertiliser use and technical competence through training to the laboratory personnel.
- Government with an objective of improving the soil productivity, increasing the profitability of farmers and achieving agricultural development by preserving soil fertility on a sustainable eco-friendly basis is promoting

Organic farming for which schemes such as procurement & distribution of green manure seeds, production and distribution of Bio-Fertilizers, composting of farm wastes with *Pleurotus and* Vermicomposting of farm wastes are being implemented. Further, efforts will be taken to promote efficient manure management and biological nitrogen harvesting as a whole village concept.

- **Green manure crops** like Sun hemp, Daincha, Kolinji and Sesbania are cheap alternative to inorganic fertilizers that maintain / increase soil organic matter content, improve soil fertility, increase yield, quality of produce & economic returns. During 2013-14, 207 MT of Green Manure Seeds were procured and distributed to the farmers at a subsidy of 50%. The scheme will be taken up during 2014-15 also. Focus will be on developing revenue generating models for Green manure production.
- **Bio-fertilizer**, a cost effective, eco-friendly, organic input, renewable source of plant nutrients and a vital component in Integrated Nutrient Management is produced in three strains viz., *Azospirillum, Rhizobium and Phosphobacteria* in the Government owned 15 **Bio-Fertilizer Production Units** functioning with an annual production capacity of 3,850 MT (192.50 Lakh packets of 200 gram each) and distributed at a cost of Rs.6/-per packet. The government has programmed to produce and supply 2,500 MT during 2014-15.
  - During 2014-15, it is programmed to produce **new biofertilizers** which solubilize Potash and Zinc content in the soil for which all the 15 units will be upgraded at a cost of Rs.5.55 Crores under National Agriculture Development Programme(NADP).

They are tested for their standards at the Bio-fertilizer Quality Control Laboratory functioning at Tiruchirapalli and this laboratory will be strengthened under NMSA during 2014-15 to improve the efficiency.

- As announced by the Government during 2012-13, the 5 existing Bio-Fertilizer Production Units(BFPUs) have been strengthened for production of **liquid biofertilizers** and production has commenced. During 2014-15, it is programmed to produce 2.5 L.litres of liquid bio fertilisers. Further, the remaining BFPUs will be strengthened during 2014-15.

- Annually 525 MT of **Blue Green Algae** and 500 MT of **Azolla** are produced and distributed to the farmers as they act as desirable biological fertilizers that reduce the use of chemical fertilizers by 25%. This scheme will be continued during 2014-15 also.
- Kits containing 1 Kg of *Pleurotus*, 5 Kg of Urea and pamphlet are distributed every year to the farmers at free of cost to produce **compost from farm waste using *Pleurotus*.**
- **Vermicomposting of agricultural waste** which is advantageous in improving soil structure, texture, aeration & water holding capacity, increasing the beneficial micro flora and improving the quality and shelf life of the produce is demonstrated to the farmers in their own fields.
  - During 2013-14, 250 demonstrations cum training to benefit 12,500 farmers were organized at a cost of Rs.9.62 Lakhs. The scheme will be continued during 2014-15.

- Further 753 vermicompost units have been established under Rainfed Area Development Programme of NADP during 2013-14.

Vermicomposting - Tradition reinvented - Our forefathers used all the techniques that we are now reverting to; coming close to nature again acknowledges Thiru. Thangavelu of Maranur village in Sathyamangalam block, Erode dt.

As agriculture moves into more and more sustainable models of production, the farmer of the village who realized the importance of natural resources for sustaining soil health resorted to application of vermicompost in his field as recommended by the Extension officers. The confidence in using non chemical approaches helped this farmer to move away from chemical fertilizers towards eco-friendly agriculture. He availed subsidy under NADP and established the vermicompost unit from which he obtained Rs.12,000/- worth vermicompost per annum besides preserving the soil health and increasing the crop production by application of vermicompost in his field.

- Government announced a scheme for Enriching the Soil Fertility through **Trash Mulching** in Sugarcane in an area of 5,000 Ha. at a cost of Rs.1.01 Crore during 2013-14 and the scheme has been completed. This scheme will be taken up in an area of 10,000 Ha. during 2014-15 at a cost of Rs.2.42 Crores.

4.3. Judicious utilisation of Water Resources for crop intensification

Spatial and temporal variations in rainfall, continuous drought and the competing demands for water among

different sectors coupled with drastic climate changes have necessitated smarter, precision technologies for irrigation and farming practices that use ecosystem approaches to conserve water.

Government focuses on knowledge based precision irrigation which involves optimum utilization of inputs and control of both the quantum and timing of water applied to crops. By this way, the farmers are encouraged to increase the number of crops grown per year, bring more area under irrigation and boost the land productivity through prudent use of water saving technologies. Government is making use of all avenues to improve the service delivery of irrigation systems by improving water holding capacity of the sub-basins, de-silting of tanks and ponds to increase their capacity, construction of water harvesting structures such as check dams, farm ponds, percolation ponds for recharging ground water. **Water use efficient technologies** such as System of Rice Intensification and Improved Pulses production technologies as a whole village concept, Sustainable Sugarcane Initiatives, Integrated Farming System, Precision Farming, sprinkler irrigation and Micro Irrigation through drip and rainguns have been taken up intensively under various crop oriented schemes to enhance the crop productivity.

4.4. Integrated Resource Management

4.4.1.Strengthening input delivery system

The phenomenal growth in agricultural production has been triggered by high quality input use as well as technology induced productivity enhancement. Hence timely availability of quality inputs is mandatory for the holistic adoption of crop production technologies. Government plays a proactive role in coordinating, facilitating and regulating the production / procurement, stocking and distribution of

key inputs such as seeds, micro nutrient mixtures, bio-fertilizers and bio-pesticides through the Block Agricultural Extension Centres besides integrating private entrepreneurs, farmer groups, Women Self Help Groups, Commodity Interest Groups etc., for rural input services. The availability of other critical inputs such as fertilizers and credit is ensured through Primary Agricultural Cooperative Credit Societies. Further Government has developed a wide and diverse network to share the information on availability of inputs in the web portal of Agriculture Department.

As a part of the initiatives taken to strengthen the input supply management system, Government would **strengthen** the infrastructure Facilities of the **Agricultural Extension Centres** at Panaimarathupatti and Thalaivasal in Salem district at a cost of Rs.1.20 Crores during 2014-15 under NADP.

4.4.1.1. Seeds

Quality seed is a critical and basic input which determines the agricultural production and productivity and it is unique for each and every agro-climatic zone. Further, the efficacy of other agricultural inputs such as fertilizers, pesticides and irrigation is largely influenced by the quality of seed.

Government has a well structured seed plan for all agro-climatic zones drawn based on various factors such as climate, soil type, water resources, cropping pattern, requirement of farmers, crop plan adopted during contingency situation, targeted Seed Replacement Rate (SRR) etc. Accordingly, Government has built up a vibrant seed industry on Public Private Partnership mode involving farmers, women SHGs, TANWABE groups and NGOs for varietal development, plant variety protection including

revival of traditional promising varieties, sustainable seed production system even for small holdings, creation of infrastructure for seed production, processing and storage besides providing training on seed related aspects. The Government has also set up a separate quality control wing with fool-proof mechanism to ensure distribution of quality seeds to the farmers.

Government is taking necessary measures such as ensuring adequate and timely availability of Breeder & Foundation seeds as per plan, organizing seed farms, incentivizing seed growers for quality seed production, facilitating tie-up with National / State Seed Public Sector Units (PSUs) etc., to achieve the SRR of 33% for self pollinated crops such as paddy, ragi, pulses and groundnut, 50% for cross pollinated crops such as cholam, cumbu and cotton and 100% for hybrids. Government also owns 16 major, 2 medium and 63 mini Seed Processing Units with an annual capacity of 29,600 MT through which seeds produced in the seed farms are processed.

During 2013-14, 15,794 MT of paddy seeds, 284 MT of millet seeds, 3,040 MT of pulses seeds and 4,080 MT of oilseeds were procured and distributed through the Agricultural Extension centres.

The details of quality seed distribution and the Seed Replacement Rate (SRR) programmed for 2014-15 are as follows:-

Crop	Seed Distribution Plan for 2014-2015 (in MT)			
	Total Annual Require-ment	Department Certified Seeds	Private Certified / Truthfully labelled Seeds	SRR (%)
Paddy	1,05,000	34,650	38,850	70
Millets	13,367	770	9,421	76
Pulses	24,027	7,955	1,602	40
Oilseeds	1,05,638	12,670	22,190	33
Cotton	607	100	507	100

In continuance to the best performance under food grain production during 2013-14, it is programmed to implement successful crop specific interventions in a wider extent with an aim to achieve 170 L.MT of food grains in the terminal year of Twelfth Five Year Plan. During 2014-15, food grain production is aimed at 145 L.MT for which the targeted area under food grains has been substantially increased. To achieve this enhanced target, the SRR of food grains has been increased compared to last year for which a comprehensive seed action plan has been formulated to meet the seed requirement. The distribution target through the Department as well as private has been substantially increased in proportionate to the enhanced area.

4.4.1.2. Macro Nutrients

Nutrient management is the key issue in sustainable soil fertility. Intensive agriculture, which helps in increasing the food grain production is at the same time causing problems in terms of nutrient imbalance including greater mining of soil nutrients, deficiency of micronutrients, decreasing organic carbon content and overall deterioration in soil health. In order to meet the projected requirement of agricultural production and sustain the soil fertility, soil test-based farm-specific integrated nutrient management is

recommended through Farmers Integrated Hand Book to increase the soil productivity, crop yield, quality of produce and economic returns of the farmers besides minimizing the environmental hazards.

The Government is taking earnest efforts in formulating season-wise, crop wise, farm wise fertilizer requirement plans every year and also gets allocation of fertilizers from Government of India in time by preparing a season wise supply plan to ensure adequate availability of fertilizers to the farmers through fertilizer companies.

Fertilizer distribution during 2013-14 and requirement for 2014-15 is furnished below:-

(L.MT)

Fertilizer	Allocation 2013-14	Distribution 2013-14	Requirement 2014-15
Urea	12.18	11.91	12.45
DAP	4.22	4.31	5.12
MOP	4.66	4.68	6.09
Complex	7.74	4.45	7.45

The Nutrient Based Subsidy (NBS) policy which was introduced by Government of India (GOI) from 01.04.2010 has resulted in spiraling cost of chemical fertilizers except Urea as the Fertilizer Manufacturers / Importers have been permitted to fix MRP based on the cost of production / import. Hence, the farmers have resorted to application of excess Urea in lieu of DAP and MOP causing imbalance in the nutrient application. As this would adversely affect the soil health and productivity of crops, the usage of SSP and phosphate solubilizing bacteria is being encouraged to reduce the consumption of DAP to a level of 5%. Further, the Government have taken up the matter with Central

Government to withdraw the NBS in view of frequent hike in fertilizer prices by the manufacturers.

To ensure availability of adequate quantity of quality fertilizers in time at affordable prices to farmers, Government of Tamil Nadu have taken commendable initiatives such as exempting 4% VAT on Fertilizers besides providing interest free loan to TANFED for prepositioning adequate quantity of fertilizers. In the past three years, a sum of Rs.429.94 Crores has been sanctioned as interest free loan to TANFED for procuring DAP, Urea and MOP for meeting the fertilizer demand by maintaining the buffer stock.During 2014-15, a sum of Rs.150 crores has been sanctioned to TANFED for timely supply of fertilizers.

4.4.1.2.1. Quality Control

The Government is not only resolute in ensuring the availability of fertilizers in time but also checks the veracity of fertilizers from the point of docking in case of imported fertilizers and from the point of manufacturing to the wholesale / retail outlets in case of fertilizers manufactured locally. The Government strictly enforces the Fertilizer Control Order, 1985 by periodical sampling and analysis in 14 notified Fertilizer Control Laboratories functioning in the State and initiates legal action against the distributors who sell non-standard fertilizers. Government with an aim to **strengthen the quality control of fertilizers**, have sanctioned a sum of Rs.59 Lakhs towards the construction of a new building for Fertilizer Control Laboratory at Seelanaickenpatti in Salem district during 2014-15 under NADP. Further, the existing Fertilizer Control laboratories will be strengthened.

During 2013-14, 17,500 samples were tested of which 635 samples were found non-standard and suitable departmental and legal action have been taken up against

the defaulters. During 2014-15, it is programmed to analyze 17,500 fertilizer samples.

Further, the Government will take appropriate measures to safeguard the interest of farmers in organic cultivation and to ensure the quality of organic manures in the market as per the standards of FCO, 1985.

4.4.1.3. Micro Nutrients

The soil becomes deficient in micronutrients due to intensive cropping, loss of top soil by erosion, loss of micronutrients through leaching, decreased usage of organic manures etc. Considering the importance of micronutrients, Government ensures timely provision of micronutrients in the form of “fortified” fertilizers as a potential source of enhanced crop nutrition to increase the crop production & productivity and quality of the produce.

To analyse the Micro Nutrient status of the soil, all the 30 Soil Testing Laboratories and 16 Mobile Soil Testing Laboratories have been provided with Atomic Absorption Spectrophotometers. Further, out of 14 Fertilizer Control Laboratories, Atomic Absorption Spectrophotometers have been installed in 5 laboratories for analyzing Micronutrients in fertilizers. As the demand for micro nutrients is increasing and new fertilizers fortified with micronutrients have been notified under FCO, 1985, Government will strengthen the remaining laboratories with the facility for analyzing Micronutrients.

Annually 1,600 MT of 14 types of notified Micro Nutrient (MN) Mixtures are produced at Micro Nutrient Mixture Production Centre, Kudumianmalai and distributed to the farmers through the Agricultural Extension Centres after ensuring the quality at 5 Fertilizer Control Laboratories. In order to augment the production of MN mixture, this MN mixture production unit is being modernized at a cost of

Rs.60 Lakhs and MN mixture godown is being constructed at a cost of Rs.130 Lakhs under NADP.

During 2013-2014, 1,409 MT of Micro Nutrient Mixtures were produced and distributed against a target of 1,600 MT. The scheme will be continued in 2014-15 also.

4.4.1.4. Plant Protection

With a vision to alleviate the yield loss due to pests and diseases, Government is adopting various management strategies such as intensive pest surveillance, Integrated Pest Management, creation of adequate infra-structure development for production of bio-control agents, quality assurance on plant protection chemicals besides sensitizing the farmers on various plant protection aspects.

Tamil Nadu Agricultural University has released Virtual Extension software called Crop Doctor for six crops – Paddy, Ragi, Sugarcane, Maize, Coconut and Banana to serve as Farmer friendly extension tool for diagnosing various pests, diseases and nutritional disorders with key visual symptoms and knowing appropriate management methods by farmers themselves. The Department of Agriculture has loaded this software in computers and 125 Touch Screen Kiosks placed at AECs for the benefit of farmers. Further, to have knowledge on crop health in the State, a field reporting format for easy handling by the Farmer Friends will be developed. A small application supporting ordinary mobiles available with farmers will be developed for taking photographs & sending to TNAU for back end advice and activated from the ensuing season through FCMS.

4.4.1.4.1. Pest & Disease Surveillance

Government is focusing on conduct of intensive pest and disease surveillance through fixed plot surveys and

roving surveys at weekly intervals and daily basis respectively, monitoring and forewarning of pest & diseases outbreak, recommendation of crop & pest specific management measures to the farmers through SMS and voice advisories, radio, television, pamphlets, campaigns, etc., and sensitization of farmers on seed borne diseases through massive seed treatment campaigns.

4.4.1.4.2. Integrated Pest Management

As an ecosystem-based approach, Government is promoting Integrated Pest Management (IPM) that serves as the main plan for a safe plant protection strategy with which notable success has been achieved in our State in maintaining a healthy agro-ecosystem. IPM involves use of cultural, mechanical, biological methods and the use of chemicals as a last resort for controlling insects-pests, diseases and weeds. Strategies such as use of quality seed / planting material, crop rotation to suppress pathogens, production and distribution of bio-control agents, elimination of infected host plants, effective weed management, usage of need based chemical pesticides in right quantity at right time, conduct of farmers field schools and extending subsidy for IPM & Non Pesticidal Management technologies have been implemented under various schemes such as NADP, ISOPOM, Technology Mission on Cotton – Mini Mission II and NFSM. Effective implementation of this programme has helped to reduce the consumption of pesticides from 10,926 MT of technical grade in 1984-85 to 2,142 MT in 2013-14. This scheme will be continued during 2014-15 under various Restructured Centrally sponsored schemes.

4.4.1.4.3. Production of Bio Control agents in Bio Control Labs and Integrated Pest Management Centres

Pests and accompanying species such as predators, parasites, pollinators, competitors and decomposers are components of crop - associated ecosystem. With an aim to manage the insect pest population in an ecologically balanced way, Government is producing Bio-control agents through state owned 10 Bio-control labs & 2 Integrated Pest Management Centres and distributing to the farmers at subsidized cost through Agriculture Extension Centres so as to minimize the crop losses due to pests and diseases. Government will strengthen these bio-control laboratories during 2014-15 to augment the production of bio-agents.

Following bio control agents are being produced and distributed to the farmers.

Bio-control agents	Production centres (Nos.)	Pests / Diseases controlled	Area (Ha.)	
			Achmt. 2013-14	Program 2014-15
Trichogramma chilonis (egg parasitoid)	21	Sugarcane Internode borer	10,570	11,000
Bethylid,Braconid [larval parasites] and Eulophid [prepupal Parasites]	12	Coconut Black headed caterpillar	5,121	10,500
Green Muscardine fungus [*Metarhizium sp*]	2	Coconut Rhinoceros beetle	40,000 ml	55,000 ml
Nuclear Polyhedrosis Virus	12	Groundnut Red hairy caterpillar, Prodenia and cotton boll worm	4,250	4,250
Bio pesticides - *Pseudomonas sp*, *Trichoderma viridi*	12	Diseases in cotton, pulses and paddy	10,000	10,000

4.4.1.4.4. Pesticide Testing Laboratories

Government monitors the quality of pesticides by drawing samples from 147 Pesticide Manufacturing Units and 13,321 private sale outlets besides regulating the supply of quality plant protection chemicals to the farmers in accordance to the Insecticide Act, 1968 and Insecticide Rules, 1971.

The quality of the pesticides is ensured through 15 notified Pesticide Testing Laboratories functioning at Kancheepuram, Cuddalore, Salem, Coimbatore, Erode, Thanjavur, Tiruchirapalli, Madurai, Thoothukudi, Vellore, Dharmapuri, Nagapattinam, Theni, Sivagangai and Tirunelveli. During 2013-14, 16,144 samples have been analysed. It is programmed to analyze 21,850 pesticide samples during 2014-15.

Government is also taking special efforts to strengthen 2 State Pesticide Testing Laboratories for obtaining NABL accreditation besides constructing new building for 6 State PTLs at a cost of Rs.5.68 Crores under NADP.

4.4.2. Farming system and crop based technological interventions

Agricultural production in Tamil Nadu is contributed mostly by small and marginal farmers who need a genetically diverse portfolio of improved crop varieties resilient to climate change & suited to a range of agro-ecological zones and improved farming practices for better management of natural resources such as land and water. The following technological framework helps in increasing the production and productivity of crops besides the Input Use Efficiency.

i. Food grain mission

Honourable Chief Minister under Rule 110 has announced the launching of **Food grain Mission** on 6.5.2013 constituting three sub-missions viz., Paddy, Millets and Pulses missions to bring in a paradigm shift from food security to food surplus through a **Mission mode approach**, by bundling the frontier technologies to bridge the yield gap at village, block and district level to achieve a quantum jump in food grain production under the leadership of District Collectors.

During 2013-14, the Food grain mission was implemented at a cost of Rs.112.30 Crores by dovetailing funds from paddy, millets and pulses mission under NADP besides NFSM for paddy and pulses. This scheme will also be continued during 2014-15 with an aim to achieve 145 L.MT. It is noteworthy to mention that Tamil Nadu stands **first** in productivity of rice and maize, **second** in cumbu and **third** in total food grains **at National level**.

ii. Whole Village Concept: Government introduced this concept during 2011-12 for increasing the area under food grains by popularization of SRI technology and SPI. This approach has been conceptualized for conserving all the crop production resources by adopting a package of input saving high productive innovative technologies in a village as a whole to serve as model village. This concept also contemplates on grouping the farmers for bulk production and profitable marketing.

a. System of Rice Intensification

SRI is a novel methodology which involves twelve vital principles meant to increase the yield, save water, reduce the production costs by 25 to 30% and increase the income of the farmers.

SRI technology breaks the jinx - Adoption of SRI has transformed his life, admits Thiru.P.Solaimalai of Villiyankunram village, Madurai district.

A farmer who was passively practicing conventional method of cultivation in paddy resorted to SRI on the advice of the Department officials. The farmer had followed all the recommended steps and the technology had paid him with full benefits. It is amazing to note that the farmer had reaped 8,272 kg per acre which is not possible under conventional method. The farmer attributes his success to decreased cost of irrigation, labour and cultivation besides increasing the cropped area by 50% due to intermittent irrigation. It is of no surprise that he had been awarded with **Prashasthi Patra** and a cash award of Rs.1 Lakh by His Excellency, the President of India. Further, he has also been awarded with a cash prize of Rs.5 Lakhs and a medal by ***Hon'ble Chief Minister*** during the Independence day function for dutiful adoption of SRI.

During 2013-14, 2,000 SRI villages have been organized covering 1.968 L.ha. During 2014-15, this concept will be adopted in 3,000 villages covering an area of 2.50 L.Ha.

During 2013-14, an amount of Rs.26.93 Crores has been allocated to organize 57,206 Demonstrations in SRI under NADP and a sum of Rs.17.14 Crores has been spent. During 2014-15, SRI technology will be adopted in a total area of 13.65 L.Ha.

b. System of Pulses Intensification

Pulse crop, an integral component of subsistence cropping system is grown as bund crop, intercrop, catch crop, relay crop, cover crop, green manure crop *etc*.,. In the present era, pulses have become inevitable in dietary requirements & nutritional security to the growing

population, improving soil health, conserving natural resources and sustaining productivity. Hence, Government is focusing on intensification of pulses cultivation as pure crop as pulses are capable of providing the high economic returns in the shortest possible time to many small and marginal farmers. **'SYSTEM OF PULSES INTENSIFICATION'** on a Whole village approach has been designed and advocated both for irrigated and rainfed areas to enhance the productivity of pulses and reduce the gap between per capita protein requirement and availability.

During 2013-14, SPI has been adopted in 1,712 villages (1.09 L.Ha) and in 2014-15, the programme will be taken up in 2,000 villages covering 1.25 L.Ha.

Further, Redgram transplantation has been taken up in an area of 40,736 Ha. coupled with micro irrigation in 3,857 Ha. This technology has helped to increase the yield two to threefold (1,200-1,500 kg/Ha). An amount of Rs.15.57 Crores has been spent against an allocation of Rs.15.60 Crores for redgram transplantation under NADP-Pulses mission. During 2014-15, Red gram cultivation will be promoted at a total cost of Rs.55.15 Crores in an area of 52,000 hectares of which precision farming will be taken up in an area of 1,000 Ha.

Improved package of practices in Pulses - Black gram makes wonder – Farmers mass contact programme was the turning point in my life, says Thiru.J.Moorthy of Padhirapuliyur village of Tindivanam block, Villupuram district.

It was Uzhavar Peruvizha programme, where he was inspired to adopt improved crop production technologies for doubling the production. He chose to cultivate Vamban-5 Black gram during Karthigai pattam (Nov-Dec) and availed assistance under NFSM-Pulses. He adopted improved

package of practices such as Seed treatment with Rhizobium and Phosphobacteria, application of Farm Yard Manure, split application of fertilizers, maintenance of optimum Plant Population by line sowing with markers, 2 rounds of TNAU Pulse wonder and spraying of Neem oil as a part of organic measure. He was astonished to observe the crop with a maximum of 213 pods per plant and 8-10 seeds per pod. He harvested 2,976 kg per acre and obtained a net profit of Rs.92,000/-

As a special measure, it is programmed to cultivate 'Rice fallow Pulses' **with improved practices'** in an extent of 4.33 L.Ha following samba paddy for which zonewise technologies for enhancement of productivity were formulated besides popularising dibbling technologies for population maintenance. It is also programmed to enhance the pulses area by raising **pulse crop in an additional area** using the water harvested through **70,000 Farm Ponds** being dug under MGNREGS.

Red gram Transplantation - The change what began as curiosity, transformed into a conviction making Thiru.Murugan, Krishnagiri district transplant redgram saplings from nurseries.

The new agricultural practice of raising nursery and transplanting redgram has revolutionised the red gram cultivation. Popularisation of this novel concept had been a boon to the farmer as he was obtaining only around 2,500 kg per hectare by adopting traditional farming techniques. This innovative concept, helped him to obtain a bumper yield of 4,500 kg per hectare, an 80 percent increase in yield as compared to the conventional practice of cultivation (2,500 kg per hectare).

iii. System of Millets Intensification

System of Millets Intensification, an unprecedented technology led revolution in agriculture is characterized by simple modifications in the agricultural practices to boost the productivity of nutrient rich millets. Government is giving due focus to increase the area and productivity of millets by capitalizing innovative management strategies such as precision farming, organizing demonstrations on improved production and post harvest technologies besides cropping system based training, distribution of certified seeds, distribution of seeds of improved varieties / hybrids as minikit, seed production and sensitizing the farmers on various local and indigenous technologies, generating consumers' demand for millet based food products through awareness creation and processing & value addition techniques.

During 2013-14, Millets Mission and Initiatives for Nutritional Security through Intensive Millets Promotion (INSIMP) were implemented at a cost of Rs.5.88 Crores and Rs.2.70 Crores respectively under NADP.

iv. Sustainable Sugarcane Initiatives (SSI)

The Sustainable Sugarcane Initiatives (SSI), a **"Chip Bud Technology"** is an innovative set of agronomic practices which involves raising shadenet nursery using single bud chips, transplanting young seedlings of age 25-30 days, practising new planting methods with wider spacing facilitating intercropping to utilize land effectively, providing sufficient moisture to plants & avoiding flooding of fields by adoption of precision farming / encouraging drip fertigation & application of organic manures for better nutrient management and promoting mechanized harvesting to increase the cane yield significantly.

This technology has been promoted in an extent of 2,905 Ha. in 2012-13. With an objective to promote this technology among sugarcane farmers to achieve a quantum jump in sugarcane productivity, **Honourable Chief Minister under Rule 110 announced upscaling of coverage under Sustainable Sugarcane Initiatives (SSI) to 20,000 Ha. through Sugar Mills at a cost of Rs.275.20 Crores.**

SSI – a path breaking initiative turns sugarcane cultivation sweeter for M.Palanisamy, in Kotuveerampalayam Village in Sathyamangalam block of Erode District.

He obtained a whopping yield of 120 MT in an area of 0.66 Ha (182 MT / Ha) of variety Co 86032 by adopting SSI. He expended an amount of Rs.18,787/- per acre which included part of investment on drip fertigation system. He realized a gross income of Rs.87,877/- per acre.The net profit was Rs.69,090/- per acre.This innovative methodology helped him to reduce the cost of cultivation with an increase in crop yield upto 20%.

During 2013-14, SSI was promoted in an extent of **7,522 Ha.** at a cost of Rs.23.50 Crores. During 2014-15, this scheme will be implemented in an area of 5,000 Ha. at a cost of Rs.17.95 Crores.

v. Tamil Nadu Cotton Cultivation Mission

An ambitious Tamil Nadu Cotton Cultivation Mission has been launched in the State to increase the productivity and production of cotton by **expansion of cotton area** from 1.34 L.Ha to **2.50 L.Ha** and increase the existing productivity level of 493 kg/ha to 870 kg of lint/hectare **over a period of five years.**

As a part of this, it is proposed to bring 1.70 L.Ha with a production target of 6.70 L.bales and increase the

productivity to 670 kg/ Ha during 2014-15 at a cost of Rs.50 Crores for which the funds will be sourced from State and dovetailed from Government of India schemes such as National Mission for Sustainable Agriculture (NMSA), NFSM- Commercial crops & Sub-Mission on Agricultural Extension (SMAE). Activities such as Precision farming, promoting Mechanization, Distribution of quality seeds, Integrated crop management including improved agronomic management practices, INM, IPM, IWM strategies, Efficient transfer of technology through front line demonstrations and Training to farmers on latest technologies, development of compact genotypes in cotton suitable for High Density Planting System, contract farming and mechanized harvest are proposed to be carried out. The scheme will be implemented in all districts except Kancheepuram, Tiruvallur, Karur, Pudukottai, Sivagangai and Kanyakumari during 2014-15.

vi. Precision Farming

Modern agriculture is science based and growers need improved management practices to increase crop productivity and maximize farm profitability while minimizing environmental hazards. Precision Farming is one such site specific crop management concept promoted on cluster basis wherein farmers are being provided with critical inputs such as seeds, water soluble fertilizers at 50% subsidy besides conducting adequate training programme.

Precision Farming in Maize - High profit lures farmers to high-tech precision agriculture, admits Thiru.Sengodan, Mannathi village, Elachipalayam block, Namakkal district.

Precision Farming Technology is an innovative technology that promises increased yield and quality of the produce by tailoring the inputs such as water, fertilizer and

pesticides. The technical guidance given by the Department officials motivated the farmer to join himself in the farmer cluster and raise maize hybrid integrated with the drip irrigation system in 2.5 acres by availing subsidy under NMMI & NADP. He obtained an yield of 10,500 kg from 2.5 acres which gave him an extra income of Rs.50,000 by adopting this location specific approach. He is also one of the leading farmers who plays a significant role in disseminating this technology to his member farmers.

Precision Farming will be implemented in agricultural crops in 5,000 Ha during 2014-15.

vii. Micro Irrigation

Micro irrigation is a localized irrigation method that saves water and fertilizer and is being popularized in a larger extent due to the added advantages of minimal soil erosion, reduced weed menace, uniform water distribution, maintenance of optimum plant population and increase in productivity & quality of agricultural produce. Recognizing the need for promotion of Micro Irrigation, first time in India, the State Government is providing 100% subsidy for SF / MF and 75% for other farmers.

The Micro Irrigation has been promoted in agricultural crops in an extent of 31,822 Ha. in the past three years. During 2014-15, Micro irrigation will be adopted in 37,850 Ha. under various agricultural crops such as Sugarcane, Pulses, Cotton and Coconut.

4.4.3. Integrated farming

Diversification of agriculture by integrating livestock, horticulture, silvi-pastures, fisheries, sericulture, apiary, etc., with the crop production system is a landmark development that ensures sustainable benefits to farmers by maximum utilization of resources in terms of time and space.

Villupuram district has been selected for implementation of Integrated Farming System as a **district saturation model** on pilot basis over a period of three years as it has large extent of cultivable land both under rainfed and irrigated conditions, large potential to increase the productivity and due to its proximity to the urban centre with good connectivity. The scheme implemented as a district saturation model will have the inbuilt potential of higher productivity & income, employment generation, sustained income throughout the year, resilience to climatic changes, holistic development and insulation against income loss.

All existing potential, present trend in cropping pattern, crop rotation, yield trend, allied activities in vogue, management practices, varieties cultivated, present level of income generation etc, and the needs of the farmers in the district will be identified in the pre-project survey. The data generated with the pre-project survey will be analysed to identify the existing deficiencies and opportunities available in the district, to finalise the interventions by the Agriculture Department in coordination with TNAU, Horticulture, Agricultural Engineering, Agricultural Marketing and Agri business.

During 2014-15, an amount of Rs.22.25 Lakhs has been sanctioned towards the cost of consultancy charges to NABCONS for conducting feasibility and fund requirement study for implementation of Integrated Farming System in Villupuram district as a district saturation model.

Integrated Farming system - Success in more ways than one - Integration of various enterprises bears fruits …. ! averred the enthused farmer Thiru.G.Hariharan, Kallikudi Block, Madurai district.

Evolving strategies for enhancing the quality of life of marginal and small farmers is the foremost priority of

Agriculture Department. Small sized holdings coupled with erratic monsoons make it difficult for such farmers to meet both the ends with the income from cropping alone. Hence, a holistic approach of integrating various allied enterprises with cropping has become the need of the hour for better security, sustenance and productivity.

Being an undergraduate, the educated farmer benefitted by this technological intervention has now set an example by his stupendous success. The extension officials motivated the farmer to implement the agri-horti cropping system integrated with organic farming, cow & sheep rearing. The total cost of the system was Rs.1,10,000/-. The farmer availed 50% subsidy from NADP & a loan from the PACCB for the remaining 50% cost. Inputs such as seeds of ADT-45 paddy, cotton & green gram, micro-nutrients, sprayers, fertilizers & PVC pipes were issued by the Department of Agriculture. The Department of Animal Husbandry supplied one cow, 10 sheep, 2,250 setts of Co-4 Fodder & 20 kg mineral salt for cattle feed. He is obtaining 14 litres of milk daily.He produced vermicompost utilizing the dung of cow and sheep by establishing a vermicompost unit of size 12'x4'x3'. A Farm pond of size 30'x30'x6' was established under MGNREGS and Mango, Guava and lemon seedlings were planted around it. Thus the farmer is earning income round the year from various enterprises besides utilizing the farm waste for organic manure production that sustained the health of his land.

4.4.4. Grower's Clusters

Group farming & Cluster approach could potentially transform the face of agriculture through a cohesive and multifaceted approach for optimal use of resources by integrating fragmented land holdings. Government is encouraging the formation of farmer groups for a particular crop or group of crops to reach out better with the entire

gamut of existing schemes and subsidies. It is also easier to transfer the technologies, provide inputs to such groups and facilitate their tie-ups with banks & markets for a profitable farming.

Cluster demonstrations on SRI / direct seeded Rice/ Line transplanting and Hybrid Rice Technology in paddy and Cluster Demonstrations on inter cropping, improved varieties and farm implements in pulses were organized at a cost of Rs.10.55 Crores under National Food Security Mission. Further Accelerated Pulses Production Programme was also implemented on a cluster basis at a cost of Rs.7 Crores. Under NADP, schemes such as precision farming, Sustainable Sugarcane Initiatives and intensification of millets are being implemented on a cluster approach.

4.5. Agriculture Infrastructure Management

Successful strategy for sustainable intensification of crop production requires a fundamental change in the management of agriculture infrastructure & rural investment and capacity development. A close interaction between farmers, extension workers and researchers is needed for diagnosing problems together and working out location specific recommendations. Farmers, farmer groups, Local organizations and agencies will be involved in identifying the real needs, setting up of priorities, planning of facilities from seed to seed, identifying the core areas for provision of infrastructure and will be teamed up in infrastructure creation, maintenance and utilization programmes in coordination with the Department and State Agricultural University.

Government has established and modernized the support infrastructure such as soil and fertilizer testing laboratories, seed processing units, seed godowns, state

seed farms, bio-fertilizer production units, Micronutrient mixture unit, farmers' hub, farmers training centres and agricultural extension centres for strengthening the end to end supply chain besides transfer of technologies from lab to land.

Government has formulated a **Strategic plan in Tamil Nadu Vision 2023 document for infrastructure development in Tamil Nadu.** The major focus of Vision 2023 is agriculture sector so as to achieve 5 per cent annual average growth rate. **The objective of Vision 2023 is** "to achieve the best in class productivity in key agricultural produces and to be a global supplier with robust infrastructure". This vision envisages setting up of **robust infrastructure support** for planning, production, processing, storage, distribution, marketing and sales of agricultural produces. Government would focus on Improving soil fertility, supply of quality seeds, timely provision of quality fertilizers and other chemicals, promotion of organic fertilizers, proper scheduling of irrigation, supporting micro irrigation for controlled water supply and effective extension support during the cropping period.

An amount of Rs.1,21,400 Crores will be invested in the ensuing years on PPP mode towards the **development of Agricultural Infrastructure** across the state for setting up of seed supply chain, improving soil health, promoting Organic Farming, Agricultural mechanization, Micro irrigation, integrated farming system etc. As per Roadmap for Vision 2023, an amount of **Rs.6,977.15 Crores** has been allocated to Agriculture alone. The major crops in all districts have been identified and suitable schemes are being formulated to increase the productivity of the crops with the active participation of private entrepreneurs. Further, it has also been planned to bring the fallow lands under cultivation on Public Private Partnership mode along with food

processing and marketing linkage for Agricultural and Horticultural crops.

4.6. Alternative Energy sources to increase farm Efficiency

As Tamil Nadu is endowed with abundant sunshine hours, solar water pumps are ideal for agriculture and related activities. Solar powered pumps are alternative to conventionally powered systems that can provide continuous pumping throughout the day for a maximum period in a year.

Hence, the Government of Tamil Nadu has come out with a Solar Energy Policy, 2012 wherein it has been proposed to encourage and popularize the use of solar energy in Agricultural sector by providing a package of Solar PV Pumping System linked with suitable Micro Irrigation System along with forward linkage of precision farming / front-end technologies, crop specific improved cultivation methods etc., to the progressive farmers of the State on a pilot basis. During 2013-14, installation of 2500 Nos. of 5 HP solar PV pumping system is in progress. Each pump will have a solar panel of 4800 Wp capacity and will deliver water equivalent to that of a 5 HP AC submersible pumpset. Out of the total cost, 50% will be met from National Agriculture Development Programme and 30 % from the Ministry of New and Renewable Energy. Balance 20% shall be farmer's contribution to be met partly through loan and partly through farmer's direct contribution for which PACCS have been directed to provide a loan amount to a maximum of Rs.1 Lakh.

Farm mechanisation is imperative to increase the productivity of the land and to cope with shrinking agricultural employment. Government is focusing on promotion of small and marginal farmers' friendly

machineries to carry out the farm operations in time and to reduce the drudgery of farmers. Previously, the farmer has to approach in person for booking the farm machinery in Agriculture Engineering Department which drains time and money. Hence, the Department of Agriculture has provided an **online booking system of farm machinery** through the existing AGRISNET web portal. With this system, the farmer can plan well ahead about the requirement of farm machinery and book it online through telephone and can make payment online through a payment gateway. This would help the farmers from exhaustion of time and money.

4.7. Invigorating the Extension machinery

Government has framed strategies for strengthening the field extension mechanism for transfer of technology through line departments anchored by frontline extension systems of the ICAR Institutes and SAUs, Commodity Boards, NGOs, voluntary organizations and Farmers' Consortiums.

Government has provided **379 vehicles** at a cost of Rs.23.37 crores to the extension functionaries for effective dissemination of technologies from lab to land and to ensure that the benefits reach the right beneficiaries at the right time.

Government is determined to harness the potential of ICT in agriculture and has developed ICT tools for empowering the farmers to take timely and quality decisions thus leading to industrialization of farming or farm business enterprises. To provide extension and advisory services round the clock to the ultimate users – the farmers - for optimizing their productivity and income and to provide networking of agriculture sector globally, **Hon'ble Chief Minister** has launched series of new initiatives such as **Farm Crop Management System (FCMS) and Farmers**

Integrated Handbook, Touch Screen Kiosks, new software modules such as farmers' database collection through mobile application, agro advisory service, farmers data updation through Interactive Voice Response (IVR), scheme benefit tracking system and online booking of farm machinery hiring system for effective individual farm planning, management of inputs and speedy transfer of extension activities under AGRISNET platform.

Government is also focussing on minimizing the time-lag between technology generation and adoption at the village level through a 'cafeteria of activities' under SMAE. This strategy ensures preparation of Strategic Research and Extension Plans (SREP) through Participatory Rural Appraisal to encourage bottom up planning, integration of all the stakeholders for empowering the farming community besides encouraging farmer friends, CIGs,SHGs, NGOs etc. for effective dissemination of technologies.

As announced during 2011-12, Government is in the process of establishing **Farmers' Hub** at 10 places at a total cost of Rs.15 crores which would serve as a platform for knowledge sharing on innovative technologies and a one stop spot for solving all field oriented problems related to Agriculture and sister departments. **Nine hubs have been completed in** Tiruchirapalli, Dindugul, Thanjavur, Madurai, Coimbatore, Kancheepuram, Erode, Ramanathapuram & Thoothukudi districts.

Various Knowledge and Training centres such as Farmer Training Centres, Water Management Training Centre, State Agricultural Extension Management Institute (STAMIN), State Agricultural Management and Extension Training Institute (SAMETI) are functioning in the State to impart training to the extension functionaries, farmers, farm women and rural youth on management practices and technologies in agriculture.

4.7.1 Promotion of Traditional Agro products: Hon'ble Chief Minister under Rule 110 made an announcement to create awareness among the public on a campaign mode about the values and importance of tender Coconut, Shikakai, Cotton and other **traditional agro products** like millets at a cost of Rs.10 Crores. The programme was implemented in all 385 Blocks of Tamil Nadu involving the Departments viz., Agriculture, Horticulture, Forestry, Agricultural Marketing, Co-optex, Khadi & Village Industries and Tamil Nadu Agricultural University. Activities such as Publicity and awareness involving mass media, conduct of Rallies and seminars, erection of hoardings, Advertisements and production of Documentary Films were carried out.

4.7.2. Farmers' Training Centre

The role of **Farmers' Training Centre** is of immense importance in the overall development of agriculture as it is involved in honing the skills of farmers on latest agricultural technologies, bringing reforms in agriculture by effective dissemination of information from lab to land and ensuring complete technology adoption at field level. There are 22 Farmers Training Centres functioning in the State which are involved in activities such as planning and conducting production - oriented, need-based short and long duration on-campus & off-campus (village based) training programmes, Convenors' training, method demonstration, awareness campaigns, Mass contact programmes, Exhibitions, Radio talk and television programmes, farm visits besides providing technical advisory services to the farmers, farm women and rural youth on management practices and technologies such as quality seed production, crop diversification, Integrated Pest and Disease Management, Integrated Nutrient Management, System of Rice Intensification, Improved Pulses Production Technologies, Sustainable Sugarcane Initiatives, Precision

Farming, Micro Irrigation, value addition, farm mechanisation etc.

4.7.3. Water Management Training Centre

Water Management Training Centre at Vinayagapuram, Madurai district functioning from 1985 emphasizes on sustainable water resource management besides crisis management by inculcating farmers and extension functionaries on location specific water conservation technologies, soil and water relationship, scheduling of irrigation, rotational water supply, adaptation to rapid changes in cropping pattern due to erratic rains or failure of monsoon, summer ploughing, land levelling, crop specific innovative technologies and cultivation methods, rainwater harvesting, surface irrigation, micro-irrigation system, weed and fertilizer management and interventions in mitigating drought.

4.7.4. State Agricultural Extension Management Institute (STAMIN)

The **State Agricultural Extension Management Institute** commissioned in the year 1975 at Kudumianmalai, Pudukottai district is a Centre of Excellence which imparts training on managerial and technical skills to Agricultural Extension Officers. The institute which is unique in its style of functioning offers demand driven capacity building to the extension functionaries that helps in developing a professional extension service capable of assisting farmers in increasing the crop production and income and thereby provides adequate support for agricultural development.

A **State Agricultural Management and Extension Training Institute** (SAMETI) has been established at a cost of Rs.99.75 Lakhs in the premises of STAMIN, to provide consultancy services in areas like project planning, appraisal, implementation & evaluation, develop & promote

the application of Management tools for improving the effectiveness of Agricultural Management Service through optimal use of available human resources, organize need based training for middle & grass root level workers, provide & develop management, communication and participatory methodologies as a sequel to feed-back from training programmes.

The details of training given by STAMIN in 2013-14 are furnished below.

Sl. No	Details of training	No. of officers trained
1	Office Management training	200
2	Computer training	192
3	Office Administration training	320
4	Orientation training to newly recruited Agricultural Officers	120
5	ISOPOM (Oilseeds) training	690
	Total	**1,522**
	Finance (Rs. in lakhs)	**12.060**

4.8. Human Resource Management

The Government which is very keen on permeating the innovative technologies upto the farmers' fields emphasizes a demand-driven capacity building of extension functionaries, farmers and other stake holders. Government has established various Extension Education and technology Institutes to produce high quality professional leaders to serve as trainers of various training programmes. Training and handholding support are provided to all stakeholders including unemployed agriculture graduates to tap their potential for agri-preneurship. The knowledge gap is bridged by strengthening communication and knowledge sharing by organizing demonstrations, exhibitions, field trips & exposure visits, workshops, technical seminars and

trainings, mobile field services, tele-advisory services, SMS-based agroadvisory services, setting up of information kiosks to get acquainted with various crop production technologies including integrated agriculture, organic farming, farm mechanization, post harvest management, value addition, etc.,

Government have prepared the following **booklets** with an aim to highlight all the initiatives taken by Agriculture and sister Departments to bridge the knowledge gap between scientists and department officials and the yield gap at farm level to increase Food Grain production:

- Second Green Revolution in Tamil Nadu
- Food Grain Mission
- Path breaking Initiatives in the last 3 years
- Tamil Nadu Vision 2023 - Roadmap for Agriculture

To empower the farmers for better understanding of technical information and motivate them for adoption of good agricultural practices to increase the farm income besides serving as a **ready reckoner** for easy understanding of status of agriculture in the village, the following books have been prepared with due care :

- Compendium on improved agricultural technologies
- Compilation of success stories
- Village level resource book for all revenue villages
- District compendium on agriculture
- Hand book for all extension officers

4.8.1. Crop Yield Competition

Agriculture is a crop science and sound scientific farming technologies are the prime mover in increasing the production & productivity by maintaining land quality, conserving critical resources, adopting appropriate and integrated plant protection measures etc. Awareness of such resource efficient innovative technologies is the need of the hour for which Crop Yield Competitions are conducted to enthuse farmers, to adopt progressive location specific farming practices for increasing the farm productivity. Such farmer-centred competitions are conducted in Paddy, Maize, Groundnut (irrigated), Cholam (irrigated), Cumbu (Irrigated), Blackgram & Greengram (Irrigated) both at District and State levels.

Totally, 62 District Level Competitions and 6 State Level Competitions are conducted every year for which an enrolment fee of Rs.100/- for Paddy and Groundnut and Rs.50/- for other crops for State Level entry and Rs.50/- for Paddy and Groundnut and Rs.25/- for other crops for district level entry is collected. The following prize amount is awarded to the farmers who obtain the highest productivity at State and District level.

(in Rs.)

Crop	State Level		District Level	
	1st Place	2nd Place	1st Place	2nd Place
Paddy & Groundnut	25,000	15,000	15,000	10,000
Other Crops	15,000	10,000	10,000	5,000

The scheme will be continued during 2014-15 also. Moreover, the farmers may enroll under SRI Crop Yield Competition, by paying a registration fee of Rs.150/-. A medal worth of Rs.3,500/- and a cash prize of Rs.5 Lakhs

will be given by the **Hon'ble Chief Minister** on the Republic Day function to the farmer who obtains the highest yield in paddy by adopting System of Rice Intensification technology.

4.9. Calamity Relief

Risk and uncertainty are ubiquitous in agriculture and emanate from uncertain weather, pests and diseases, volatile market conditions and unstable commodity prices. The impact of climatic change in Tamil Nadu is significant as agriculture in our state is dominated by small holders who lack resources to mitigate and cope with risk. Prevention and mitigation are the primary strategies formulated to minimize the impact of disasters through forewarning, techno - advisory information, implementation of crop insurance schemes, extending enhanced relief assistance to compensate the crop losses at distress times and protect the livelihood of the farmers by infusing confidence to adopt frontier technologies to increase the crop yields. A sum of Rs.242.54 Crores has been provided for implementation of crop insurance schemes during 2014-15.

During 2013-14, Government sanctioned an amount of Rs.2.211 crores as second year maintenance subsidy for replanted coconut seedlings under the scheme "**Agriculture package for rejuvenation of Coconut gardens affected by cyclone Thane**". An amount of Rs.2.125 crores has been spent benefitting 4,967 farmers of Cuddalore and Villupuram districts. During 2014-15, an amount of Rs.2.633 crores will be provided as third year maintenance subsidy.

5. Restructured Centrally Sponsored Schemes

5.1. National Mission on Oilseeds & Oilpalm (NMOOP)(75:25)

The Integrated Scheme for Oilseeds, Pulses, Oilpalm and Maize (ISOPOM) scheme which was implemented from 2004-05 with an objective to formulate programmes that increase the productivity of Oilseeds, Pulses, Oilpalm and Maize besides promoting crop diversification on a regionally differentiated approach has been restructured by Government of India. The Oilseeds and Oilpalm components have been merged with National Mission on Oilseeds and Oil palm (NMOOP) and components of Maize with NFSM - Coarse cereals from 2014-15.

ISOPOM was implemented with Centre and state Government financial assistance on 75:25 basis. The scheme was implemented during 2013-14 with a total allocation of Rs.14.15 Crores of which an amount of Rs.13.28 Crores has been spent. The crop-wise expenditure details are as follows:

Rs. in Crores

Crop	Allocation	Expenditure
Oilseeds	11.65	11.23
Oilpalm	1.32	0.90
Maize	1.18	1.15
Total	**14.15**	**13.28**

Tamil Nadu ranks **first** in the productivity of groundnut and sunflower and **second** in total oilseeds at National level**. National Mission on Oilseeds and Oil Palm** (NMOOP) is implemented from 2014-15 onwards with an objective of increasing the production of vegetable oils sourced from oilseeds, oilpalm and Tree Borne Oilseeds

(TBOs). It is proposed to implement three Mini Missions one each for oilseeds, oilpalm and TBOs with Centre and State Government financial assistance on 75:25 basis.

5.1.1. Mini Mission-I on Oil Seeds

The Mission envisages on strategies such as Seed Replacement Ratio (SRR) with focus on varietal replacement; increasing irrigation coverage under oilseeds from 26% to 36%; diversification of area from low yielding cereal crops to oilseed crops; inter-cropping of oilseeds with cereals/ pulses/ sugarcane and use of fallow lands after paddy cultivation.

During 2014-15, seed components such as purchase of breeder seeds, production of Foundation and Certified seeds & distribution of certified seeds, production components such as distribution of plant protection equipments,insecticides, Bio-pesticides, Weedicides, micronutrients, NPV, Bio-fertilizers, Improved farm implements, pipelines to carry water from source to field, sprinkler sets, transfer of technologies through Block demonstration, demonstrations on IPM, training of officers and farmers on latest technologies are being carried out. This programme is implemented in all the districts except Kanyakumari & The Nilgiris at a total cost of Rs.10.01 Crores.

5.1.2. Mini Mission-II on Oil Palm

The Mission focuses on strategies such as expansion of cultivation of Oil Palm in watersheds and wastelands; increasing availability of quality planting materials of Oil Palm; enhancing procurement of fresh fruit bunches and Inter cropping during gestation period of oil palm to provide economic returns to the farmers.

During 2014-15, oil palm cultivation is proposed to be brought in an additional area of 1,600 hectares besides providing maintenance subsidy to older plantations. Production inputs for intercropping in oil palm fields and transfer of technology through farmers training are also being carried out. An amount of Rs.3.51Crores has been allocated to implement this scheme.

5.1.3. Mini Mission-III on Tree Borne Oilseeds (TBOs)

The Mission contemplates on enhancing seed collection of TBOs, increasing the availability of elite planting materials for area expansion under waste land and collection & processing of TBOs besides intercropping.

During 2014-15, it is proposed to implement components such as development of nurseries and plantation on waste lands, intercropping and training of farmers on improved practices for which an amount of Rs.0.42 Crores has been allocated.

5.2. National Mission on Agricultural Extension & Technology (NMAET)

The objective of the scheme is to make the extension system farmer-driven and farmer-accountable through new institutional arrangements for technology dissemination. It aims to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to farmers through interactive methods of information dissemination, use of ICT, popularisation of modern and appropriate technologies, capacity building and institution strengthening to promote mechanisation, availability of quality seeds, plant protection etc. and encourage aggregation of Farmers into Interest Groups (FIGs) to form Farmer Producer Organisations (FPOs).

NMAET consists of **4 Sub Missions** viz., Sub-Mission on Agricultural Extension (SMAE), Sub-Mission on Seed and Planting Material (SMSP), Sub-Mission on Agricultural Mechanization (SMAM) & Sub-Mission on Plant Protection and Plant Quarantine (SMPP).

5.2.1. Sub-Mission on Agricultural Extension (SMAE)

The Revised ATMA Scheme which was implemented from Eleventh plan period with the funding support of Centre & State in the ratio of **90:10** for all components except Farmer Friend (50:50) in all the districts of Tamil Nadu with coordinated efforts of Agriculture, Horticulture, Animal Husbandry, Sericulture, Fisheries, Forestry, Agricultural Engineering, Agricultural Marketing and Agri Business, Co-operative department and Tamil Nadu Agricultural University has been renamed as **Sub-Mission on Agricultural Extension (SMAE)** during 2014-15. A sum of Rs.30.14 Crores was allocated and Rs.25.91 Crores spent under revised ATMA during 2013-14.

5.2.2. Sub-Mission on Seeds and Planting Material (SMSP)

Seed Village Programme which was implemented from 2006-2007 envisaged compact area / cluster approach for seed production to ensure supply of quality certified seeds of high yielding varieties to the farmers at right time at their places at affordable prices besides ensuring quick multiplication of new seed varieties to meet the requirement of farmers. An amount of Rs.19.06 crores has been spent during 2013-14.The scheme has been restructured as **Sub-Mission on Seeds and Planting Material (SMSP**) from 2014-15 onwards and will be operated with **full Central assistance**. The new scheme will be implemented with the objective of distributing Foundation/Certified seeds of paddy & millets at 50% subsidy and that of oilseeds & pulses to the

farmers at 60% subsidy for an acre besides training them on scientific methods of quality seed production to meet their own requirement and increase their farm income. This scheme has been proposed to be implemented at a cost of Rs.20.45 Crores during 2014-15.

As announced during 2011-12, the processing capacity of 10 existing Seed Processing Units has been augmented by modernizing the Seed Processing Units at Pudurpalayam (Tiruchirappalli), Bhavani (Erode), Kattuthottam (Thanjavur), Annapannai (Pudukottai), Thirumanoor (Ariyalur), Inungur (Karur), Kallakurichi (Villupuram), Karaiyiruppu (Tirunelveli), Rasipuram (Namakkal) & Anaimalai (Coimbatore). Further 2 seed storage godowns are being established at Sankarapuram (Villupuram) & S.Pudur (Sivagangai) at a cost of Rs.25 Lakhs each .

5.2.3.National e-governance Plan-Agriculture (NeGP - A)

The continued increase in globalization and integration of food markets has intensified competition and efficacy in the agriculture sector and has brought unique opportunities to include more small and marginal farmer holders into supply chains. Yet in the same vein, agriculture faces a range of modern and serious challenges such as price shocks, climate change and deficiencies in infrastructure in rural areas.

In this context, the need for information becomes most vivid. The small and marginal landholders, who play a significant role in meeting the food requirement of the State need information on innovative technologies and strategies to advance their work. The smallholders who remained dependent primarily on word of mouth, previous experience and local leadership have now been empowered with **digital**

tools to obtain information on varieties, production techniques, prices, markets, services, storage and processing.

e-Governance in Tamil Nadu aims at improving delivery of extension services to extension officials and farmers through the service delivery outlets in their locality to ensure efficiency, transparency & reliability of services extended by the Government to meet the requirements of the farmers. **Government of Tamil Nadu leads the rest of the country** in effective utilization of **ICT tools** in agriculture under AGRISNET platform. The State delivers a collection of initiatives, technologies and processes that hold great promise for agriculture and rural development. Needless to say, the initiatives taken by the State in the past two years such as **Farm Crop Management System (FCMS), Mobile Enabled Computer Server Gateway, Web Based Scheme Benefits tracking System, Online Farm Machinery Rental System and Voice Enabled Computer Server Response Interface** have become a role model as the new ICT initiatives have found a place in the **National e-Governance Plan (NeGP-A).**

During 2014-15, the **Innovative Technology Dissemination (ITD) Interventions** will be operated with Centre and State Government financial assistance on **75:25** basis and **NeGP-A** on **90:10** basis.

- **Farm Crop Management System (FCMS),** a state-of-the-art tool in the entire country for individual farm level intervention by the Extension functionaries has been developed and location specific recommendations have been given to each and every farm individually.
  - So far 3,32,500 crop plans have been developed in the pilot blocks of Vellore, Erode, Coimbatore, Tiruvarur, Tiruchirapalli and Virudunagar districts and will be upscaled to the rest of the state also.

  - 2,319 Tablet PCs enabled with 3G, GPS and GPRS have been distributed to grass root level extension functionaries at a cost of Rs.4.64 Crores to facilitate field monitoring during critical crop stages through biometric observations for yield analysis besides pest and disease monitoring. During 2014-15, it is proposed to synchronize the extension activities of Horticulture and Marketing wing to deliver integrated services to the farmers from seed to seed by providing IT gadgets.
- **Virtual Extension- Dissemination of Technology**
  - 150 nos of **pico mini projectors** have been provided to the extension officials of each block in the pilot districts to demonstrate the salient technologies through Video Clippings at the farmers door step. An amount of Rs.0.45 Crores has been spent.
- To create “Know it yourself” concept among the farming community, 125 nos of “All in one” **touch screen kiosks** at a cost of Rs 0.81 Crores have been provided at block level. The cropwise expert systems to clarify doubts on cultivation technologies and **Crop Doctor,** an exclusive soft ware module have been developed by Tamil Nadu Agricultural University to get on-the-spot remedial measures by comparing the real symptoms of pest and disease with 1000s of images available.
- **Mobile Enabled Computer Server Gateway** has been launched to provide Mobile Enabled Agro Advisories to the farmers
  - The database of around 71 lakh farmers has been collected under FCMS.
  - About 13.78 Crores region specific Text advisories and 1.3 Crore of Voice advisories have been sent to farmers by block and district

level extension functionaries and the state **stands first in the country.**
  - Government have sanctioned a sum of Rs.2.65 Crores towards delivering services through voice advisories. So far 2.10 Crore farmers have been benefitted.
  - Location / crop specific information, Crop related technologies of Agriculture and Horticulture, Dynamic information on Market prices, Market trends and Weather forecast are being delivered.

5.3. National Agriculture Development Programme

National Agriculture Development Programme, a special Additional Central Assistance Scheme with 100% assistance of Government of India was launched during 2007-08 wherein the States have been given greater flexibility and autonomy to plan, develop and execute state-specific projects based on the priorities of the districts and the state so as to achieve 4% annual growth in agriculture, by ensuring holistic development of Agriculture and allied sectors through formulation of improved production technologies, creating robust infrastructure and commendable assets.

Objectives

- To increase public investment in agriculture and allied sectors
- To ensure the preparation of agriculture plans for the districts and the states based on agro-climatic conditions, availability of technology and natural resources
- To ensure that the local needs/crops/priorities are better reflected in the agricultural plans of the states
- To reduce yield gap in key crops through focused interventions

- To maximize returns to the farmers in Agriculture and allied sectors
- To bring quantifiable changes in the production and productivity of agriculture and allied sectors

Government, with a main focus to increase the production and productivity of crops especially food grains, promote food & nutritional security and increase the productivity of rainfed crops for Sustainable Agriculture besides adopting diversified and composite farming systems to mitigate adverse climatic effects implemented schemes viz., Paddy, Millets & Pulses mission, Initiatives for Nutritional Security through Intensive Millets Promotion (INSIMP), Oil Palm Area Expansion (OPAE),Rainfed Area Development Programme (RADP), Sustainable Sugarcane Initiatives, Enrichment of Soil Fertility through Trash Mulching in Sugarcane, Bringing Fallow lands under cultivation, Farmers mass contact programme, Comprehensive Input Supply Management System, GIS Soil mapping by fast tracking of soil analysis and Distribution of FIHB and Invigorating Extension system through efficient use of ICT tools during 2013-14 with the total allocation of Rs.148.54 Crores. Further OPAE was extended to 26 districts (except Madurai, Ramanathapuram, Thoothukudi, Kanyakumari, Chennai & Nilgiris) during 2013-14 and was implemented in 2,625 Ha.

During 2014-15, OPAE is merged with NMOOP, INSIMP with NFSM-Coarse cereals and RADP with National Mission for Sustainable Agriculture. The following projects are being implemented under NADP during 2014-15.

(Rs. in Crores)

Sl. No	Schemes Proposed to be Implemented	Amount proposed
1	Programme on Paddy Mission	10.19
2	Programme on Millets Mission	3.79
3	Programme on Pulses Mission	16.25
4	Programme on Oilseeds Mission	5.01
5	Enrichment of soil fertility through trash mulching	2.42
6	Distribution of coconut seedlings	0.68
7	Infrastructure improvement of State Coconut nurseries	0.63
8	Infrastructure improvement of Agriculture Extension Centres	1.20
9	Construction of FCL in salem district	0.59
10	Establishment of Organic Fertilizer Testing Laboratories	2.84
11	Promoting redgram cultivation for nutritional security	18.52
12	IT empowerment of field functionaries by providing Tablet PCs	1.60
13	Strengthening of 7 BFPUs for production of liquid biofertilisers	8.93
14	Kuruvai package to delta districts	5.06
15	Distribution of Farmer's Integrated hand book	4.99
	Grand Total	**82.70**

5.4. National Food Security Mission (NFSM)

National Food Security Mission was launched in 2007–08 to ensure food and nutritional security by addressing the major constraints of crop productivity through promotion of relevant location specific technological interventions in rice and pulses alone on a mission mode approach. The mission focused on paddy growing districts with rice productivity below the state average and pulses growing districts with potential for area expansion and production enhancement. During 2014-15, the mission has been restructured and extended to coarse cereals and commercial crops with the following objectives:

- Increasing production of rice, pulses, coarse cereals and commercial crops through area expansion and productivity enhancement in a sustainable manner.
- Restoring soil fertility and productivity at the individual farm level.
- Enhancing farm level economy (i.e. farm profits) to restore confidence amongst the farmers.

The scheme will be implemented with full Central Assistance.

5.4.1. NFSM- Rice

National Food Security Mission for Rice which was implemented in 5 districts viz., Pudukkottai, Tiruvarur, Nagapattinam, Ramanathapuram and Sivagangai will now be extended to 3 more districts viz., Thanjavur, Tiruvannamalai and Cuddalore.

Under National Food Security Mission – Rice, activities such as Cluster demonstrations on SRI / direct seeded Rice/ Line transplanting,Hybrid Rice Technology, Swarna Sub-1 variety & cropping system based demonstrations, distribution of quality seeds of High Yielding

varieties & hybrids, micro nutrients, plant protection chemicals, weedicides, sprayers, power sprayers, power weeders, pumpsets, rotavators, paddy thresher & self propelled paddy transplanter, organising community nursery, assistance for custom hiring paddy transplanters & combine harvesters besides cropping system based trainings are being taken up at a cost of Rs.27.34 crores during 2014-15. This scheme was implemented during 2013-14 at a cost of Rs.22.36 Crores.

5.4.2. NFSM- Pulses

National Food Security Mission for Pulses is implemented in all districts except Chennai and Nilgiris. Under National Food Security Mission – Pulses, activities such as Cluster Demonstrations on improved package & cropping system based demonstrations, distribution of Certified Seeds of high yielding varieties, gypsum, Micronutrient mixture, bio-fertilizers, plant protection chemicals, weedicides, seed drills, rotavators, zero till seed drill, multi-crop planter, pumpsets, pipes, sprinklers, mobile rainguns, spraying of Pusa hydrogel besides cropping system based trainings on improved technologies are being taken up at a cost of Rs.33.47 Crores during 2014 – 15. This scheme was implemented during 2013-14 at a cost of Rs.15.53 Crores.

Accelerated Pulses Production Programme (A3P) which was implemented under NFSM- Pulses during 2013-14 in 163 compact units of 100 Ha. each at a total cost of Rs.7.01 Crores has now been withdrawn.

5.4.3. NFSM- Coarse Cereals

National Food Security Mission for coarse cereals is proposed to be implemented in 10 districts viz., Salem, Coimbatore, Dharmapuri, Krishnagiri, Tiruchirapalli,

Perambalur, Tirupur, Dindugul, Theni and Thoothukudi. Activities such as Demonstrations of improved package, distribution of Certified Seeds of high yielding varieties and hybrids and establishment of water harvesting structures with portable mobile sprinklers, Demonstrations by NGOs are being taken up at a cost of Rs.7.64 Crores during 2014 - 15.

5.4.4. NFSM- Commercial Crops

Cotton is the most important commercial crop and is generally regarded as the King of Textile Fibres due to its significant contribution to the National economy. The Technology Mission on Cotton (TMC) was under implementation with Centre and state Government financial assistance on 75:25 basis in all the potential districts of Tamil Nadu during 2013-14. The scheme was introduced with an objective to increase cotton production & productivity through improved technologies, reduce contamination & improve the quality and generate IPM technologies for the management of important cotton pests (sucking pests and bollworms) besides disseminating to farmers through training programmes and Front Line Demonstrations. An amount of Rs. 0.53 Crores was allocated towards Front Line demonstration on production technologies, distribution of certified seeds, Pheromone traps, bio-agents and bio-pesticides besides training the farmers through farmers' field school of which a sum of Rs.0.51 Crores has been expended. During 2014-15, the scheme has been amalgamated with NFSM – Commercial crops with 100% Central assistance and will be implemented for cotton and sugarcane.

NFSM for cotton based cropping system is being implemented in 11 districts viz., Salem, Dharmapuri, Madurai, Virudunagar, Tirunelveli, Theni, Dindugul, Villupuram, Perambalur, Thoothukudi and Coimbatore.

Activities such as organizing Front Line Demonstrations on Integrated Crop Management, Desi and Extra Long Staple Cotton, Seed production of Extra Long Staple Cotton, Intercropping besides organizing trials on High Density planting are implemented at a cost of Rs.0.30 Crores during 2014 - 15.

NFSM for sugarcane based cropping system is implemented in 7 districts viz., Cuddalore, Villupuram, Salem, Namakkal, Erode, Ariyalur and Thanjavur with activities such as Front line Demonstrations on intercropping and State level training at a cost of Rs.0.31 crores during 2014 - 15.

5.5. National Mission for Sustainable Agriculture (NMSA)

National Mission for Sustainable Agriculture (NMSA) has been formulated for enhancing agricultural productivity especially in rainfed areas by progressively shifting to environment friendly technologies, focusing on integrated farming, crop diversification, soil and water conservation, soil health management, water use efficiency and synergizing resource conservation through community based approach besides aiming at promoting location specific improved agronomic practices.

Objectives:

- To make agriculture more productive, sustainable, remunerative and climate resilient.
- To conserve Natural resources.
- To adopt Comprehensive Soil Health Management Practices.
- To optimize utilization of Water Resources.

During 2014-15, components such as Rainfed Area Development (RAD), Soil Health Management (SHM), On Farm Water Management (OFWM) and Climate Change

and Sustainable Agriculture Monitoring, Modelling & Networking (CCSAMMN) will be implemented.

5.6. Agriculture Insurance Schemes

Crop insurance, an effective bulwark of rural economy plays a pivotal role in stabilizing the growth of agriculture sector by bringing financial stability to the remotest and poorest farmers in an effective manner to meet out their diverse needs. During 2013-14, the State Government implemented Crop Insurance schemes viz., National Agricultural Insurance Scheme (NAIS), Modified National Agricultural Insurance scheme (MNAIS), Weather Based Crop Insurance Scheme (WBCIS) and Coconut Palm Insurance Scheme (CPIS) till Kharif, 2013. From **Rabi 2013–14 onwards,** NAIS has been withdrawn and the **National Crop Insurance Programme** formulated by merging MNAIS, WBCIS and CPIS is under implementation.

During 2013-14, NAIS and MNAIS were implemented with an allocation of Rs.50.865 Crores. A sum of Rs.36.50 Crores was extended as premium subsidy under NAIS till Kharif, 2013 and 5,02,800 number of Farmers were enrolled under the scheme. Under MNAIS, a sum of Rs.14.12 Crores was extended as premium subsidy and 1,55,000 number of farmers have been enrolled under the scheme. Under CPIS, a sum of Rs.0.17 Crores was extended as premium subsidy and 2,402 farmers have been enrolled under the scheme. With regard to WBCIS, an amount of Rs.1.26 Crores was spent towards enrollment of 19,298 farmers in the 11 pilot districts viz., Theni, Tirunelveli, Tirupur, Salem, Dharmapuri, Virudhunagar, Perambalur, Ariyalur, Villupuram, Dindigul and Coimbatore.

Further, a total sum of Rs.27.67 Crores was extended as premium subsidy for Samba and Thaladi crops

under universal coverage in the delta districts during 2012-13 by the State Government. However, due to the rousing reception given by the farmers of the delta districts for the scheme and their interest in enrolling under universal coverage, additional sum of Rs.38.44 Crores was sanctioned as premium subsidy during 2013-14 by the state Government to settle the additional premium subsidy claims of 2012-13. Totally 8,21,822 number of farmers were benefitted under NAIS and 1,54,545 under MNAIS.

5.6.1. Compensation under Insurance Schemes

Under NAIS, compensation claims are equally shared by the Central and state government if the claim exceeds the premium amount collected by Agriculture Insurance Company. The Agricultural Insurance Company pays compensation upto 100% premium collected for food and oilseed crops and 150% for annual and commercial crops, if the claim is less than the premium collected. In the recent years, seasonal variation compounded with either poor or excess rainfall has become common phenomenon and the State government's dual role in executing strategies to increase production and productivity of crops on one hand and simultaneously compensating the farmers on account of weather perils on the other hand have been a routine one. However undaunted by these inherent deficiencies in the Agriculture system, Government has taken arduous efforts to compensate the farmers in time in the event of crop loss due to natural calamities.

During 2013-14, a sum of Rs.740.80 Crores (GOI share : Rs.303.405 Crores ; State government share: Rs.303.405 Crores; AIC share: Rs.133.99 Crores) was disbursed as compensation to 5,54,257 farmers towards crop loss due to unprecedented drought that occurred during the year 2012-13. Further, an amount of Rs.49.398 Crores has been disbursed as compensation to

79,402 farmers under MNAIS for the Samba/Thaladi/ Pishanam season paddy crop affected by drought in Cuddalore, Sivagangai and Namakkal districts during 2012-13.

5.6.2. National Crop Insurance Programme (NCIP)

Government of India has issued administrative approval to withdraw NAIS and implement a new Central Sector Scheme namely **National Crop Insurance Programme (NCIP)** / Rashtriya Fasal Bima Karyakram (RFBK) merging MNAIS, WBCIS and CPIS from Rabi 2013-14 with modification in premium slab and operational procedures. Government after detailed evaluation of the modifications effected by GOI has opted for MNAIS scheme alone as it is observed to be more beneficial to farmers compared to WBCIS for food and oilseed crops.Hence, MNAIS which was implemented on pilot basis in 3 districts has been extended to all districts from Rabi 2013-14 besides continuing the implementation of Coconut Palm Insurance scheme in all districts under the new National Crop Insurance Programme.

5.6.2.1. Component I: Modified National Agricultural Insurance Scheme

The main objective is to provide insurance coverage and financial support to the farmers in the event of prevented sowing & failure of any of the notified crops as a result of natural calamities, pests & diseases; encourage the farmers to adopt progressive farming practices by use of high value inputs and innovative technologies and help in stabilizing the farmers income particularly during disaster years besides facilitating on-account payment of compensation upto 25% sum insured. Food crops, Oil seeds, Annual Commercial and Horticulture Crops are covered under this scheme. All farmers including share croppers, tenant farmers, farmers enrolled under contract

farming directly or through promoters/organizers, group of farmers/societies serviced by fertilizer companies, pesticide firms, crop growers associations and self help groups, Non-Governmental organizations and others growing the notified crops in the notified areas are eligible for coverage. The risk covered includes sowing to harvest of the standing crop and post harvest losses.

The premium structure would be worked out with the discount provision on the premium in respect of the unit area where all farmers have adopted better water conservation and sustainable farming practices for better risk mitigation.

Premium Slab	Subsidy by Central and State Government on 50:50 basis and premium payable by farmers
Upto 2%	Nil
> 2 - 5%	40% subject to minimum net premium of 2%
>5 - 10%	50% subject to minimum net premium of 3%
>10-15%	60% subject to minimum net premium of 5%
>15%	75% subject to minimum net premium of 6%

However, premium rates are capped at 11% and 9% (of sum insured) for food & oil seed crops of Kharif and Rabi seasons respectively and 13% for annual commercial / horticultural crops. In case of crops where premium is higher than the cap level, then the sum insured will be reduced in proportion to cap level. Yield estimation under this scheme would be at village level in Cuddalore, Sivagangai & Namakkal and at firka level in all other districts except Chennai.

5.6.2.2. Component II : Coconut Palm Insurance Scheme

Coconut Palm Insurance Scheme was introduced on a pilot basis in 11 districts during 2011-12 and is now implemented in all the districts with the objectives to provide

insurance coverage against natural and other perils, provide timely relief against income loss, minimize risks and encourage replanting and rejuvenation. This scheme which was hitherto implemented separately will now be implemented under the new National Crop Insurance Programme.

Healthy nut bearing coconut palms grown as mono or intercrop, on bunds, farms or homestead and all varieties of coconut (Tall varieties of 7 to 60 years and Dwarf & Hybrids of 4 to 60 years) are insured. Individual farmers / growers cultivating atleast 5 healthy nut bearing palms in contiguous area / plot are eligible for enrolment.

Sum Insured and Premium

Coconut Palm age in years	Sum Insured Per Palm (Rs.)	Premium Per Palm Per Year (Rs.)
4 to 15	900	9.00
16 to 60	1750	14.00

Subsidy pattern for premium

CDB (%)*	STATE GOVT (%).	FARMER (%)
50	25	25

* Coconut Development Board

5.7. Coconut Development Board Assisted Schemes

Coconut plays a significant role in the agrarian economy of the state since it is an integral component even in the homestead system of farming. Being a perennial crop, Coconut earns income to the farmers throughout the year. Government is taking meticulous efforts to take up coconut cultivation in a remunerative manner by demonstration & adoption of location specific innovative technologies, effective mechanisation, plant protection and value addition. The schemes of Coconut Development Board aim at increasing the production and distribution of quality planting material, creating production potential by bringing more area

under coconut and improving the production & productivity of existing coconut holdings through an integrated approach thereby increasing the net income from unit holdings. Under this scheme, Quality 'Tall x Dwarf ' and 'Dwarf x Tall' coconut seedlings are produced in the Navlock Coconut Nursery, Vellore district and distributed to the farmers besides carrying out activities such as strengthening of Regional Coconut Nurseries and conducting demonstrations to popularize scientific management techniques to increase coconut productivity.

An extent of 82.66 acres of land has been identified in Dhali village in Udumalpet taluk of Tirupur district and handed over to the Coconut Development Board on a lease agreement for 33 years for establishing **Demonstration cum Coconut Seedling Production Farm** to demonstrate improved production technology to the Coconut growers besides ensuring production of adequate high yielding seedlings for distribution to the farmers.

Every year, around 3.20 Lakh coconut seedlings are distributed. During 2013-14, an amount of Rs.2.16 Crores has been spent towards the distribution of coconut seedlings, strengthening of coconut nurseries and laying out of demonstration plots. The scheme will be continued during 2014-15.

6.0. Externally Aided Projects

6.1. TN-IAMWARM PROJECT – Irrigated Agriculture Modernization and Water Bodies Restoration and Management (IAMWARM) Project

As Tamil Nadu is a water starved State, the Government is taking several initiatives like creation of farm ponds, check dams for effective rain water harvesting for improving the underground water table besides "More crop per drop of water" through increased water use efficiency. Government with an aim to increase the irrigated area, improve the crop productivity and farmers' income have

strengthened and integrated institutional structures under IAMWARM which can help farmer's access to irrigation management and improved agricultural practices. The project is implemented with the assistance of World Bank to improve water resources in 61 selected sub basins through Water Resources Organization by integrating the activities of departments of Agriculture, Horticulture, Agricultural Engineering, Agriculture Marketing & Agri Business, Animal Husbandry, Fisheries and Tamil Nadu Agricultural University.

An amount of Rs.108 Crores was allotted to Agriculture Department for implementation of the following Project activities.

- **Crop Demonstrations:** Demonstrations were conducted in Greenmanure-SRI-Rice Fallow Pulses, SRI-Rice Fallow Pulses, Modified SRI, Semi Dry Rice, Semi Dry Rice-Rice Fallow Pulses, Maize, Ragi, Pulses, Groundnut, Coconut, INM and Vermicompost (Silpaulin).
- **Distribution of Agricultural Implements:** SRI implements such as Conoweeder & Marker and Pulses Line Marker were distributed at 100% subsidy for demonstrations; Hand operated sprayer and power operated sprayers were distributed to the farmers in the sub-basin areas at 50% cost.
- **IEC / CB activities:** Farmers training, agricultural labourers training, exposure visits, capacity building and publicity propaganda activities were carried out.
- **Up-scaling of 400 Model Villages** in 17 Districts were carried out through 5 Ha. Crop Demonstrations for SRI, Maize and Pulses @ Rs.10,000/- per Ha. IEC / CB Programmes; Engaging / Deploying ATMA Volunteer (Farmers Friend) and Workshops, Trainings, etc.

During 2013-14, IAMWARM Project was implemented in 61 selected Sub-basins:

Phase & Year of implementation	Finance (Rs. in crores)	
	Sanctioned	Achmt
Regular Phase – IV (2) Amaravathy (2nd year)	4.187	3.040
Additional Activities – 3	2.870	2.485
Up-scaling of 400 Model Villages	2.730	2.191
Total	**9.787**	**7.716**

The project comes to closure by September 2014. During 2014-15, activities will be carried out to increase the area and production of millets and minor millets(Additional Activities – 4) besides taking up exposure visits to learn innovative irrigation management practices etc., at a cost of Rs.10.35 Crores.

The Cumulative financial progress of the project from 2007–08 to 2013-14 is as follows:

(Rs. in Crores)

Sub-basins	Target	Achievement
Phase – I (9 sub-basins)	15.70	15.53
Phase–II (16 sub-basins)	6.64	6.60
Phase–III(30 sub-basins)	25.99	25.35
Phase–IV (5 sub-basins)	12.05	10.26
Phase – IV–2 (Amaravathy Sub-basin)	7.67	6.33
Additional Activities – 1	20.37	19.85
Additional Activities – 2	7.07	6.85
Additional Activities – 3	3.50	3.04
Model Villages Activities	2.73	2.19
Total	**101.72**	**96.00**

2. HORTICULTURE

1. Introduction

Horticulture is a growth engine for Agriculture sector and the way to attain nutritional security in the state. The population of Tamil Nadu has increased from 62.41 million to 72.14 million in last decade which necessitates increasing the production of horticulture crops to meet the growing nutrition demand.

Consumption rate of fruits and vegetables is showing an upward trend because of greater awareness among the people on healthy diet and also increase in purchasing power. This necessitates the farmers to make a shift from traditional farming to commercial cultivation of horticulture crops. The contribution of horticulture produce in the State's Gross Domestic Product is very significant.

The varied agro climatic conditions favour the cultivation of extensive array of Horticulture crops. Population explosion and increase in urbanization in Tamil Nadu leads to shrinking of cultivable area. Hence it is necessary for effective utilization of available land and greater efforts had been put forth for enhancing the productivity. The Policy focus of the Government is as follows.

2. Policy Focus

- Achieving food security through doubling the production using hi-tech cultivation of horticulture crops.
- Tripling the income of the farmers through forward linkage and ensuring quality life

- Introduce organic farming for better soil health and human health.
- Focus on formation of farmer's clusters and empowerment.
- Thrust on rain fed area development.
- Thrust on Post-harvest, market-led management Technology.
- Extension of horticulture farming in urban sectors.
- Modernisation of the department farms/parks and gardens.

3. Strategies

- Area expansion and hi tech cultivation practices in horticulture crops.
- Use of High yielding varieties and quality pedigree planting material.
- Ensure timely supply of inputs.
- Increased water use efficiency and fertilizer use efficiency through mass adoption of Micro-Irrigation with Fertigation
- High tech horticulture by promotion of Precision Farming, High density planting, Protected cultivation.
- Thrust on Integrated Crop/Nutrient Management.
- Thrust on Integrated Pest and Disease Management.
- Canopy Management and senile orchards rejuvenation
- Promotion of Roof top cultivation of horticulture crops in urban areas.
- Improved Horticulture farming practices in rain fed areas to increase productivity of rainfed horticulture crops.
- Strengthening and modernization of infrastructure facilities for production of quality Pedigree Planting materials.

- Establishing forward and backward linkage for horticulture produce.
- Effective use of Information technology tools in horticulture sector to reach all farmers and effective planning.

The Government of Tamil Nadu has launched various path breaking initiatives in the past three years to increase the area as well as the productivity of Horticultural crops, taking advantage of the seven different agro climatic zones of Tamil Nadu.

- Precision farming in annual horticulture crops in 10,722 Ha.
- Micro Irrigation and Fertigation technology for efficient use of irrigation water and fertilizers in 93,868 Ha.
- Mulching in 1,767 Ha. to reduce the loss of moisture through evaporation and weed growth.
- Productivity increase by promoting high yielding and hybrid varieties of vegetable seeds in 83,599 Ha., Use of Tissue Culture planting material in 2,557 Ha. of Banana crop and Use of pedigree planting materials of fruits, spices and flowers.
- Production and Distribution of about 175 Lakh numbers quality pedigree planting materials of horticulture crops in the State Horticulture Farms of Tamil Nadu.
- The introduction of the High-density planting technology and Canopy management in fruits such as Mango and Sapota along with drip & fertigation in 5,260 Ha. has made a revolution in orchard development.
- Precise application of water and other inputs reduces the cost of cultivation.

- Infrastructure promotional activities such as laying of Pandal for cultivation of vegetables in 726.55 Ha. and protected structures for cultivation of vegetables and flowers in poly houses in 25.57 L.Sq.m. Shade net nursery in 1.70 L.Sq.m ensures cent percent crop stand in the field and to bring about transformation in vegetable cultivation.
- Centres of Excellence for flower crops and vegetables has been established in collaboration with Israel helps to triple the income level of the farmers especially in small and marginal holdings as envisaged in TN Vision 2023.
- Massive farm Mechanization in Horticulture to reduce labour drudgery and to reduce the cost of cultivation besides steps to educate the farmers in use of superior farm implements, equipments and machineries.
- As an important measure, Government has initiated the Peri-metro Vegetable Cluster development programme to link the farm producer and consumer through the market aggregator. This programme covers identification of project areas and the bottle necks in the supply chain system through Base Line Survey, motivation of farmers to form clusters and later to federate into a Farmer Producer Organization at district level so as to improve the market intelligence and to empower the farmers. Promoting the farmers to cultivate vegetables in open (5,780 Ha.) and protected conditions (22,000 Sq.M), promoting organic farming through developing Vermi-compost units (65 nos.), overcome the post-harvest losses by providing best logistics and supply of assured quality vegetables and to provide good remuneration to the growers and price benefit to the consumers are implemented.

- Activities relating to area expansion in Horticulture crops to an extent of 88,000 Ha. are taken up. It is also important to note that the area of Horticulture crops have been increased from 9.40 L.Ha to 10.81 L.Ha over the past three years.
- Bringing back into cultivation of 9.67 L.Ha area of fallow land available in Tamil nadu through “Rain fed Area Development Programme”. Horticulture Based farming system is introduced along with water management activities in 4,458 Ha.
- To meet out the demand of daily requirement of vegetables, by growing vegetables at the roof top of the residential houses at Chennai and Coimbatore metros, the Government had launched “Do It Yourself Kit” model for growing vegetables as pilot project under “Urban Horticulture development Scheme”.
- Modernized Parks and Gardens are established at Courtallam, Yercaud, Kodaikanal, Ramanathapuram and Chennai to cater to the requirement of tourists and public.
- To increase the production of pedigree planting materials and to function as model demonstration centers, infrastructure for both production and protection for five State Horticulture farms namely SHF, Vitchanthangal (Kancheepuram Dt), SHF, Adudurai (Thanjore Dt), SHF, Mulluvadi (Salem Dt), SHF, Vallathirakottai (Pudukkottai Dt), and SHF, Srivilliputhur, (Virudhunagar Dt) have been taken up.
- Establishment of new State Horticulture farms in Thorakudi in Trichy district and Polayampalli in Dharmapuri district to cater to the need of the planting materials of horticulture farmers.

- Steps for cultivation of diversified crops and inclusion of Bamboo in 1,075 Ha. and Medicinal crops in 17,139 Ha. have been taken up.
- Ensuring effective dissemination of technology to the farmers and to improve extension outreach at field gate through establishment of District Horticulture Information and Training centres at 10 major horticulture districts on a pilot basis.

The area, production and productivity attained in the past three years due to various initiatives taken by the government and the programme for 2014-15 under various Horticultural crops are given below.

4. Area, Production and Productivity of Horticultural crops in TamilNadu for the year 2011-12, 2012-13, 2013-14 & 2014-15 (Area: Lakh Ha, Production: Lakh MT, Productivity : MT/Ha)

Sl. No.	Name of Crops	2011-12			2012-13			2013-14			2014-15		
		Area	Prodn.	Pty	Area	Prodn.	Pty	Area	Prodn.	Pty	Area	Prodn.	Pty
1.	Fruits	2.87	58.77	20.48	3.10	67.00	21.62	3.29	73.70	22.43	3.45	81.07	23.50
2.	Vegetables	2.54	69.27	27.25	2.74	78.96	28.77	2.90	86.79	29.95	3.05	95.46	31.27
3.	Spices & Condiments	1.65	10.05	6.11	1.78	11.46	6.44	1.89	12.60	6.69	1.98	13.87	7.01
4.	Plantation Crops	2.55	10.50	4.12	2.75	11.97	4.34	2.92	13.16	4.51	3.07	14.48	4.72
5.	Flowers	0.26	2.74	10.35	0.29	3.12	10.92	0.31	3.44	11.12	0.32	3.78	11.65
6.	Medicinal & Aromatic Plants	0.14	1.29	9.20	0.15	1.47	9.73	0.16	1.62	9.91	0.17	1.78	10.38
	Total	**10.01**	**152.62**	**15.24**	**10.81**	**173.98**	**16.09**	**11.46**	**191.31**	**16.69**	**12.04**	**210.44**	**17.47**

5. State Plan Schemes

5.1.Integrated Horticulture Development Scheme (IHDS)

This scheme aims at increasing the area and production of horticulture crops and is implemented in all the 31 districts excluding Chennai. Under this scheme, quality planting materials, high yielding / hybrid vegetable seeds and flower seeds are distributed to farmers at 50% subsidy. Up to a maximum of 1 Ha / beneficiary for fruits and spices and 0.5 Ha / beneficiary for high yielding / hybrid vegetable seeds and flowers are provided.

The scheme was implemented in 26,583 Ha. area with an expenditure of Rs.371.18 Lakhs during 2011-12, 40,283 Ha. with an expenditure of Rs.1,186.68 Lakhs in the year 2012-13 and 20,238 Ha. area with an expenditure of Rs.485.705 Lakhs in the year 2013-14.

In 2014-15, the scheme is proposed to be implemented at an outlay of Rs.492.50 Lakhs aiming to increase the area and production of horticultural crops to an extent of 22,000 Ha.

5.2. Horticulture Training Centres

The prime objective of the training is to impart Hi tech horticulture trainings to farmers, to enhance their knowledge on recent advancements in horticulture crop cultivation to maximize the productivity and income. Training is imparted on precision farming, protected cultivation, high density planting, canopy management, Integrated Pest and Disease Management, Integrated Nutrient Management, Micro irrigation and Fertigation through Horticulture Training Centres functioning at Madhavaram, Kudumianmalai, Thally and Ooty.

During 2011-12, training was given to 6,400 farmers with an assistance of Rs.6.97 Lakhs. In the year 2012-13, 6,400 farmers were trained with assistance of Rs.19.20 Lakhs. In 2013-14, training was imparted to 2,500 farmers with an assistance of Rs.7.50 Lakhs.

During 2014-15, it is proposed to impart training to 2,500 farmers at an outlay of Rs.7.50 Lakhs.

5.3. Hill Area Development Programme (HADP)

The main objective of the Scheme is to improve the socio-economic status of the farmers of the Nilgiris District by increasing the area under Horticultural crops for which inputs such as vegetable seeds, tea clones, Oil Engines, Hand sprayers, Power Tillers and Agricultural implements are distributed at 50% subsidy to small and marginal farmers.

During 2011-12, the scheme was implemented in an area of 4,200 Ha. with a financial assistance of Rs.80 Lakhs. During 2012-13, it was implemented in an area of 782.50 Ha with a financial assistance of Rs.78.25 Lakhs. Under the component of Mechanization, Rs.30.10 Lakhs and Rs.56 Lakhs in the year 2011-12 and 2012-13 was achieved respectively. Civil works were also taken up in the State Horticulture Farms, Parks and Garden of Nilgiris District to a tune of Rs.96.70 Lakhs in 2011-12 and Rs.141.50 Lakhs in 2012-13. During 2013-14, the scheme was implemented at an outlay of Rs.254.79 Lakhs covering an area of 900 Ha.

It is proposed to implement this scheme at an outlay of Rs.260.00 Lakhs with the same subsidy pattern, during 2014-15.

5.4. Urban Horticulture Development Scheme (Do it yourself Kits)

The Hon'ble Minister for Agriculture on 5.4.2013 had announced on the floor of Assembly that in Chennai and Coimbatore Metropolitan Cities, to promote cultivation of fresh, nutritious organic vegetables in the Terrace garden, "Do-it-yourself Kits" would be provided to the needy, to meet the growing demand for fresh vegetables.

Accordingly, a new scheme titled, Urban Horticulture Development Scheme (Do it yourself Kits) was launched with a financial outlay of Rs.500 Lakhs during 2013-14. The objective of the scheme is to grow fresh and nutritious vegetables in the roof tops of households in Metropolitan cities like Chennai and Coimbatore. Under this scheme, a Kit containing vegetable seeds, implements, bio pesticide, bio fertilizer, growing media were distributed along with dissemination of technical knowhow was given at 50% subsidy.

During 2013-14, 4,968 Do it yourself Kits were distributed to the beneficiaries. The Metropolitan city dwellers could apply through online to get the benefits under this scheme. Each kit costing about Rs.2,650/- was given at 50% subsidy. A beneficiary could avail up to a maximum of 5 kits.

Each kit has 20 numbers of UV-treated polythene bags with coco pith 2kgs, polythene spreading sheet, water soluble fertilizer – 2kgs, Azospirillum – 200g, Phosphobacteria – 200g, Trichoderma viridi - 100g, Pseudomonas - 100g, Azadiractin – 250ml, Plastic hand Sprayer, Plastic rose can, Hand digging fork, Hand trowel, Protray, Brinjal, Tomato, Chillies, Bhendi, Cluster beans, Bush beans, Radish, Amaranthus, Coriander & Palak Green

seeds, Technical booklet carrying information on cultivation aspects. This scheme has very well received by the Metropolitan public.

In 2014-15 it is proposed to extend this scheme to Trichy, Madurai and Salem cities also at an outlay of Rs.500.00 Lakhs.

5.5. National Agriculture Development Programme:

NADP is in implementation in all districts of TamilNadu except Chennai. In the last three years, the scheme covered an area of 49,136 Ha. with an expenditure of Rs. 18,429.35 Lakhs.

Under NADP, Productivity Enhancement of Horticulture Crops, Precision Farming, Hi-tech Productivity Enhancement Programme, Perimetro Vegetable Cluster Development Programme for Chennai and Coimbatore and Rainfed Area Development Programme (RADP) have been implemented to enhance production of Horticulture crops.

5.5.1. Precision Farming

The implementation of Precision Farming in Horticulture crop cultivation has shown a spectacular increase of productivity from 30% to 50%.This is due to adoption of High Yielding /Hybrid seeds, installation of Micro Irrigation with fertigation in annual horticulture crops. From 2011-12 to 2013-14, it was implemented at an expenditure of Rs.2,249.43 Lakhs in an area of 10,722 Ha. During 2014-15, this component will be continued under the Productivity Enhancement Programme of Horticulture Crops under NADP.

5.5.2. Hi Tech Productivity Enhancement Programme

To enhance the per unit productivity of the Horticulture crops by adopting Hitech interventions like High Density Planting, use of Hybrid varieties for vegetables cultivation, improved package of practices for the cultivation of all Horticulture crops, like use of banana bunch sleeves, mulching and to increase the area under horticulture crops by normal planting are practiced. This component was implemented from 2011-12 onwards in an area of 27,016 Ha. at an expenditure of Rs.3,265.90 Lakhs at 50% subsidy. During 2014-15, this programme will be continued under the Productivity Enhancement Programme of Horticulture Crops under NADP.

5.5.3. Encouraging Pandal Cultivation of Vegetables

To enhance the production and productivity of Gourds and avarai vegetables which are growing in Pandal structure, this scheme is implemented from 2012-13 onwards. As announced in the floor of assembly, this scheme is implemented at an expenditure of Rs.761.98 Lakhs in an area of 490 Ha. In 2013-14 the assistance for the structure was extended to other Horticulture Crops growing in pandal. Totally an area of 726.55 Ha. have been covered at an expenditure of Rs.1,233.93 Lakhs. During 2014-15, this programme will be continued under Productivity Enhancement Programme of Horticulture Crops under NADP.

5.5.4. Establishment of District Horticulture Extension cum Training Centre

In order to disseminate the latest technologies to all kinds of field functionaries and to the farmers, establishment of 10 District Information cum Training centre at an outlay

of Rs.600 Lakhs, is in progress in the districts of Ariyalur, Cuddalore, Kancheepuram, Krishnagiri, Pudukottai, Ramanathapuram, Thirunelveli, Thiruvallur , Villupuram and Virudhunagar.

5.5.5. Mechanization of Harvesting & Processing of Turmeric and Sett cutting, harvesting of Tapioca

To improve the quality of Turmeric and Tapioca by adopting scientific method of Harvesting, without any breakage and on farm processing like curing in turmeric so as to fetch better market price for improving the income level of the farmer, this scheme was implemented during 2012-13 at an expenditure of Rs.175.175 Lakhs. 9 turmeric harvesters, 38 turmeric boilers, 8,308 tapioca sett cutters to 878 farmers have been distributed.

5.5.6. End to End Computerization

To deal the extension work at field level and release the subsidy in a modern way, Rs.200 Lakhs was sanctioned to this department.

With this, the Hon'ble Chief Minister had inaugurated the Enterprise Resource Planning (ERP) software which enables all file works from end to end at the Commissionerate had been made online and M-Governance for monitoring installation of micro irrigation systems has been designed and it is under process for implementation.

5.5.7. Mass Multiplication of Carnation Mother Plants in Nilgiris district

In order to promote cut flower cultivation in Nilgiris and to reduce the dependency on private sources for quality planting material, a sum of Rs.140 Lakhs was sanctioned

during the year 2012-13 under NADP towards Mass multiplication of Carnation Mother plants, at State Horticulture Farm, Thummanatty in Nilgiris district. The scheme is being implemented through TANHODA and sourcing of rooted mother carnation cuttings from Italy is in progress.

5.5.8. Development of infrastructure facilities at Horticulture Training Centre, Thally Village, Hosur Taluk, Krishnagiri district.

During 2012-13, a sum of Rs.150 Lakhs had been sanctioned for the development of infrastructure facilities at Horticulture Training Centre, Thally, Krishnagiri district. Construction of the Administrative building complex, class rooms and Trainees hostel are in progress.

5.5.9. Improving Agricultural Productivity and Profitability through Horticultural Crop Diversification in the Feeder Zones of Metro city

To increase the profit of peri-urban farmers through improved cultivation practices, an amount of Rs.367.85 Lakhs was sanctioned to Anna University under NADP for the year 2012-13. Subsidy for drip irrigation and other inputs is being given to the farmers of Kancheepuram and Tiruvallur districts through this scheme.

5.5.10. Empowerment of Extension functionaries (from State Department of Horticulture) on diagnosis and integrated management of Mite Pests through Hands on Training and Farms School Programmes

For advocating integrated mite management strategies to horticulture farmers and to train extension

functionaries on the diagnosis of mite pests, an amount of Rs.30.97 Lakhs has been sanctioned to TNAU, under NADP during 2012-13. Trainings have been organized to Horticulture Officers and progressive farmers.

5.5.11. Capacity Building of Extension officials to transfer hybrid seed production technologies in Vegetable crops (Tomato and Okra)

To develop entrepreneurial skill among rural farmers for Hybrid seed production in Tomato and Okra, an amount of Rs.15.53 Lakhs had been sanctioned to TNAU under NADP during 2012-13. Training to extension officials and field demonstrations are in progress.

5.5.12. Perimetro Vegetable Cluster Development Programme

It is a sub-scheme of NADP. Government of India has launched it as a new programme in the 11th Five Year Plan period called Vegetable Initiative for Urban Cluster (VIUC) under NADP. An amount of Rs.1,700.44 Lakhs and Rs.1,700 Lakhs have been sanctioned for the year 2011-12 and 2012-13 respectively for Chennai and Coimbatore Districts. This programme is named as Perimetro Vegetable Cluster Development Programme in TamilNadu with a view to have a price gain for both the producers and consumers besides ensuring continuous supply of fresh vegetables to the burgeoning urban markets it becomes absolutely necessary to create forward linkages from rural to urban areas. Community mobilization and capacity building of the farmers are the objectives of this scheme. This will also facilitate assured income to farmers in the rural areas adjoining the cities.

Clusters of farmers will be organised to supply their produce to a society run by the farmers at the District level. The vegetable growing farmers are federated into clusters at village level with each cluster comprising 15-20 numbers of farmers with a total area of 15-20 Ha. / cluster. These clusters will go on to form Panchayat level federation, Block level federation, District level federation and to promote as Farmer Producer Organization (FPO) to empower the farmers with market intelligence and to improve their bargaining capacity.

Public & Private Entrepreneurs will be engaged as Market Aggregators to collect, sort, grade and pack the vegetables at the farm gate and to supply them to the retail outlets established by them in the city. This scheme is implemented in a Public Private Partnership (PPP) mode. Vegetable cultivation in open as well as protected cultivation, Post Harvest Management facilities viz.,low cost onion storage structure, Reefer vans and Pack house besides Marketing facilities such as Collection centres and Retail outlets are the major components along with the Baseline survey and Promotion of FPO as per the guidelines of RKVY sub scheme.

Under this scheme, 700 clusters with 12,070 farmers have been formed in 9 districts namely Kancheepuram, Tiruvallur, Tiruvannamalai, Vellore, Villupuram, Coimbatore, Erode, Tiruppur and The Nilgiris. The farmer clusters have opened separate Bank Accounts. Further 13 FPO formations are in progress with the help of reputed NGOs and KVKs.

As announced in the Assembly in the year 2011-12, this programme was successfully initiated at Chennai and Coimbatore resulting in increase of 5,780 Ha. area under cultivation of vegetables. An amount of Rs.751.45 Lakhs has been released as subsidy benefitting 5,571 vegetable

growers.16 collection centres run by the farmer clusters were inaugurated on 01.09.2013 in 9 districts and about 5,808.63 Mt of vegetables were collected and sold at the collection centres through various market aggregators. Further 7 Market aggregators have been identified for establishing collection centres, retail outlets and for mobile sale units at all perimetro areas.

During 2013-14, this programme has been extended to Trichy district with an outlay of Rs.1,200 Lakhs and the activities will be taken up during 2014-15. This scheme will be extended to Madurai and Salem districts at an outlay of Rs.500 Lakhs.

6. National Crop Insurance Programme (NCIP)

National Crop Insurance Programme (NCIP) / Rashtriya Fasal Bima Karyakram (RFBK) have been formulated converging MNAIS, WBCIS & CPIS. In Tamil Nadu under National Crop Insurance Programme (NCIP) Modified National Agriculture Insurance Scheme (MNAIS) is being implemented from Rabi 2013-14. This scheme is implemented at revenue village Level in 3 districts viz., Sivagangai, Namakkal and Cuddalore and at Firka Level in rest of the 28 Districts except Chennai. Horticulture crops such as Banana, Onion, Pineapple, Potato, Chillies, Turmeric and Tapioca are notified under National Crop Insurance Programme (NCIP) for Kharif 2014-15.The objective of the scheme is to provide insurance coverage and financial support to the farmers in the event of failure of sowing and failure of any of the notified crop as a result of natural calamities.

- During the last three years National Agriculture Insurance Schemes (NAIS) was implemented with a

subsidy on premium of Rs.1,466.44 Lakhs covering 78,554 farmers.
- Modified National Agriculture Insurance Scheme (MNAIS) was implemented with a subsidy on premium of Rs.30.44 Lakhs covering 10,558 farmers.
- Weather Based Crop Insurance Scheme (WBCIS) was implemented with a subsidy on premium of Rs.41.29 Lakhs covering 4,202 farmers.

During 2014-15 it is proposed to cover 49,500 farmers at an outlay of Rs.4,000 Lakhs.

7. Part II Scheme

During 2011-12, an amount of Rs.110 Lakhs was sanctioned and infrastructure facilities are being created at a cost of Rs.30 Lakhs at Horticulture Training Centre, Madhavaram. District Horticulture Extension and Training Centres are being established at Erode and Trichy at a cost of Rs.20 Lakhs each and also training infrastructures are being created at Horticulture Training Centre, Thally at a cost of Rs.40 Lakhs.

During 2012-13, the following works were carried out under Part II Scheme.

1. Establishment of District Horticulture Extension and Training Centre at Dharmapuri at a cost of Rs.30 Lakhs
2. Extension of District Horticulture Extension and Training Centres at Trichy and Erode at a cost of Rs.10 Lakhs each.

During 2013-2014, an amount of Rs. 170 Lakhs was sanctioned. Under Component I, Extension of District

Horticulture Extension and Training Centres at Dharmapuri at a cost of Rs.40 Lakhs was carried out. Under Component II, E-enabling Peri-metro project using mobile based agro advisory system in Chennai and Coimbatore regions at a cost of Rs.100 Lakhs which will be implemented in 2014-15 and Formation of Farmers Interest Groups, capacity building of FIGs and formation of Producers Company at a cost of Rs.30 Lakhs are being carried out.

Hon'ble Chief Minister of Tamil Nadu announced establishment of **District Horticulture Technology Resource Centres** in five districts viz., Salem, Namakkal, Theni, Tiruvannamalai and Sivagangai during 2013-14 at an outlay of Rs.325 Lakhs. The preparatory works are in progress.

In 2014-15, under component I, it is proposed to extend the District Horticulture Extension and Training Centres at Trichy and Erode at a cost of Rs.20 Lakhs each and to create infrastructure facilities for Central Horticulture Training Centre at Kudimiyanmalai and Pudukottai, at a cost of Rs.45.13 Lakhs. It is also proposed to produce and distribute the planting materials of Dendrobium (Orchids) to the farmers at a subsidized rate and demonstrate Orchids cultivation in Tamil Nadu at a cost of Rs.50 Lakhs under Component II.

8. Organic Farming Policy

In the context of world scenario towards organically produced food, Organic Farming is gaining importance. With food safety concern looming large, stand on sustainable Agriculture is to be taken up by adopting organic farming methods which can be devised only based on a strong State

Organic Farming Policy as indicated and emphasised in Vision 2023 under Horticulture Development Programme.

Accordingly, Organic Farming Policy for Tamil Nadu is being drafted by a Drafting Committee consisting of eminent people, academicians, entrepreneurs and farmers who are working actively in the area of organic farming as announced in the floor of Assembly and the draft policy is in the final touch.

9. Special Package implemented under Cyclone thane Rehabilitation programme

In Tamil Nadu, due to Cyclone Thane hit on 30.12.2011, 48,040.90 Ha. of Horticulture crops was damaged which includes the perennial crops like Cashew in an extent of 36,517.08 Ha. in the districts of Cuddalore and Villupuram.

Hon'ble Chief Minister announced a Special Package on 04.02.2012 for horticulture crops to rehabilitate the affected farmers at an outlay of Rs.724.26 crores to be implemented for a period of five years.

Due to the Revival of the revised assessment for crop damage was estimated to be 8,678.57 Ha. and the Special Package was determined at an outlay of Rs.5,409.97 Lakhs. So far, expenditure has been incurred for a sum of Rs. 5,179.697 Lakhs.

- 22,666 Nos Vegetable minikits were completely distributed
- 41,176 Nos of pulses minikits distributed
- Flower crops re cultivated in an area of 180.90 Ha.
- Tuber crops re-cultivated in an area of 2,182 Ha.

- Spice crops re-cultivated in an area of 589.30 Ha.
- Non-Perennial fruit crops such as banana re-cultivated in an area of 4,580.930 Ha.
- Medicinal plants re cultivated in an area of 41 Ha.
- Cashew replanting has been completed in an area of 8,228.40 ha with the proposed target of 8,678.59 Ha. which includes the area replanted by gap filling in the partially affected fields in an extent of 7,428.59 Ha. normal planting in an area of 350 Ha. and High Density Planting in an area of 449.81 Ha. The balance area of 450.19 Ha. will be covered under High Density Planting during 2014-15. 900 Ha. will be covered as High Density Cashew orchard with drip irrigation under NMSA during 2014-15.
- Besides to provide irrigation facility to High Density Cashew Orchards, the Government sanctioned a sum of Rs.1,140 Lakhs to provide 270 Nos. of bore wells to 60 Joint Liability Groups (JLGs) and 210 individual farmers of Cuddalore and Villupuram. Sofar, 59 Nos. of bore wells for JLGs and 90 Nos. of bore wells for individual farmers totally 149 borewells have been completed at an outlay of Rs.686.185 Lakhs.
- During 2014-15, 450.19 Ha. will be brought under Cashew High Density planting, 121 nos. of bore wells will be erected and 862 Ha. of Cashew High Density orchard will be provided with drip irrigation facility.

State Plan Schemes Physical and Financial Target and Achievement

The financial allocation for the year 2013-14 with the expenditure details incurred and the proposed outlay for the year 2014-15 for the State Plan Schemes are furnished below:

Financial: Rupees in Lakhs

Sl. No.	Name of the Scheme	Unit	2013-14				2014-15	
			Physical		Financial		Physical	Financial
			Target	Achmt.	Target	Achmt.	Target	Target
1.	Integrated Horticulture Development Scheme	Ha.	24,625	20,239	492.50	485.713	22,000	492.500
2.	Horticulture Training Centre (HTC)	Nos.	2,500	2,500	7.500	7.500	2,500	7.500
3.	Hill Area Development Programme	Ha.	900	900	254.79	254.790	900	260.00
4.	Urban Horticulture Development Scheme (Do it your Self Kit)	Nos.	15,565	4,968	500.00	300.393	15,565	500.000
5	National Agricultural Development Programme	Ha.	7,248	5,277.20	3,372.83	3152.288	13,896	5,087.767

Sl. No.	Name of the Scheme	Unit	2013-14				2014-15	
			Physical		Financial		Physical	Financial
			Target	Achmt.	Target	Achmt.	Target	Target
6.	National Agricultural Insurance Scheme	No. of far-mers	45,000	14,488	950.00	709.880	-	-
7.	Modified National Agricultural Insurance Scheme			6,348		14.900	-	-
8	Weather Crop Insurance Scheme	No. of far-mers	8,000	771	52.51	6.950	-	-
9	National Crop Insurance Programme	No. of far-mers	-	-	-	-	49,500	4000.00
10	Part - II Schemes	No. of far-mers	3	3	170.000	138.000	4	135.13
	TOTAL				**5,800.13**	**5,070.414**		**10,482.897**

3. SUGAR DEPARTMENT

Sugarcane is one of the important Agro Based Industrial Crop in Tamil Nadu. This crop offers major scope for the Agriculturist to sustain their income and improve their standard of living. To increase the production and productivity in sugarcane, usage of optimum water and critical inputs like inorganic fertilizers, plant protection chemicals through drip and fertigation and by adopting all other technological interventions are advocated.

In Tamil Nadu, sugarcane is cultivated in an area of 3.50 L.Ha by about 3 lakh farmers. The State stood at 2nd in productivity of sugarcane at all India level and contributes approximately 7-9 percent of the National Sugar Production. During 2013-14 sugar season, 3.27 L.Ha area was covered under sugarcane crop as per the fourth estimate and the estimated sugarcane production is 317.60 L.MT with a productivity of 97 MT/ Ha. Upto 30.06.2014, 128.08 L.MT of cane crushed through Co-operative, Public sector and Private Sugar Mills during the current sugar season and 14.14 L.MT of sugarcane is expected to be crushed for the remaining period of 2013-14 crushing season. For the season 2014-15, the estimated sugarcane production is 200 L.MT of which 55-60% will be crushed by the sugar mills.

In Tamil Nadu at present there are 46 Sugar Mills, of which 16 Sugar Mills are in Co-operative Sector, 3 Sugar Mills in Public Sector and 27 Sugar Mills in Private Sector. Out of 46 sugar mills Madura Sugars (Madurai District) a public sector sugar mill and Arunachalam sugar mill (Tiruvanamalai District) and Empee sugar mills (Tirunelveli District) are not functioning at present. Only 43 sugar mills are functioning now. The Name of the Sugar Mills, its

location, year of establishment, installed capacity are given in Table.

The past two years performance and estimate for 2013-14 under area cultivated, registered, cane crushed, sugar produced and recovery percentage are given below:

Crushing season (Oct.– Sep.)	Cane area cultivated (L.Ha.)	Cane production (L.MT)	Productivity MT/Ha	Cane area registered (L.Ha.)	Cane crushed (L.MT)	Sugar Production (L.MT)	Recovery %
2011-12	3.46	385.76	111	2.75	254.55	23.79	9.35
2012-13	3.93	396.82	100	2.81	214.57	19.06	8.88
2013-14 (Estimated)	3.27	317.60	97	2.18	142.22	12.80	9.00

Every year, the Government of India announces the Fair and Remunerative Price (FRP) on all India basis and the Government of Tamil Nadu announces State Advised Price (SAP) at State level, to encourage sugarcane growers. The sugarcane price fixation is done after considering the cost of cultivation of sugarcane, input cost, sugar stock, market price of sugar and other related factors. The Fair and Remunerative Price fixed by Government of India is Rs.2,100/- per MT for the sugar season 2013-14 linked to 9.5% recovery with an incentive of Rs.22.10 per MT for every 0.1% increase in recovery. Considering the increased cost of cultivation due to increased fertilizer and other input cost besides labour scarcity at times of agricultural operations, the Government of Tamil Nadu have announced

the State Advised Price of Rs.2,650/- inclusive of Rs.100/- per MT as transport charges for the 2013-14 crushing season.

The Government of Tamil Nadu with the aim to augment sugarcane production and to achieve 100% capacity utilization by the sugar mills is implementing Sustainable Sugarcane Initiative method of cultivation. This method involves production of single budded seedlings using shade nets, installation of Drip system for efficient use of available water for irrigation and fertigation to enhance farm productivity.

During the year 2013-14, the Government has announced Sustainable Sugarcane Initiative Scheme to cover an area of 20,000 Ha. in which 7,000 Ha. have to be covered with subsidy, 13,000 Ha without subsidy and also 400 shade net units are to be distributed with subsidy. Due to poor monsoon and depletion of underground water, 4,299 Ha have been covered with subsidy, 1,337 Ha. covered without subsidy under SSI and 393 Nos. of shade net units had been erected.

For the year 2014-15, under the Budget speech, the Government has announced coverage of Sustainable Sugarcane Initiative scheme in 5,000 Ha. Out of which 2,000 Ha. is being implemented by the Department of sugar through co-operative and public sector sugar mills and 3,000 Ha. by the Department of Agriculture through Private sugar mills. The critical inputs are proposed to be supplied by the agriculture department to the sugar mills in advance.

. To enhance soil fertility and to encourage soil micro flora, the organic farming methods like growing of green manure crops viz. Sesbania, Daincha and application of

Vermi-compost, Bio fertilizers and adoption of Integrated Nutrient Management are being practiced among the farmers in Tamil Nadu. The value added vermi-compost is produced from the press mud obtained from the sugar mills and distributed to the farmers for increasing sugarcane productivity. The farmers are encouraged to take up production of vermi-compost, bio inputs and organic manure at village level to enrich soil fertility so as to increase the productivity of Sugarcane.

To promote SSI method of cultivation, Organic Farming and Integrated Nutrient Management, awareness campaigns are conducted at village level.

The Sugar Mills in association with Tamil Nadu Agricultural University and other Sugarcane Research Stations have introduced promising high yielding, drought and pest resistance varieties like CoC.24, Co.99004, Co.99006, Co.94012, Co.Si.7 etc. to improve production and productivity of the sugarcane. The existing ruling varieties cultivated are Co.86032, CoC.22, and CoV.94102.

To ensure easy movement of harvested cane from grower's field to factory, link roads are laid by utilizing sugarcane cess fund. It helps both the farmers and the sugar mills for timely arrival of fresh cane to the Mills and helps in improving sugar recovery.

4. TAMIL NADU HORTICULTURE DEVELOPMENT AGENCY (TANHODA)

Tamil Nadu Horticulture Development Agency – TANHODA registered as a society under the Tamil Nadu Societies Registration Act 1975 for implementing various Horticulture Schemes funded by Government of India and Government of Tamil Nadu, functions as a "Special Purpose Vehicle" since 2004.

Schemes Operated through TANHODA

1. **Under Mission on Integrated Development of Horticulture**
   a) National Horticulture Mission
   b) National Bamboo Mission
2. **National Mission on Sustainable Agriculture**
   a) On Farm Water Management through Micro Irrigation
   b) Rainfed Area Development
3. **National Mission on Medicinal Plants**
4. **State Horticulture Farms**
5. **Tamil Nadu IAMWARM Project (Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration & Management)**

1. Schemes Shared Between Central and State Governments

1.1. National Horticulture Mission

National Horticulture Mission aims for holistic development of horticulture that includes Expansion of area under High income generating horticulture crops, Promotion of Extension technology, Post-Harvest Management and Marketing. The focus is for crop diversification and increasing the area under horticulture crops.

This is one of the flagship programmes of Government of India being operated on a mission mode from 2005-06 onwards. This scheme is implemented in 22 districts i.e., Ariyalur, Coimbatore Cuddalore, Dharmapuri, Dindigul, Erode, Kanyakumari, Krishnagiri, Madurai, Perambalur, Pudukottai, Ramanathapuram, Salem, Sivagangai, Thanjavur, The Nilgiris, Theni, Tiruppur, Tirunelveli, Trichy, Vellore and Villupuram with Centre and State sharing pattern on 85:15 basis. During XII Plan period, i.e from 2014–15 this scheme is subsumed under Mission for Integrated Development of Horticulture (MIDH)

Activities like, area expansion under high value horticulture crops including hybrid vegetables, production of quality planting materials, rejuvenation, creation of water resources, protected cultivation, INM/IPM, Organic farming, mechanization, Post Harvest Management, creation of marketing infrastructure and human resource development, Centre of Excellence for Horticulture crops, Promotion of Farmer Producer Organization / Farmers Interest Groups / Growers Association, etc., are being implemented under this scheme.

Since horticulture produces are more perishable in nature, thrust is now being given to project based activities. 'Post Harvest Management' wherein focus on post harvest losses and promotion of Farmer Producer Organizations (FPO) and their tie up with Market Aggregators (MAs) and Financial Institution (FIs) to ensure support and adequate returns to the farmers are contemplated.

1.1.1. Area Coverage under Focus crops:

Establishment of New Gardens is aimed in fruits, vegetables, flowers, spices, aromatic and plantation crops. During the last 3 years (2011 – 12 to 13 – 14) an area of 58,576 Ha. had been covered with an expenditure of Rs.8,926.933 lakhs and during 2014-15 it is proposed to cover 13,031 Ha. with an expenditure of Rs.2,093.30 lakhs under this programme by supply of quality seeds and planting materials.

1.1.2. Quality Planting Material:

During the last 3 years (2011 – 12 to 13 – 14) an expenditure of Rs.259.50 lakhs allocated for the supply of quality Planting Material. During the year 2014 – 15 an amount of Rs.1,243.55 lakhs is proposed to be allocated for small nursery, Model nursery, and Tissue culture units and for vegetable seed production both under public and private 5sector for the production of quality seeds and quality planting materials.

1.1.3. Productivity Increase:

During the last 3 years (2011 – 12 to 13 – 14) an expenditure of Rs.8,323.765 lakhs allocated for increasing the productivity of the Horticulture Crops and income to the farmers assistance to the farmers through protected cultivation, Rejuvenation, mechanization, INM/IPM, Pollination Support, Creation of water resources, etc., and

an outlay of Rs.3,740.75 lakhs proposed during the year 2014-15.

1.1.4.Organic Farming

Farmers are motivated to take up organic cultivation of horticultural crops through training followed by certification. One project mode activity was started during 2013-14 under Organic Certification for 1,000 Ha. coverage in three years period. Further, during 2014-15 it is proposed to cover 5,000 Ha. in three years period with an outlay of Rs.350 Lakhs.

1.1.5.Post Harvest Management

An amount of Rs.1,140.50 Lakhs is proposed for the year 2014-15 towards assistance for establishment of pack houses, pre-cooling units, Cold rooms, Mobile pre-cooling units, Cold storages, Processing Units, Ripening Chambers, Low Cost Onion Storage, etc., on project mode.

1.1.6.Centre of Excellence

Centre of Excellence is a place to identify the technologies, improved cultivation practices and varieties very much suitable for the region through series of demonstrations and trials which will function as "One stop shop" for farmers and entrepreneurs to get trained on latest technologies of a crop.

Such Centres of Excellence, one for vegetables at Reddiyarchathiram of Dindigul District (Rs.1,018 Lakhs) and another for cut flowers at Thally of Krishnagiri District (Rs.880 Lakhs) are being established. Open cultivation of vegetables using technologies like mulching and drip irrigation demonstrated at Reddiyarchatram during the year

2013-14. The crops like Tomato, Brinjal, Bhendi and Chilies are cultivated by using drip irrigation & mulching technology successfully. As a part of Centre of Excellence other works like construction of administrative building with training hall and other amenities are in progress in both the centres. The works will be completed before 2014-15.

During 2014 – 15 it is proposed to implement this scheme to cover 15,870 Ha. with an outlay of Rs.12700 Lakhs.

As per the announcement of the Hon'ble Ministerfor Agriculture, potato seed tuber production was taken up by 17 farmers at Thalavady, Erode district and 19 farmers of Thally, Krishnagiri District in 50 acres with a subsidy amount of Rs.5 Lakhs. The seeds have been harvested and supplied for further multiplication in State Horticulture Farms at Ooty and Kodaikanal.

The International Horti Fest 2014 will be conducted at Coimbatore during the 1st week of November 2014 as announced by the Hon'ble Minister for Agriculture.

1.1.7. National Horticulture Mission – A Boon to Horticulture Crops

Success Stories - I. Capsicum under Poly House

At Krishnagiri District, from the cultivation of 4000 No. of Red, yellow and Green coloured hybrid varieties of capsicum under poly house condition in an area of 1,000 Sq.mt, totally 12 Mt produce was harvested and sold for Rs.4.40 Lakhs with the first harvest started on 52nd day and went up to 180 days. After deducting the expenditure of Rs.1.18 Lakhs a net profit of Rs.3.32 Lakhs was received in 8 months.

Success Stories – II Gerbera Cultivation under Poly House

At Hosur block of Krishnagiri district from the cultivation of 7000 nos. Gerbera plants in 1000 Sqmt totally 2.4 Lakhs flowers @ Rs.2/- flower gave a gross income of Rs.4.80 Lakhs with the first harvest started from 90th day onwards @ 2 flowers / plant up to 4th month and 3-4 flowers / plants from 5th month. After deducting the expenditure of Rs.1.80 Lakhs, a net profit of Rs.3.00 Lakhs per year was received.

1.2.National Mission for Sustainable Agriculture (NMSA)

With Objectives to optimize utilization of Water Resources to make agriculture more productive, sustainable, remunerative and climate resilient along with Comprehensive Soil Health Management Practices and to conserve Natural resources, National Mission for Sustainable Agriculture (NMSA) has been formulated by GOI during 2014-15. Components such as Rainfed Area Development (RAD), Soil Health Management (SHM), On Farm Water Management (OFWM) and Climate Change and Sustainable Agriculture Monitoring, Modelling & Networking (CCSAMMN) will be implemented under NMSA.

1.2.1a.On Farm Water Management (Micro Irrigation)

Water is the most critical and precious input for cultivation of crops. The availability of water for irrigation is the deciding factor for production and productivity in Agriculture. However, the conventional irrigation system has not only resulted in poor yield and poor water use efficiency but also led to wastage of huge quantity of water. The Tamil Nadu Vision 2023 strategic plan for Agriculture and irrigation sector also provides support to micro Irrigation for increasing the water use efficiency.

Tamil Nadu is a water starved State. Water is a serious limiting factor as the State has harnessed the available surface water potentials. In order to enhance the water use efficiency, Hon'ble Chief Minister during 2011 announced 100% subsidy for SF/MF and 75% subsidy for Other Farmers for Micro Irrigation as it is envisaged in the Tamil Nadu Vision 2023 documents to cover atleast 50% of the States' net cultivated area in next 10 years. It gives thrust for achieving higher level of productivity with available water besides optimal use of fertilizers and restricted weed growth. This scheme has been upscaled as National Mission on Micro Irrigation (NMMI). This scheme is being implemented by TANHODA through registered and empanelled Micro Irrigation Firms. Totally 93,868 Ha. crops has been covered under Micro irrigation in the past three years for which Rs.39,070 Lakhs has been spent.

This Micro Irrigation scheme is subsuming as a component of "National Mission for Sustainable Agriculture scheme" as On Farm Water Management (OFWM) from 2014-15.

OFWM will focus primarily on enhancing water use efficiency by promoting efficient on-farm water management technologies, efficient water application & distribution system, secondary storage and drainage development. It is expected that adoption of improved methods of irrigation such as drip & sprinkler will not only save water, power, fertilizer consumption, weeding cost, etc. but it will also mitigate water logging and soil salinity.

In the year 2014-15, it is programmed to cover 34,373 Ha with an outlay of Rs.24,290 Lakhs under National Mission for Sustainable Agriculture (NMSA).

1.2.1b. Micro Irrigation Model Village

The Hon'ble Minister for Agriculture has made announcement in the Assembly during 2012-13 that "Micro Irrigation Model Village in all districts with quick installation through IT enabled field inspection. This Micro Irrigation Model Village will serve as a demonstration village for farmers of surrounding villages and blocks.

In continuation to the above announcement, One village has been selected in each of the 31 districts (except Chennai) for adoption of Micro Irrigation in cent percent of its irrigated area. This scheme is being implemented from 2012-13 So far this scheme was implemented in 3,969.95 Ha. and 2,353 farmers were benefitted.

In 31 Micro Irrigation Model Villages, village campaigns were conducted during 2013-14 with a financial outlay of Rs.1.55 Lakhs benefitting 1,250 farmers under the leadership of the Chairman, District Micro Irrigation Committee/ the District Collector.

1.2.1c. Using Information Technology in Micro Irrigation scheme

As per the announcement made by the Hon'ble Minister for Agriculture in the Assembly during 2012-13, a State High Level Committee (SHLC) has been formed for monitoring the implementation of Micro Irrigation Scheme in Tamil Nadu. The SHLC on Micro Irrigation Scheme has recommended the use of IT tools in implementation of MI scheme and for making field inspection.

With the recommendations of SHLC, Government has issued guidelines for the adoption of IT tools for easy and quick method of field inspection.

- **(i) Third Party Inspection** - The Government has authorized the Commissioner of Horticulture and Plantation Crops to appoint a third party inspection agency and the expenditure is being met from the administrative cost of Micro Irrigation scheme.
- **(ii) Mobile Governance -** The objective of M-Governance is to develop a mobile phone based software using GIS/GPS and Geo-fencing concepts. Every field surveyed will be identified with its Geo-reference such as GPS co-ordinates (Latitude and Longitude) and Geo-Fencing.

  The supervisory officers will visit the field and capture the photograph of the Micro Irrigation system installation. The image/photograph that is captured will be augmented with GPS coordinates, date and time of capturing the image and also unique identification. The cost will be met from the end to end computerization component of the Horticulture Department under National Agriculture Development Programme.
- **(iii) On line Monitoring:** Web based online monitoring system with the website **www.mdtanhoda.gov.in/micro** is already in practice in TANHODA for the implementation of Micro irrigation scheme right from Registration of application, approval by District Technical Committee, giving work completion certification, Check measurement by block level officer and release of subsidy. The existing online monitoring system system has been modified and made user friendly.

  National Informatics Centre, Chennai has been asked to develop"Customized software" by synchronizing of M-Governance, Third Party

Inspection with the Up gradation of existing on line monitoring system.

1.2.1d. Success Stories National Mission on Micro Irrigation – Model Village - Ariyur village, Namakkal district

At Mohanur block of Namakkal District Tapioca cultivated in an area of 2.90 ac with Drip Irrigation System 22.20 Mt. tuber / ac was harvested as against 17.60 Mt. tuber/ac of previous year without MI System with the incremenal yield of 25% with additional net income of Rs.53,820/-.

1.2.2. Rainfed Area Development (RAD)

Rainfed Area Development Programme (RADP) was implemented as sub-scheme of NADP since 2011-12. During the last three years, 4,452 Ha. has been covered under RADP in horticulture crops with a financial achievement of Rs.1,742.51 Lakhs.

From 2014-15, RADP scheme will be implemented under National Mission for Sustainable Agriculture (NMSA) as Rainfed Area Development by following new guidelines. Farmers are encouraged to follow Horticulture based farming system in rainfed areas, protected cultivation and setting up of vermi-compost units under this component. 50% subsidy will be given for practicing the above interventions. During 2014-15, Rainfed Area Development in Horticulture Crops is proposed to cover an area of 3,120 Ha. with a financial outlay of Rs.1,041.67 Lakhs under NMSA.

2. Schemes Fully funded by Government of India

2.1.National Mission on Medicinal Plants (NMMP)

The major resource base of our indigenous health care traditions is Medicinal Plants. The outreach and acceptability of AYUSH systems, both nationally as well as globally, are dependent on uninterrupted availability of quality medicinal plants based raw material. More than 90% of the species used in trade continue to be sourced from the wild forest of which about 2/3rd harvest is not utilised. The cultivation of medicinal plants, therefore, is the key in meeting the raw material needs of the AYUSH industry besides offering opportunities for higher levels of income, crop diversification and growth of exports.

The National Mission on Medicinal Plants scheme was introduced in the year 2008-09 with the objective of providing support for the cultivation of medicinal plants in the farming system through crop diversification and enhances income of the farmers besides satisfying the ever increasing the demand of Medicinal plants. It is a centrally sponsored scheme with 100% grant from Government of India through National Medicinal Plants Board which is functioning under the Ministry of Health & Family Welfare.

National Mission on Medicinal Plants scheme is implemented in 29 districts in the state. Under this scheme, 50% and 20% of graded subsidy assistance is provided for the cultivation of medicinal plants species such as Acorus, Aonla, Coleus, Aloe vera, Gloriosa, Solanum nigrum, Neem, Piper longum, Senna and Tulsi.

From 2011-12 onwards totally 17,139 Ha. has been covered under this scheme for which a sum of Rs.2,730 Lakhs has been spent.

During 2014-15, National Mission on Medicinal Plant scheme is proposed to be implemented at an outlay of Rs.1,323.075 Lakhs to cover an area of 8,272 Ha. under various medicinal plant species.

2.2.National Bamboo Mission

Bamboo is a versatile group of plants which is capable of providing livelihood security to the people. In recent past, it has remained confined to the forests (12.80% of forest cover) The importance of the crop as a source of raw material for domestic and industrial use has necessitated cultivation of bamboo in farm lands.

In Tamil Nadu, bamboo is cultivated in an area of 1,691 Ha. with an annual production of 30,438 MT. The average productivity is 18 Mt per Ha. It is cultivated mainly in the district of Thanjavur, Nagapattinam, Erode, Tiruvarur, Cuddalore, Trichy and Kancheepuram.

Keeping in view the vast untapped potential of the bamboo, the scheme on National Bamboo Mission was introduced in Tamil Nadu during 2007-08 with the objective of increasing the area coverage under bamboo in non – forest areas.The scheme also promotes marketing of Bamboo and Bamboo based handicrafts. It is a centrally Sponsored Scheme with 100% grant from Government of India.

During the year 2011-12, 250 Ha. was covered at an expenditure of Rs.40 Lakhs. During the year 2012-13, 100 Ha. was covered at an expenditure of Rs.20.05 Lakhs. 2013-14 target of 425 Ha. will be implemented in 2014-15 at an expenditure of Rs.104.04 Lakhs.

Now, Government of India has subsumed the National Bamboo Mission under the Mission for Integrated Development of Horticulture (MIDH) and issued new guidelines with revised cost norms to implement the scheme from 2014-15 onwards.

During 2014-15, it is proposed to implement this scheme under Mission for Integrated Development of Horticulture (MIDH) to cover an area of 310 Ha. at an outlay of Rs.186.029 Lakhs.

3. State Horticulture Farms

With an objective to produce pedigree known and quality planting materials of horticulture crops for supply to the farmers, 54 State Horticulture Farms and 10 Parks and Gardens are functioning in the State located in 20 districts. One more garden is being established at Vathalmalai in Dharmapuri district. The list of parks and gardens is given in the Annexure.

The latest technology, mechanization, farming techniques, irrigation methodologies, etc. to elucidate to the farmers, the merits of scientific horticultural practices are being demonstrated in these farms as emphasised in Tamil Nadu Vision 2023 document of Hon'ble Chief Minister. The Parks and Gardens acts as attraction centres to the tourists within the State, Nation and Internationally. It also acts as study centres to the students of Botany and Landscaping. The State Horticulture Farms act as demonstration centres for the following latest horticulture technologies.

- ✓ On high density planting of mango and cashew
- ✓ Top working in mango orchards

- ✓ Raising vegetable seedlings in pro trays
- ✓ Soft wood grafting in mango
- ✓ Introduction of new varieties of mango, pomegranate, guava and pepper
- ✓ Drip irrigation with fertigation

Under pedigree planting materials production of horticulture crops, during 2011-12, 166.77 Lakh Nos. of planting materials of horticultural crops was produced as against the target of 165.45 Lakh Nos. accounting to more than 100 % achievement with an expenditure of Rs.1,106.09 Lakhs and receipt through sales of planting materials was Rs.2,143.89 Lakhs. Similarly, during 2012-13, 209.98 Lakh Nos. were produced as against the target of 178.44 Lakh Nos. with an expenditure of Rs.1,502.82 Lakhs and receipt through farm sales was Rs.2,251.29 Lakhs.

During 2013-14, 178.79 Lakh Nos. of planting materials were produced as against the target of 189.48 Lakh Nos. accounting to 93% only. Severe depletion of irrigation water in farms resulted in constrained production of plants. The expenditure incurred during 2013-14 is Rs.1,616.45 Lakhs and receipt collected is Rs.3,063.13 Lakhs.

During 2014-15, it is programmed to produce 200.240 Lakh Nos. of plants with a proposed expenditure of Rs.2,079.43 Lakhs. The proposed receipts are projected as Rs.3,546.89 Lakhs.

To cover cultivable unutilized area in the farms and to bring them into production for increasing the land use efficiency and income of the farms, new area expansion and gap filling with latest choice varieties of horticultural crops is taken up every year. New area expansion and gap filling

with latest choice varieties of mango, acid lime, guava, pomegranate, pine apple, sapota and some minor fruits, cashew, jasmine, rose have also been taken up in some of the farms to an extent of 55 Ha. during 2013-14.

As a new venture, high yielding varieties/hybrids of vegetables and flower seedlings are produced in pro trays for distribution to the farmers to advocate use of seedlings rather than seeds for better vigour and field establishment. During 2013-14, 15.799 Lakh Nos. of vegetable seedlings were produced and distributed and 258.539 MT of seed potato were produced and distributed to the farmers.

With an aim to expand the benefit of availability of quality planting materials within the district premises to the horticultural farmers, new farms are being established every year in the uncovered districts. From 2011 to 2013, the following farms were established.

- A new farm at Poonjuthi village in Melur taluk of Madurai district.
- A new farm at Thorakudi village in Srirangam taluk of Trichy district.
- A new farm at Polayampalli village in Harur taluk of Dharmapuri district.
- A new farm at Sandhaiyur village in Nilakottai taluk of Dindigul district.

State Horticulture Farms of Salem, Kanyakumari, Sivagangai, Pudukottai, Theni, Dindigul districts were accredited by the National Horticulture Board, Government of India certifying the production of quality and pedigree planting materials of horticulture crops. Processing for accreditation is in progress for remaining farms.

To facilitate quality planting materials production for quality distribution, the State Horticulture Farms have to be constantly upgraded and modernized with the latest developments. With this idea, funds to a tune of Rs.1,423.42 Lakhs and Rs.502.383 Lakhs during 2012-13 and 2013-14 respectively has been sanctioned from National Agriculture Development Programme for Modernization and up gradation of State Horticulture Farms.

Accordingly, during 2012-13 and 2013-14, the State Horticulture Farms were provided with irrigation facilities, water conservation facilities and drip irrigation to closer planting areas besides providing farm infrastructures required for plant propagation activities. Further recently developed farm machinery and equipments for labour saving were also provided to the farms. In particular, during 2012-13 five farms namely State Horticulture Farm Vichanthangal (Kancheepuram), Mulluvadi (Salem), Aduthurai (Thanjavur), Vallathirakottai (Pudukottai) and Srivilliputhur (Virudhunagar) have been selected for overall development to attain saturation in terms of farm land and farm income and the works are in progress. During 2013-14 two farms namely Neyveli (Cuddalore) and Devakottai (Sivagangai) are selected for overall farm development and the detailed project report is under preparation.

4. Parks and Gardens

During 2011-12 there were 7 Parks and Gardens functioning under the control of TANHODA. Now, it has been increased to 10 numbers. These parks and garden attract large number of visitors. To further encourage the botanists and researchers and to attract more number of visitors, parks and gardens are being developed by acquiring lands and also by utilizing the available land in the State Horticulture Farms. The parks and gardens are

established to accomplish the aesthetic sense of tourists and public.

The Hon'ble Chief Minister on 15.10.12 inaugurated 3 parks and gardens through video conferencing for the benefit of the public.

- An Eco Park at Courtrallam in Tirunelveli District with an out lay of Rs.573 Lakhs in the State Horticulture Farm, Courtllam.
- A Government Botanical Garden at a cost of Rs.745 Lakhs in an area of 36 acres at Yercaud, in Salem district.
- A Genetic Heritage Garden at Yercaud in the Salem district at a cost of Rs.856 Lakhs in an area of 20 acres.

Apart from the above parks and gardens, works have commenced at Achadipirambu in Ramanathapuram District to establish a Genetic Heritage Garden in an area of 10 acres at an estimated cost for Rs.816 Lakhs and an Ornamental and Demo garden at Horticulture Training Centre, Madavaram in an area of 20 acres at an estimated cost of Rs.593 Lakhs.

In 2014-15, 205 Lakh Nos. of planting materials will be produced and distributed to the farmers. Rs.2,048.44 Lakhs will be utilized for planting materials production with receipt outlay of Rs.3,460.54 Lakhs.

During 2014-15, it is programmed to establish one ECO park at SHF, Kanyakumari and a Rose garden and Cut flower demonstration unit at SHF Kodaikanal apart from a Government Botanical Garden at Vathalmalai in Dharmapuri District and a Tea Park at Doddabetta in Nilgiris District.

The details of number of visitors visited the Parks & Gardens in the State are given below.

S. No	Parks & Gardens	Extent (in Ha)	No. of Visitors	No. of Visitors
			2012-13	**2013-14**
1	Government Botanical Garden, Ooty	22.00	22,20,168	20,50,619
2	Government Rose Garden, Ooty	14.40	8,96,938	7,52,282
3	Sim's Park, Connoor	12.14	6,44,800	5,21,630
4	Park at SHF, Kattery, Ooty	18.96	16,265	24,714
5	Bryant park, Anna park & Chettiar park at Kodaikanal	10.28	6,66,954	6,52,412
6	Anna Park and lake view park at Yercaud	3.14	2,06,058	1,53,903
7	Semmozhi Poonga, Chennai	3.17	2,32,188	1,50,880
8	Eco park at Courtallam	14.89	40,014	49,118
9	Genetic Heritage Garden, Yercaud	8.27	65,206	69,438
10	Government Botanical Garden,Yercaud	14.58		
	TOTAL	**121.83**	**49,88,591**	**44,24,996**

4.1. Creation of Rose Garden and cut flower Demonstration unit at State Horticulture Farm, Kodaikanal.

TANHODA have taken steps to create a Rose Garden in an area of 4 Ha and a cut flower demonstration unit in an area of 0.40 Ha at State Horticulture Farm, Kodaikanal in Dindigul District based on the announcement made in the floor of Assembly.

In order to attract more No. of tourists to Kodaikanal and also to act as a study centre for the students and for the farmers, it is proposed to create a Rose Garden with a Cut Flower Demonstration Unit at State Horticulture Farm, Kodaikanal. The empanelled Landscape Architects had prepared the Landscape Design, drawing and project and the work was commenced in the first phase to the tune of Rs.380 Lakhs.

5. Externally Aided Project
TN IAMWARM PROJECT
Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management Project – Horticulture.

TN IAMWARM project, an externally aided project is under implementation with an objective to bring crop diversification and area expansion with high value horticultural crops, in 61 sub basins of Tamil Nadu with a total outlay of Rs.7,846.50 Lakhs for Horticulture department.

The project was implemented in 9 sub-basins viz., Varahanadhi, Upper Vellar, South Vellar, Pambar, Manimuthar, Kottakkaraiyar, Arjunanadhi, Palar and Aliyar in

the **first Phase** in 2007-08. subsequently the project was extended to another 16 sub-basins viz., Pennaiyar (up to Krishnagiri), Swethanadhi, Anaivari Odai, Chinnar, Agniar, Ambuliyar, Upper Vaigai, Varattar-Nagalar, Upper Gundar, Therkar, Senkottaiyar, Sindapalli-Uppodai, Nishabanadhi, Kalingalar, Poiney and Koundinyanadhi in the **second Phase** during 2008-09.Further in the **third Phase,** the project was extended to 30 sub basins viz, Araniyar, Kosasthalaiyar, Ongur,Nallavur, Thurinjalar, Pambar to Thirukoilur, Gadilam, Markandanadhi, Kambainallur, Pambanar –Verattar, Gomukinadhi, Theniar, Girdhamal, Kanal Odai, Lower Gunder, Vembar, Uthirakosamangai, Palar, Sevalaperiar, Deviar, Nagarier, Vallampatti, Uppathur, Kovilar, Uppodai, Salikulamaru, Korampallam, Karumeniyar, Vaipar and Hannumannadhi during 2009-10, but started implementation during 2010-11. In the **fourth Phase**, the project was extended to 5 sub basins viz, Adayar, Cooum, Cheyyar-Kiliyar,Paralaiyar and Kayalkudiar for implementation during 2011-12. In the **fourth phase-2** the project was extended to one sub basin viz Amaravathi for implementation during the year 2012-13.

Due to implementation of this project for the past 3 years the total area expansion done under Horticulture crops is 21,264 Ha. and the financial achievement is Rs.3,458.399 Lakhs.

The project is coming to an end by 30th September 2014.

Progress of Schemes Implemented by TANHODA

Financial: Rupees in Lakhs

Sl. No.	Name of the Scheme	Unit	2013-14				2014-15	
			Physical		Financial		Target	
			Target	Achmt.	Target	Achmt.	Phy.	Fin.
1 A	Mission on Integrated Development of Horticulture National Horticulture Mission	Ha.	10,215	10,215	9,675.232	9,097.39	15,870	12,700.00
B	National Bamboo Mission	Ha.	0	0	0	0	310	186.029
2	National Mission on Micro Irrigation	Ha.	22,700	39,780	17,775.000	16,792.00	Subsumed under NMSA	
3 A	National Mission on Sustainable Agriculture Micro Irrigation under On Farm Water Management	Ha	-	-	-	-	34,373	24,290.00
B	Rain fed Area Development	Ha	-	-	-	-	3,120	1,041.665
4.	National Mission on Medicinal Plants	Ha.	7,480	7,480	1,026.939	1,026.939	8,232	1,323.075
5.	State Horticulture Farms	Lakh Nos.	189	179	1,986.861	1,616.45	200.24	2,079.43
6.	Tamil Nadu IAMWARM	Ha.	7,500	7,408	1,350.590	1,314.241	-	-
	TOTAL				**31,814.622**	**29,847.02**		**41,620.199**

5. TAMIL NADU HORTICULTURAL PRODUCERS CO-OPERATIVE ENTERPRISES LIMITED (TANHOPE)

To benefit small and marginal horticultural farmers in order to encourage Horticultural activities with good market linkage, Tamil Nadu Horticultural Producers Co-operative Enterprises Limited (TANHOPE) was registered in the year 1994 as a primary Horticultural Co-operative Society under Tamil Nadu Co-operative Societies Act 1983.

The area of operation of the institution is entire state of Tamil Nadu. The President is the head of TANHOPE and Joint Director of Horticulture is the Managing Director. So far 3,936 Horticultural crop growers have been enrolled in this society by paying Rs.100/- as share capital.

The main activity of TANHOPE is to supply inputs required for Horticulture schemes implemented by Department of Horticulture and Plantation crops. TANHOPE facilitates joint venture with private partners to help the farmer to market their produce and to get reasonable price. Procurement centres at Salem and Ottanchatram, procure and market fruits and vegetables to Ulavar sandhai, Government institutions, Co-operative societies, Hostels, etc.

The mandates of TANHOPE are to promote and encourage the development of Horticulture crops and to organize value addition and marketing of fruits and vegetables on modern lines by means of grading, sorting and standard packaging, marketing on Co-operative basis and marketing through retail outlets and branches to undertake export of fresh and processed produces. The most important activity is to supply horticultural produce

on credit (or) cash basis to government institutions, Co-operative societies, Hospitals, factories, Clubs and Hotels.

5 a) Special Purpose Vehicle – for supply of quality Agricultural and Horticultural inputs and Water Soluble Fertilizers

Hon'ble Chief Minister for Tamil Nadu under Rule 110 during the Tamil Nadu Legislative Assembly on 06.05.2013 announced that a Special Purpose Vehicle will be established at the Commissionerate of Horticulture for assured and timely supply of quality inputs to the farmers under the various Agricultural and Horticultural schemes. Accordingly, orders were issued that TANHODA will serve as a Special Purpose Vehicle for procurement and supply of liquid fertilizers and seeds. An interest free amount of Rs. 50 Crores (Rupees Fifty Crores only) was released as revolving fund and deposited in the TANHODA SPV account. The Governing Council of TANHODA will act as Empowered Committee for the Special Purpose Vehicle. To assist the Empowered Committee, Two Technical Committees for purchase of Seeds and plants/ Manures and Fertilizers headed by the Additional Director of Horticulture have been constituted. From this year, Water Soluble Fertilizers and seeds will be procured through Special Purpose Vehicle,and supplied to the farmers in time.

6. AGRICULTURAL ENGINEERING

1. Introduction

Soil and water conservation, Irrigation water management and Agricultural Mechanisation hold the key to achieve goals of the Second Green Revolution. The Agricultural Engineering Department, apart from promoting farm mechanisation, is engaged in the Soil Conservation, Development and Management of the agricultural land and water resources of the State. Ensuring "Water Security" by appropriate use of technology is the focus of the Department. Through integration of on farm development and micro irrigation, the department proposes to move towards saving every drop of rainwater, ensuring more crops per unit of water and adequate supply of water for agriculture. Water Management through on farm development and critical life supporting irrigation are the major strategies of the department contributing to the sustainable increase in agricultural production. Promoting agricultural mechanization to overcome the shortage of farm workers in the rural areas is accorded highest priority.

Agricultural Engineering Department is promoting value addition as a thrust area with an aim to increase farmer's income. The department is focusing on Infrastructure and strengthening of Post Harvest Management infrastructure for value addition of agricultural commodities like Chilly and Onion. Efforts are taken to minimize the Post harvest losses in Chilly and Onion by proper handling and management through Solar Chilly Drier and Onion storage structures. Further, the department has initiated action to promote use of non-conventional energy in Agriculture sector i.e., solar energy which is abundantly available in our State. In addition to Solar PV pumping system linked with micro irrigation farmers are encouraged

to combine with the judicious use of irrigation water to improve the water use efficiency thereby increasing the Agricultural Production and Productivity.

A number of State, Centrally sponsored and externally aided schemes are being implemented by the department to achieve the objectives mentioned above.

2. Soil and Water Conservation Management

The cultivable land gets slowly degraded due to soil erosion, reduction in soil organic contents, salinity and alkalinity. Water resources available in the State have already been exploited to near maximum level. Hence, the need of the hour is to conserve both - land and water resources for sustainable agriculture. With an aim to prevent soil erosion, land degradation and to improve soil moisture, various Soil and Water conservation programmes are taken up in a larger scale for sustainable increase in agricultural production.

2.1. Soil & Water Conservation in River Valley Project Catchments

Soil & Water Conservation in River Valley Project Catchments is a Centrally Sponsored Scheme being implemented under National Agriculture Development Programme, for prevention of land degradation to reduce siltation in the multipurpose reservoirs, improvement of land capability, soil moisture regime and land use to match land capability in interstate catchments. Under this programme, soil and water conservation measures are taken up in the inter-state river valley catchments of Tamil Nadu. Soil and water conservation measures such as contour bunding, horticultural plantations, drainage line treatments, silt

detention structures and water harvesting structures are undertaken in the catchment areas approved by the Soil and Land Use Survey of India and Government of India. The soil and water conservation activities are implemented with 100% assistance and works relating to individual farmer such as horticultural plantations etc., are executed with 50% farmer's contribution. In the past three years, totally 4,052 structures have been completed covering 35,045 Ha. in the districts of Dharmapuri, Krishnagiri and Erode with the total expenditure of Rs.3,585.65 Lakhs benefitting 19,903 farmers. During 2013-14, an area of 10,322 Ha. have been covered and 1,084 structures have been constructed in South Pennaiyar and Mettur river valley catchments in Dharmapuri, Krishnagiri and Erode districts with an outlay of Rs.1,165.28 Lakhs.

During 2014-15, it is proposed to cover an area of 12,551 Ha. and to construct 954 structures in South Pennaiyar and Mettur river valley catchments the programme under NADP in Dharmapuri, Krishnagiri and Erode districts with an outlay of Rs.1,175 Lakhs.

2.2. Soil & Water Conservation under Hill Area Development Programme

With an aim to restore and maintain the ecology of the Nilgiris, Hill Area Development Programme is being implemented in the Nilgiris District. Under this scheme, soil and water conservation measures such as stream training works, drainage line treatment works, community irrigation wells, aligning and lining works to irrigation channel, channel alignment and widening, drying yards and provision of irrigation facilities – check dams, terrace support wall and landslide preventive measures are taken up in the Nilgiris District. The beneficiary contribution is 10% of the cost of

works in the Patta lands and it is 5% for SC/ST beneficiaries. The community works and the landslide treatment measures are executed with 100% assistance. In the past three years, totally 1,971 structures have been completed covering a length of 48,094 m with the total expenditure of Rs.1,596.51 Lakhs benefitting 4,781 farmers. During 2014-15, it is proposed to construct 28,643 Meters and 695 nos. of soil and water conservation works under the programme in the Nilgiris at a cost of Rs.707 Lakhs.

2.3. Dam Rehabilitation and Improvement Project

The World Bank aided Dam Rehabilitation and Improvement project (DRIP) has been approved for implementation in 46 Water Resources Dams and 38 Tamil Nadu Electricity Board Dams at a cost of Rs.745.49 Crores for three years starting from the year 2012-13 onwards. This includes catchment area treatment of two reservoirs of Krishnagiri and Kundah by the Agricultural Engineering Department in a period of three years from 2014-15 with a total outlay of Rs.1,541 Lakhs. The main objective of the programme is to prevent land degradation by adoption of suitable soil and water conservation measures in the catchment areas and to reduce siltation of multipurpose reservoirs. The conservation measures like Silt Detention Tanks and a silt monitoring station are proposed to be taken up in the catchment areas of Krishnagiri reservoir.

In the catchment areas of Kundah reservoir, the conservation measures such as drainage line treatment works, terrace/gabion support wall, facial revetment, gabion check dams, river widening and channel alignment, silt detention structures, landslide treatment works and a silt monitoring station are proposed. During 2014-15, it is

programmed to implement the programme in Krishnagiri and Kundah reservoir catchments at an outlay of Rs.291 Lakhs.

2.4. Revival of Agriculture in fallow land

To increase the area under cultivation, Hon'ble Chief Minister, on the Floor of the Assembly on 06.05.2013 has made an announcement under Rule 110 that agriculture would be revived in fallow land in an area of 12,500 acres. As per the announcement, the Soil and Water Conservation works namely Land Levelling, Contour bunding / Compartmental bunding and Land development work of chisel ploughing are being taken up in fallow lands and bringing back for cultivation by increasing the area . This pilot scheme "Revival of Agriculture in fallow land" was implemented in the Villupuram district during the year 2013-14 in 100 acres by adopting a unit cost of Rs.8,000/- / acre for one or more of the above said interventions with 50 percent back ended subsidy of Rs.4.00 Lakhs, It has been proposed under TN Vision 2023 that balance area would be covered under PPP mode.

2.5. Deepening of Farm Ponds created under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in Ramanathapuram District

Farm ponds are cost effective Rain Water Harvesting structures which has gained momentum among the farming community. The water stored in the farm pond can be used for supplemental irrigation of dry land crops like pulses and millets during critical stages of growth and at times of scanty rainfalls. Hence, the Hon'ble Chief Minister has announced to form 70,000 farm ponds throughout the State under MGNREGS by the Department of Rural Development.

Ramanathapuram district, a drought hit district, is largely covered by clayey soil. Hence, Hon'ble Chief Minister during Collector's Conference 2012 had made an announcement exclusively for Ramanathapuram that 5,000 farm ponds dug to a depth of 0.5 m under MGNREGS in Ramanathapuram district would be further deepened to a depth upto 2.0 m by Agricultural Engineering Department. The programme is being implemented with NABARD-RIDF assistance for further deepening of 5,131 Farm Ponds at a total cost of Rs.2,565 Lakhs in 3 phases, i.e., 1,500 Farm Ponds in Phase-1 for the year 2013-14 at a cost of Rs.750 Lakhs, 1,500 Farm Ponds in Phase II for the year 2014-15 at a cost of Rs.750 Lakhs and 2,131 Farm Ponds in Phase III for the year 2015-16 at a cost of Rs.1,065 Lakhs.

During 2013-14, further deepening was completed in 311 Farm Ponds at a cost of Rs.151.14 Lakhs. It is proposed to complete the deepening work in balance 1,189 farm ponds of 2013-14 and in 1,500 targeted ponds during 2014-15 with an outlay of Rs.1,349 Lakhs.

2.6. Construction of Farm Ponds under the Integrated Development of Pulses Villages in Rainfed Areas

Rain water harvesting, conservation and management are very critical for reduction of the adverse impact of the moisture stress and for bringing sustainability in pulses production in dry land agriculture. Farm ponds are the suitable rainwater harvesting and storage structures at farm level. Farm pond facilitates life saving supplemental irrigation at critical stages of crop growth at times of water scarcity. Hence, construction of farm ponds have been carried out under National Agricultural Development Programme in the eight districts of Krishnagiri, Dharmapuri, Vellore, Tiruvannamalai, Salem, Tiruppur, Dindigul and

Tirunelveli. In the past three years, totally, 732 farm ponds have been constructed at a total cost of Rs.543.98 Lakhs.

2.7. Rain Water Harvesting and Run off Management Programme

To improve the moisture regime of the watershed for increased land use, Rain Water Harvesting and Runoff Management structures such as check dams, percolation ponds, farm ponds, new village tanks, Ooranies and recharge shafts are constructed in all districts except Chennai and the Nilgiris. Under this programme, the beneficiaries are required to contribute 10% of the cost of works executed in community lands in cash (5% in case of SC/ST farmers), which will be deposited in the name of the Village Development Association **/** Watershed Association and the accrued interest will be utilised for the maintenance of assets created in community lands. Works in patta lands are taken up with 90% assistance and the remaining 10% is collected as beneficiary share (it is 5% in case of SC/ST) in the form of cash / labour / material. During the past three years, a total of 908 Rain water harvesting structures have been constructed at a total cost of Rs.997.63 Lakhs.

2.8. Soil & Water Conservation in Tribal Areas under Integrated Tribal Development Programme

The programme is implemented with an objective to develop agricultural lands in the tribal areas of Jawadhu hills (Vellore and Tiruvannamalai districts), Kalrayan hills (Salem and Villupuram districts), Shervaroy hills and Arunuthu hills (Salem District), Sitheri hills (Dharmapuri district), Kolli hills (Namakkal district) and Pachamalai (Salem and Tiruchirapalli districts) by adopting suitable soil and water conservation measures. Soil and water conservation

measures such as land shaping, pipe laying, construction of contour rubble bunds, contour stone walls and check dams are taken up by the department in the lands owned by the tribal farmers with 100% assistance from the Government. In the past three years, totally 253 structures have been completed covering an area of 1,964 Ha. with the total expenditure of Rs.544.50 Lakhs**.**

From the year 2013-14, the scheme of soil conservation works in tribal areas has been implemented under the Comprehensive Tribal Development Programme (CTDP) of Adi Dravidar and Tribal Welfare department. During 2013-14, 139 structures have been constructed to cover an area of 647 Ha. at a total cost of Rs.60.16 Lakhs. During 2014-15, it is programmed to cover an area of 433 Ha. and 39 structures to be constructed at a cost of Rs.490.52 Lakhs.

3. Water Management

Tamil Nadu has already exploited nearly 80% of its water potential for irrigation. The demand for water for industrial and domestic purpose is increasing day by day, resulting in the reduction of the water availability for irrigation. Growth in agriculture depends on increasing the efficiency and productive use of water. The water use efficiency of the conventional irrigation methods is abysmally low at about 35 – 50% only. Hence, judicious management of irrigation water has become imperative to significantly improve water use efficiency.

3.1. Command Area Development and Water Management Programme under Accelerated Irrigation Benefit Programme

Command Area Development and Water Management Programme of Accelerated Irrigation Benefit Programme is a Centrally Sponsored programme being implemented in Tamil Nadu with the financial assistance shared between the Central and State Government on 50:50 basis. The main objective of this programme is to improve Water Use Efficiency in canal irrigated areas. The major components are On Farm Development works, Rotational Water Supply, Field Drains and Participatory Irrigation Management.

On Farm Development works

The Planning of the construction of On Farm Development works is being done by taking into the consideration of the needs of both the head reach and tail end farmers in such a way that the interference of the head reach farmers is eliminated and giving way to tail end farmers for irrigation water without any time lag. This is the starting point for establishing equity in the entire sluice command. This has been achieved in all the projects using optimum flow block concept. The unit cost is Rs.25,000/- per Ha. in all command areas.

The main items of works executed under the component of Construction of field channels are:

i. Lining of field channels
ii. Construction of new field channels
iii. Construction of Division and Diversion Boxes
iv. Construction of Drops.
v. Construction of Bed Dams.

Rotational Water Supply (Or) Warabandi

Rotational Water Supply or Warabandi is a system of equitable water distribution, by turns, according to a predetermined schedule specifying the day, time and duration of supply to each irrigation in proportion to holding in an outlet command.

Warabandi or Rotational Water Supply schedule is prepared by the staff of Agricultural Engineering Department after executing the On Farm Development Works and handed over to farmers for implementation. The unit cost is Rs.300/- per Ha. As per the revised new financing pattern of Government of India, this component will be taken up with State Government funds only.

Participatory Irrigation Management (PIM):

At the Farm level, participation of farmers plays a major role in the execution of Command Area Development Programme works and in ensuring equitable distribution of water to each individual field at the right place with the right quantity as per water requirements of crops. Agricultural Engineering Department has been playing a crucial role in the past two decades in the above thrust areas.

The necessity of involving farmers in water management has been recognized by the Agricultural Engineering Department based on the following assumptions:

- water distribution costs would get reduced
- maintenance of the irrigation systems at micro level would be achieved
- Beneficiaries would have sense of owning the system, which would motivate economic use of water.

- effectiveness of the system would improve
- Reliability of assured water supply made known to the beneficiaries would also motivate them to go for appropriate inputs leading to higher productivity.

Involvement of Water Users Associations

The following 3-tier system was adopted by Agricultural Engineering Department in motivating the farmers for group action in a standardized pattern under Societies Registration Act 1975.

1) Farmers Councils at the sluice outlet
2) Farmers council at irrigation division level (at distributory level)
3) Farmers Federation at Project level which is the Apex body.

The Tamil Nadu Government enacted the "Tamil Nadu Farmers Management of Irrigation Systems Act 2000" (TNFMIS Act 2000). Under this act, elections will be held by the Water Resources Organisation of PWD, Tamil Nadu in various commands in 1) Water users Association, 2) Distributary committee and 3) Project committee. Totally, 1910 Water Users Associations / Farmers' councils were formed in 33 Commands covering an extent of 9.357 L. Ha.

With a view to strengthen the Water Users Associations, financial assistance in the form of One Time Functional Grant of Rs.1,000/- per ha was released (Centre share Rs.450/-, State share Rs.450/-, farmers' share Rs.100/-) upto 2013-14. The unit cost is now increased to Rs.1,200/- per ha as per the new guidelines (Centre share Rs.540/-, State share Rs.540/-, farmers' share Rs.120/-) from 2014-15 onwards. One Time Functional Grant along with the Farmers' share is deposited in a joint account in a

Nationalised Bank in the name of any one of the office bearers of Water Users Association and Superintending Engineer. The interest accrued out of the deposit is utilised to enable them to look after the pertinent routine activities of the Associations and maintenance and repair works of infrastructure created under Command Area Development and Water Management Programme.

For the maintenance of the assets, the Water Users Associations periodically meet (one or two times in a quarter) and identify the repair and maintenance works, if any, to be attended in the next quarter. Necessary estimate for that work is approved by the Assistant Executive Engineer and repair works are carried out by Water Users Associations.

During 2013–14, Command Area Development and Water Management Programme were implemented in an area of 23,275 Ha. with an expenditure of Rs.5,053.88 Lakhs in eight ongoing commands viz., 1) Vaigai Project (Ramanathapuram, Sivagangai and Madurai Districts), 2) Kodaganar Reservoir Project(Dindigul District), 3) Kalingarayan Anaicut Project (Erode District) 4) Varadhamanadhi reservoir Project (Dindigul District), 5) Manimuktha Nadhi System (Villupuram and Cuddalore Districts), 6) Cheyyar Anaicut System (Thiruvannamalai District), 7) Ellis Anaicut Project (Villupuram District) and 8) Pelandurai Anaicut Project (Cuddalore District).

During 2014–15, it is proposed to continue the programme based on the revised Guidelines of Command Area Development and Water Management Programme issued by the Government of India to cover an area of 23,439 Ha. at an outlay of Rs.11,582.62 Lakhs in six ongoing commands viz. Vaigai Project (Ramanathapuram,

Sivagangai and Madurai Districts), Kalingarayan Anaicut Project (Erode District),Manimuktha Nadhi System (Villupuram and Cuddalore Districts), Cheyyar Anaicut System (Thiruvannamalai District), Ellis Anaicut Project (Villupuram District) and Pelandurai Anaicut Project (Cuddalore District).

3.2. World Bank Aided Tamil Nadu IAMWARM Project

The Irrigated Agriculture Modernisation and Water bodies Restoration and Management (IAMWARM) Project is being implemented with the assistance from World Bank with an objective of increasing agriculture productivity & farm power in canal irrigated areas of Tamil Nadu. The project has been originally designed over a period of six years from 2007-08 to 2012-13 and then extended up to September 2014 with integrated approach by the Public Works Department, Agriculture, Agricultural Engineering, Horticulture, Agricultural Marketing, Animal Husbandry, Fisheries and various other departments. The project outlay of Rs.15,909 Lakhs is earmarked for Agricultural Engineering Department for taking up the following components in 51 sub-basins

a) Installation of Micro Irrigation Systems in sub-basin areas with an aim to increase the irrigation efficiency and to save ground water thereby reduces the pumping hours of irrigation pump sets which leads to savings in electricity and to achieve more income per drop of water

b) Construction of farm ponds in the sub-basin area in order to conserve and utilise rain water during the critical crop period by the farmers. Farm ponds wherever feasible are also used as fish pond to derive additional income to the farmer.

c) Construction of Rain Water Harvesting Structures to recharge the ground water in the sub-basin area.
d) Supply of farm machinery to Water Users Associations so as to increase the yield and income of the farmers through farm mechanisation.
e) Conveyance of water to the ayacut area below the sluice outlet through buried pipe line to reduce the conveyance losses and to improve the controlling system of irrigation water in a closed conduit by the use of hydrants. It saves more water than the conventional irrigation practices through earthen field channel.

The IAMWARM scheme is being implemented from 2007-08 onwards and upto 2013-14, an area of 41,918 Ha. has been covered under Micro Irrigation System (MIS), 2,653 Nos. of Farm Ponds were constructed, 800 Farm machinery/implements were distributed to Water Users Associations(WUAs) for hiring them to sub basin farmers, 861 Rain Water Harvesting structures were constructed and 12 Improved Water Conveyance systems were installed at the total expenditure of Rs.15,288 Lakhs since inception.

As the IAMWARM project is likely to be closed by September 2014, it is proposed to take up the MIS works in 1,475 Ha. in the following sub basins: Pambar, South Vellar, Upper Vellar, Kottakaraiyar, Manimuthar, Arjuna nadhi, Palar, Aliyar, Agniar, Ambuliyar, Koundanyanadhi, Poiney,Swethanadhi, Pennaiyar, Chinnar, Anavari Odai, Upper Gundar, Therkar, Upper Vaigai, Varattar Nagalar, Singottaiyar, Sindapalli Uppodai, Kalingalar, Nichabanadhi, Araniar, Kosasthalayar, Nallavur, Ongur, Markandanadhi, Pullampadi / Kambainallur, Kovilar ,Gadilam, Pambar to Thirukovilur, Thurinjalar, Gomukhinadhi, Uthirakosamangaiyar, Girdhamal, Deviyar, Sevalaperiyar / Mudangiar , Vaippar Main River, Uppodai Hanumanathi,

Karumeniyar, Theniar, Adayar, Cooum, Cheyyar & Kiliyar, Paraliyar, Kayalkudiyar, Amaravathy and 38 Farm ponds in Manimuthar, Agniyar and Ambuliyar sub basins and 23 Rain Water Harvesting structures in Amaravathy sub basins with a total outlay of Rs.621.46 Lakhs during the year 2014-15.

3.3. Provision of Diesel Engine Pumpsets with Raingun / Portable Sprinkler Irrigation System for critical life saving supplemental Irrigation

Hon'ble Chief Minister has made an announcement under Rule 110 on the Floor of the Assembly on 06.05.2013 to provide 700 units of diesel engine with rain gun and mobile sprinklers at nominal rent for critical life saving supplemental irrigation. The portable irrigation system comprising (i) Diesel Engine Pumpset (ii) Raingun Portable Sprinkler Irrigation system would be procured by the Agricultural Engineering Department for providing to the farmers at free of cost for life saving supplemental irrigation. Diesel and transport charges are met by the farmers. This project is implemented under National Agriculture Development Programme. During 2013-14, 350 sets of Diesel Engine Pumpsets with Raingun irrigation systems / Portable Sprinkler Irrigation Systems have been procured as a pilot project for an outlay of Rs.199.10 Lakhs.

3.4. Kuruvai package for delta region.

During 2013-14, Mettur dam could not be opened on scheduled date for Kuruvai paddy cultivation. Hence, with an aim to bring more area under filter points, the Hon'ble Chief Minister has announced a Special Kuruvai Package-2013 for Rs.18 Crores for delta region in which a sum of Rs.12 Crores has been earmarked for distribution of

6000 units of HDPE pipes at no cost to farmers. Under the programme, 5,864 units of HDPE pipes each consisting of 30 Nos. of 90 mm diameter HDPE pipes were supplied to the delta district farmers at a cost of Rs.925.52 Lakhs. During 2013, Mettur dam could be opened on 02.08.2013 leaving no scope for Kuruvai paddy cultivation using canal irrigation. Due to the free distribution of HDPE pipes, Kuruvai paddy could be covered in an extent of 2.04 Lakh acres in 2013-14 as against the normal extent of 1 Lakh acres in the filter points region.

During 2014-15 also, the water storage position is not comfortable for opening on the scheduled date for which Hon'ble Chief Minister, 06.06.2014, has announced the Special Kuruvai Package-2014 for the supply of 7,000 units of water conveyance HDPE pipes to farmers at a cost of Rs.14 Crores for reducing the water conveyance loss. Further, 200 Nos. of 8 row Paddy Transplanters at a cost of Rs.400 Lakhs and 200 Nos. of 2 row Paddy Power Weeders at a cost of Rs. 60 Lakhs would be distributed for farmers groups in six Delta Districts for helping the farmers in timely completion of transplanting and weeding operations.

3.5. Community bore well scheme in Sivagangai District.

Based on the announcement made by Hon'ble Chief Minister during the Collectors Conference 2013, the Government has sanctioned a sum of Rs.320 Lakhs under National Agriculture Development Programme to be disbursed as 50% subsidy cost of 150 bore-wells to farmers groups in Sivagangai District. A user group consisting of 10-15 Nos. of farmers covering a minimum of 10 Hectares per Bore well are being formed and registered as a group. 50% of Bore well cost should be paid as contribution by the

used group to agricultural engineering department. Steps have been taken to identify the farmers groups and entire 150 borewells will be drilled in 2014-15.

3.6. Thane Cyclone Relief measures

As a part of Thane Special Livelihood Package announced by Hon'ble Chief Minister during 2011-12, 600 Nos. of Power operated Chain Saws have been purchased at a cost of Rs.300 Lakhs and handed over to Horticulture Department (500 Nos.) and Agriculture Department (100 Nos.) for cutting and removing the fallen trees in Cuddalore and Villupuram District.

For providing irrigation facilities, 122 Bore wells have been drilled at Cuddalore district and 14 Borewells, at Villupuram District at a total cost of Rs.856.20 Lakhs. During 2014-15, another 23 Bore wells would be drilled at Cuddalore district.

4. Agricultural Mechanization

Due to shortage in farm workers, farmers are not in a position to undertake various field operations in time. Hence, modernization of agriculture through Agricultural Mechanization is inevitable. Availability of farm power coupled with efficient and judicious use of farm implements/ machinery enable efficient utilization of various inputs such as seeds, fertilizers, plant protection chemicals and water for irrigation besides eliminating the drudgery in various farm operations from land preparation to post harvest technology and value addition.

Productivity of the farm depends considerably on the availability of farm power and its efficient use. The States which have higher farm power availability per hectare show

higher productivity. The Agricultural Mechanization is the only way out to face the challenge of farm workers' shortage. The educated youth feel discouraged to work in farms due to human drudgery. Migration of farm workers from rural to urban areas for other works is a common phenomenon in Tamil Nadu. Farm mechanization has been helpful to bring about significant improvement in agricultural productivity by bridging the demand-supply gap of farm workers. The increase in food grains production is possible only when heavy demand for tractors, power tillers and other Agricultural machinery / implements by the farmers are met.

During the year 2011-12, a total of 3,438 crop based machineries had been given to 1,283 PACCS by the Agricultural Engineering Department at a cost of Rs.2,536.50 Lakhs for hiring out to individual farmers / farmers group.

4.1. Agricultural Mechanisation Programme under National Agriculture Development Programme (NADP)

The agricultural machinery/implements such as multi crop thresher, paddy transplanter, nursery media filling machine, reaper, post hole digger, planters, tree pruners, Track trolley, tractor and power tiller driven equipments etc., are given to the individual farmers under NADP with subsidy assistance as per Sub Mission on Agricultural Mechanization (SMAM) guidelines. The Agricultural Engineering Department is providing higher subsidy assistance to SC, ST, women farmers, Small and Marginal farmers, besides giving subsidy assistance for other farmers for purchasing agricultural machinery / implements subject to the ceiling limit prescribed for each implements.

This facilitates the farmers to take up the timely sowing, transplanting, weeding, plant protection and harvesting in order to enhance the agricultural production and productivity. The acute farm workers shortage is being mitigated by increased use of farm machinery/implements. During 2011-12, subsidy assistance of Rs.2,704.47 Lakhs has been given to farmers for purchasing 8,593 Nos.of agricultural machinery and implements. During 2012-13, subsidy assistance of Rs.7,431.11 Lakhs has been given to farmers for purchasing of 90,931 agricultural machinery / implements / trays. During 2013-14, a subsidy assistance of Rs.4,799.82 Lakhs was provided to the farmers towards the distribution of 14,343 Nos. of Agricultural Machinery and Implements along with 39,740 Nos. of trays for raising rice nursery.

It is proposed to continue the programme during 2014-15 also with a financial outlay of Rs.3,000 Lakhs.

4. 2. Formation of farmers groups including free package of machinery and Training on operation and maintenance of farm machinery

The State Government has initiated sincere steps in the last two years to form farmers' groups in all districts for distribution of machineries after giving training on operation and maintenance of various farm machineries. For the last two years, 59 farmers' groups were formed and 360 nos of farm machinery have been purchased at a cost of Rs.352.46 Lakhs and imparting training on operation and maintenance of farm machinery at a cost of Rs.18.65 Lakhs to the farmers' groups.

During 2014-15, it is proposed to give Power tiller, Paddy transplanter, Paddy weeder, Zero till seed drill and

higher HP power weeder with rotavator to the above farmers groups at a total financial outlay of Rs.738 Lakhs with 100 percent financial assistance from Government in order to hire out the same to the other farmers. As this programme is gaining momentum in Vellore district, 20 Rural youth groups comprising of 16 youth including Small and Marginal Farmers are proposed to be formed for distribution of machineries at subsidized cost during 2014-15 with a financial outlay of Rs.410 Lakhs.

4.3. Demonstration of newly developed Agricultural Machinery and Implements

Through conduct of extensive field demonstrations at farmers' field, efforts are taken to popularize newly developed agricultural machinery / implements such as raised bed planter, laser land leveller, sugarcane trash shredder, tractor operated leaf shredder, self propelled paddy transplanter, power weeder, zero till seed drill, Turmeric harvester, Tractor PTO driven two row turmeric digger with elevator etc., among the farmers.

During the last two years, 1,041 demonstrations of farm machinery / implements have been conducted at a total cost of Rs.31.23 Lakhs and farm implements worth of Rs.13.66 Lakhs were purchased for purpose of conducting demonstrations. This programme will be implemented with 100% assistance from Central Government under SMAM. During 2014-15, it is proposed to conduct 550 demonstrations at an outlay of Rs.16.50 Lakhs for the benefit of 11,000 farmers and to purchase newly developed machinery at a cost Rs.23.50 Lakhs for conducting demonstration.

4.4. Training programme to farmers in the field of Agricultural Mechanisation

Advancement in agricultural machinery and implements technology used for paddy and sugarcane cultivation, plant protection equipments, machinery for dry land agriculture and conjunctive use of water through Micro Irrigation systems are exposed to the farmers and rural youth for streamlining the application of Agricultural Machinery / Implements used in various farm operations through refresher course trainings. Awareness among stakeholders is created for promoting farm mechanization in a big way in addition to imparting the first hand experience on Repair and Maintenance of Agricultural Machinery. During 2011-12 onwards, 240 training programmes have been conducted at a cost of Rs. 66.95 Lakhs.

During 2014-15, it is proposed to conduct 150 training programmes to farmers at an outlay of Rs.39 Lakhs with 100% financial assistance from Central Government under SMAM.

4.5. Training to rural youth on Operation, Repair and Maintenance of the newly developed Agricultural Machinery / Implements

Skilled man power engaged in the repair and maintenance of the commonly used agricultural machinery / implements is shrinking day by day on one side and another side, advanced hi-tech, hi-value and hi-productive agricultural machinery / implements are getting popularisation among the farmers. To inculcate the rural youth in skill power development, a three months training programmes on the repair and maintenance of Tractors / agricultural machinery / implements are implemented. The reputed firms have given job opportunities to some of these trained rural youth in the past. Training programmes to rural youth on operation and maintenance of the newly developed

agricultural machinery / implements are conducted in six workshops functioning at Tiruvarur, Vellore, Coimbatore, Trichy, Madurai and Tirunelveli. During 2011-2012 onwards, 544 training programmes are conducted at a total cost of Rs.69.64 Lakhs. During 2014-15, it is proposed to continue this scheme at an outlay of Rs.57.30 Lakhs.

4.6. Agricultural Mechanisation Programme under the Centrally Sponsored Scheme of Macro Management of Agriculture.

The scheme of popularising agricultural machinery / implements in agriculture has been implemented under the Centrally Sponsored Scheme of Macro Management of Agriculture with the financial assistance from the Centre and State Government on 90:10 basis. Under this scheme, subsidy assistance is provided to farmers to purchase Tractors, Power Tillers and Rotavators as per the norms of the Government of India guidelines. During the past three years, a sum of Rs.1,628.57 Lakhs has been given as subsidy assistance to farmers to purchase of 3,946 agricultural machinery such as Tractors, Power Tillers and Rotavators. This programme has been withdrawn by Government of India and subsumed under SMAM.

4.7. Agricultural Mechanisation Programme under the Centrally Sponsored Scheme of Sub Mission on Agricultural Mechanisation

Under the Centrally Sponsored Scheme of Sub Mission on Agricultural Mechanisation, the Agricultural Mechanisation Programme is proposed to be implemented during the year 2014-15 with the financial assistance from the Centre and State Government is 75:25. The main objectives of this scheme are increasing the reach of farm mechanisation to small and marginal farmers and to the regions where availability of farm power is low, offsetting

adverse 'economies of scale' and 'higher cost of ownership' of high value farm equipment by promoting "Custom Hiring Centre" for agricultural machinery and passing on the benefit of hi-tech, high value and hi-productive agricultural machinery to farmers through creating hubs for such farm equipment.

The Mission Components are

1) Promotion and Strengthening of Agricultural Mechanization through Training, Testing and Demonstration
2) Demonstration, Training and Distribution of Post Harvest Technology and Management (PHTM).
3) Financial Assistance for Procurement of Agricultural Machinery and Equipment
4) Establishment of Farm Machinery Banks for Custom Hiring
5) Establishment of Hi-Tech, High Productive Equipment Hub for Custom Hiring
6) Promotion of Farm Mechanisation in Selected Villages and
7) Financial Assistance for Promotion of Mechanized operations/hectare carried out through Custom Hiring Centres.

Under this scheme, subsidy assistance is provided to the farmers for the purchase of tractor, power tiller, Rice transplanter, specialized self propelled machinery, self propelled horticultural machinery, tractor/power tiller (below 20 BHP) driven equipments, tractor (above 20 to 35 BHP) driven equipments, tractor (above 35 BHP) driven equipments, manual / animal drawn equipments / implements / tools, plant protection equipments and other important agricultural implements / machinery. During 2014-15, this scheme is proposed to be implemented with a subsidy amount of Rs. 5,470 Lakhs.

4.8. Demonstration of Pulses and Millets Machinery at Farmers Field.

With the goal of promoting mechanization in post harvest management system, reducing the losses of perishable farm produce during storage period, implementing latest technologies for value addition of farm product and preserve its quality, disseminating and adoption of new technologies among farmers and also for popularising the agricultural machinery/ implements among the Small / Marginal / SC / ST / Women / Other farmers through demonstration, Post Harvest Technology and Management scheme is implemented in Tamil Nadu from the year 2013-14 with 100 % Central Government assistance under the Central Sector Scheme. During the year 2013-14, an amount of Rs.186 Lakhs was sanctioned towards the purchase of Multi-crop thresher, Maize Husker Sheller and Mini Dhal Mill for conducting demonstrations. After the completion of demonstration for at least 12 months, the above machinery will be handed over to the SHG / TANWABE/ User Group/Farmers group/WUA/Commodity group in each district at 50% of the cost price of the machinery. The scheme is proposed to be implemented during 2014-15 in 30 districts of Tamil Nadu.

5. Remote Sensing and Geological Information System (GIS)

Mapping of data is essential for proper watershed planning. The assistance of Geographical Information System is very much needed right from the level of data illustration to manoeuvrings mapped data, processing to generating final maps as per the requirements etc. Remote Sensing Techniques can be used in watershed development projects in selection of watersheds through prioritization of natural resource information and integrating through Geographical Information System for arriving specific

recommendation for sustainable development and for monitoring and evaluation of watershed projects. This GIS cell functioning in Agricultural Engineering Department has completed the Digitisation of the Revenue Village maps of Nagapattinam (Keelaiyur, Kilvelur, Nagapattinam, Sembanarkoil, Sirkazhi, Thalainayar and Tirumarugal blocks), Cuddalore (Cuddalore, Kurunchipadi, Mangalore and Panruti blocks) and Sivaganga (Sivaganga, Manamadurai, Kalayarkoil and Illayankudi blocks) Districts in 1:5000 scale under the Rashtriya Sam Vikas Yojana (RSVY) project. The digitized Cuddalore and Nagapattinam block maps have been shared with NIC for establishing the NRDMS (National Resources Data Base Management System) GIS centres at cuddalore and Nagapattinam. The studies done by this cell sponsored under State Land Use Board (SLUB)

1. District Watershed Atlas in 1: 50000 scale.
2. District Soil Watershed Atlas in 1: 50000 scale.
3. Soil Watershed Atlas in CD's.
4. Status report on Eco-degradation of Perambalur District.
5. Hydrology of Small watershed.
6. Land use Zonation maps for Salem & Theni District using ancient land use.

This cell will be in a position to provide support and co-operation for the creation of TNGIS. The total number of revenue villages in Tamil Nadu is 16,888 out of which 13,744 Nos. of village maps are available in the concerned districts and the balance 3,144 Nos. of village maps have been procured under Part-II scheme during 2013-14. Out of the village maps made available so far, 2,435 Nos. of villages has been digitized. District GIS cell has been entrusted with the task of digitizing the village maps in a phased manner. During 2012-13, study sponsored by SLUB

on Cadastral level information system on Minor Irrigation tanks in 1:5000 scale using Remote Sensing and GIS in Namakkal district – Tamil Nadu is under progress.

6. Custom Hiring of Agricultural Machinery to Farmers

6.1. Land Development Machinery

In order to take up Land Development works such as land levelling, land shaping and puddling works, 91 Bulldozers, 63 Laser Land Levellers, 215 Tractors and 2 Hydraulic Excavators are available with the department for hiring out to farmers at nominal hire charges. These machinery also cater to the need of relief works during flood and natural calamities.

Besides, for taking up Transplanting and Harvesting works, 7 Paddy transplanters, and 50 Paddy combine harvesters, are also available for hiring out to farmers at nominal hire charges. The details of machinery available for custom hiring in each district and the hire charges are furnished in the table. This programme of custom hiring of agricultural machinery to farmers will be continued during the year 2014-15.

Achievement of custom hiring of LD Machineries to farmers for the past three years

in Hours

Machineries	2011-2012	2012-2013	2013-2014
Bulldozer	92,334	86,848	65,861
Tractor	1,60,396	1,73,283	1,51,765
Combine Harvester	17,840	15,986	16,057

6.2. Minor Irrigation Machinery

The Agricultural Engineering Department is having a fleet of machinery, under minor irrigation scheme viz., 30 Rotary Drills, 10 Percussion Drills, 19 Mini Drills, 63 Hand Boring Sets, 7 Long Hole Equipments and 33 Rock Blasting Units for hiring out to the farmers at reasonable hire charges for taking up sinking of new bore wells and revitalisation of open wells. Also, 8 Resistivity Meters and 2 Electrical Loggers are provided to farmers for locating well sites and aquifers on hiring basis.

Achievement of custom hiring of MI Machineries to farmers for the past three years

Machineries	2011-2012	2012-2013	2013-2014
Rotary Drill(Meter)	25,470	37,799	49,587
Percussion Drill(Day)	2,494	2,307	2,186
Mini Drill(Meter)	10,658	11,262	11,414
Hand Boring Set(Meter)	24,215	22,091	20,840
Long Hole Equipment(Day)	1,070	1,077	1,077
Rock Blasting unit(Blasting)	5,400	5,370	4,991
Resistivity Meter(Point)	2,211	1,388	1,539
Electrical Logger(Tube Well)	133	112	219

6.3. Online booking of Agricultural Machinery under Custom Hiring

Agricultural Engineering Department offers custom hiring of farm machineries like Tractor, Dozer and Harvesting Equipments to farmers on need basis. Presently, the farmer has to contact the nearest Assistant Executive Engineer, AED office, in person, to submit the mandatory application along with necessary documents and make payment for the required working hours. Once payment made, the officials visit the farmer's field and the machinery will be allotted to the farmer based on the seniority in booking.

In order to avoid the delay in getting the machinery on rental, an Web based / Mobile based application has been developed by Rural Technology and Business Incubator (RTBI), IIT, Chennai, and hosted on IIT Chennai server for testing. The farmer needs to be registered in the Farm Crop Management System (FCMS) data base as one time entry for availing the mobile booking facility. The farmer's name, mobile number, village and other details are captured during the registration process.

For booking machinery on rental, the farmers need to call the number (044-64506996-IIT, Chennai) and book the machinery through IVRS system. Based on the calling mobile number, the server identifies the caller (farmer) and his village details and provides options based on the data (Machinery availability data entered by the sub divisional officers.) available in the database. Once the booking process completed, an SMS will be sent to the farmer and Sub-divisional officer to confirm the booking. The sub-divisional officer will allocate the machinery based on the field visit and advance payment made towards the working hours.

This system has been tested in Vellore District and the following observations were made in order to improve the mobile booking application for operating throughout the state.

- The Sub-Divisional offices should be provided with internet facility.
- Payment gateway to be included in the online application.
- Machinery tracking system to be included in order to avoid unnecessary road march.

The Department is in the process of improving the online booking system.

7. New Innovative Schemes

7.1 Provision of 500 nos. of Solar Powered pumping system (Non-tracking type)

The scheme was sanctioned for the year 2012-13 for providing 500 nos. of 5 Hp AC solar powered pumping system (non-tracking type) to the farmers preferably in delta districts, with 80% subsidy of which 50% assistance is provided under NADP and 30% assistance from Ministry of New and Renewable Energy (MNRE), GOI. Tamil Nadu Energy Development Agency (TEDA) finalized the companies through tender for the implementation of the scheme during 2013-14. The identification of beneficiaries was done by Agriculture Department officials and about 1400 nos. of applications were canvassed from the farmers during 2013-14. The feasibility survey for installation of the system for the identified beneficiaries was taken up and applications were shortlisted. Preference is being given to the delta district farmers. Based on the receipt of farmer's contribution of 20% amount, on "first come first served" basis, work orders are being issued to the approved

companies and the installations are being done in the farmers' field. Work orders have been issued for 425 locations and installations have been completed in 160 places, so far. Action has been taken to complete the installation in the remaining sites during 2014-15.

7.2. Provision of Solar PV Pumping System with automatic tracking facility linked with appropriate Micro irrigation system

The Hon'ble Chief Minister has announced under rule 110 the scheme of providing a comprehensive package of Solar powered pumping system with 80% subsidy, linked with suitable Micro irrigation system as per the existing norms along with forward linkage of precision farming / front-end technologies, crop specific improved cultivation methods etc. to the progressive farmers in the year 2013-14. The scheme was proposed with the following objectives viz., to ensure energy security to the farmers for irrigating the crops with no recurring expenditure, to promote non-conventional energy in agriculture sector, to improve the water use efficiency by judicious use of irrigation water and thereby achieve improvement in agricultural production and productivity of the crops under this system.

The scheme was sanctioned for Rs.80 Crores for providing 2000 Nos. of 5 Hp AC solar powered pumping systems 4800 Wp capacity each with automatic tracking facility, at 80% subsidy assistance to the farmers, of which, 50% assistance (Rs.50.00 Crores) is provided under National Agricultural Development Programme (NADP) and 30% assistance (Rs.30.00 Crores) under Ministry of New and Renewable Energy (MNRE). In anticipation of NADP and MNRE assistance, the Government sanctioned Rs.80 Crores as advance for implementation of the scheme.

The rates and companies for the supply and installation of the solar powered pumping systems were finalized through tender process during the month of February 2014 and applications were mobilized from the willing farmers. The implementation of the scheme is under progress.

The 2000 numbers of 5 Hp submersible AC Solar pumps are being installed to pump water from Bore wells, from open wells and from Ground level reservoir / Surface storage structures. Out of the proposed 2000 Nos, it has been proposed to provide 800 Nos. of solar powered pumping system linked with Micro irrigation system for Agricultural crops and 1200 Nos. for Horticultural crops. Identification of beneficiaries is in progress. The scheme is to be continued for the year 2014-15 for completing the target of 2000 Nos. of Solar powered pumping systems.

The cost of Micro irrigation system to be installed suitable to the crops cultivated would be met from the ongoing Micro Irrigation Scheme in the state, with 100 % subsidy for small and marginal farmers and 75 % subsidy for other farmers. Dovetailing of existing schemes of Agriculture department & Horticulture department would be done to provide improved technology linkage.

7.3. Promotion of Onion Storage Structure (Natural air ventilated)

The price of onion is usually less when the production is surplus. There are certain problems which arise during conventional storage of onion viz. loss in weight, sprouting and rotting of bulb. To overcome these losses, onion must be stored in scientific manner. The onion storage as per this scheme will minimize the storage losses and quality deterioration which will in turn help the farmers

to fetch better prices for their produce. To minimize the storage loss and quality deterioration in Onion and to get better price by farmers, the Hon'ble Minister for Agriculture during the Budget Session 2013-14 has announced to create Scientific Storage structures of 2 to 20 MT capacity with 50% subsidy assistance to the individual farmers in 12 Onion producing districts at an outlay of Rs.6 Crores. This scheme has been formulated by seeking subsidy assistance under National Agricultural Development Programme.

A pilot project was implemented under NADP assistance during the year 2013-14 for creation of Onion storage structures varying in sizes from 2 MT to 20 MT for a total capacity of 250 MT in 11 major onion growing districts of viz,. Tiruchirapalli, Perambalur, Dindigul, Tirunelveli, Tirupur, Erode, Madurai, Theni, Virudhunagar, Namakkal and Thoothukudi benefiting 27 farmers at a total cost of Rs.10 Lakhs. To get the benefit of this scheme, farmer should erect onion storage structure according to proposed plan only. The construction cost of the proposed onion storage structure is about Rs.10,000/- per MT and 50% of the construction cost i.e. Rs.5,000/ MT is provided as subsidy. An evaluation of the structure will be taken up by Tamil Nadu Agriculture University, Coimbatore for its suitability of the programme on large scale.

7.4. Promotion of Solar Chilli Dryer

The scheme is proposed to reduce the time taken for drying of chillies and to get desired level of moisture content and to improve the quality of produce without impairing colour and pungency, so that farmers could get more income from the produce. During the year 2013-14, 20 Nos. of Poly house tunnel type Solar Chilli drier were proposed

4 each in 5 major Chilli growing districts at a total cost of Rs.40 Lakhs to the Chilli growing farmers' groups at 100% subsidy under National Agricultural Development programme. The construction of 12 Nos. of Solar Chilli drier 4 Nos. each in Sivaganga, Tirunelveli and Thoothukudi districts were completed during 2013-14 at a total cost of Rs.24 Lakhs. The provision of balance 8 Nos. of Solar Chilli drier 4 Nos. each in Virudhunagar and Ramathapuram districts will be completed in 2014-15.

8. Vision 2023

Hon'ble Chief Minister of Tamil Nadu has released the "Vision Tamil Nadu 2023", for development of robust infrastructure for agriculture to achieve goals of the Second Green Revolution to increase farmer's income. Agricultural Engineering Department is focusing on managing labour shortage in agriculture operations, in-situ moisture conservation to avoid soil erosion, land preparation for agriculture and effective use of water for increasing the crop productivity by promoting Farm mechanisation, Land development and Micro irrigation activities for sustainable agricultural production.

Agricultural Engineering Department has programmed to bring about 5 L.Ha of fallow land into cultivation by focusing on Soil quality improvement and wasteland rehabilitation, to bring an area of 1.80 L.Ha under Micro irrigation system and to promote agricultural mechanisation with a total financial outlay of Rs.22,114.13 crores under PPP mode during the period ending 2023.

7. TAMIL NADU WATERSHED DEVELOPOMENT AGENCY

Irrigation is a powerful tool which ensures food security by offering protection against adverse seasonal conditions, sustained livelihood with stable farm income and greater opportunity for multiple cropping and crop diversification. Water and land are the two essential inputs for agriculture. Tamil Nadu is a water scarce state. Per capita (annual) water availability is only about 900 cubic meters as against the all-India average of 2200 cubic meters. The surface irrigation potential has been virtually exhausted while groundwater irrigation has increased due to rural electrification, the availability of affordable irrigation pump sets and free electricity provided by the state Government for agriculture use. Strengthening the irrigation infrastructure is the most important pre-requisite to the Sustainable growth of the Agriculture sector. With the focus on enhancing the productivity and increasing the income level of small and marginal farmers, Tamil Nadu Watershed Development Agency was established in 2002.

The primary objective is land development through prevention of soil erosion, water conservation and plantation activities. The watershed development programmes seek to promote economic development of village community, which is directly or indirectly dependent on watershed through optimum utilization of natural resources to mitigate drought and ecological degradation and generation of employment opportunities.

In tune with the State's attempt to promote water saving techniques, following watershed development programmes are implemented by Tamil Nadu Watershed Development Agency.

- Drought Prone Areas Programme (DPAP)
- Integrated Wasteland Development Programme (IWDP)
- National Watershed Development Project for Rainfed Areas (NWDPRA)
- Integrated Watershed Management Programme(IWMP)
- Watershed Development Fund (WDF)
- Western Ghats Development Programme (WGDP)

In addition, the following schemes funded by Central Government are also implemented for which TAWDEVA is the Nodal Agency to Agriculture Department.

- National Agriculture Development Programme (NADP)
- National Food Security Mission (NFSM)
- Agriculture Technology Management Agency (ATMA)
- Agriculture Resource Information Systems and Networking (AGRISNET)
- National Project on Management of Soil Health & Fertility

Moreover, it will be the Nodal Agency for National Mission for Sustainable Agriculture from 2014-15.

1. Drought Prone Areas Programme (DPAP)

This scheme is being implemented from 1972-73 onwards in 80 notified blocks of 17 districts identified in Tamil Nadu, to mitigate the adverse effects of drought on the production of crops, productivity of land, water and human resources.

1,222 watersheds in 7 batches were sanctioned at a total project cost of Rs.33,670 Lakhs for treating a total area of 6.141 L.Ha. The Government of India and State Government have released Rs.31,696.45 Lakhs of which

Rs.31,361.86 Lakhs have been spent by the District Rural Development Agency and District Watershed Development Agency of 17 districts and a total area of 5.760 L.Ha. have been treated. In the last seven years, no new projects were sanctioned by Government of India. The Government of India have released the funds upto December 2013 and release of funds are stopped. All the Projects are now under Completion Stage and Impact Evaluation of the completed projects are in progress.

The Blockwise programme under implementation is given in Table.

2. Integrated Wasteland Development Programme (IWDP)

This scheme is implemented with an objective to harvest the rainwater and to bring the degraded lands into productive use under non-forest wasteland area. This programme is being implemented in 96 blocks of 24 districts.

On project basis, the watersheds are sanctioned by Government of India. Government of India have sanctioned 910 watersheds in 80 projects at a total cost of Rs.26,220 Lakhs to treat a total area of 4.576 L.Ha.

A total area of 4.161 L.Ha. have been treated in 24 districts utilizing the Government of India and State Government released amount of Rs.24,169.69 Lakhs of which Rs.23,882.99 Lakhs have been spent by District Rural Development Agencies and District Watershed Development Agencies.

In the last seven years, no new projects were sanctioned by Government of India. The Projects are under

Completion Stage and Impact Evaluation of the completed projects are in progress. The list of blocks is given in Table.

3. National Watershed Development Project for Rainfed Areas (NWDPRA)

National Watershed Development Project for Rainfed Areas (NWDPRA) aimed at augmentation and stabilization of production and productivity, minimizing ecological degradation, reduction in regional disparity, opening up of greater opportunities for employment of rural poor in the rainfed areas is being implemented in Tamil Nadu from VIII Five Year Plan onwards. The expenditure is shared between Centre and State on 90:10 basis.

With a view to promulgate the twin concepts of Integrated Watershed Management and sustainable farming system further, an area of 1.156 L.Ha. covering 200 watersheds in 18 districts was proposed to be treated under NWDPRA, during the 11th Five Year Plan. The estimated cost for this five year plan was Rs.6,936 Lakhs. Out of the total amount of Rs.4,408 Lakhs released upto 2012-13 to treat an area of 0.734 L.Ha., Rs.935.00 Lakhs was available as balance on 01.04.2013. With this amount, an area of 15,600 Ha. is planned to be treated. An expenditure of Rs.757.360 Lakhs has been incurred by way of treating 12,623 Ha. till March 2014.

During 2014-15, consolidation work with respect to XI Plan NWDPRA will be taken up. The List of blocks wherein this programme is under implementation is given in Table.

4. Integrated Watershed Management Programme (IWMP)

The Integrated Watershed Management Programme (IWMP) is under implementation during the last five years by Integrating Drought Prone Area Programme, Integrated Wasteland Development Programme & National Watershed Development Project for Rainfed Areas schemes. The Drought Prone Areas Programme, Integrated Wasteland Development Programme and National Watershed Development Project for Rainfed Areas are nearing completion.

The Integrated Watershed Management Programme is implemented in accordance with the common Guidelines given by Government of India. The key features of Common Guidelines include innovativeness in the approach, delegating powers to different stakeholders, strengthening dedicated institutions with multi-disciplinary professionals at the State, District and Panchayat level. Social, gender and economic equity in sharing enhanced productivity and livelihood has been emphasized. Multi-tier ridge to valley system approach, community participation are the important features.

During last five years, this scheme is being implemented in 24 districts covering 2,413 watersheds. The scheme expenditure is shared by the Central and State Governments in the ratio of 90:10.

From inception, the Government of India have sanctioned a project cost of Rs.1,45,156.68 Lakhs over a project period of 5 - 7 years for treating 12.096 L.Ha.

Objectives

- Watershed Approach for efficient watershed management and balanced use of natural resources and livelihood by mobilizing social capital.
- Harnessing, conserving and developing natural resources to restore ecological balance.
- Resource development usage to promote farming and allied activities, to promote local livelihood, to ensure resource conservation and regeneration.
- Conserving water in watershed areas by following multi-tier approach to create sustainable water resources and to have sustainable source of income for the rural community.
- Planning, monitoring and evaluation of the programmes by utilizing the Information Technology and remote sensing inputs
- Promoting overall development in rural areas.

The Basis

The Government of India have issued specific guidelines for the implementation of watershed programmes based on which the watershed programmes are being implemented in a participatory mode throughout the project period of 5 - 7 years. The action plan for the watershed activities are being prepared by the Village Panchayat / Watershed Committee and after getting the approval of the District Collector as Chairman of the watershed, the scheme is implemented. The directions given by the State Government are also adhered to.

The Process

User Groups are formed by the District Watershed Development Agency (DWDA) in the watersheds and the works are implemented through them. The Watershed Committee is empowered to select the required Development works for the watershed and get the approval of the Grama Sabha and Administrative sanction from the District Collector / Chairman.

The watershed committee consists of 10 members of which 5 members are nominated one each from User Group, Self Help Group, SC / ST, Landless women, Watershed Development Team Member and the committee needs to be registered under the Tamil Nadu Registration Act 1975. While the Secretary is nominated by the committee, the Grama Shaba is empowered to select or elect the Chairman of the committee.

The various activities taken up under the Integrated Watershed Management Programme, Drought Prone Areas Programme, Integrated Wasteland Development Programme and National Watershed Development Project for Rainfed Areas Programme are as follows:-

Entry Point Activities

For getting the confidence of the villagers and ensure their participation in the implementation process, entry point activities like Augmentation of drinking water, maintaining natural resources, ground water recharge, construction of drying yard, thrashing floor and small and minor bridges are being taken up.

Institutional and Capacity Building

To various levels of stake holders like State / District level officers, Project Implementing Agency, Members of Watershed Development Team, Watershed Committee, Self Help Group, User Group, Watershed Secretaries and Watershed beneficiaries, need based training is provided for which 5% of the total project cost is allotted.

Development Activities

The following development activities are carried out in private land.

S. No.	Activity	Components
1	Land Development	Land leveling, Contour Bunding, Silt Application, Stone Bunding, Retaining Wall, Summer Ploughing, Vegetative Bunding and Continuous Trenching.
2	Water Resources Development	Percolation pond, Formation of New Tank / Oorani, Farm Pond, Desilting of Existing Tanks and Supply Channels.
3	Plantation Activities	Horticulture Plantation, Socio-Agro Forestry, Fodder Development, Crop Demonstration and Homestead Garden.
4	Common Property Development	Check dam, Cattle pond, Supply channels, Desilting of Ooranis, Desilting of tanks and ponds, Community nursery formation and Agro forestry plantation are carried out in common land.

Farm Production System and Micro Enterprises

To encourage individual or Group a grant to the maximum of Rs.24,000/- is provided to carry out the value added activities in Agriculture and Horticulture produce, seed production and processing, vermi-compost, mushroom cultivation, dairy farming and poultry, brick making, terracotta and pottery making, custom hiring of farm implements, palm crafts, Agarbathi making, mat weaving and event management for which 10% funds have been allocated.

Self Help Group and Livelihood interventions for Landless Farmers

Revolving funds are provided for promotion of Group Activities like planting, watering, watch & ward of plantations and other assets, community nurseries, fodder development, fodder banking, storage godown, seed processing, groundnut shelling unit, custom hiring of harvester, draught animals, dairy farming management, live stock and backyard poultry and Emu & Japan Quails or other activities for which Landless Farmers Group, Self Help Group and User Group are formed in the watershed area. The revolving fund is given at free of interest needs to be repaid for providing revolving funds to other Groups on rotation basis.

The Year Wise Projects Sanctioned by Government of India under IWMP is given below.

Sl. No	Batch - Year	No. of projects	No. of Micro watersheds	Project Area (L.Ha.)	Project Cost (Rs. in Lakhs)	Fund Released so far (Rs. in Lakhs)	Expenditure (Rs.in Lakhs)	Area Treated (L.Ha.)
1	2009-10	50	517	2.600	31,207.00	19,840.22	17,378.063	1.45
2	2010-11	62	632	3.110	37,319.00	18,668.20	15,466.375	1.29
3	2011-12	56	483	2.711	32,531.00	10,822.61	8,642.251	0.72
4	2012-13	32	361	1.715	20,584.00	3,236.703	1,932.895	0.16
5	2013-14	39	420	1.959	23,515.68	1,203.744	658.834	0.06
	Total	**239**	**2,413**	**12.095**	**1,45,156.68**	**53,771.48**	**44,082.382**	**3.68**

So far an expenditure of Rs.44,082.382 Lakhs has been incurred towards preliminary and developmental activities and an area of 3.68 L.Ha. has been treated.

For the year 2014-15, it is planned to cover 1.596 L.Ha. of watershed area under new projects in 19 districts with a total cost of Rs.191.62 Lakhs in 5 years.

List of blocks wherein this programme is under implementation is given in Table.

Success in Integrated Watershed Management Programme

A humble rainfed farmer of Thandarai Puduchery Watershed in Acharapakkam block of Kancheepuram district by creation of farm pond of size 30m x 30m x 1.20m at a cost of Rs.50,000/- through IWMP scheme have harvested

rain water to provide critical irrigation to his groundnut crop to get additional yield. Through the guidance offered by the DWDA officials, he has grown fish in his farm pond. He could harvest 550 kgs of fish and prawn and earned an additional profit of Rs.90,000/- in just 6 months apart from the excess profit of Rs.20,000/- that he earned through increased groundnut yields by giving critical irrigation.

Details of various watershed programmes being implemented by TAWDEVA

Sl. No	Details	DPAP	IWDP	NWDPRA	IWMP
1	Share between Centre and State (Ratio)	75:25	11:1	90:10	90:10
2	Districts covered (No)	17	24	18	24
3	Blocks covered (No)	80	96	45	147
4	Sanctioned projects (No)	7	80	200	200
5	Watersheds (No)	1,222	910	200	2,413
6	Area to be treated (in L.Ha.)	6.141	4.576	1.156	12.095 (7 years)
7	Area actually treated (in L.Ha.)	5.760	4.161	0.734	3.680
8	Project duration (Year)	5	5	5	5 -7
9	Per unit cost / Ha (Rs.)	6,000	6,000	6,000	12,000
10	Contribution by beneficiary General (%)	10	10	10	10
	SC/ST & Common Land (%)	5	5	5	5

5. Watershed Development Fund (WDF) assisted by NABARD:

With the assistance of NABARD, 100 watershed projects at a cost of Rs.6,000 Lakhs are under treatment through Tamil Nadu Watershed Development Agency.

Objectives

- Watershed areas where the concentration of SC/ST population and rainfed farming is maximum are to be treated under the scheme.
- To treat watersheds where the irrigated area is below 30%.
- To treat the watersheds where Water scarcity and Soil erosion are high.
- To implement the project through NGOs, the Project Facilitating Agency.
- To create the awareness on the importance of the Watershed Development Fund Project.
- To select a work through Participatory Rural Appraisal by the Constitution of Village Watershed Committee, User Groups and Self-helps Groups and develop the watersheds.

Project Details

The project is under implementation in 3 phases as per the new guidelines. The unit cost per Hectare is Rs.12,000/- of which 70% of the cost is apportioned for physical treatment,10% for Administrative overheads,7.5% for Livelihood support for landless farmer & women and 12.5% for Community Organization & Training programmes.

Phase I & II : By involving Non - Government organization (NGO) and Village Watershed Committee, capacity building

is being done during the first 18 months and feasibility study is being done in the next 6 months with the full grant by NABARD.

Phase III : The first 50% of the works will be done by Tamil Nadu Watershed Development Agency and the rest 50% works will be done on grant basis by NABARD, after getting approval of the Project Sanctioning Committee for full Implementation Phase. The rate of interest is 4.5% for the loan amount received from NABARD and the repayment period 9 years ie.,3 years after availing Loan.

At present for implementing the projects, NABARD granted fully for 12 watersheds and assisted on loan basis to 142 watersheds. In addition, 3 watersheds are under grant basis by Corporate Social Responsibility. Out of 142 watersheds, 97 are in full implementation phase funded by TAWDEVA. To treat an area of 0.430 L.Ha. an amount of Rs.2,022.296 Lakhs has been spent.

Sl. No.	Details	WDF
1	State Share (Ratio)	50 % State 50% NABARD
2	Districts covered (No)	24
3	Blocks covered (No)	78
4	Sanctioned projects (No)	162
5	Watersheds (No)	162
6	Area to be treated (in L.Ha.)	2.074
7	Area actually treated (in L.Ha.)	0.430
8	Project duration (Year)	5 – 7
9	Unit cost / Ha (Rs.)	12000
10	Contribution by beneficiary General (%) SC/ST & Common Land (%)	16 Shramadhan

List of blocks wherein this programme is under implementation is given in Table

6. Western Ghats Development Programme (WGDP)

To ensure eco-restoration, eco-development and eco-protection, Western Ghats Development Programme is under implementation. Maintenance of the ecological balance, Preservation of genetic diversity, Restoration of ecological system damaged by human interaction, Creation of awareness among the people and educating them on the far-reaching implications of ecological degradation and securing their active participation in the eco-development schemes, Preservation, Restoration and Stabilization of the Natural Resources, Protection of Soil Erosion and Improvement of Rain Water Harvesting, improving the Livelihood standards of the Tribals and Adi Dravidars, Development of Agriculture and Horticulture, Income generation activities through Animal Husbandry and Khadi Village Industries, Creation of Capacity Building and Infrastructure activities to the Watershed people are the objectives of the programme.

Tamil Nadu Watershed Development Agency is implementing this programme through watershed approach initially in Dindigul, Madurai and Theni districts and subsequently from 2012-13 onwards in Virudhunagar & Tirunelveli districts, further extended to Coimbatore, Tiruppur & Kanyakumari districts from 2013-14. The entire Western Ghats districts in Tamil Nadu are being covered by Tamil Nadu Watershed Development Agency.

The programme is implemented on participatory mode with the Line Departments like Forest and Environment, Agricultural Engineering, Agriculture, Horticulture, Tribal and Adi Dravidar Welfare Department, Animal Husbandry, DRDA, Fisheries, Tourism, Town Panchayat, Renewable Energy, and Khadi village industries. The funding for implementation of the project is received from Union Planning Commission by the State Planning,

Development and Special Initiatives Department. In the district level, the scheme is being implemented through District Watershed Development Agency. The District Collector as the Chairman of the DWDA is closely monitoring the programme. An amount of Rs.2,284 Lakhs has been sanctioned during 2013-14 for the implementation of Development Works and Rs.2,284 Lakhs has been utilized. This programme will be implemented during 2014-15 with an allocation of Rs.2,284 Lakhs.

7. Watershed Greening Project

Watershed Greening project is being implemented from 2012-13 to uplift and Integrate the Village level economy with reference to the Soil and Water Conservation structures created. The activities are mainly based on seed to sale by involving beneficiaries on cluster mode in the watershed areas and also integrating all schemes implemented by Agriculture and line departments. At present the project is being successfully launched by dovetailing the NADP funds at Natarpatti Watershed in Trichy district and Thumberi Watershed in Vellore district only. So far Rs.103 Lakhs has been spent for the development of clusters.

8. National Agriculture Development Programme (NADP)

National Agriculture Development Programme / Rashtriya Krishi Vikas Yojana was launched with an aim to achieve an annual growth rate of 4% in agriculture sector. The scheme is being implemented in the State with funds received as Additional Central Assistance from Government of India since its inception.

Tamil Nadu Watershed Development Agency (TAWDEVA) acts as the Nodal Agency for NADP for

coordinating with the Government of India and all Implementing Departments in the State.

Objectives

- To promote participation of farmers in cluster mode in agriculture.
- To provide flexibility in the process of planning.
- To ensure that the local needs / crops / priorities are better reflected in the agricultural plan.
- Reducing yield gap in key crops through focused interventions.
- To maximize returns to the farmers.
- Bringing quantifiable changes in the production and productivity of agriculture and allied sectors.

As prescribed in the RKVY Operational Guidelines issued for the 12th Five Year Plan, the District Agriculture Plans, State Agriculture Plan and State Agriculture Infrastructure Development Programme are being prepared by the Tamil Nadu Agricultural University based on the State's priorities set for the 12th Five Year Plan and in line with the Vision 2023 phase II document.

Agriculture oriented schemes of Departments of Agriculture, Horticulture, Agricultural Engineering, Tamil Nadu Agricultural University, Seed Certification, Agricultural Marketing, Animal Husbandry, Dairy Development & Milk Production, Fisheries, Tamil Nadu Veterinary & Animal Sciences University, Tamil Nadu Fisheries University, Tamil Nadu Civil Supplies Corporation, Co-operation Department and Public Works Department are being implemented under this programme.

The State Level Sanctioning Committee (SLSC) has been constituted with the Chief Secretary to Government as Chairman and the Agricultural Production Commissioner and Secretary to Government as Vice Chairman & Member Secretary with GOI officials, Secretaries and HoDs of various State Departments as members. SLSC is the apex body which sanctions the project proposals, monitors and reviews the implementation of NADP in the State. The project proposals received from agriculture and allied departments based on Government of India allocation are placed before the State Level Sanctioning Committee (SLSC), for discussion and approval. State Government issues Government order for the SLSC approved projects and the funds are released to the implementing departments accordingly.

Year wise Government of India release and expenditure details

(Rs. in Lakhs)

Sl. No.	Year	GOI Release	Expenditure
1	2007-08	15,360	18,312*
2	2008-09	14,038	14,475*
3	2009-10	12,790	12,790
4	2010-11	25,003	25,003
5	2011-12	33,306	33,174
6	2012-13	61,327	63,485*
7	2013-14	26,996	27,735*
	Total	**1,88,820**	**1,94,974**

* The excess expenditure incurred over and above the GOI release with respect to the fund sanctioned in State Level Sanctioning Committee (SLSC) has been met out from the State fund.

State Level Data Centre

For efficient management and scientific planning of watersheds, a State Level Data Centre (SLDC) with core GIS facilities with spatial and non-spatial data have been established at TAWDEVA and augmented with satellite imagery data and Global Positioning System.

In the last five years, 239 IWMP projects are implemented in 2,413 watersheds sanctioned by GOI. The watersheds are digitized and Cadastral Maps are incorporated in the watershed boundary by using GIS. The details like Latitude and Longitude, Survey number etc., of all developmental works carried out under IWMP are collected and verified with available satellite imagery of IRS and Google Earth at SLDC. Using GIS Applications the watershed works are checked with accuracy and overlapping of watersheds with other watershed schemes are avoided. The Thematic maps like Soil, Topography, Land Capability, Slope, Drainage, Land use etc., are prepared for every watershed. The SLDC conducted GIS and GPS training to field level functionaries at district level.

GIS functionality in nutshell at SLDC includes:

- Creation of Polygon to avoid overlapping through marking of watershed boundaries.
- For evaluation through satellite remote sensing images and Global Positioning System consistent monitoring the execution of developmental works in the watersheds are carried out.
- Various important thematic maps vital for watershed planning and archived systematically at SLDC are made available through Internet for the benefit of District Watershed Development Agencies, other line departments and common public.

XII Five Year Plan objective

The total geographical area of Tamil Nadu State has been delineated into 18,568 micro watersheds covering an area of 130.27 L.Ha. The treatable micro watersheds in the state is 11,116 Nos. covering an area of 60.85 L.Ha. Out of the treatable micro watersheds, so far during the XII FYP, 781 Nos. of watersheds were covered to treat an area of 3.674 L.Ha. under Rural Development Ministry of Government of India with the sharing of State Government. For the year 2014-15, an area of 1.596 L.Ha. will be sanctioned by Government of India under IWMP. It is proposed to include the remaining watersheds to be treated in the XII Five Year Plan period.

8. AGRICULTURAL EDUCATION, RESEARCH AND EXTENSION EDUCATION

Tamil Nadu is one of the water starved States, where the per capita availability of water resources is 900 cubic meters per year as compared to all India average of 2,200 cubic meters. The Gross Cropped Area (GCA) which was 62.26 L.Ha (including area under Horticulture crops) during 2001-02 has come down to 57.53 L.Ha during 2010-11. Of this, 33.48 L.Ha (58%) are under irrigated condition and 24.05 L.Ha (42%) are rainfed. Tamil Nadu contributes approximately, three per cent of the food grain production, 12 per cent of fruit production and 24 per cent of flower production in India. Tamil Nadu state, which is surging ahead in all fronts, has created a history in the annals of agriculture of the state by obtaining the highest food grain production of 101.52 L.MT during 2011-12. As per the fourth advance estimate for 2013-14, the food grain production is110.65 L.MT. It is now incumbent on all the institutions to sustain this peak and improve further to attain the goal of five per cent rate of growth envisaged under the Hon'ble Chief Minister's Tamil Nadu Vision 2023.

Tamil Nadu Agricultural University is focusing its activities in six major domains such as Agricultural Education, Agricultural Research, Agricultural Extension Education, Agri Business Development, Agricultural Policy Support and Open and Distance Learning to enable youth to develop their skills in farming, farming related activities and farm business ventures, to meet the global challenges of food production.

The major initiatives are production and supply of quality seeds, promoting System of Rice Intensification(SRI), Sustainable Sugarcane Initiative(SSI),

Improved pulses and oil seeds production technologies, production and supply of bio-control agents such as *Trichoderma viride*, *Pseudomonas fluorescence*, booster and coconut growth promoters such as maize maxim, pulse wonder, groundnut rich, cotton plus, sugar cane tonic, precision farming, integrated farming systems, mission mode approach to tackle papaya mealy bug, drought effect mitigation on rice through PPFM spray, farm mechanization, promotion of improved crop husbandry decisions in choice of crops, extent of area and farm operations including input usage through price forecasting, weather forecasting, e-Agriculture, market extension and to help in increasing the income through agri business promotion.

Besides the traditional tools to disseminate scientific technologies to farming community viz., village meetings, newspapers, radio, television, mass contact programmes, exhibitions and melas, the recent developments in information and communication technology like; internet, mobile phones and telephony are used for disseminating the knowledge to farmers. Apart from that, TNAU - Agri Tech Portal which is a virtual extension platform, Short Message Services and Kisan Call Centres were also employed for knowledge penetration to reach the farm gates of the needy farmers.

1. Notable Acievements in Agricultural Education

1.1. New Horticultural College and Research Institute exclusively for women for the first time in the country

For the first time in the country, for women empowerment, Hon'ble Chief Minister inaugurated the newly established Horticultural College and Research Institute for women on 25.07.2011 at Navalur Kuttappattu, Srirangam

taluk, Tiruchirappalli district exclusively for women. Hon'ble Chief Minister of Tamil Nadu inaugurated the new administrative building and ladies hostel which were constructed at a cost of Rs. 14.55 crore on 30.06.2014.

The number of girl students admitted to B.Sc. (Horticulture) during 2011-12, 2012-13 and 2013-14 were 37, 42 and 41, respectively**.**

1.2. Establishment of Institute of Agriculture to offer Diploma in Agriculture

At Kudumiyanmalai in Pudukkottai district, a new Diploma in Agriculture programme was started during 2012-13 and 47 students were enrolled. During 2013-14, 48 students were enrolled.

1.3. Newly established affiliated colleges

Three new private Agricultural colleges were established during 2013-14, at Thuraiyur, Namakkal and Boothalur (Thanjavur) with affiliation to Tamil Nadu Agricultural University.

1.4. New courses introduced

The following Postgraduate and Doctoral courses were introduced during the period from 2011-12 to 2013-14.

During the year 2011, M.Tech. (Ag. Engg.) in Environmental Engineering and M.Tech. (Ag.) in Agricultural Nanotechnology were introduced.

During the year 2012, the following seven new Forestry programs viz., i) MBA in Forest Business Management, ii) M.Sc. (Forestry) in Forest Resource

Management, iii) Tree Breeding and Biotechnology, iv) Silviculture and Agroforestry, v) Wood Science and Technology, vi) Forest Ecology and Environment and vii) Wildlife Management. Five new Home Science programs were introduced namely; M.Sc.(Home Science) i) in Food science and nutrition, ii) Family Resource Management and Ergonomics, iii)Human Development and Family Dynamics, iv) Textile and Apparel Merchandizing and v) Home Science Extension and Communication Management. Besides, M.Sc. (Ag.) Plant Genetic Resources and M.Tech. (Ag.) Geo-informatics were introduced.

During the year 2013, i) M.Sc.(Ag.) in Molecular Plant Breeding, ii) Integrated Ph.D. in 26 disciplines, iii) External Ph.D. in Agronomy, Agricultural Entomology, Genetics, Soil Science and Microbiology were started. B.Tech in Food Science and Technology was started at Indian Institute of Crop Processing Technology (IICPT), Thanjavur with affiliation to Tamil Nadu Agricultural University.

1.5. Under graduate and Postgraduate courses offered

Tamil Nadu Agricultural University is currently offering 13 Under Graduate programmes, 39 Masters degree and 26 Doctoral degree programmes.

1.6. Students admitted to various degree programmes in the 12 constituent colleges of TNAU.

The number of students admitted to Under graduate programme during 2011-12, 2012-13 and 2013-14 were gradually increased and stood at 1474, 1691 and 1921, respectively. The number of students admitted to Postgraduate programme during 2011-12, 2012-13 and 2013-14 was 397, 380 and 449, respectively. However, the number of students admitted to Doctoral programme

during 2011-12, 2012-13 and 2013-14 was gradually brought down to 194, 174 and 135, respectively to ensure quality of the critical mass in research and education spheres.

1.7. Dual degree programmes offered with foreign collaboration

M.Tech. in Food Processing and Marketing and M.Tech. in Biotechnology and Business Management are offered jointly with the Cornel University, USA. So far, 32 students have completed the dual degree programme successfully. The programmes include six months residential requirement in USA.

1.8. Directorate of Open and Distance Learning

Tamil Nadu Agricultural University is offering many correspondence courses through the Directorate of Open and Distance Learning. At present, one Diploma programme, five Postgraduate diploma programmes three Postgraduate degree programmes, 16 Certificate courses besides, one Bachelor degree in B. F. Tech. (Bachelor of Farm Technology), to benefit farmers and rural youth are offered. The number of candidates enrolled during 2013-14 in certificate courses is 392, 60 in Postgraduate degree programmes and 12 in Postgraduate diploma programmes besides 253 in B.F. Tech course.

1.9. Students' Welfare and placement

Directorate of Students' Welfare (DSW) of the Tamil Nadu Agricultural University (TNAU), Coimbatore, which is the hub providing career counseling and job placement for students, opened an 'Overseas Employment Unit' to

facilitate graduates to get placement in organisations abroad. A state-of-the-art 'Communication Laboratory' was also established to improve the soft skills and employability of the graduates.

The number of students placed in various industries during 2011-12, 2012-13 and 2013-14 was 737, 223 and 112, respectively. Students were placed in Agro Industry, Seed Industry, Food Industry, Fertilizer Industry, Non Governmental Organisations, Plantations and Banking sector.

This Directorate facilitated students by providing coaching on Graduate Record Examination (GRE), Test of English as Foreign Language (TOEFL) and International English Language Testing System (IELTS) and guidance to pursue higher studies in abroad.

1.10. Strengthening TNAU Library

The University Library caters to the benefit of users by subscribing to many online journals and databases. Also, provides a facility to access the CeRA consortium journals and Krishiprabha online thesis databases. At present the Library has more than 1,75,000 books and back volumes. e-Journals are received from Consortium for e-Resources in Agriculture (CeRA) journals (3051) and Proquest journals (6119). Online Databases include; www.indiastat.com, www.delnet.nic.in and www.commodityindia.com; www.sciencedirect.com, www.springer.com/ebooks, www.cabi.org, www.cabi.org/cpc and www.cabi.org/fc.

Totally, 69,792 persons have used the library resources with a membership base of 1087 during 2013-14. University library collections include; 1,17,496 books,

51,431 back volumes, 5,485 Theses / Dissertations and 588 book bank books for SC/ST students.

In March 2014, a total of 7.80 Lakh pages of valuable documents (rare books, theses, back volumes, annual reports, etc.) have been digitalized at TNAU Library for the use of students and scientists, through the NAIP–ICAR Project on Strengthening of Digital Library and Information Management (e-Granth). All these contents are made available in the Digital Repository of *Krishikosh* and could be referred by anybody at any time.

2. Notable Acievements in Agricultural Research

2.1. Newly formed Research Stations

The Grape Research Station was started in the year 2012-13 at Mallingapuram in Theni district to promote research in grapes.

The Centre of Excellence in Millets was established at Athiyandal, Thiruvannamalai district and it was inaugurated by the Hon'ble Minister for Agriculture on 10th October, 2013.

A Food Processing Research and Training Institute was established at Chettinad in Sivagangai district during January 2014.

2.2. Varieties and Hybrids, Farm machinery and Management technologies released

In the year 2011, TNAU released; (A) seven varieties / hybrids, viz., (1). TNAU rice ADT 49, (2).TNAU rice hybrid Co 4, (3). TNAU blackgram VBN 6, (4). TNAU sorghum hybrid Co 5, (5). TNAU cumbu hybrid Co 9, (6). TNAU vegetable cowpea PKM 1 and (7). TNAU casuarina MTP 2;

(B) Two farm implements, viz., (1). Self propelled flail mower for cutting grasses and bushes and (2). Automatic protray sowing machine for vegetable nursery production; and (C) Six management technologies viz., (1). High density planting system in cashew, (2). TNAU indigenous sex pheromone lure for Yellow Shoot Borer management in rice (3). Processing and value addition of sugarcane syrup, (4) Multigrain adai mix, (5) Integrated Pest and Disease Management (IPDM) package for silkworm, *Bombix mori* L. and (6) Designer micronutrient fertilizer mixtures.

In the year 2012, (A) thirteen varieties / hybrids, viz., (1) TNAU rice ADT 50, (2) TNAU maize hybrid Co 6, (3) TNAU sugarcane Si 8, (4) TNAU coconut ALR (CN) 3, (5) TNAU papaya Co 8, (6) TNAU coccinia Co 1, (7) TNAU bottle gourd hybrid Co 1, (8) TNAU ash gourd hybrid Co 1, (9) TNAU mushroom Co (TG) 3, (10) TNAU malai vembu MTP 1, (11) TNAU Niligris kufri potato 1 (Kufri neelima), (12) TNAU blackgram VBN 7 and (13) TNAU coconut VPM 4 (Kera keralam); (B) Five agricultural implements, viz., (1) Arecanut harvester, (2) Tractor operated multipurpose hoist, (3) Improved coconut tree climber, (4) Pulse line marker and (5) Aerial access hoist for coconut harvesting and (C) Three management technologies, viz., (1) Subsurface drip fertigation system in sugarcane, (2) Biocolour from beetroot and (3) Soil Test Crop Response (STCR) based Integrated Plant Nutrient System (IPNS) for agricultural and horticultural crops, were released.

In the year 2013, (A) Twelve varieties / hybrids viz., (1) Rice Co 51, (2) Ragi Co 15, (3) Greengram Co 8 (4) Groundnut Co 7, (5) Lucerne Co 2, (6) Davana PKM 1, (7) Tapioca YTP 1, (8) Turmeric Co 2, (9) Sweet potato Co 5 (10) Coleus Co 1, (11) Amaranthus PLR 1 (12) Eucalyptus MTP 1 and (B) Two agricultural implements, viz.,

(1) Tamarind huller, (2) Multi crop multi row weeder were released.

In the year 2014, (A) four varieties / hybrids viz., (1) Rice TPS 5, (2) Blackgram MDU 1, (3) Fodder sorghum Co 31, (4) Butter pear Ooty 1 and (B) one agricultural implement, viz., (1) Tractor operated single row / two row cassava harvestor were released for the benefit of farming community.

2.3. Seeds and seedlings multiplication and distribution

Tamil Nadu Agricultural University is involved in production and distribution of seeds in 175 varieties of principal crops in various classes. Breeder seeds are utilized for multiplication in seed supply chain as foundation and certified seeds by the Government and private agencies which takes two years and distributed to farmers. Similarly, within a year the foundation seeds are produced and multiplied as certified seeds and distributed.

During 2011-12, a total quantity of 1858 quintals of breeder seeds in 98 varieties, 3354.4 quintals of foundation seeds in 51 varieties of principal crops, 5018.88 quintals of certified/truthful labelled (TFL) seeds in 116 varieities of principal crops and 24.75 Lakhs planting material in 17 crops were produced and distributed.

During 2012-13, a total quantity of 1,463 quintals of breeder seeds in 110 varieties, 3,752.19 quintals of foundation seeds in 60 varieties, 3,067.70 quintals of certified/TFL seeds in 120 varieities of principal crops and 26.02 Lakhs planting material for various crops were produced and distributed.

During 2013-14, a total quantity of 1,598 quintals of breeder seeds in 108 varieties, 4,155.23 quintals of foundation seeds in 53 varieties, 3,189.08 quintals of certified/TFL seeds in 120 varieities of principal crops and 26.46 Lakhs planting material for various crops were produced and distributed.

In order to facilitate the consumers easy access of the fruits / vegetables seeds round the clock, an **'Automatic Seed Vending Machine' (ASVM)** was installed in January 2014 at Tamil Nadu Agricultural University, Coimbatore to commemorate with the celebration of State Level Farmer's Day 2014.

2.4. Research Findings / New technologies developed during 2013-2014

2.4.1. Seeds and seedlings fortification/treatment

- In groundnut, seed treatment with Sulphur Oxidizing Bacterial (SOB) inoculant @ 1 kg/ha with *Rhizobium* @ 1kg/ha was standardized. This along with basal application of gypsum @ 400 kg/ha and soil application of SOB @ 5 kg/ha on 45th day after sowing enhanced the yield upto 21.0%.
- Development and standardization of rooting mixture for raising sugarcane chip bud seedling under Sustainable Sugarcane Initiative (SSI) technique were made.
- Standardization of nursery techniques for quality seedling production in 'White Kadamba' tree was made.
- Mini clonal technology for mass multiplication of casuarina was developed.

2.4.2. Bio-inputs

- Mixed inoculants like Azophos and Azophosmet for supply of N, P and growth hormones were standardized for application to different crops.
- Formulation, dosage, method of application and feeding schedules of liquid biofertilizer were developed for precision farming system.

2.4.3. Plant nutrition

- Nutrient management for cotton under drip fertigation system was standardized.
- Long term experiment on STCR-IPNS technology revealed that yield increase over blanket recommendation was 25.0 per cent and 21.8 per cent during *Kharif* and *Rabi* respectively, in rice – rice cropping system.

2.4.4. Irrigation mangement

- Irrigated groundnut with micro-sprinkler registered the maximum yield of 2844 kg/ha followed by sub-surface drip irrigation method (2655 kg/ha). Application of NPK at 17:34:51 kg /ha with 50 per cent P and K as basal as straight fertilizer and the balance P, K and full N as water soluble fertilizer registered increased pod yield (2685 kg/ha).
- Sub-surface drip fertigation system in maize - cotton - maize sequence was standardized.

2.4.5. Crop mangement

- Pruning for high density planting in Alphonso mango, cashew, cocoa and defoliation in palmyra was standardized.
- Advanced rice breeding lines (ASD 16, ADT 43 and IR 64) expressing pro-vitamin A, are in the developmental stage.

- Precision production technology package for jasmine, marigold and carnation such as; spacing, enriched media consortia, fertigation schedules, spraying of bio-stimulants and micro nutrients, integrated and eco-friendly pest and disease management were standardised.

2.4.6. Pest and disease management

- Rice varieties Co 43 and ASD 16 were improved for bacterial leaf blight and drought resistance. These are under testing.
- Management of rust disease in pearlmillet with foliar application of Hexaconazole @ 0.1% immediately after the observation of rust symptoms and second spray at 15 days after the first spray was found to be effective in reducing the rust severity.
- Management of cocoa pod rot and bacterial leaf blight disease of mulberry was standardised.

2.4.7. Agricultural Engineering / Farm machinery

- Briquetting technology studies of forest plantation residues and wood based industrial residues have been taken up.
- 'High solid content fixed dome' type biogas plant for power generation in dairy units was developed.
- Pod breaker (capacity 230 kg/hr and at a cost of Rs.5,000/-), drier for cocoa, cassava harvester and paddy seeder were developed.
- Farm machinaries such as; weeder for maize and cotton, centrifugal dehuller for small millets, combine harvester for groundnut and tractor operated fertilizer dibbler for ratoon sugarcane were developed.

2.4.8. Post harvest technology

- Processing methods for broken rice, moringa, banana, curry leaf, tomato, sago, sorghum, amla and palmyra were developed.

2.4.9. Health and nutrition (Home Science)

- Community based approach for prevention of anaemia among young rural women was takenup.
- Drudgery reducing technologies for tribal families in Sirumalai hill areas of Dindigul district was propagated.

3. Agricultural Extension Education in Tamil Nadu Agricultural University

3.1. Krishi Vigyan Kendras' activities

Transfer of Technology programmes were takenup through the 14 Krishi Vigyan Kendras. Totally, 71 On Farm Testing (OFT), 174 Front Line Demonstrations (FLD) of newly released varieties and technologies were conducted, besides, 4,281 trainings to extension officers, rural youth and SHGs and 13,413 farm advisory services.

The National Initiative on Climate Resilient Agriculture (NICRA) project has been sanctioned to Villupuram, Nagapattinam and Ramanathapuram Krishi Vigyan Kendras.

3.2. Information and Communication Technology (ICT) based e- extension

3.2.1. Agritech Portal (http://agritech.tnau.ac.in)

This dynamic portal holds around six Lakh pages in Tamil and English with multi–media content. The Portal (http://agritechportal.tnau.ac.in) has been dedicated for the benefit of field extension officials, farmers and other stakeholders. During the past three years, the portal was used by 21.59 Lakh users. During the year 2013-14, the

daily users ranged from 2,783 to 5,126. New users numbered between 1,340 and 2,550 in a day. The e-mail queries received were 65,000.

The details of usage of the agri-tech portal are given below:

Sl. No	Particulars	2011-12	2012-13	2013-14
1.	Total viewers of portal	6,52,345	6,27,444	9,06,247
2.	Daily visitors	450-550	740-900	2,783-5,126
3.	Average time on site	12-18 minutes	24-32 minutes	45-54 minutes
4.	Repeated hits / day	35-60 times	240-290 times	390-490 times
5.	e-Mail queries	1,865	35,000	65,000
6.	New visitors / day	125-140	190-320	1,340-2,550

3.2.2. 'e-Velanmai'

'e-Velanmai' programme was implemented in 26 sub basins of Tamil Nadu as a special scheme under Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management (TN-IAMWARM) Project. Field Co-ordinators facilitated the technology transfer between scientists and farmers using ICT tools. The project details can be accessed from www.evelanmai.com. During the year 2013-14, sustainability of the e-Velanmai model of agricultural extension was tested by involving the Block Technology Managers (BTM) and Subject Matter Specialists (SMS) of ATMA scheme jointly implemented by the Department of Agriculture and TNAU. During the year, 6,700 beneficiaries received 11,279 advisory on their crop problems. The number of farmers enrolled as members who

received scientific advices in agriculture from the expert team are:

Year	Number of beneficieries	Number of farm advisory services provided
2011-12	4,557	10,797
2012-13	4,770	7,997
2013-14	6,700	11,279

3.2.3. Educational Media Centre (EMC)

Educational Media Centre (EMC) is co-ordinating video documentation of important programmes and events of the University. Totally, 506 video lessons in 3 GP format were produced on various subjects for the benefit of farmers and extension functionaries.

The details of activities of Educational Media Centre are given below**:**

Particulars	2011-12	2012-13	2013-14	Total
Video programmes produced	180	142	377	699
3 GP Video lessons produced	-	-	506	506
Video telecast through DDK, Chennai.	-	-	396	396
Video coverages	32	64	209	305
Video CD lessons sold	68	203	320	591
Video shows conducted	10	15	34	59

3.3. Printed media and other mass attraction programmes

3.3.1. Uzhavarin Valarum Velanmai

'Uzhavarin Valarum Velanmai' a monthly Tamil farm magazine of Tamil Nadu Agricultural University, Coimbatore is published for the benefit of the farming community and other stake holders. In the year 2013, there were 5,438 Annual members and 5,947 Life members.

The details of reader base are given below :

Category	2011-12	2012-13	2013-14
Annual membership	4,528	4,535	5,438
Life membership	5,834	5,794	5,947
Total	**10,362**	**10,329**	**11,385**

3.3.2. Community Radio Station

Community Radio is an effective tool to disseminate the farm technologies to the farming community living around 18 km from the Radio Station. One such Community Radio Station was established in the University campus during 2010 and functioning as 'Velaan Palkalaikazhaga Vivasaayee FM' at 107.4 MHz frequency.

The instantaneous information on weather, market prices, forecast for sowing in relation to marketability, etc., are broadcast apart from the technical guidance by scientists and experiences of farmers. So far, 348 recorded programmes were broadcast. Totally, 285 farm programmes were uploaded in http://agritech.tnau.ac.in/comm-e-radio.html website for the benefit of the farmers.

3.3.3. Kisan Call Centre (KCC)

With a view to bridge the gap between farmers, farm scientists and development functionaries, the Government of India has formulated a scheme called 'Kisan Call Centre'. Under this scheme, any farmer in the country can access by dialling the toll free number 1551 or 1800-180-1551. He / She can also interact in his/ her local language with experts. This Centre functions on all working days between 7.00 a.m. and 10.00 p.m. On an average 850 calls are received every day. Total number of calls received during 2013-14 was around 3.23 Lakhs.

3.3.4. Agricultural Technology Information Centre (ATIC)

The Agricultural Technology Information Centre (ATIC) is a single window delivery system which provides information on technologies and sells products developed by the University to the farmers. It disseminates information through published literature, audio - visual aids and electronic media. It is also rendering services to the visiting farmers through advisory services.

3.3.5. Regional Agricultural Melas

For the first time, Regional Agricultural Melas were conducted at Agricultural College and Research Institute, Madurai on 07.12.2013, Agricultural College and Research Institute, Killikulam on 02.01.2014 and Tamil Nadu Rice Research Institute, Aduthurai on 10.01.2014. Totally, 10,500 farmers visited the exhibitions and participated in the intreractions and seminars organised in these Melas. For the first time, Farmer-Teacher awards were instituted in these Melas and 8 progressive farmers were honoured.

3.3.6. Varieties Release function and State Level Farmers Day

The Varieties Release function and State Level Farmers Day was conducted at Tamil Nadu Agricultural University, Coimbatore on 11.01.2014. More than 3,500 farmers participated. Exhibition and farmers-scientists interaction sessions were organized.

For the use of farmers visiting Tamil Nadu Agricultural University, battery operated two wheelers were introduced in January 2014 for the mobility inside the campus and to see various facilities and demonstrations laid.

3.4. Demonstrations takenup

3.4.1. System of Rice Intensification

System of Rice Intensification (SRI) was implemented in 1,030 Ha. The overall average yield recorded under SRI was 7,320 kg ha^{-1} while, under conventional practice it was only 5,515 kg ha^{-1}. The increase in yield was 32.7 % in SRI. Besides, 30 per cent water saving was also achieved.

3.4.2. Sustainable Sugarcane Initiative (SSI)

In Sustainable Sugarcane Initiative (SSI), for improving the productivity, the technology packages have been standardized. The area covered under SSI was 100 Ha during 2013-14. The yield increase was from 65 to 110 tons per Ha.

3.5. Weather forecasting

The Agro Climate Research Centre (ACRC) is making medium range forecast on the basis of weather

parameters obtained from the Automatic Weather Stations for the benefit of farmers of Tamil Nadu to take crop husbandry decisions under weather based farming. Yield increase in different crops ranged between 8 - 15 % and farm income by 10 – 18 % by practicing weather based farming. Prior to August 2013, the forecast messages were published in the dailies. From August 2013, Agromet Advisory Services bulletins are uploaded regularly in India Meteorological Department (IMD) website www.imdagrimet.gov and the forecast is sent fortnightly to farmers through the portal. Since, August 2013, totally 25 Lakh messages were sent to the registered farmers.

Weather parameters recorded at Automatic Weather Station are:

1. Air Temperature
2. Relative Humidity
3. Solar Radiation
4. Wind Speed
5. Wind Direction
6. Rainfall
7. Atmospheric Pressure
8. Soil moisture
9. Soil Temperature
10. Leaf wetness duration

3.6. TNAU - Information and Training Centre, Chennai

At TNAU Information and Training Centre, Chennai, during 2013-14, totally 91 trainings were imparted to 3,406 partipants on varied topics such as roof gardening, kitchen gardening, fruits and vegetables preservation, textile dyeing and printing, value addition in millets and spices, indoor plants care and maintenance, mushroom cultivation.

3.7. Agricultural Marketing promotion

3.7.1. Price forecasting and Market intelligence

Tamil Nadu Agricultural University operates the Domestic and Export Market Intelligence Cell (DEMIC) (www.tnagmark.tn.nic.in) and provides forecasts of prices of agricultural produces before sowing and prior to harvest which are published in Tamil and English daily news papers and broadcast through radio and television. About 2 Lakh farmers were benefitted. The programme covered maize, cumbu, groundnut, sunflower, gingelly, cotton, coconut, blackgram, bengalgram, turmeric, chillies, small onion and potato. The price forecast achieved 95 per cent reliability.

3.7.2. Daily Market Information

e-Extension Centre of Tamil Nadu Agricultural University in collaboration with Agro Marketing Intelligence and Business Promotion Centre (AMI & BPC), Trichy is providing daily market information of 160 commodities and details of wholesalers to the farmers in time through TNAU Agritech portal. A total of 3,125 registered farmers receive price information through Short Message Services (SMS) to their mobiles. Also, short message services on agricultural technologies are sent to 9,13,180 farmers through Kissan SMS portal.

3.7.3. Agri Market Intelligence and Business Promotion Centre

Tamil Nadu Agricultural University is associating in effective functioning of the Agro Marketing Intelligence and Business Promotion Centre, Tiruchirappalli, under the Department of Agricultural Marketing and Agri business for providing market information to farmers. For effective

extension, along with all the stakeholders, focused efforts are taken to have intensive contact with the farmers.

3.8. Agri – Business Promotion

Agri-business Incubator in Tamil Nadu Agricultural University has so far commercialized 15 technologies including Coconut tonic, Panchagavya, Egg removing device, SRI power weeder, *Pseudomonas* and *Trichoderma* since its inception in the year 2010-11. Prior to 2011, seven technologies were commercialized. During the year 2013-14, three technologies were commercialized; (i) Herbal insect repellent for rice, (ii) Phosphorus solubilising liquid biofertilizer and (iii) Device to remove insect eggs in pulses.

3.9. Trade and Intellectual Property Protection

Seven inventions were filed for patent rights during the year 2013-14. Out of seven inventions, six were filed under product patent right and one was filed under process patent right. Under Geographical Indication, Erode turmeric was filed for community protection.

Under the Integrated Watershed Development Programme (IWDP) funding, four trainings on Agro-export and Domestic Trade for Watershed Development Team were conducted. In the year 2013-14 in association with Federation of Indian Export Organization, workshop on export of agro-processed products was conducted to farmers and exporters.

3.10. Food Processing and Value addition

The Post Harvest Technology Centre in TNAU is offering trainings to progressive entrepreneurs, rural youth and women on value addition and post production

management of farm produce particularly vegetables and fruits. During 2013-14, totally, 39 trainings were offered. Thrust is given to millet based food products. In association with Entrepreneurship Development Institute, Chennai, agripreneurial trainings were imparted to educated women and the entrepreneurs' samples are tested in the food testing laboratory on cost basis to ensure food safety.

4. Plan Schemes/flagship schemes in operation

4.1. National Agricultural Development Programme (NADP)

Tamil Nadu Agricultural University is implementing various projects funded through the National Agricultural Development Programme since 2007. As on March 2014, 56 projects have been implemented with an outlay of Rs.7,775.62 Lakhs.

During 2013-14, the following five projects were implemented with an outlay of Rs.360.00 Lakhs.

- Demonstration of synchronized maturing pulses varieties with key technologies and mechanisation for higher productivity
- Promotion of quality seed production in green manures
- Enhancement of productivity and quality in grapes through Hi- tech management practices
- Demonstration of Direct Seeded Rice (DSR) in dry and puddled condition to enhance productivity in selected districts of Tamil Nadu.
- Establishment of back office at Tamil Nadu Agricultural University to interface with e-Resource division of Agro Marketing Intelligence and Business Promotion Centre, Trichy.

4.2. Part II Plan Schemes

- Under Part-II Plan schemes, six schemes including, enhancing the productivity and value addition of millets and establishment of an Insects Museum with a total outlay of Rs.153.27 Lakhs were taken up.

4.3. Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management Project (TN-IAMWARM)

The World Bank funded TN-IAMWARM project is implemented in 63 river basins with an outlay of Rs.905.29 Lakhs. During 2013-14, System of Rice Intensification (1,030 Ha.), Semi dry rice (60 Ha.), Groundnut (110 Ha.) precision farming (86 Ha.) and Maize production technology (150 Ha.) were demonstrated. Rice fallow pulses demonstration was taken up in 1,020 Ha.

5. Opening and laying of foundation stones of new buildings of TNAU by Hon'ble Chief Minister of Tamil Nadu

Opening of new buildings (Rs.783.39 Lakhs) and laying of foundation stones (Rs.1,121.20 Lakhs) for new buildings at various research stations of Tamil Nadu Agricultural University was made through video conferencing by the Hon'ble Chief Minister of Tamil Nadu on 19.02.2014. Similarly, the Hon'ble Chief Minister declared open new buildings (Rs. 573.70 Lakhs) and laid foundation stones (Rs.1,203 Lakhs) at various research stations and colleges of Tamil Nadu Agricultural University through video conferencing on 27.06.2014. The new administrative building and ladies hostel at the Horticulture College and Research Institute for Women, Tiruchirapalli, constructed at a cost of Rs.1,455 Lakhs were declared open by the Hon'ble Chief Minister of Tamil Nadu on 30.06.2014.

6. Proposed research programme for 2014 – 2015

6.1. Varieties and Hybrids

6.1.1. Green Super Rice

- From International Rice Research Institute, Manila, Philippines, 32 Green Super Rice (GSR) genotypes were imported. The material was multiplied and evaluated for the duration and other morphological characters. The study indicated that all the GSR materials had duration in the range of 120-135 days and did not yield superior to our check variety, Co 47 which matured in 117 days. The GSR materials are reported to possess resistance against major biotic and abiotic stress factors. In order to test the same, the 32 GSR cultures are being evaluated at Ambasamudram, Paramakudi and Tirur.

6.1.2. Other crop Varieties and Hybrids

- High yielding superior hybrids in sorghum, pearl millet and maize will be evolved through intensive inbred development.
- High yielding varieties in blackgram, greengram and redgram will be developed.
- Evaluation of production packages will be made for rice yield maximization.
- Development of intra-specific and inter-specific hybrids in cotton with good fibre quality and yield will be takenup.
- Evaluation of adaptability of domestic collection and synthesized hybrids for copra and tender nut purpose will be takenup.
- Evaluation of high yielding elite flowers such as Heliconia and orchids in coconut and banana based cropping systems will be takenup.
- Standardization of agro techniques for Heliconia, carnation and cocoa will be takenup.

- *Dalbergia sissoo* (*Sisoo maram*) genetic resources for biomass based power generation, *Chuckrassia tabularis* (*Akila maram*) for agro forestry system and Agar (*Aquillaria malaccensis*) for oleo resin production will be evaluated.

6.2. Bio-inputs

- Evaluation of combined inoculation of bacterial cultures in green gram / black gram will be taken up.
- Enhancing maize productivity through drip fertigation, seed bio-priming and using bio-control agents will be taken up.

6.3. Irrigation management

- Evaluation of drip fertigation in castor and nutrient management in groundnut will be made.
- Standardization of fertigation Schedule and inter cropping in coconut will be taken up.
- Optimizing spacing, irrigation schedule under drip, nipping and foliar spray of Plant Growth Regulator Consortia (1.5%) to control flower drop in redgram will be made.

6.4. Weed management

- Evaluation of weed control practices for irrigated maize will be taken up
- Sustaining increase in sugarcane productivity will be evaluated through bio-inoculants such as, azophosmet and management of twining weeds.

6.5. Pests and disease management

The Programmes to be taken up are:

- Evaluation of new pesticide molecules against leaf folder, gall midge, plant hoppers, sheath blight and brown spot diseases in rice.
- Integrated Pest and Disease Management for blast and false smut in rice.
- Management of Sheath blight and charcoal rot in maize.
- Management of soil borne and foliar diseases of cotton.
- Control of powdery mildew in sunflower.
- Management of coconut eriophid mite.
- Development of wilt resistant grafted pepper.
- Management of pest and diseases in vegetables such as; brinjal, bhendi, snakegourd and plantation crops namely; coconut and oilpalm.

7. Seed Production Programme for 2014-15

- The Seed Centre in TNAU has programmed to produce and distribute 20,000 quintals of various classes of seeds in major principal crops in 175 improved varieties besides, 30 Lakh planting material.
- Automatic Seed Vending Machines are proposed to be installed at commercially important places of major cities to facilitate consumers to obtain their choice of seed material especially fruits / vegetable seed packets at any time.
- Production of high quality oil palm seedlings by establishment of mother palm gardens is also programmed.

9. SEED CERTIFICATION & ORGANIC CERTIFICATION.

1. **Introduction**

The Agriculture is the first and foremost sector which paves the way for the development of all other allied sectors. Food is the most essential and undeniable requirement for survival and development. To attain self sufficiency in food production and to meet the growing needs of the increasing population, agricultural sector needs utmost priority and focused attention.

In agriculture, seed is the most important factor which influences not only the yield potential but also the quality and uniformity of the produce which ultimately decides the market value. One of the most critical management decisions of the farmer is the selection of appropriate seed source and variety. The seed quality can affect the yield potential of a crop more than any other input factor. Thus the income of the farmer totally depends upon the use of quality certified seeds.

In order to increase the certified seed production and to ensure quality seed supply for the benefit of the farmers, the Department of Seed Certification and Organic Certification is implementing the following programmes namely,

1. Seed Certification,
2. Seed Quality Control,
3. Seed Testing,
4. Training,
5. Organic Certification.

The Department aims to achieve the following Goals by

- Ensuring the availability of good quality seeds to farmers of the State,

- Motivating the private seed producers to involve in certified seed production of various crops,
- Strict enforcement of seed legislations,
- Creating awareness among the stakeholders of the seed industry regarding seed certification and seed testing,
- Encouraging and involving farmers to register under organic certification programme.

2. Seed Certification

Seed Certification is a regulatory process to secure, maintain and make available seeds with standard qualities of germination, physical purity, genetic purity and seed health as prescribed under the Indian Minimum Seed Certification Standards (IMSCS).The functions of the seed certification agency are carried out in accordance with the provisions of The Seeds Act 1966 and The Seeds Rules 1968 by the Seed certification wing.

Out of the total quantity of seed certified, the quantity certified under paddy crop accounts for 92%. The share of the private sector in the total production of paddy seeds amounts to 84%. The private sector are being motivated and encouraged to take up certified seed production of Millets, Minor millets, Pulses and Oil seed crops.

To increase the working efficiency of the field level functionaries, it is proposed to provide seed certification kits under the NADP Scheme during the year 2014 -15 at a total cost of Rs.18.16 Lakhs. The proposal has already been sent to the Government and is approved for the year 2014-15 by the State Level Sanctioning Committee. Under the part II scheme, sanction has been issued for the purchase of 10 numbers of new jeeps as replacement for old, condemned and handed over jeeps. Financial allocation of

Rs.57.50 Lakhs has been sanctioned during the year 2014-15.

During the year 2013-2014, 84,776 MT of various crop seeds has been certified against the annual target of 1,10,000 MT of seeds. It is proposed to certify 1,10,000 MT of various crop seeds during the year 2014-15. Use of Information and Communication Technology (ICT) will be promoted for easy monitoring and effective reporting.

3. Seed Quality Control

The Government is keen in ensuring the timely availability of quality seeds for which seed distribution, system is properly monitored by the Quality Control wing through enforcement of various seed legislations viz.,. The Seeds Act 1966, The Seeds Rules 1968, The Seeds (Control) Order 1983 and The Environment (Protection) Act 1986 .

The Seed Inspection wing is issuing license for seed dealers under provisions of The Seeds (Control) Order, 1983. At present there are 9,148 licensed seed selling points in the state. The seed quality control activities involve inspection of the seed selling points at regular intervals and drawing of seed samples for quality check from seed lots kept for sale. The samples are analyzed in the notified seed testing laboratories. Based on the results of the analytical reports, actions are initiated against sub standard seed lots. Contraventions of seed legislations detected by the Seed Quality Control wing are dealt with legal actions.

During the year 2013-2014, 69,392 seed selling point inspections have been conducted as against the annual

target of 68,500 inspections and 61,002 seed samples have been drawn for quality check as against the annual target of 66,000 seed samples. The quality control wing has unearthed sub standard seeds of 2,042 seed lots, weighing 2,922 MT. valued at 1,536 Lakh Rupees. These seed lots were prevented from being sold to the farmers. Under contravention of seed legislations, 366 cases were filed in the court of law, of which 264 cases were disposed off in favour of the Government.

It is proposed to make 68,500 seed selling point inspections and to draw 66,000 seed samples for quality check during the year 2014-15.

During 2014-15, it is proposed to strengthen the Seed quality control wing at a total cost of Rs 6 Lakhs under the NADP scheme.

4. Seed Testing

The implementation of the seed certification and seed quality control programmes are dependant on the results declared by the notified seed testing laboratories of this Department. The various seed standards such as germination, physical purity, moisture, seed health and other distinguishable varieties are determined in the seed testing laboratories.

At present there are 32 notified seed testing laboratories in our State. The certified seed samples received from the seed certification wing, the official samples received from the seed quality control wing, and the service samples sent by the farmers, seed dealers and seed producers are tested in the notified seed testing laboratories. Grow out tests are conducted to ascertain the

genetic purity of a given seed lot. Genetic Purity tests are conducted for crop seeds, where it is a pre requisite for seed certification and also for the samples received from the seed inspection wing. Genetic purity tests are conducted at the grow out test farm of this Directorate, functioning at Kannampalayam (Coimbatore). A Bt testing Laboratory is attached to this Directorate for analyzing Bt toxin.

4.1. Special & Outstanding activities carried out in Seed Testing.

a. Establishment of a DNA (Finger Printing) Laboratory

The functions of seed testing need to be updated and modernized as there is a huge need arising out to meet the ever growing seed industry. Taking in to account of this situation and in order to perform better in ensuring the seed standards, this Department has taken the outstanding efforts by the establishment of a DNA (Finger Printing Laboratory) at a cost of Rs 52 Lakhs.

This is the first of its kind in the whole of public sector under takings in the nation. This laboratory has further been strengthened under the NADP Schemes during the year 2012-13.

The functions of this Laboratory has enabled the Department to identify the Genetic Purity of crop varieties within a very short period of three to four days which otherwise will need a time of 2 to 3 months as the case may be. The DNA (Finger Printing Laboratory) at present has a potential to ensure the Genetic Purity of 13 varieties of the paddy crop which are most popularly grown in the state. This laboratory is awaiting the notification of the Testing Protocol from the Central Seed Sub Committee of the Government of India. This Laboratory has obtained the State notification during the year 2014-15. This DNA Finger

Printing Laboratory will be strengthened during the year 2014-15, at a cost of Rs.3.66 Lakhs under the NADP Scheme. The proposals have already been approved by the State Level Sanctioning Committee.

b. Taking seed testing to International levels

There is an urgent need to grow to the international standards in the seed testing arena. The seed industry in India is in need of public sector under taking seed testing laboratories on par to international standards to support and encourage seed exports. For this, it is essential that our seed testing laboratories are to be accredited by the International Seed Testing Association (ISTA) which has its head quarters at Switzerland.

The department has taken up this challenge and has upgraded the existing notified seed testing laboratory at Coimbatore, to the standards of the International Seed Testing Association (ISTA).

This laboratory has become a member of the International Seed Testing Association. This Laboratory has been accredited by the International Seed Testing Association (ISTA) in the month of June 2014. This accreditation is valid for a period till 27.01.2017. This is an exclusive and unique achievement which has not been achieved by any other public sector undertaking in the country.

Under Seed testing during 2013-14, a total number of 91,782 seed samples have been analyzed as against the annual target of 87,000 seed samples. It is proposed to analyze 92,000 seed samples during the year 2014-15. During 2014-15, the seed testing activities will be

strengthened by equipping all the seed testing laboratories and the Grow out Test Farm at Kannampalayam with improved infrastructure facilities.

5.Training

In order to update the skills and knowledge of personnel's of this department, seed producers, seed dealers and farmers in seed production technology, seed certification procedures, seed testing, seed legislation, etc., there is an exclusive training wing functioning in this department.

Training imparted to the Technical Officers

5.1 Orientation Training: Training on seed certification procedures, field inspections, identification of crop varieties, processing, sampling, tagging, and procedures involved in seed testing and seed quality control imparted to the newly recruited technical officers of this Department.

5.2 Refresher Training: The latest techniques on seed production, seed testing and seed inspection are imparted to the already positioned technical officers of this department.

Training imparted to the Seed producers, Growers and Seed Dealers.

5.3 Training to Seed Producers: Training is given to seed producers on seed production to improve quality seed production.

5.4 Training to Seed Dealers: Training on the purchase and sale of quality seeds, seed storage and the regulatory aspects of seed legislation are given to the seed dealers.

During 2014-15, it is proposed to train 44,500 persons involved in the seed industry, under the training programme of this Department.

6. Organic Certification

Organic Certification addresses a growing worldwide demand for organic food. It intends to assure quality and to promote commerce. Organic Certification essentially aims at regulating and facilitating the sale of organic products to consumers. It is extended to Crop production, Animal husbandry, Beekeeping, Food Processing, Input production, Trade and Export.

Organic Agriculture means, a process of developing a viable and sustainable agro eco system, which can achieve sustainable productivity without the use of artificial external inputs such as chemical fertilizers and pesticides.

Sufficient quantities of biodegradable material of microbial, plant or animal origin should be returned to the soil to increase its fertility and the biological activity. The primary objective of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people.

To carryout inspection and certification of organic production system in accordance with (NPOP) National Programme for Organic Production, Tamil Nadu Organic Certification Department (TNOCD) was established and was launched by Government of India in the year 2000 and notified in October 2001 under the Foreign Trade (Development and Regulation) Act 1992 (FTDR Act). Tamil Nadu Organic Certification Department is accredited by (APEDA) Agricultural and Processed Food Products Exports Development Authority, New Delhi, Ministry of Commerce and Industry, Government of India.

NPOP/NAB/0019 is the accreditation number allotted to Tamil Nadu Organic Certification Department. Organic Certification carried out by this Department is on par with standards of European Union. Tamil Nadu Organic Certification Department participated in the premier International Trade Fair on Organic Agriculture held at Bengaluru during November 2013. The Organic Certification Department imparts free training to registered organic farmers on National Standards for Organic Production, and for Tamil Nadu Organic Certification Department Standards.

6.1 Objectives of organic Farming

- To preserve tomorrows' nature than today's economy
- To Promote the Use of Natural products available in local area
- To Preserve Soil health for longer time
- To Avoid environmental pollution by avoiding Agricultural Technologies which aims only on higher yield
- To produce required quantity of nutritive food grains
- To Increase Agricultural Production as well increase the standard of living of farmers by bringing rain fed cropped area under organic cultivation /certification

6.2. Benefits of Organic Certification

This is towards assurance of quality, to produce genuine produce and to promote organic trade. When the product comes to consumer market there needs the third party certification, for assurance of quality. This ensures the use of allowable inputs in the established procedure of production.

During the year 2013-14, 11,339 Ha. of land have been registered under Organic Certification as against the annual target of 12,546 Ha. This includes 230 individual farmers possessing 3,359 Ha. of land, 13 groups containing 4,394 farmers having 7,788 Ha. of land and 26 corporate possessing 193 Ha. of land. It has been planned to bring 12,546 Ha. of land under Organic Certification during 2014-15.

10. AGRICULTURAL MARKETING AND AGRI BUSINESS

1. Introduction

Agricultural Marketing and Agri Business plays a pivotal role in improving the agrarian economy of the country and it involves all aspects of market structure in the system, both functional and institutional, based on technical and economic considerations and includes pre and post-harvest operations *viz.*, assembling, grading, storage, transportation and distribution. Creation of Marketing infrastructure is important not only for the performance of various marketing functions and expansion of size of the markets but also for transfer of appropriate price signals leading to improved marketing efficiency. ***An efficient marketing system*** would enable the farmers to get the best possible returns, narrow down the price spread between the producer and the consumer and make all products of farm origin available to consumers at reasonable price without impairing the quality of the produce. The Directorate of Agricultural Marketing and Agri Business is taking various technological interventions to ensure remunerative price to the farmers by creating more infrastructure facilities for marketing and post-harvest management. In addition to the above, thrust is being given for providing farmers with sufficient market information and intelligence, promotion of Farmer Producer Organization (FPO) and creation of aggregation and e-auctioning facilities to improve farmers' income.

Strengthening the marketing infrastructure, creating robust post-harvest supply chain and paving the way for market led agriculture would be impetus to achieve the target of the Vision Tamil Nadu 2023 "to be a global supplier

of agricultural produce with robust infrastructure in Agriculture sector".

1.1. Major interventions

1. Development of infrastructure facilities for marketing, post harvest management and processing of agricultural produce.
2. Formation of Commodity groups / Clusterisation of growers of lead commodities and creation of market linkages in order to empower farmers in efficient trading.
3. Promotion of Farmer Producer Organisation (FPO) for improved access to investments, technology, inputs and markets.
4. Rendering services to farmers to realize remunerative price for their produce through various marketing outlets which include regulated markets, farmers markets and specialized market complexes.
5. Curtailing the post harvest losses of farm produce and facilitating the farmers to handle their marketable surplus through storage godowns, cold storages, ripening chambers and drying yards.
6. Promoting the role of private players in infrastructure creation especially for value addition and processing of farm produce under Public Private Partnership (PPP) mode.
7. Disseminating the dynamic and forecasted market price information to the registered farmers through mobile and web portals.
8. Increasing the level of food processing and value addition in the State through National Mission on Food Processing and also through Incubation cum Training centers.
9. Sensitizing the farmers to adopt market-led agriculture by providing crop advisory, market information and

extension services through Agro Marketing Intelligence and Business Promotion Center.
10. Imparting skills to the farmers on the techniques of post harvest management, processing, value addition, grading, etc., through capacity building programmes.

2. Agri Marketing Activities

2.1. Market Committees and Regulated Markets

Regulated Markets act as a common forum to farmers and traders on equal footing for marketing of agricultural produce without middlemen. Competitive and remunerative prices are ensured for the produce sold by the farmers through closed tender system in the Regulated Markets. In Tamil Nadu, 21 Market Committees have been established to enforce the provisions of Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987, Rules 1991 and by-laws. Under these Market Committees, 277 Regulated Markets are functioning for better regulation of buying and selling of agricultural produce. No fee is collected from farmers for the services rendered. One percent of the sale value of the produce is collected as market fee from Traders. Besides, license fee is also collected from traders and weighmen. In the Regulated Markets, 59.13 L. MT of agricultural produce were sold by farmers and Rs.258.22 crores have been collected as market fee from traders from 2011-12 to 2013-14.

2.1.1. Facilities available in Regulated Markets

The State Government have provided sufficient facilities such as Godowns, Drying yards, Transaction sheds, Trader Shops, Automatic weighing and bagging machines, Weigh bridge, Weighing balance, Market Complex, Cold storage, Rural Business Hub, Ticker boards

for price display, Farmers rest room and free medical aid in the Regulated Markets functioning in the State for the benefit of farmers.

2.2. Modern Storage Godowns and Cold Storages in Regulated Markets

Capital intensive marketing infrastructure is necessary for protecting the agricultural produce from harvest season to consuming period. Inadequate scientific storage facilities cause heavy losses to farmers in terms of quantity and quality. Hence it is essential to protect the agricultural produce from deterioration. Seasonal fluctuations in prices aggravate in the absence of these facilities.

Farmers can store their agricultural produce in the godowns and get credit facilities in the form of pledge loan. The State Government has taken various steps in the past three years to further strengthen the Regulated markets. As announced in the Budget speech of 2011-12 and 2012-13, a total of 88 modern storage godowns with capacity of 2,000 MT (75 Nos), 5,000 MT (8 Nos) and 10,000 MT (5 Nos) and 20 cold storages with 25 MT capacity have been constructed at a total cost of Rs.133.96 crores with 95% financial assistance from NABARD under RIDF (Rural Infrastructure Development Fund) and 5% from Market Committee

Hon'ble Minister for Agriculture made an announcement during 2012-13 for the establishment of 50 cold storages with 25 MT capacity to reduce the post-harvest losses and to extend the shelf-life of fruits and vegetables at a cost of Rs.15.90 crores. Hon'ble Chief Minister of Tamil Nadu unveiled 22 modern storage

godowns of 2,000 MT capacity and 1 cold storage unit through video conferencing for farmers' use on 19.02.2014.

2.3. Rural Business Hub (RBH) in Regulated Markets

Rural Business Hub envisages development opportunities through which farmers have increased access to markets through forward linkages. These centers aim to achieve higher income for farmers by aggregating products enabling larger buyers and processors to make direct purchase from farmers. RBHs link up with farmers' groups formed in villages. These hubs provide infrastructure facilities like input shop, storage shed, drying yard, electronic balance, moisture meter and also serve as a knowledge centre.

At present, 10 Rural Business Hubs are functioning in the Regulated Markets of Sathyamangalam, Kalavai, Krishnagiri, Gangavalli, R.Ponnapuram, Ulundurpet, Panruti, Pavoorchatiram, Batlagundu and Rajapalayam. From 2011-12 to 2013-14, 644 commodity groups have been formed and 4,502 farmers have been benefitted.

To realise remunerative price for farmer's produce, the State Government is taking various interventions like creation of infrastructure facilities and dissemination of market information. In this regard, the Department of Agricultural Marketing and Agri Business created Rural Business Hubs, where post-harvest management trainings on grading, sorting, storage, value addition are organised and market information have been disseminated to farmers. Further, Department has organised interface workshop with traders to procure farmers produce at an assured price through MoU.A coconut grower,Thiru D.Dhanabalakrishnan, S/o.Devendren, R.Ponnapuram (Po), Pollachi North Block,

Coimbatore District utilised the infrastructure facilities available in the Rural Business Hub and sold his coconut as copra – a value added product at a cost of Rs.75/ kg when the local market rate was Rs.70/kg. Due to timely intervention of the Department, the farmer got Rs.6,500/- as an additional income by selling 1,300 kg of copra at a margin of Rs.5/kg.

2.4. Construction of own building for Regulated Markets

Among 277 Regulated Markets, 92 Regulated Markets are functioning in rented buildings. State Government is taking sincere steps to provide own building with adequate infrastructure facilities to enable the farmers to get better price for their produce and more revenue to the Market Committees by inviting more farmers and attracting more arrivals.

Hon'ble Chief Minister made an announcement under Rule 110, in the floor of Assembly during 2013-14 for the construction of building for Bodinayakanur Regulated Market, Theni District at a cost of Rs.150 Lakhs under National Agriculture Development Programme and construction work is in progress.

2.5. Pledge Loan

Pledge loan helps the farmers to avoid distress sale during glut seasons, to prepare for next cropping season and also to meet their immediate money requirement. The State Government is providing pledge loan to farmers by storing their produce in the godowns of Regulated markets.

Small and marginal farmers can avail pledge loan upto 75% of the value of the produce and other farmers can

avail 50% of the value of produce for a maximum period of 6 months. No interest is charged for first 15 days of loan period. Beyond 15 days, interest rate of 5% is charged. Hon'ble Minister for Agriculture announced during 2011-12 that the maximum amount of pledge loan is enhanced from Rs.1 Lakh to Rs.2 Lakhs. For the benefit of Turmeric growers, the State Government has enhanced the storage period for Turmeric from six months to one year.

During 2013-14, 2,995 farmers availed pledge loan to the tune of Rs.3,916.56 Lakhs, as against the pledge loan of Rs.2,563.73 Lakhs provided in the year 2012-13 to 2,251 farmers.

Registered Traders can avail pledge loan upto 50% of value of the produce limited to the maximum of Rs.1 Lakh with 9% interest rate upto 3 month's period. During 2013-14, about 325 traders have availed pledge loan of Rs.302.41 Lakhs, as against the pledge loan of Rs.205.72 Lakhs provided in the year 2012-13 to 211 traders.

2.6. Dissemination of Market price information

Provision of Market Price information is very important to farmers in planning production, marketing and equally to other stakeholders in arriving at optimal trading decisions. The existence and dissemination of complete and accurate marketing information is the key to achieve both operational and pricing efficiency in the marketing system. To establish an ICT based "Agricultural Marketing Information Network', 210 computers were provided to 21 Market Committees and 189 regulated markets under Marketing Research and Information Network Scheme (MRIN). These regulated markets upload the information on

prevailing agricultural produce price and commodity arrival in the web portal www.agmarknet.nic.in on daily basis. In addition, 80 ticker boards are functioning in Regulated markets to disseminate spot prices of agricultural commodities marketed in Regulated markets. Similarly, 179 Farmers' markets are also disseminating the prevailing prices of fruits and vegetables in the web portal www.tnsamb.gov.in

2.7. Drying yards in villages

Food grains when appropriately dried can be stored safely and protected from the storage pests, moulds and other microorganisms. The post production losses of farm produce account 10-15% in total cereals and pulses production. Considering the importance of Drying yards at village level or farm gate level, the State Government has constructed 1,359 village level Drying yards at a cost of Rs.2,734.50 Lakhs to help the farmers to handle their agricultural produce immediately after harvest for drying, cleaning, winnowing, etc.

2.8. Market Complex for Paddy

A Paddy Market Complex is functioning in an area of 9.85 acres at Mattuthavani, in Madurai district, at a total cost of Rs.1,706 Lakhs with facilities such as 314 shops for traders of paddy, flowers and agricultural inputs. In this complex, regulated market office, rural godown, auction shed, canteen, bank, post office and firefighting equipments are also available. Agricultural Produce of 1.98 L.MT has been transacted in the paddy Market Complex fetching a revenue of Rs.359.65 Lakhs during 2011-12 to 2013-14.

2.9. Mega Market (Velan Vilaiporul Perangadi)

A Farmer's Mega Market (Velan Vilaiporul Perangadi) has been established in 15.50 acres at Ottanchathram of Dindigul District at a cost of Rs.308.20 Lakhs for fruits and vegetables with 50 shops, 216 floor space shops, grading hall and transaction shed. Steps are being taken to allot these shops to the traders of Gandhi Market.

2.10. Flower Auction Centre

Flower Auction Centre is established and functioning at Kavalkinaru in Tirunelveli District at a cost of Rs.163.40 Lakhs.

2.11. AGMARK grading

AGMARK is a quality certification mark on agricultural products in India, assuring that they confirm to a set of standards approved by the Government of India. AGMARK is legally enforced by the Agricultural Produce (Grading and Marking) Act of 1937 (amended in 1986). Directorate of Marketing and Inspection of the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India is implementing the provisions of the Act and the Rules.The present AGMARK standards cover quality guidelines for 213 commodities. The term AGMARK is coined by joining the words 'Ag' to mean agriculture and 'mark' to mean certification mark. It is a voluntary scheme.

The AGMARK certification is implemented through State-owned Agmark laboratories located across the State which act as testing and certifying centers. In Tamil Nadu, 30 State Agmark Grading Laboratories and 1 Principal

Agmark Grading Laboratory are functioning. Both Centralised and Decentralised commodities are graded under Agmark. In Tamil Nadu, the products graded under Agmark are Rice, Pulses, Ghee, Honey, Groundspices, Whole spices, Wheat products, Sago, Vegetable Oils, Gram flour, Compounded Asafoetida etc.,

Agmark is a symbol for quality food products. Agmark grading protects the consumers from harmful effects of consuming adulterated food products and ensures quality of food products. During 2011-12 to 2013-14, 47.65 Lakh quintals of food products have been graded through State Agmark Grading Laboratories.

2.12. Farmers' Markets (Uzhavar Sandhais)

At present, 179 Farmers' Markets (Uzhavar Sandhais) are functioning in Tamil Nadu. The Farmers' Market ensures fair price to the farmers' produce without intermediaries interference and supply of fresh fruits and vegetables to the consumers at a nominal price.

Farmers can avail facilities such as shops, balance for weighing, drinking water, sanitary facilities , telephone and vehicles parking etc., at free of cost. Luggage free transportation facility is available to farmers to bring their produce to the Uzhavar Sandhai. The unsold vegetables and fruits can be stored in the mini cold storage in the Uzhavar Sandhai at free of cost. Among 179 Uzhavar Sandhais, 27 Uzhavar Sandhais have cold storages with 2.0 MT Capacity. These Uzhavar Sandhais are functioning with Market Committee fund. During 2011-12 to 2013-14 on an average, 7,881.48 MT Vegetables and fruits worth of Rs.1,496.83 Lakhs are being sold by 28,924 farmers and 17.17 Lakh consumers are benefitted in Uzhavar Sandhais per day.

3. Agri Business Activities

Agri business denotes the collective business activities that are performed from farm to fork. It covers the supply of agricultural inputs, production and transformation of agricultural products and their distribution to final consumers. Agri business is characterized by raw materials that are mostly perishable, variable in quality and not regularly available. Traditional production and distribution methods are being replaced by more closely coordinated and better planned linkages between agribusiness firms, farmers, retailers and others in the supply chains.

Fetching remunerative price to farmers, reduction in post harvest losses and value addition of agricultural produce are vital. To reduce post harvest losses and to avoid distress sales during glut, infrastructure facilities like grading and sorting hall, godowns, pack houses, drying yards, pre-cooling room, cold storage etc., are essential. In this context, more specialized commodity markets have been developed with above facilities.

3.1. Market Complex with Cold Storage facilities for Mango

A Market Complex with cold storage facility for Mango has been established at a cost of Rs.100 Lakhs and functioning at Krishnagiri Regulated Market, Krishnagiri District, under Tamil Nadu State Agricultural Marketing Board and State Government funds for the welfare of small and marginal farmers. During 2012-13 to 2013-14, 370.23 MT of Mango and Banana has been stored in cold storage and 57 farmers have benefitted.

3.2. Market Complex with Cold Storage facilities for Tomato

For the benefit of tomato growers a Market complex has been established at a cost of Rs.100 Lakhs and is functioning at Palacode Regulated Market in Dharmapuri District with cold storage facility under Tamil Nadu State Agricultural Marketing Board and State Government funds. About 2,062 MT of tomato have been stored and transacted upto 2013-14.

3.3. Market Complex with Cold Storage facilities for Grapes

The State Government has established a Market complex with cold storage facility at a cost of Rs.100 Lakhs for Grapes at Odaipatti in Theni District for the welfare of small and marginal grapes growing farmers. Steps are being taken to form Grapes commodity groups for effective utilization of the market complex.

During 2012-13, Hon'ble Minister for Agriculture announced that a Market complex with Cold storage for Grapes would be established in Cumbum Regulated Market,Theni District at a project cost of Rs.345 Lakhs under NADP. On completion of civil and electrical works, the complex will come to utilization to farmers.

3.4. Market Complex with Cold Storage facilities for Onion

In Pongalur Regulated Market in Tiruppur District, a Market complex with cold storage facility for onion has been established at a cost of Rs.100 Lakhs and functioning for the welfare of small and marginal farmers. During 2012-13 to 2013-14, 39 farmers have utilized this Market Complex and 31.45 MT of onion,copra,tomato and maize have been transacted.

3.5. Market Complex for Coconut

With an aim to help coconut growers of Thanjavur district to get better price, the State Government has created a Coconut Market Complex at Ponnavarayankottai, Ukkadai village at a cost of Rs.400 Lakhs. For augmenting value addition in Coconut, this Market complex has been provided with rural godown, transaction sheds, godowns, drying yards and solar drier for copra, grading and sorting hall, input shops, traders shops, coconut de-shelling hall, electronic weighing balances and coconut oil mill unit with automatic oil packing facility for the benefit of coconut growers. So far, 115 coconut commodity groups have transacted 93 MT copra and 18 Lakh coconuts in the market complex.

In addition to this Coconut Market Complex, the Government has established another Coconut Market Complex in Tiruppur District at Pethappampatti, at a cost of Rs.100 Lakhs under NADP. So far, 276 coconut growers transacted 2,278.70 MT of copra and stored 349.75 MT of copra in the godown.

3.6. Storage facilities for Onion and Cold storage for other vegetables

Perambalur is one of the major Onion producing districts. With an aim to help the Onion and other vegetables growers to fetch higher income, the State Government has established a Market complex with cold storage facility at a cost of Rs.114.90 Lakhs at Chettikulam, in Perambalur District under NADP for the benefit of the farming community.

3.7. Market Complex with cold storage for Hilly Vegetables

Coimbatore and the Nilgris districts are the major Vegetable growing districts. To facilitate hilly vegetable growers in and around Coimbatore District, the State Government has created a Market Complex with Cold Storage for hilly vegetables at Karamadai Regulated Market at a cost of Rs.100 Lakhs under NADP. During 2013-14, 26 hilly vegetable commodity groups were formed and 15.72 MT of vegetables transacted and 16.75 MT has been stored in cold storage.

3.8. Cold storage for Chillies

Chilli is grown in the districts of Ramanathapuram, Sivagangai, Virudhunagar and Thoothukudi districts in an area of 40,000 Ha. In order to help the chilli growing farmers, State Government has established a cold storage unit with a capacity of 100 MT for Chillies at Paramakudi Regulated Market in Ramanathapuram district at a cost of Rs.99.50 Lakhs under NADP.

3.9. Cold storage for Tomato

For the benefit of tomato growing farmers, a cold storage unit with 100 MT capacity is functioning at Mecheri in Salem district at a cost of Rs.100 Lakhs under NADP. So far, 552.81 MT of agriculture produce have been stored in the cold storage.

3.10. Cold storage units for fruits and vegetables

For the benefit of fruits and vegetables growing farmers, Cold storage units have been established at

Oddanchatram (25 MT) in Dindigul District, Tindivanam (15 MT) in Villupuram District and Singanallur (15 MT) in Coimbatore District and 5 MT collection centres at Oddanchatram, Batalagundu and Palani at a total cost of Rs.100.10 Lakhs with the funds from APEDA (70%) and concerned Market Committee (30%).

3.11. Banana Ripening Chamber

In Tamil Nadu, Banana is cultivated in an area of 1.03 L.Ha with production of around 45 L.MT. Post harvest loss in Banana is around 30-40% due to lack of proper storage techniques. To avoid this loss, post harvest management is largely required. For facilitating uniform ripening of banana, the State Government has established ripening chambers at Trichy, Srivaikundam, Chinnamanur and Mohanur at a total cost of Rs.200 Lakhs under NADP. From 2011-12 to 2013 -14, about 15 banana commodity groups each at Trichy, Srivaikundam and Mohanur and 23 banana commodity groups in Chinnamanur have been formed for better utilization of these infrastructure facilities and for better price realization.

3.12. Additional Infrastructure facilities

Hon'ble Minister for Agriculture announced during 2012-13, in the floor Assembly for the establishment of various marketing infrastructure facilities viz. 500 MT cold storage for vegetables and fruits in Kinathukadavu, Coimbatore District, Market Complex with 500 MT capacity cold storage for vegetables and fruits in Mettupalayam in Coimbatore District, 500 MT cold storage unit for chillies in Sankarankoil Regulated Market in Tirunelveli district, 25 MT cold storage unit at Jolarpet in Vellore district and Buildings for 9 Agmark laboratories at a total cost of Rs.1,125.00 Lakhs and works are in progress. In addition,

Market complex with cold storage for vegetables and fruits at Thuraiyur in Trichy district and Market complex for vegetables in 'The Nilgiris' district are being established at a total cost of Rs.380 Lakhs.

During 2013-14, Hon'ble Chief Minister announced under rule 110 for the establishment of infrastructure facilities such as building for Regulated Market at Bodinayakanur in Theni District, Transaction Shed at Dharmapuri, Krishnagiri, Anthiyur, Polur, Arani, Vandavasi and Vellakoil Regulated Markets, Tender Coconut Market Complex at Thippampatti, Pollachi Taluk in Coimbatore District, Perishable Commodity Market improvement through collection centres, specialized market complex for Banana at Ambasamudram at a total cost of Rs.1,525 Lakhs and construction works are in progress.

Further, Hon'ble Finance Minister announced in the Budget Speech 2013-14 to create an Integrated commodity management through aggregation at a cost of Rs.118 Lakhs and construction works are in progress.

Besides, during 2013-14, establishment of infrastructure facilities namely upgradation of Rural sandhais in Tamil Nadu at 10 places, Food Processing Incubation cum Training Centre in Srirangam and Kinathukadavu area at a total cost of Rs.460 Lakhs were announced by the Hon'ble Minister for Agriculture and construction works are in progress.

All the above infrastructure faciltites are being established under Naional Agriculture Development Programme, Rural Infrastrucutre Develomemt Fund and State Government fund.

3.13. Establishment of Terminal Market Complexes (TMC)

Establishment of Terminal Market complex is a scheme of Government of India with the main objective to link farmers to markets by shortening supply chain of perishables and increase farmers' income. As per the revised guidelines framed by the Government of India, Terminal Market Complex project would be Built, Owned and Operated (BOO) by the selected Private Enterprise through competitive bidding process.

In Tamil Nadu,Terminal Market Complexes are being established at Chennai, Madurai and Coimbatore regions on a Hub and Spoke model. Terminal Market Complex is the Hub and the Collection Centers in the main production centers will act as Spokes. Hub will have marketing structures with "State of Art" technology.TMC will establish backward linkages with farmers through collection centers and forward linkages through wholesalers, distribution centers, processing units etc. Commodities to be marketed will include perishables like Fruits, Vegetables, Flowers, Spices, Herbs, etc.

For Coimbatore region, Terminal Market Complex is being set up in Perundurai, Erode District by the selected Private Enterprise, M/s.SPAC Terminal Market Complex with a project cost of Rs.120.62 crores. The foundation stone was laid by Hon'ble Chief Minister of Tamil Nadu on 03.03.2012 through video conferencing. Construction of Collection centres as well as market infrastructures in Hub is under progress.

In Chennai region, M/s.URC Construction Private Limited, Erode has been selected as Private Enterprise Complex at Navalur Village of Sriperumpudhur Taluk in Kancheepuram District at a project cost of Rs.135 Crores.

M/s.URC Construction Private Limited and consortium partners formed a Special Purpose Vehicle (SPV) namely M/s. Ulavar Kalangiyam Limited.

In Madurai region, Terminal Market Complex will be established by the selected Private Enterprise, M/s.RR Industries Limited, Chennai at Mukkampatti and Thiruvathavur village, Melur Taluk, Madurai District at a project cost of Rs.120.06 Crores. M/s. RR Industries Limited and consortium partners formed a Special Purpose Vehicle (SPV) namely M/s. Bhumi Agri Markets Private Limited.

State Government will enter into an agreement called Operation Management and Development Agreement (OMDA) with the selected Private Enterprise and then construction works will be commenced for establishment of Chennai and Madurai Terminal Market Complexes.

3.14. Agri Export Zones

With a view to promote agricultural exports and ensure remunerative returns to the farming community in a sustained manner, Agri Export Zones have been set up for end to end development for export of specific products from a geographically contiguous area.

Export zones facilitate value addition for agriculture products and minimize post harvest losses thereby it ensures steady and better price realization to the farming community as well as availability of commodities in processed form to the consumer throughout the year. To promote Agri- Produce Exports from Tamil Nadu, four Agri Export Zones for specific commodities with private participation are functioning with modern infrastructure facilities like cold storage, grading and sorting yard, pack house, processing units and reefer vans for the direct export of value added agricultural produce, at the production centres.

In Hosur, Krishnagiri District, an Agri Export Zone for cut-flowers has been established by a joint venture company of Tamil Nadu Industrial Development Corporation Limited (***TIDCO***) and a private promoter M/s.TANFLORA at a cost of Rs.24.85 crores. An Agri Export Zone for flowers at Ooty in the Nilgiris district has been established with the participation by M/s.Nilflora – a private promoter at a cost of Rs.15.89 crores. For the benefit of mango growers, an Agri Export Zone at Nilakkotai in Dindigul District has been established by an anchor promoter M/s.Maagrita Export Ltd., at a cost of Rs.21 crores. For cashew, an Agri Export Zone at Panruti in Cuddalore district has been established by Private Promoter M/s.Sattva Agro Export Pvt. Ltd., at a cost of Rs.16.54 crores.

During 2011-12 to 2013-14, cut-flowers worth of Rs.320 Lakhs has been exported by the firm M/s.Tanflora, M/s.Nilflora has exported Rs. 258 Lakhs worth of flowers, M/s. Maagrita Export Ltd. has exported Rs.207 Lakhs worth of mango and mango pulp and M/s.Sattva Agro Export Pvt. Ltd., has done a turnover of Rs.67 Lakhs worth of cashew.

3.15. National Mission on Food Processing (NMFP)

Food processing in the organized sector helps in achieving higher efficiency in the use of raw materials and by-products. Processing in the organized sector generates additional employment in trade and transport activities which may be quite substantial as compared to direct employment created in processing activities. Food processing is promoted in our State to reduce the wastage of agricultural produce, fetch remunerative price to the farmers and to ensure processed foods to the consumers throughout the year.

National Mission on Food Processing is a Centrally Sponsored Scheme being implemented from the year 2012-13 with the financial sharing pattern of 75:25 from Ministry of Food Processing Industries and Government of Tamil Nadu. Department of Agricultural Marketing and Agri Business is the State Nodal Agency for the implementation of the scheme. The Commissioner / Director of the Department of Agricultural Marketing and Agri business has been authorized as Mission Director for the State Nodal Agency to implement the projects under National Mission on Food Processing in Tamil Nadu from 2012-13.

Objectives:

- To promote facilities for post-harvest operations including setting up of food processing industries.
- To undertake decentralization of the schemes so far operated by the Ministry of Food Processing Industries (MoFPI) by considering the requirements suitable to the local needs.
- To augment the capacity of food processors and upscale their operations through capital infusion, technology transfer, skill upgradation and hand holding support.
- To support established Self Help Groups working in food processing sector to facilitate them to achieve SME status.
- Capacity development and skill upgradation through institutional training to ensure sustainable employment opportunities to the people and also to reduce the gap in requirement and availability of skilled manpower in food processing sector.
- To raise the standards of food safety and hygiene in order to meet the norms set up by Food Safety and Standards Authority of India (FSSAI).

- To facilitate food processing industries to adopt Hazard Analysis and Critical Control Points (HACCP) and ISO certification norms.
- To augment farm gate infrastructure, supply chain logistics, storage and processing capacity.
- To provide better support system to organized food processing sector.

3.15.1. Schemes being implemented under the Mission during 2013-17:

The Major Programmes/Schemes being implemented under NMFP during the 12th Five Year Plan period (2013-17) are:

(i) Scheme for Technology Up-gradation / Establishment / Modernisation of Food Processing Industries**.**
(ii) Scheme for Cold Chain, Value Addition and Preservation Infrastructure for Non -Horticultural Products .
(iii) Setting up / modernisation / expansion of Abattoirs (to be implemented w.e.f. 2014-17).
(iv) Scheme for Human Resource Development (HRD).
  (a) Creation of Infrastructure facilities for running Degree/Diploma/Certificate Courses in Food Processing Technology.
  (b) Entrepreneurship Development Program (EDP).
  (c) Food Processing Training Centre (FPTC).
(v) Scheme for Promotional Activities**.**
  (a) Organizing Seminar/Workshops.
  (b) Conducting Studies/Surveys.
  (c) Support to Exhibitions/Fairs.
  (d) Advertisement & Publicity.
(vi) Scheme for Creating Primary Processing Centres / Collection Centres in Rural Areas.
(vii) Modernisation of Meat Shops**.**
(viii) Reefer Vehicles**.**
(ix) Old Food Parks**.**

Till now, 47 proposals with the total project cost of Rs.104 Crores with grant request of Rs.1,744.02 Lakhs has been approved and sanctioned by State Level Empowered Committee (SLEC).

3.16. Agro Processing Units with farmers' participation

His Excellency, the Governor of Tamil Nadu during the Governor's Address announced in the Assembly that Agro Processing Units with farmers and private participation would be established at 5 places to minimize post harvest losses and maximize benefits from agricultural produce. "Agro Processing Units are to be established at 5 places" viz., in Pudukottai District for Pulses, in Dharmapuri District for Tomato, in Theni District for Banana, in Coimbatore District for Copra and in Villupuram District for Groundnut at a total cost of Rs.2,000 Lakhs. The State Government will bear 25% of the share capital on behalf of farmers and the remaining 75% of the share will be borne by the private entrepreneurs. Selection of entrepreneurs is under progress.

3.17. Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management (TN - IAMWARM Project)

The World Bank assisted TN-IAMWARM Project is being implemented in phased manner covering 61 sub basins in Tamil Nadu. The main objective of Agri Marketing component is strengthening the market orientation of sub basin farmers. The revised project outlay of Department of Agricultural Marketing and Agri Business is Rs.6,614 Lakhs.

Creation of market infrastructure, Commodity group formation and market tie-up arrangement between farmers

and traders, capacity building activities to farmers are the main activities under Agri Marketing component.

With an aim to narrow down the institutional gap and link farmers with markets, Agri Business Centres (ABC) are constructed with infrastructure facility to create market opportunities for farmers through value chain linkages. The ABC operates on a Hub and spokes format wherein the ABC (the Hub) is linked to a number of spokes (commodity groups).

In the area of operation, 24 ABC have been created and are functioning. 116 Storage Sheds, 226 Drying Yards, 22 Collection Centers, 1 Pack house and 4 additional infrastructures were also created for the benefit of sub basin farmers. In addition to the infrastructure, important supporting equipments for value addition *viz.*, 249 moisture meters, 285 Electronic weighing scales, 1,698 Tarpaulin, 6,203 dunnages, 22 Computers with internet connection, 2,860 Plastic crates, 8 Copra dryer, 6 Coconut Defibering units, 8 goods auto and 1 mini lorry for logistics were provided to commodity group farmers and are being utilized by them.

Commodity groups are being formed with the objectives of promoting the farmers to get additional income. Commodity group farmers are empowered themselves for their own problem solving, gaining techno economic support, improved access to resources, knowledge on infrastructure utilization, scale of operation, updated to current technological innovations, knowledge on market price, market led agriculture, credit facility and ultimately it will improve the economy of farmers. So far, 3,235 commodity groups have been formed and 2,567 MoU were signed between farmers and traders.

In the sub basin area for the empowerment of Commodity group farmers, 972 capacity building programmes were conducted viz., 418 technical trainings, 236 interface workshops, 206 Exposure visits inside the State, 101 Exposure visits outside the State and 11 awareness campaigns.

State Government is taking various steps to empower the sub basin farmers in efficient trading, improve their scale of operation and to promote market led agriculture in the State. In light of the above, Department of Agricultural Marketing and Agri Business has created marketing infrastructure, formed commodity groups and orgaznised Buyer - Seller meets and interface workshops where the farmers had opportunity to interact with buyers and know about quality and grade specifications in addition to capacity building training and exposure visits. A cucumber grower, Tmt.S.Devi, W/o.Singaram, Kuppudayampatti, Pudukottai District prior to the Department intervention sold cucumber @ Rs.10/kg in the local market. After becoming a commodity group member, the farmer sold cucumber @ Rs.15/kg as per the MoU and earned an additional income.

By utilizing the facilities created under Agri marketing component of TN-IAMWARM, 1.52 Lakh commodity group farmers earned an additional income of Rs.7,367 Lakhs with the commodity transaction of 3.74 L. MT.

During 2014-15, post project management training is being conducted to the commodity group farmers and the project is proposed to end on 30.09.2014.

3.18. Tamil Nadu Small Farmers Agri-business Consortium (TNSFAC)

The Tamil Nadu Small Farmers' Agri-business Consortium [TNSFAC] functions with the objectives of making formal / informal market arrangements, besides linking Small farmers to technologies as well as to markets by providing both forward and backward linkages through assured purchase at reasonable price for their farm produces. The TNSFAC is functioning in association with Government, Private sector, Co-operatives, banks / financial institutions notified by the Reserve Bank of India where the ownership of the Central / State Government is more than 50% to fulfill the above objectives.

Eligibility Criteria for funding:

- Projects should be from agriculture or allied sector or related to agricultural services.
- Project should provide assured market to farmers / producer groups.
- Project should encourage farmers to diversify into high value crops to increase farm income.
- Project should be accepted by banks / financial institutions for grant of term loan.

Quantum of Venture Capital Assistance (VCA) would be 26 % of the Promoter's equity (or) Rs.50 Lakhs whichever is lowest. For registered Farmer Producers Organisation, VCA would be 40 % of the Promoter's equity (or) Rs.50 Lakhs whichever is lowest.

Agri Business development in Tamil Nadu is achieved by sanctioning Venture Capital Assistance and Project Development Facility. So far, 64 projects have been

sanctioned with Venture Capital Assistance of Rs.2,174 Lakhs by the Tamil Nadu Small Farmers' Agri-business Consortium (TNSFAC) to develop agri business activities. The major agri business projects on Mango pulp, Floriculture, Menthol (Mint), Coconut, cold storage, Mushroom cultivation, Medicinal plants, Gherkin processing, Ripening Chamber, Aloe vera gel and supplements, Miscellaneous fruits and vegetables, Anti cancer drug, Tea, Coconut shell charcoal and Food processing have been sanctioned with Venture Capital Assistance.

3.18.1. Farmer Producer Organisation:

Government of India launched a pilot programme for promoting member-based Farmer Producer Organizations [FPOs] during 2011-12, in partnership with State Governments, which is being implemented through the Small Farmers' Agribusiness Consortium. The purpose of the project is to collectivize farmers, especially small producers, at various levels to foster technology penetration, improve productivity, enable improved access to inputs and services and increase farmers' income, thereby strengthening their sustainable agriculture based livelihoods.

The project objectives are:

- Mobilising farmers into groups at the village level and building up their associations to an appropriate federating point, i.e., Farmer Producer Organisations [FPOs] to plan and implement product - specific cluster / commercial crop cycles.
- Strengthening farmer capacity through agricultural best practices for enhanced productivity.

- Ensuring access to and usage of quality inputs and services for intensive agriculture production and enhancing cluster competitiveness.
- Facilitating access to fair and remunerative markets including linking of producer groups to marketing opportunities through market aggregators.

In accordance with the policy and process guidelines of Farmer Producer Organization of Government of India, the TNSFAC, has proposed to promote 9 FPOs under National Agriculture Development Programme for the year 2014-15 with financial outlay of Rs.413 Lakhs.

3.19. Agro Marketing Intelligence and Business Promotion Center (AMI&BPC) at Trichy

The ability of farmers to sell their produce for income generation will depend on good access to markets. Farmers often lack information on current market prices and not able to negotiate better deals. Disseminating price information and Market intelligence advisories is necessary for increasing the bargaining power of farmers and also to make informed decisions about what to grow, when to harvest, to which markets produce should be sent, and whether to store it or not. In this context, as a new initiative, an institutional mechanism entitled 'Agro Marketing Intelligence and Business Promotion Centre' was established in Trichy. Through this Centre, crop specific Market Advisory services are rendered through text SMS and Voice SMS to the staff of the Departments, 19 Lakh farmers and other stakeholders who were registered under Farm Crop Management System (FCMS). Apart from Market Advisory services, Price information on agricultural and horticultural commodities in different markets are also disseminated daily through text SMS.

Collectivization of producers, especially small and marginal farmers, into Producer Organisations has emerged as one of the most effective pathways to address many challenges of agriculture, most importantly, improved access to investments, technology, inputs and markets. Government of Tamil Nadu promotes Farmer Producer Organisations registered under the special provisions of the Companies Act, 1956 as the most appropriate institutional form to mobilize farmers and build their capacity to collectively leverage their production and marketing strength. Hence, the Agro Marketing Intelligence and Business Promotion Centre, Trichy has been strengthened to facilitate Farmer Producer Organization in each commodity along with officials of Directorate of Agricultural Marketing and Agri Business at district level. There are 15 Farmer Producer Companies under different stages of formation in our state not only for doubling the production, but also enabling them to realize the due price to triple their net income.

3.20. Infrastructure facilities proposed for the year 2014-15.

Establishment of transaction sheds in Regulated markets, ripening chambers for banana, integrated market complex for chillies, storage godowns, spices complex, cold storage facilites and strengthening of Agmark laboratories by providing scientific equipments are proposed during 2014-15 under various schemes.

11. TAMIL NADU STATE AGRICULTURAL MARKETING BOARD

1. Constitution of Board

Tamil Nadu State Agricultural Marketing Board was established by an executive order of the State Government vide G.O. Ms. No.2852, Agriculture Department, dated 24.10.1970. According to the Section 35 of "The Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987", the Tamil Nadu State Agricultural Marketing Board has been reconstituted as Statutory Board, as per G.O. Ms. No.299 Agriculture (AM.1) Department, dated 13.06.1995.

1.1. Board Members

As per Section 36 of "The Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987", the Board consists of a President appointed by Government and of the following members, namely:

I. Director / Commissioner of Department of Agricultural Marketing & Agri Business
II. Agricultural Marketing Advisor, Government of India
III. Managing Director, Tamil Nadu State Warehousing Corporation
IV. Registrar of Co - operative Societies
V. President, Tamil Nadu Co-operative Marketing Federation
VI. An Officer from the Agriculture Department in the Secretariat not below the rank of Deputy Secretary to Government dealing with the subject Agricultural Marketing.
VII. 21 Non-Official Members (Chairman / Special Officers of 21 Market Committees)

2. Source of Finance:

The Market Committees are paying 15% contribution from their revenue to the Marketing Board. Out of the contribution received, 50% is utilized for market development activities and the remaining 50% for administrative expenditure of the Board which includes employees' salary etc.

3. Functions of Tamil Nadu State Agricultural Marketing Board

3.1. Post Harvest technology Training to Farmers

Awareness on Post harvest technology, scientific storage, importance of value addition, market intelligence and ongoing Agricultural Marketing Schemes is created among the farmers through training programme by Publicity & Propaganda wing of the Board, functioning at Chennai, Coimbatore, Trichy and Madurai. The Post harvest technology training programmes are conducted in the Regulated Market premises every year utilizing Market Development Fund. During 2011-12 to 2013-14, about 11,960 farmers were trained.

3.2. Capacity Building Training to Agricultural Marketing Officials

The training Centre of Tamil Nadu State Agricultural Marketing Board, functioning at Salem is imparting training as detailed below:

- Refresher training to Market Committee Supervisors & Superintendents.
- Graders training
- Storage Training to Agricultural officers & Market Committee staff.

- Orientation Training to Market Committee Junior Assistants.
- Refresher training to Agricultural officers of State Agmark Grading Laboratory.
- Refresher Training to Market Committee Secretaries
- Market Extension Training to Agricultural Officers & Assistant Agricultural Officers
- Computer Training to Agricultural Officers & Assistant Agricultural Officers
- Training on Food Processing & Value Addition to Agricultural officers & Assistant Agricultural Officers
- Personal Contact Training programme to Farmers

In the past three years, 2,238 officials were benefitted by the above mentioned trainings.

During 2013, Capacity Building Training programme on Market Led Agriculture and Entrepreneurship Development for Agricultural Marketing Department officials was conducted by Tamil Nadu Agricultural University utilizing Tamil Nadu State Agricultural Marketing Board Funds. Through this training programme, 149 Agricultural Marketing officials were benefitted.

One day Awareness cum training programme on "Food Processing technologies" was conducted at Indian Institute of Crop Processing Technology (IICPT), Thanjavur, for the officials of Agricultural Marketing through Board fund. In total, 142 trainees were benefitted in 2013-14.

3.3. Tamil Nadu Farmer's Development and Welfare Scheme

This welfare scheme is implemented from 02.11.1995 onwards for the welfare of the farming community. Farmers and tenants in the age group of

18 to 60 years who sell their agricultural produce of one metric tonne and above, through Regulated Markets every year will be eligible to avail the benefit of the scheme. Farmers who are enrolled under this scheme need not pay any contribution.

The Market Committee concerned will contribute Rs.5/- per annum for every farmer enrolled under this scheme and the Tamil Nadu State Agricultural Marketing Board will contribute Rs.5/- per individual.

In case of death occurring due to an accident/death due to snake bite, the member farmer/tenant is eligible for a grant of Rs.1,00,000/. In case, the eligible farmer/tenant loses both the hands / legs / eyes due to accident, is eligible for a grant of Rs.75,000/-. In case of loss of one hand or one leg or one eye or permanent hip disability due to accident, the farmer/tenant is eligible for a grant of Rs.50,000/-.

4. Marketing Endowment Chair at Tamil Nadu Agricultural University

An Endowment Chair was created at Tamil Nadu - Agricultural University, Coimbatore utilizing the corpus fund of Rs.50 Lakh from Tamil Nadu State Agricultural Marketing Board. The Chair has been created for conducting field studies on existing and upcoming problems in agricultural marketing, organizing workshops on emerging marketing issues and imparting training to the staff of the Department of Agricultural Marketing and Agri Business. So far, for the benefit of farmers as well as staff of this Department, 35 research projects and 35 training programmes were organized, besides this, 5 short films were produced by utilizing the interest accrued from Corpus Fund deposit.

5. Construction works

The Engineering wing of Tamil Nadu State Agricultural Marketing Board executes civil works for creation of Agricultural Marketing infrastructure facilities such as construction of Modern storage godowns, Transaction sheds, Rural Business Hubs, Market complex with cold storage facilities, drying yards under NADP, RIDF-NABARD, TN-IAMWARM and Part II Schemes for the benefit of farmers.

6. Domestic and Export Market Intelligence Cell (DEMIC)

Domestic and Export Market Intelligence Cell is functioning in Centre for Agricultural and Rural Development Studies (CARDS), Tamil Nadu Agricultural University, Coimbatore from January, 2006 onwards, at a cost of Rs.44 Lakh with the financial assistance from Tamil Nadu State Agricultural Marketing Board.

Prices of major commodities at various domestic and international markets are collected and future domestic and export prices are forecasted by the Cell. The Cell continue to provide market advices including price forecast and prices prevailing in Regulated Markets and other States to farmers through media. This information helps the farmers to plan the cropping pattern and to sell their produce at right time in right market.

So far, DEMIC has disseminated 122 price forecasts for various crops through television, radio, newspapers both in English and regional language and also through text SMS and voice SMS to 4 Lakh farmers. The Cell has organized 70 trainings to farmers and 33 trainings for officials of Agriculture Department.

AGRICULTURE DEPARTMENT

TABLE – 1

Agricultural Extension Centres

District	Main Agricultural Extension Centres	Sub Centres	Total
Kancheepuram	13	16	29
Tiruvallur	14	21	35
Cuddalore	13	17	30
Villupuram	21	27	48
Vellore	20	23	43
Tiruvannamalai	17	24	41
Salem	20	11	31
Namakkal	15	17	32
Dharmapuri	8	8	16
Krishnagiri	10	7	17
Coimbatore	12	14	26
Tirupur	13	13	26
Erode	14	21	35
Tiruchirappalli	14	11	25
Perambalur	6	4	10
Ariyalur	4	3	7
Karur	8	4	12
Pudukkottai	13	20	33
Thanjavur	14	46	60
Nagapattinam	11	33	44
Tiruvarur	10	34	44
Madurai	14	18	32
Theni	9	12	21
Dindigul	13	15	28
Ramanathapuram	11	6	17
Sivagangai	12	8	20
Virudhunagar	11	5	16
Tirunelveli	19	31	50
Thoothukudi	12	16	28
Kanyakumari	10	11	21
Nilgiris	4	2	6
Total	**385**	**498**	**883**

TABLE – 2

State Seed Farms (unit: acres)

Sl. No.	District	Place	Total Extent	Net Cultiviable Area for Seed Production
1	Kancheepuram	Kancheepuram (Panjupettai)	58.76	23.97
2	Tiruvallur	Kolandalur	50.72	43.00
3	Villupuram	Vanur	60.36	50.70
4		Iruvelpattu	50.72	40.11
5		Kakkuppam	31.60	26.00
6		Vadakanandal	47.06	44.87
7	Cuddalore	Miralur	46.98	39.50
8		Vandurayanpattu	50.99	46.64
9	Tiruvannamalai	Athiyandal	14.11	9.82
10		Vazhavachanur	191.05	91.41
11	Salem	Mettur Dam	57.90	44.00
12		Danishpet	96.40	70.70
13	Dharmapuri	Papparapatti	14.80	9.82
14	Tirupur	Pongalur	39.05	34.05
15		Pappankulam	43.86	22.63
16	Erode	Sathyamangalam	41.89	33.10
17		Bhavani	73.61	61.00
18	Karur	Inungur	205.44	42.00
19	Tiruchirappalli	Neikuppaipudur	38.57	30.00
20		Pudurpalayam	75.97	60.80
21	Pudukkottai	Annapannai	643.57	100.00
22	Thanjavur	Sakkottai	72.20	56.77
23	Tiruvarur	Devambalpattinam	92.72	68.97
24		Kanchikudikadu	53.02	35.17
25		Keeranthi	55.70	47.85
26		Nedumbalam	63.73	58.03
27		Moongilkudi	47.63	42.78
28	Nagapattinam	Nagamangalam	63.91	56.81
29		Thirukadaiyur	45.82	41.30
30	Madurai	Vinayagapuram	45.52	34.88
31	Theni	Keezhakudalur	47.86	40.00
32	Virudhunagar	Devadanam	52.07	42.50
33	Tirunelveli	Karaiyiruppu	83.59	78.00
34	Kanyakumari	Thirupathisaram	37.20	31.64
	Total		**2694.38**	**1558.82**

State Oilseed Farms (unit: acres)

Sl. No.	District	Place	Total Extent	Net Cultiviable Area for Seed Production
1	Kancheepuram	Musaravakkam	154.95	91.26
2	Krishnagiri	Agasipalli	24.50	8.50
3	Pudukkottai	Vellalaviduthi	657.35	117.75
4	Vellore	Navlock	66.16	36.00
5	Erode	Bhavanisagar	28.39	7.03
6	Cuddalore	Neyveli(TANCOF)	301.01	130.00
		Total	**1232.36**	**390.54**
State Pulses Multiplication Farm				
1	Pudukkottai	Vamban	475.00	50.00
	Grand Total		**4401.74**	**1999.36**

TABLE – 3

SEED PROCESSING UNITS

Sl. No	District	No. of Units			Total
		Major	Medium	Mini	
1	Kancheepuram	1	..	4	5
2	Thiruvallur	1	..	3	4
3	Cuddalore	..	..	3	3
4	Villupuram	2	..	4	6
5	Vellore	..	..	3	3
6	Tiruvannamalai	2	..	5	7
7	Salem	1	..	1	2
8	Namakkal	..	..	2	2
9	Dharmapuri	..	..	2	2
10	Krishnagiri	..	1	1	2
11	Coimbatore	..	..	1	1
12	Tiruppur	..	..	2	2
13	Erode	1	..	1	2
14	Tiruchirapalli	..	..	3	3
15	Perambalur	..	..	1	1
16	Ariyalur	..	..	1	1
17	Karur	1	..	..	1
18	Pudukkottai	1	..	1	2
19	Thanjavur	2	..	1	3
20	Nagapattinam	..	..	5	5
21	Tiruvarur	1	..	3	4
22	Madurai	1	..	1	2
23	Theni	..	..	2	2
24	Dindigul	1	..	..	1
25	Ramanathapuram	..	1	1	2
26	Sivagangai	..	..	2	2
27	Virudhunagar	..	..	4	4
28	Tirunelveli	..	..	4	4
29	Thoothukudi	1	..	1	2
30	Kanyakumari	…	…	1	1
TOTAL		**16**	**2**	**63**	**81**

TABLE – 4
Laboratories and Production Centres

Sl. No.	District	Fertilizer Control Laboratory		Mobile Soil Testing Laboratory		Soil Testing Laboratory		Micro Nutrient Mixture Production Centre	
1	Kanchee-puram	1	Kanchee-puram			1	Kanchee-puram		
2	Tiruvallur			1	Tiruvallur	2	Tiruvallur		
3	Cuddalore					3	Cuddalore		
4	Villupuram	2	Villupuram	2	Villupuram	4	Villupuram		
5	Vellore					5	Melalathur		
6	Tiruvanna-malai			3	Tiruvanna-malai	6	Tiruvanna-malai		
7	Salem	3	Salem			7	Salem		
8	Namakkal			4	Tiruchengode	8	Namakkal		
9	Dharmapuri	4	Dharmapuri			9	Dharmapuri		
10	Krishnagiri			5	Krishnagiri	10	Krishnagiri		
11	Coimbatore	5	Coimbatore			11	Coimbatore		
12	Tirupur			6	Tirupur				
13	Erode			7	Erode	12	Erode		
14	Tiruchira ppalli	6	Tiruchirappalli			13	Tiruchirappalli		
15	Perambalur			8	Perambalur	14	Perambalur		
16	Ariyalur					15	Ariyalur		
17	Karur			9	Karur	16	Karur		
18	Pudukkottai					17	Kudumiyan-malai	1	Kudumiyan-malai
19	Thanjavur	7	Kumbakonam			18	Aduthurai		
20	Nagapatti nam			10	Nagapattinam	19	Nagapattinam		
21	Tiruvarur	8	Tiruvarur	11	Tiruvarur	20	Tiruvarur		
22	Madurai	9	Madurai	12	Madurai	21	Madurai		
23	Theni					22	Theni		
24	Dindigul	10	Dindigul			23	Dindigul		
25	Ramanatha-puram	11	Paramakudi	13	Paramakudi	24	Paramakudi		
26	Sivagangai					25	Sivagangai		
27	Virudhu nagar			14	Aruppukkottai	26	Virudhunagar		
28	Tirunelveli					27	Tirunelveli		
29	Thoothukudi	12	Kovilpatti	15	Kovilpatti	28	Kovilpatti		
30	Kanya kumari	13	Nagercoil	16	Nagercoil	29	Nagercoil		
31	The Nilgris	14	Ooty			30	Ooty		

TABLE - 4 (Contd….)

Sl. No.	District	Pesticide Testing Laboratory		Bio Fertiliser Production Unit		Liquid Bio Fertiliser Production Unit		Bio Control Laboratory/ IPM Centre	
1	Kanchee-puram	1	Kanchee-puram	1	Chengal Pattu			1	Panjupettai (IPM)
2	Cuddalore	2	Cuddalore	2	Cuddalore	1	Cuddalore		
3	Villupuram							2	Villupuram
4	Tiruvanna-malai			3	Polur				
5	Vellore	3	Vellore						
6	Salem	4	Salem	4	Salem	2	Salem	3	Seelanaickan patti
7	Namakkal							4	Namakkal
8	Dharmapuri	5	Dharmapuri	5	Palacode			5	Papparapatti
9	Coimbatore	6	Coimbatore					6	Coimbatore
10	Tiruppur			6	Avinashi				
11	Erode	7	Erode	7	Bhavani			7	Bhavani
12	Tiruchirap-palli	8	Tiruchirap palli	8	Tiruchirap Palli			8	Tiruchirappalli
13	Pudukkottai			9	Kudumian malai	3	Kudumian malai		
14	Thanjavur	9	Aduthurai	10	Sakkottai	4	Sakkottai	9	Kattuthottam
15	Thiruvarur			11	Needaman galam				
16	Nagapatti-nam	10	Nagapatti nam						
17	Madurai	11	Madurai					10 11	Vinayaga puram Vinayaga puram (IPM)
18	Theni	12	Vaigai Dam	12	Uthama palayam				
19	Ramanatha-puram			13	Ramanatha puram	5	Ramana thapuram		
20	Sivagangai	13	Sivagangai						
21	Tirunelveli	14	Tirunelveli	14	Tenkasi			12	Palayamkottai
22	Thoothu-kudi	15	Kovilpatti	15	Thoothukudi				

TABLE – 5
Farmers Training Centre & Coconut Nursery Centres

Sl. No	District	Farmers Training Centre		Coconut Nursery	
1	Kancheepuram	1	Kancheepuram	1	Pichiwakkam
2	Thiruvallur			2	Madhavaram
3	Cuddalore			3	Neyveli
4	Villupuram	2	Tindivanam		
5	Vellore	3	Vellore	4	Navlock
6	Tiruvannamalai	4	Tiruvannamalai	5	Vazhavachanur
7	Salem	5	Salem	6	Danishpet
8	Namakkal	6	Namakkal		
9	Dharmapuri	7	Dharmapuri		
10	Krishnagiri	8	Krishnagiri	7	P.G. Pudur
11	Coimbatore			8	Aliyarnagar
12	Tiruppur				
13	Erode	9	Erode	9	Bhavani sagar
14	Tiruchirapalli	10	Tiruchirapalli	10	Srirangam
15	Perambalur	11	Perambalur		
16	Ariyalur				
17	Karur	12	Karur		
18	Pudukkottai	13	Kudumianmalai	11	Vellala vidudhi
19	Thanjavur	14	Sakkottai	12	Pattukkottai
20	Nagapattinam			13	Malliam
21	Tiruvarur				
22	Madurai				
23	Theni	15	Theni	14	Vaigai Dam
24	Dindigul	16	Dindigul		
25	Ramanathapuram	17	Paramakudi	15 16	Uchipuli Devi pattinam
26	Sivagangai	18	Sivagangai	17	Chadurveda mangalam
27	Virudhunagar	19	Virudhunagar	18	Devadhanam
28	Tirunelveli	20	Palayamkottai	19 20	Senkottai Vadakarai
29	Thoothukudi	21	Thoothukudi	21	Killikulam
30	Kanyakumari	22	Nagercoil	22	Puthalam

TABLE – 6
Parasite Breeding Centres

Sl. No	District	Parasite Breeding Centre - Sugarcane		Parasite Breeding Centre - Coconut	
1	Kancheepuram	1	Maduranthagam	1	Chengalpattu
2	Tiruvallur			2	Putlur
3	Cuddalore	2	Virudhachalam	3	Cuddalore
4	Villupuram	3	Villupuram		
5	Vellore	4 5 6	Ambur Gudiyatham Tiruppathur	4 5 6	Melalathur Vaniyambadi Natrampalli (Tiruppathur)
6	Salem			7	Sukkampatti
7	Namakkal	7	Mohanur	8	Paramathivelur
8	Dharmapuri	8	Papparapatti	9	Dharmapuri
9	Coimbatore			10	Aliyar Nagar
10	Tirupur	9	Udumalaipettai		
11	Erode	10	Bhavani	11	Gobi
12	Tiruchirappalli	11	Lalgudi	12	Tiruchirappalli
13	Thanjavur	12	Thanjavur	13	Kattuthottam
14	Nagapattinam	13	Mayiladuthurai		
15	Madurai	14	Melur	14	Melur
16	Ramanathapuram			15	Uchipuli
17	Sivagangai			16	Sathurvetha Mangalam
18	Virudhunagar			17	Devadhanam
19	Tirunelveli			18	Senkottai
20	Thoothukudi			19	Udhankudi
21	Kanyakumari			20	Bhoodhapandi

TABLE - 7

Details of State Horticulture Farms

Sl.No.	District	Location	Block	Taluk	Year of Establish ment	Area (Ha.)
1	Coimbatore	Anaikatty	Periyanaic kanpalayam	Coimbatore (N)	1986	12.00
2	Coimbatore	Kannam Palayam	Sulur	Sulur	2001	11.20
3	Cuddalore	Neyveli	Panrutti	Panrutti	1985	39.53
4	Cuddalore	Virudhachalam	Vridhachalam	Vridhachalam	1975	10.43
5	Dharmapuri	Polayampalli	Morappur	Harur	2012	2.30
6	Dindigul	Sandhaiyur	Batlagndu	Nilakkottai	2013	15.20
7	Dindigul	Kodaikanal	Kodaikanal	Kodaikanal	1958	5.74
8	Dindigul	Thandikudi	Kodaikanal	Kodaikanal	1985	5.45
9	Dindigul	Reddiar Chatram	Reddiar-chatram	Dindigul	1994	5.33
10	Dindigul	Sirumalai	Dindigul	Dindigul	1981	200.04
11	Kancheepuram	Attur	Kattan kulathur	Chengalpattu	1961	12.24
12	Kancheepuram	Vichanthangal	Sirukaveri pakkam	Kanchee puram	1982	22.96
13	Kancheepuram	Melkadirpur	Sirukaveri pakkam	Kanchee puram	1982	42.63
14	Kancheepuram	Melottivakkam	Sirukaveri pakkam	Kanchee puram	1974	20.60
15	Kancheepuram	Pichivakkam	Sriperum puthur	Sriperum puthur	1982	34.00
16	Kanyakumari	Kanyakumari	Agastees waram	Agastees waram	1922	12.67
17	Kanyakumari	Pechiparai	Melpuram	Villavancodu	1967	6.00
18	Karur	Mudalaipatti	Thogamalai	Kulithalai	1978	23.96
19	Krishnagiri	Thimma Puram	Kaveri pattinam	Krishnagiri	1952	9.51
20	Krishnagiri	Jeenur	Veppanapalli	Krishnagiri	1980	121.96
21	Madurai	Poonjuthi	Poonjuthi	Melur	2012	5.77
22	Namakkal	Semmedu	Kollihills	Namakkal	1974	11.60
23	Namakkal	Padasolai	Kollihills	Rasipuram	1989	22.67
24	Pudukottai	Kudumian Malai	Annavasal	Illupur	1974	118.68
25	Pudukottai	Vallathirakottai	Thiruvarun gulam	Alangudi	1977	521.20

Sl.No.	District	Location	Block	Taluk	Year of Establish ment	Area (Ha.)
26	Pudukottai	Nattu mangalam	Aranthangi	Aranthangi	1985	53.02
27	Salem	Yercaud	Yercaud	Yercaud	1975	10.12
28	Salem	Karumandurai	Peddanai kampalayam	Attur	1981	419.77
29	Salem	Karumandurai	Peddanai kampalayam	Attur	1981	4.00
30	Salem	Maniyar kundram	Peddanai kampalayam	Attur	1982	100.00
31	Salem	Karumandurai	Peddanai kampalayam	Attur	1981	39.35
32	Salem	Mulluvadi	Attur	Attur	1985	47.80
33	Salem	Sirumalai	Ayothia pattinam	Vazhapadi	1987	8.00
34	Sivagangai	Devakottai	Devakottai	Devakottai	1985	81.20
35	Sivagangai	Nemam	Kallal	Tiruputtur	1978	38.77
36	Thanjavur	Aduthurai	Tiruvidai maruthur	Tiruvidaimaru thur	1988	8.80
37	Thanjavur	Marungulam	Thanjavur	Thanjavur	1966	10.70
38	The Nilgiris	Burliar	Coonoor	Coonoor	1871	6.25
39	The Nilgiris	Kallar	Karamadai	Mettu palayam	1900	8.92
40	The Nilgiris	Coonoor	Coonoor	Coonoor	1965	4.05
41	The Nilgiris	Coonoor	Coonoor	Coonoor	1920	6.92
42	The Nilgiris	Doddabetta	Ooty	Ooty	1969	4.08
43	The Nilgiris	Thummanatty	Ooty	Ooty	1956	9.80
44	The Nilgiris	Nanjanad	Ooty	Ooty	1917	64.00
45	The Nilgiris	Devala	Gudalur	Gudalur	1978	80.00
46	The Nilgiris	Colegraine	Ooty	Ooty	1989	20.40
47	Theni	Periyakulam	Periyakulam	Periyakulam	1950	9.32
48	Thiruvallur	Madhavaram	Madhavaram	Ambattur	1980	4.38
49	Trichy	Thorakudi	Manikandam	Srirangam	2013	4.00
50	Vellore	Thagara kuppam	Alangayam	Tirupattur	1985	34.40
51	Vellore	Kudapattu	Tirupattur	Tirupattur	1961	9.96
52	Vellore	Navlock	Walajah	Walajah	1981	84.42
53	Virudhunagar	Poovani	Srivilliputtur	Srivilliputtur	1967	9.46
54	Virudhunagar	Srivilliputhur	Srivilliputtur	Srivilliputtur	1981	46.28
		TOTAL				**2,521.84**

TABLE - 8

Details of Parks and Gardens

Sl.No.	District	Name	Location	Block	Taluk	Year of Establishme nt	Area (Ha.)
1	Chennai	Semmozhi Poonga	Chennai	Chennai	Mylapore	2010	3.17
2	Dindigul	Bryant park	Kodaikanal	Kodaikanal	Kodaikanal	1960	10.28
3	Dharmapuri	Government Botanical Garden	Vathalmalai	Harur	Morappur	2012	34.67
4	Salem	Government Botanical Garden	Yercaud	Yercaud	Yercaud	2012	14.58
5	Salem	Anna park and Lake view park	Yercaud	Yercaud	Yercaud	1999	3.14
6	Salem	Genetic Heritage Garden	Yercaud	Yercaud	Yercaud	2012	8.27
7	The Nilgiris	Government Botanical Garden	Ooty	Ooty	Ooty	1847	22.00
8	The Nilgiris	Government Rose garden	Ooty	Ooty	Ooty	1995	14.40
9	The Nilgiris	Sims Park	Coonoor	Coonoor	Coonoor	1874	12.14
10	The Nilgiris	Garden	Katteri	Coonoor	Coonoor	1975	18.96
11	Tirunelveli	Eco park	Courtallam	Tenkasi	Tenkasi	2012	14.89
			Total				**156.50**

Abstract

S. No	Detail	No. of districts	Numbers	Area in Ha.
1	State Horticulture Farms	20	54	2521.84
2	Parks and Gardens	6	11	156.50
	Total	**26**	**65**	**2678.34**

TABLE – 9

Details of Sugar Mills

Sl. No.	Name of the Sugar Mills	Location	Year of establish-ment	Daily crushing Capacity (Mt./Day)
I	**CO-OPERATIVE SECTOR:**			
1	Ambur Sugar Mills	Vellore Dt.	1960-61	1,400
2	Amaravathy Sugar Mills	Tirupur Dt.	1959-60	1,250
3	Chengalrayan Sugar Mills	Villupuram Dt.	1980-81	3,000
4	Cheyyar Sugar Mills	Tiruvannamalai Dt.	1990-91	2,500
5	Dharmapuri Sugar Mills	Dharmapuri Dt.	1971-72	2,000
6	Kallakurichi-I Sugar Mills	Villupuram Dt.	1966-67	2,500
7	Kallakurichi-II Sugar Mills	Villupuram Dt.	1997-98	2,500
8	M.R.K. Sugar Mills	Cuddalore Dt.	1989-90	2,500
9	Madurantakam Sugar Mills	Kancheepuram Dt.	1960-61	2,500
10	N.P.K.R.R. Sugar Mills	Nagapattinam Dt.	1986-87	3,500
11	National Sugar Mills	Madurai Dt.	1966-67	2,500
12	Salem Sugar Mills	Namakkal Dt.	1963-64	2,500
13	Subramaniya Siva Sugar Mills	Dharmapuri Dt.	1991-92	2,500
14	Tirupattur Sugar Mills	Vellore Dt.	1977-78	1,250
15	Tiruttani Sugar Mills	Tiruvallur Dt.	1984-85	2,500
16	Vellore Sugar Mills	Vellore Dt.	1976-77	2,500
	Sub-Total - (A)			**37,400**

Sl. No.	Name of the Sugar Mills	Location	Year of establish-ment	Daily crushing Capacity (Mt./Day)
II	**PUBLIC SECTOR**			
17	Arignar Anna Sugar Mills	Thanjavur Dt.	1976-77	2,500
18	Madura Sugars Sugar Mills	Madurai Dt.	1946-47	1,250
19	Perambalur Sugar Mills	Perambalur Dt.	1976-77	3,000
	Sub-Total - (B)			**6,750**
	Total - (A) + (B)			**44,150**
III	**PRIVATE SECTOR**			
20	Arunachalam Sugar Mills	Tiruvannamalai Dt.	2001-02	2,500
21	Bannariamman Sugar Mills (Unit-I)	Erode Dt.	1985-86	4,000
22	Bannariamman Sugar Mills (Unit-II)	Tiruvannamalai Dt.	2009-10	5,000
23	Dhanalaksmi Srinivasan Sugar Mills	Perambalur Dt.	2009-10	3,500
24	Dharani Sugar Mills (Unit-I)	Tirunelveli Dt.	1988-89	2,500
25	Dharani Sugar Mills (Unit-II)	Tiruvannamalai Dt.	1995-96	4,000
26	Dharani Sugar Mills (Unit-III)	Villupuram Dt.	2009-10	3,500
27	E.I.D.Parry Sugar Mills (Unit-I)	Cuddalore Dt.	1942-43	5,000
28	E.I.D.Parry Sugar Mills (Unit-II)	Thiruchirapalli Dt.	1957-58	2,500
29	E.I.D.Parry Sugar Mills (Unit-III)	Karur Dt.	1939-40	4,000
30	E.I.D.Parry Sugar Mills (Unit-IV)	Pudukkottai Dt.	1999-2000	3,500
31	Empee Sugar Mills	Thirunelveli Dt.	2009-10	4,900

Sl. No.	Name of the Sugar Mills	Location	Year of establish-ment	Daily crushing Capacity (Mt./Day)
32	Kothari Sugar Mills (Unit-I)	Thiruchirapalli Dt.	1962-63	2,900
33	Kothari Sugar Mills (Unit-II)	Ariyalur Dt.	2007-08	3,000
34	Madras Sugar Mills	Villupuram Dt.	2010-11	3,600
35	Ponni Sugar Mills	Namakkal Dt.	1983-84	4,750
36	Rajshree Sugar Mills (Unit-I)	Theni Dt.	1989-90	2,500
37	Rajshree Sugar Mills (Unit-II)	Villupuram Dt.	1964-65	5,000
38	Rajshree Sugar Mills (Unit-III)	Villupuram Dt.	2008-09	3,500
39	S.V.Sugar Mills	Kancheepuram Dt.	1995-96	9,000
40	Sakthi Sugar Mills (Unit-I)	Erode Dt.	1964-65	9,000
41	Sakthi Sugar Mills (Unit-II)	Sivaganga Dt.	1988-89	4,000
42	Sakthi Sugar Mills (Unit-III)	Erode Dt.	2007-08	4,000
43	Sri Ambika Sugar Mills (Unit-I)	Thanjavur Dt.	1998-99	4,000
44	Sri Ambika Sugar Mills (Unit-II)	Cuddalore Dt.	1965-66	7,500
45	Thiru Arooran Sugar Mills (Unit-I)	Cuddalore Dt.	2002-03	3,500
46	Thiru Arooran Sugar Mills (Unit-II)	Tirumandankudi, Thanjavur Dt.	1989-90	6,000
	Sub-Total - (C)			**1,17,150**
	Grand Total (A)+(B)+(C)			**1,61,300**

TABLE – 10
District wise details of Land Development Machinery available for custom hiring

Sl. No	District	Bull dozer	Tractor	Paddy Combine Harvester	Hydraulic Excavator	Paddy Trams-planter
1	Kancheepuram	6	10	2		
2	Tiruvallur	4	7	2		
3	Cuddalore	5	12	3		1
4	Villupuram	4	7	1		
5	Vellore	2	6	1		
6	Thiruvanna-malai	2	4	2		
7	Dharmapuri	3	4	0		
8	Krishnagiri	3	5	1		
9	Salem	5	8	2		
10	Namakkal	4	6	2		
11	Coimbatore	5	4	1	1	
12	Erode	2	7	2		
13	Tiruppur	5	4	1		
14	Trichy	4	7	2		1
15	Ariyalur	2	4	1		
16	Perambalur	1	2	0		
17	Karur	2	3	2		
18	Pudukkottai	2	2	1		
19	Thiruvarur	2	20	6		2
20	Thanjavur	4	15	2	1	1

Sl. No	District	Bull dozer	Tractor	Paddy Combine Harvester	Hydraulic Excavator	Paddy Trams-planter
21	Nagappattinam	-	18	6		2
22	Dindigul	6	4	2		
23	Madurai	3	7	2		
24	Theni	2	5	0		
25	Sivagangai	2	4	1		
26	Ramanatha-puram	2	4	1		
27	Virudhunagar	2	4	0		
28	Thoothukudi	3	3	1		
29	Tirunelveli	3	9	3		
30	The Nilgiris	1	1	0		
Total		**91**	**196**	**50**	**2**	**7**
Hire charges / hour.		950.00	390.00	1600 / 940 (Track / Wheel)	900.00	1030.00

Note: The hire charges are subject to change based on the market rate of the diesel.
Land Development machinery is not available in Chennai and Kanyakumari Districts.

TABLE - 11

District wise details of Minor Irrigation Machinery available for custom hiring

Sl. No	District	Rotary Drill	Percussion Drill	Mini Drill	Hand Boring Set	Long Hole Equipment	Rock Blasting Unit	Resistivity meter	Electrical logger
1	Kanchee-puram	1	1		4				
2	Tiruvallur		6		7				
3	Cuddalore	11		1	20			1	1
4	Villupuram		2		6		2	1	
5	Vellore						5	1	
6	Thiruvanna-malai						1		
7	Dharmapuri						4		
8	Salem					4	5	1	
9	Namakkal					3	1		
10	Coimbatore		1				1		
11	Erode						2	1	
12	Tiruppur						1	1	
13	Trichy				3		1	1	
14	Ariyalur				3				
15	Perambalur						1		
16	Karur				2				

Sl. No	District	Rotary Drill	Percussion Drill	Mini Drill	Hand Boring Set	Long Hole Equipment	Rock Blasting Unit	Resistivity meter	Electrical logger
17	Pudukkottai	2					1		
18	Thiruvarur	8		2					
19	Thanjavur	8		14	9			1	1
20	Nagappatti-nam			2	7				
21	Sivagangai						1		
22	Ramanatha-puram				2				
23	Virudhu-nagar						4		
24	Thoothu-kudi						1		
25	Tirunelveli						2		
	Total	**30**	**10**	**19**	**63**	**7**	**33**	**8**	**2**
	Hire Charges	130 / Metre	300 / day	70 / Metre	30 / Metre	250 / day	250 / Blasting	500 / Point	1000 / Tube Well

Note: Minor Irrigation machinery is not available in Chennai, Krishnagiri, Dindigul, Madurai , Nilgiris, Theni and Kanyakumari districts.

TABLE – 12

List of blocks wherein the Drought Prone Areas Programme is under implementation

S. No.	District	Block
1	Coimbatore	Annur, Avinashi, Palladam, Tirupur, Sulur
2	Dharmapuri	Morapur, Nallampalli, Dharmapuri, Palacode, Pennagaram, Karimangalam
3	Dindigul	Athoor, Natham, Kodaikanal,
4	Karur	Aravakurichi, K. Paramathi
5	Krishnagiri	Bargur, Hosur, Kelamangalam, Shoolagiri Thalli, Uthangarai, Veppanapalli, Mathur
6	Namakkal	Mallachamudram, Elachipalayam, Puduchathiram
7	Perambalur	Andimadam, Ariyalur, Sendurai, Veppur, Alathur, Jayamkondan
8	Pudukkottai	Gandarvakottai, Karambakudi, Pudukottai, Thiruvarankulam
9	Ramanathapuram	Bogalur, Kadaladi, Kamuthi, Mandapam, Mudukulathur, Paramakudi, Thirupullani
10	Salem	Nangavalli, Mecheri, Konganapuram, M.D. Choultry, Kadayampatti
11	Sivagangai	Devakottai, Ilayangudi, Kalayarkoil, Kallal, Kannangudi, Singampuneri, S. Pudur
12	Thoothukudi	Kayathar, Kovilpatti, Ottapidaram, Pudur, Sathankulam, Thoothukudi, Udangudi, Vilathikulam
13	Tiruchirappalli	Thuraiyur
14	Tirunelveli	Kuruvikulam
15	Tiruvannamalai	Cheyyar
16	Vellore	Vellore, Kaniyambadi, Thimiri, Katpadi, Alangayam, Kanthili
17	Virudhunagar	Kariapatti, Narikudi, Sattur, Sivakasi, Vembakottai, Virudhunagar, Aruppukottai

TABLE - 13

List of blocks wherein the Integrated Wasteland Development Programme is under implementation

S. No.	District	Block
1	Coimbatore	Pongalur, Periyanaickenpalayam, Sarkar Samakulam, Pollachi (North), Kinathukidavu (I, II), Madhukarai
2	Cuddalore	Cuddalore, Panruti, Mangalur
3	Dharmapuri	Harur (I, II & III), Pappireddipatti
4	Dindigul	Vedasandhur, Vathalagundu, Vadamadurai, Dindigul, Gujiliamparai
5	Erode	Moovalur, Thalavadi, Anthiyur, Perundurai, Sathyamanglam
6	Kancheepuram	Kancheepuram, Walajahbad, Mathuranthagam
7	Karur	Kadavur, Thogamalai, Krishnarayapuram (I,II)
8	Krishnagiri	Krishnagiri (I & II), Kaveripattinam
9	Madurai	Alanganallur, Melur, Chellampatti, Usilampatti, Kallikudi
10	Namakkal	Sendamangalem, Kolli Hills, Namagiripettai, Pallipalayam, Rasipuram
11	Perambalur	Perambalur, Ariyalur, Sendurai, Thirumanur, T. Pazhur, Veppanthattai(I & II)
12	Pudukkottai	Aranthangai, Avudaiyarkoil, Tirumayam
13	Ramanathapuram	Nainarkoil, R.S. Managalam (I & II)

TABLE - 13 contd….

Sl. No.	District	Block
14	Salem	Sangagiri, Veerapandy, Panamaruthupatti, Valapadi, Pethanaickanpalayam
15	Sivagangai	Sivaganga, Manamadurai, Thiruppuvanam, Sakkottai
16	Theni	Periyakulam, Bodinayakanur
17	Thoothukudi	Srivaikundam, Alwarthirunagar (I & II), Tiruchendur, Karungulam
18	Tiruchirappalli	Thathayangarpettai, Uppiliyapuram, Manachanallur, Musiri, Pullambadi, Marungapuri, Vaiyampatti
19	Tirunelveli	Nanguneri (I & II), Kalakkadu
20	Tiruvallur	Poondi, Pallipattu, R. K. Pet, Tiruvalangadu
21	Tiruvannamalai	Vembakkam, Kalasapakkam, Thandarampattu, Puduppalayam
22	Vellore	Walajah, Sholinghur, Natrampalli, Jolarpet
23	Villupuram	Vanur, Marakanam, Gingee, Melmalayanur
24	Virudhunagar	Vembakottai, Sivakasi, Virudhunagar, Rajapalayam, Srivilliputhur, Thiruchuli

TABLE - 14

List of blocks wherein the National Watershed Development projects for Rainfed Areas is under implementation

S. No	District	Block
1	Villupuram	Kanai,Vikravandi
2	Vellore	Gudiyatham
3	Tiruvannamalai	Chepet & Polur
4	Salem	Veerapandi & Thalaivasal
5	Namakkal	Tiruchengode
6	Dharmapuri	Nallampalli, Kariyamangalam, Pennagaram & Morappur
7	Erode	Nambiyur
8	Trichy	Manachanallur,
9	Karur	Krishnarayapuram,Kulithalai & Kadavur
10	Pudukottai	Thirumayam,Arimalam
11	Madurai	T.Kallupatti & Kallikudi
12	Theni	Uthamapalayam, Andipatti,Cumbum & Periyakulam
13	Dindigul	Oddanchathram, Nilakottai & Thoppampatti
14	Ramanathapuram	Kadaladi,Paramakudi,Mudukulathur,Kamuthi & Thiruvadanai
15	Sivagangai	Singampunari,Thiruppathur & S.Pudur
16	Virudhunagar	Thiruchuli
17	Tirunelveli	Sankarankoil,Manur & Keelappavur
18	Thoothukudi	Kovilpatti, Ottapidaram Sathankulam & Udankudi

TABLE - 15
List of blocks wherein the Integrated Watershed Management Programme is under implementation

Sl.No	District	Block
1.	Coimbatore Tiruppur	Pollachi (N), Kinathukadavu, Sultanpet Dharapuram, Moolanur
2.	Cuddalore	Mangalore, Panruti, Kurinjippadi, Virudhachalam, Nallur
3.	Dharmapuri	Nallampalli, Pennagaram, Harur, Morapur, Pappireddipatty, Palacode,
4.	Dindigul	Dindigul, Vadamadurai, Sanarpatti, Nilakkottai, Vedasandur, Guziliamparai, Natham, Thoppampatti, Kodaikanal
5.	Erode	Thalavadi, Ammapettai
6.	Kancheepuram	Acharapakkam, Uthiramerur, Lathur, Maduranthagam, Chithamoor, Walajabad, Thirukalukundram
7.	Karur	K.Paramathi, Thogamalai, Aravakurichi
8.	Krishnagiri	Kelamangalam, Uthangarai, Bargur, Veppanapalli, Shoolagiri, Thally, Mathur
9.	Madurai	Sedapatti, Usilampatti, Kottampatti, Chellampatti
10.	Namakkal	Vennandur, Namagiripet, Erumapatty, Mohanur, Paramathi, Kabilarmalai, Sendamangalam,Kollimalai
11.	Perambalur Ariyalur	Peramabalur, Veppanthattai, Alathur, Veppur Thirumanur, T. Palur
12.	Pudukkottai	Gandarvakottai, Pudukottai, Thiruvarankulam, Karambakudi, Arimalam, Annavasal

Sl.No	District	Block
13.	Ramanatha-puram	Kadaladai, Kamuthi, Mudukulathur, R.S. Mangalam, Nainarkoil
14.	Salem	Sankari, Panamarathupatti, Valappadi, Ayothiapattanam, Mecheri, Kadayampatti, Pethanaickenpalayam, Tharamangalam, Edapadi, Kolathur
15.	Sivagangai	Kallal, Devakottai, Ilayangudi, Manamadurai, Kalaiyarkovil, Sivagangai, Thiruppuvanam
16.	Theni	Chinnamanur, Periyakulam, Uthamapallayam, Theni, K.Myladumparai, Andipatty
17.	Thoothukudi	Kayathar, Ottapidaram, Kovilpatti, Karunkulam, Pudur, Vilathikulam
18.	Tiruchirappalli	Pullampadi, Thuraiyur, Marungapuri, Thottiyam, Vaiyampatty, Thathiangarpettai,Musiri
19.	Tirunelveli	Kadayam, Papakudi, Sankarankoil, Vasudevanallur, Kuruvikulam
20.	Tiruvallur	Tiruttani, Tiruvalangadu, R.K. Pet, Ellapuram, Gummudipoondi, Kadambathur
21.	Tiruvannamalai	Puthupalayam, Thandarampattu, Kalasapakkam,Chengam, Cheyyar
22.	Vellore	Kandhili, Kaveripakkam, Thimiri, Peranampet, Anaicut, Gudiyatham, K.V.Kuppam
23.	Villupuram	Melmalayanur, Ulunthurpettai, Thirunavalur, Kallakurichi, Thiyagadurgam, Kanai, Olakkur, Mailam
24.	Virudhunagar	Sivakasi, Srivilliputhur Rajapalayam, Vembakottai, Sathur, Kariyapatti, Virudhunagar

TABLE - 16

List of blocks wherein the Watershed Development Fund is under implementation

S. No	District	Block
1	Coimbatore	Thondamuthur
2	Cuddalore	Mangalur, Cuddalore, Panruti
3	Dharmapuri	Palacode, Pennagaram, Dharmapuri, Nallampalli
4	Dindigul	Ottanchatram, Sanarpatti, Athur, Vedachandur, Nilakottai, Dindigul
5	Kancheepuram	Acharapakkam, Uthiramerur, Madhuranthagam, Chithamur
6	Karur	Karur
7	Krishnagiri	Kelamangalam, Krishnagiri, Hosur, Thali
8	Madurai	Peraiyur, Melur,Tirumangalam, Sedappatti, Usilampatti
9	Namakkal	Puduchatram, Namakkal, Rasipuram
10	Perambalur	Alanthur, Veppanthattai, Perambalur
11	Pudukottai	Viralimalai, Kunnandar kovil, Annavasal
12	Ramanatha-puram	Thiruvadanai, Mudhukulathur, Paramakudi, Ramanathapuram, Nainarkovil
13	Sivagangai	Sivagangai, Tiruppathur
14	Theni	Cumbum, Andipatti, Periyakulam, Chinnamanur, Uthamapalayam, Bodinayakanur
15	Tiruvallur	Tiruvallur, Oothukottai, Thiruthani, Ellapuram, Poondi
16	Tiruvannamalai	Polur, Sengam, Sethupattu
17	Tirunelveli	Alangulam, Sankarankovil, Kadayanallur, Vasudevanallur
18	Trichy	Musiri
19	Thoothukudi	Tiruchendur, Sathankulam, Vilathikulam, Srivaigundam, Ottapidaram
20	Vellore	Nattrampalli
21	Villupuram	Ulundhurpettai
22	Virudhunagar	Kariyapatti
23	Salem	Kangavalli, Panaimarathipatti
24	Nagapattinam	Kilvelur

TABLE - 17
Constituent Colleges

1. Agricultural College and Research Institute, Coimbatore - 641003.
2. Agricultural College and Research Institute, Madurai - 625104.
3. Agricultural College and Research Institute, Killikulam, Thoothukudi District – 628252.
4. Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirapalli – 620009.
5. Horticultural College and Research Institute, Coimbatore – 641003.
6. Horticultural College and Research Institute, Periyakulam, Theni District – 625604.
7. Agricultural Engineering College and Research Institute, Coimbatore – 641003.
8. Agricultural Engineering College and Research Institute, Kumulur, Trichy District – 621712.
9. Forest College and Research Institute, Mettupalayam, Coimbatore District – 641301.
10. Home Science College and Research Institute, Madurai – 625104.
11. Horticultural College and Research Institute for Women, Tiruchirapalli – 620009.
12. School of Post graduate studies, TNAU, Coimbatore – 641003.

TABLE - 18
Affiliated Colleges

1. Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, Puducherry, Union Territory – 613602.
2. Adhi Parasakthi Agricultural College, Kalavai, Vellore district – 632 506.
3. Vanavarayar Institute of Agriculture, Pollachi, Coimbatore district – 642 103.
4. College of Agriculture Technology, Kullapuram, Theni district – 625 531.
5. Thanthai Roever Institute of Agriculture and Rural Development, Perambalur, Elambalur, Perambalur district – 621 212.
6. PGP College of Agriculture Sciences, Villipalayam, Namakkal, Namakkal district – 637 207
7. Imayam Institute of Agriculture and Technology, Thuraiyur, Trichy district – 621 602.
8. RVS Agricultural College, Usilampatty, Palayapatty South village, Budhalur taluk, Thanjavur district–613 402.
9. Indian Institute of Crop Processing Technology, Thanjavur, Thanjavur district – 613 005.

TABLE - 19
Diploma Institutes

Constituent Institutes – Diploma in Agriculture

1. C. Subramanian Institute of Agriculture, Tindivanam –604002.
2. M. S. Swaminathan Institute of Agriculture, Bhavanisagar –638451.
3. Institute of Agriculture, Ambasamudram – 627 401.
4. Institute of Agriculture, Aruppukotai – 626 107.
5. Institute of Agriculture, Kovilpatti – 628 501.
6. Institute of Agriculture, Kattuthottam, Thanjavur – 613501.
7. Institute of Agriculture, Kudumiyanmalai, Pudukkottai – 622104.

Constituent Institute – Diploma in Horticulture

1. Institute of Horticulture, Pechiparai – 629 161.

Affiliated Institutes – Diploma in Agriculture

1. Ramakrishna Institute of Agriculture, Periyanayakkanpalayam, Coimbatore District - 641020.
2. Sagayathottam Institute of Agriculture and Rural Development, Takkolam, Vellore District – 631151.
3. Thanthai Roever Institute of Agriculture and Rural Development, Perambalur, Permbalur- 612212.
4. Vanavarayar Institute of Agriculture, Manakkadavu, Pollachi – 642103.
5. Adhi Parasakthi Institute of Agriculture, Kalavai – 632506.
6. PGP College of Agriculture Sciences, Villipalayam, Namakkal – 637207.

Affiliated Institutes – Diploma in Horticulture

1. Thanthai Roever Institute of Agriculture and Rural Development, Elambalur, Permbalur – 612212.
2. Vanavarayar Institute of Agriculture, Manakkadavu, Pollachi – 624103.

TABLE - 20
Research Stations

1. Agricultural Research Station, Bhavanisagar - 638451, Erode district.
2. Agricultural Research Station, Kovilpatti – 628501, Thoothukudi district
3. Agricultural Research Station, Vaigai Dam-625512, Theni district.
4. Agricultural Research Station, Paramakudi – 623707, Ramanathapuram district.
5. Agricultural Research Station, Tirupathisaram – 629901, Kanyakumari district.
6. Rice Research Station, Tirur–602025, Thiruvallur district.
7. Rice Research Station, Ambasamudram–627401, Thirunelveli district.
8. Coastal Saline Research Centre, Ramanathapuram–623501, Ramanathapuram district.
9. Regional Research Station, Kovilankulam, Aruppukottai - 626107, Virudhunagar district.
10. Agricultural Research Station, Virinjipuram – 632104, Vellore district.
11. Agricultural Research Station, Pattukottai – 614602, Thanjavur district.
12. Hybrid Rice Evaluation Centre, Gudalur – 643212, The Nilgiris district.
13. Oilseeds Research Station, Tindivanam – 604002, Villupuram district.
14. Sugarcane Research Station, Cuddalore – 607001, Cuddalore district.
15. Sugarcane Research Station, Sirugamani – 639115, Trichy district.
16. Sugarcane Research Station, Melalathur – 635806, Vellore district.
17. Soil and Water Management Research Institute, Thanjavur – 613501, Thanjavur district.
18. Coconut Research Station, Veppankulam – 614906, Thanjavur district.
19. Coconut Research Station, Aliyarnagar – 642101, Coimbatore district.
20. Cotton Research Station, Srivilliputhur – 626125, Virudhunagar district.
21. Regional Research Station, Paiyur – 635112, Krishnagiri district.
22. Regional Research Station, Virudhachalam – 606001, Cuddalore district.
23. National Pulses Research Centre, Vamban – 622303, Pudukkottai district.
24. Tamil Nadu Rice Research Institute, Aduthurai – 612101, Thanjavur district.
25. Tapioca and Castor Research Station, Yethapur– 636119, Salem district.
26. Horticultural Research Station, Pechiparai – 629161, Kanyakumari district.
27. Horticultural Research Station, Thadiyankudisai – 624212, Dindigul district.
28. Horticultural Research Station, Yercaud – 636602, Salem district.
29. Horticulture Research Station, Uthagamandalam – 643001, The Nilgiris district.
30. Horticultural Research Station, Kodaikanal – 624103, Dindigul district.
31. Vegetable Research Station, Palur – 607113, Cuddalore district.
32. Information and Training Centre, Chennai – 600040, Chennai.
33. Cotton Research Station, Veppanthattai - 621116, Perambalur District.
34. Maize Research Station, Vagarai- 624613, Dindigul District
35. Dryland Agricultural Research Station, Chettinad– 630102, Sivagangai district.
36. Floriculture Research Station, Thovalai – 629302. Kanyakumari District.
37. Grape Research Station, Mallingapuram, Theni District -
38. Centre of Excellence in Millets, Athiyandal, Thiruvannamalai - 606 603, Thiruvannamalai district.

TABLE - 21

TNAU Krishi Vigyan Kendras (KVK)

1. Krishi Vigyan Kendra, Agricultural College and Research Institute, Madurai - 625104, Madurai district.
2. Krishi Vigyan Kendra, Virudhachalam - 606 001, Cuddalore district.
3. Krishi Vigyan Kendra, Needamangalam - 614407, Thiruvarur district
4. Krishi Vigyan Kendra, Sikkal - 611008, Nagapattinam district.
5. Krishi Vigyan Kendra, Sirugamani - 639115, Trichy district.
6. Krishi Vigyan Kendra, Ramanathapuram - 623501, Ramanathapuram district.
7. Krishi Vigyan Kendra, Sandhiyur - 636203, Salem district.
8. Krishi Vigyan Kendra, Vamban - 622303, Pudukkottai district.
9. Krishi Vigyan Kendra, Tindivanam - 604002, Villupuram district.
10. Krishi Vigyan Kendra, Viringipuram - 632104, Vellore district.
11. Krishi Vigyan Kendra,Thirur - 602025,Tiruvallur district.
12. Krishi Vigyan Kendra, Papaparapatti - 636809, Dharmapuri district.
13. Krishi Vigyan Kendra, Pechiparai – 629161, Kanya Kumari district.
14. Krishi Vigyan Kendra, Aruppukkottai - 626107, Virudhunagar district.

TABLE -22

Plant Clinic Centres

1. Plant Clinic Centre, Agricultural Research Station, Bhavanisagar - 638451, Erode district.
2. Plant Clinic Centre, Agricultural College and Research Institute, Killikulam, Thoothukudi District – 628252.
3. Plant Clinic Centre, Rice Research Station, Ambasamudram – 627401, Thirunelveli district.
4. Plant Clinic Centre, Cotton Research Station, Srivilliputhur – 626125, Virudhunagar district.
5. Plant Clinic centre, Regional Research Station, Paiyur – 635112, Krishnagiri district

SEED CERTIFICATION

TABLE - 23

Quantity of Seeds Certified in M.T.

S. No.	Crop	2013-14		2014-15
		Target	Achievement	Target
1	Paddy	1,00,070	77,637	99,800
2	Variety millets	400	319	440
3	Hybrid millets	5	0	5
4	Cotton	155	126	155
5	Pulses	4,900	3,668	5,100
6	Oilseeds	4,370	2,963	4,400
7	Vegetables	100	63	100
	Total	1,10,000	84,776	1,10,000

SEED INSPECTION (Numbers)

S. No.	Details	2013-14		2014-15
		Target	Achievement	Target
1	Seed selling point inspections	68,500	69,392	68,500
2	Seed samples taken	66,000	61,002	66,000

SEED TESTING (Numbers)

S. No.	Details	2013-14		2014-15
		Target	Achievement	Target
1	Samples tested	87,000	91,782	92,000

TRAINING (Numbers)

S. No.	Details	2013-14		2014-15
		Target	Achievement	Target
1	Persons trained	44,500	44,853	44,500

ORGANIC CERTIFICATION (Ha.)

S. No.	Details	2013-14		2014-15
		Target	Achievement	Target
1	Area Registered	12,546	11,339	12,546

TABLE – 24
SEED CERTIFICATION UNITS

S. No.	Location	Jurisdiction (Districts)	Area registered under Seed Certification (Ha)
1	Coimbatore	Coimbatore Nilgiris and parts of Tiruppur	3,167.40
2	Cuddalore	Cuddalore	2,360.86
3	Dharmapuri	Dharmapuri	1,051.60
4	Dindugal	Dindugal	1,156.00
5	Erode	Erode and parts of Tiruppur	5,284.80
6	Karur	Karur	397.60
7	Kancheepuram	Kancheepuram	933.51
8	Kanyakumari	Kanyakumari	98.80
9	Krishnagiri	Krishnagiri	731.00
10	Madurai	Madurai	1,314.00
11	Namakkal	Namakkal	480.80
12	Nagapattinam	Nagapattinam	2,366.00
13	Perambalur	Perambalur & Ariyalur	679.20
14	Pudukkottai	Pudukkottai	673.00
15	Ramanathapuram	Ramanathapuram	378.40

S. No.	Location	Jurisdiction (Districts)	Area registered under Seed Certification (Ha)
16	Salem	Salem	1,306.00
17	Sivagangai	Sivagangai	325.60
18	Tiruvallur	Tiruvallur and Chennai	951.50
19	Thoothukudi	Thoothukudi	810.00
20	Thiruvarur	Thiruvarur	5,328.80
21	Thanjavur	Thanjavur	6,698.00
22	Tirunelveli	Tirunelveli	2,231.40
23	Tiruvannamalai	Tiruvannamalai	1,584.00
24	Theni	Theni	398.40
25	Trichy	Trichy	1,882.20
26	Vellore	Vellore	1,345.72
27	Villupuram	Villupuram	2,718.98
28	Virudhunagar	Virudhunagar	1,003.20
	Total		**47,656.77**

TABLE - 25
SEED INSPECTION UNITS

S. No	Location	Jurisdiction (Districts)	No. of inspections made (Nos)	No. of samples taken (Nos)
1	Coimbatore	Coimbatore, Nilgiris and parts of Tiruppur	6,954	7,053
2	Erode	Erode and parts of Tiruppur	5,662	5,283
3	Salem	Salem and Namakkal	6,535	6,109
4	Dharmapuri	Dharmapuri and Krishnagiri	3,736	3,495
5	Karur	Karur and Dindugal	5,063	3,837
6	Madurai	Madurai and Theni	4,492	4,643
7	Thanjavur	Thanjavur and Pudukkottai	4,585	4,024
8	Trichy	Trichy, Perambalur and Ariyalur	4,698	4,120
9	Chennai	Chennai, Tiruvallur and Kancheepuram	3,981	2,702
10	Tirunelveli	Tirunelveli and Kanyakumari	5,290	4,133
11	Virudhunagar	Virudhunagar and Thoothukudi	4,618	4,700
12	Ramanathapuram	Ramanathapuram and Sivagangai	2,650	1,674
13	Vellore	Vellore and Tiruvannamalai	3,889	3,676
14	Villupuram	Villupuram and Cuddalore	3,904	3,820
15	Nagapattinam	Nagapattinam and Thiruvarur	3,335	1,733
	Total		**69,392**	**61,002**

TABLE - 26
SEED TESTING LABORATORIES

S. No	Location	Jurisdiction (Districts)	No. of seed samples analyzed
1	Coimbatore	Coimbatore and parts of Tiruppur	6,052
2	Nilgiris	Nilgiris	1,064
3	Erode	Erode and parts of Tiruppur	8,538
4	Dharmapuri	Dharmapuri	2,407
5	Salem	Salem	5,044
6	Krishnagiri	Krishnagiri	2,588
7	Namakkal	Namakkal	2,114
8	Trichy	Trichy	2,894
9	Villupuram	Villupuram	3,926
10	Pudukkottai	Pudukkottai	1,954
11	Perambalur	Perambalur and Ariyalur	2,301
12	Karur	Karur	885
13	Thanjavur	Thanjavur	3,438
14	Nagapattinam	Nagapattinam	1,285
15	Thiruvarur	Thiruvarur	1,192
16	Madurai	Madurai	4,888
17	Theni	Theni	2,912
18	Dindigul	Dindigul	4,278
19	Virudhunagar	Virudhunagar	3,274
20	Ramanathapuram	Ramanathapuram	1,321

S. No	Location	Jurisdiction (Districts)	No. of seed samples analyzed
21	Sivagangai	Sivagangai	1,263
22	Tirunelveli	Tirunelveli	5,412
23	Thoothukudi	Thoothukudi	2,380
24	Kanyakumari	Kanyakumari	409
25	Kancheepuram	Kancheepuram	1,404
26	Vellore	Vellore	3,335
27	Tiruvannamalai	Tiruvannamalai	3,135
28	Tiruvallur	Tiruvallur & Chennai	1,938
29	Cuddalore	Cuddalore	3,057
30	Directorate referral Lab and Bt Lab	Entire State	560
31	Directorate Glass House Lab	Entire State	436
32	Grow out Test Farm	Entire State	6,098
	Total		**91,782**

TABLE - 27
Organic Certification - Operational Jurisdiction (Districts)

SL. No.	Organic Certification Unit	Jurisdiction (Districts)	Area Registered (Ha.)
1	Organic Certification Inspector 1 (Training)	Technical work at the Head quarters.	-
2	Organic Certification Inspector 2 (Evaluation & e – Supporting Cell)	Technical work at the Head quarters.	-
3	Organic Certification Inspector-Coimbatore.	Coimbatore, Tiruppur, Nilgiris, Erode, Salem, Namakkal, Dharmapuri, Krishnagiri Districts.	2,004.54
4	Organic Certification Inspector-Trichy.	Trichy, Karur, Perambalur, Ariyalur, Pudukkottai, Thanjavur, Thiruvarur, Nagapattinam Districts.	473.35
5	Organic Certification Inspector-Madurai.	Madurai, Virudhunagar, Tirunelveli, Sivagangai, Ramanathapuram, Theni, Dindugal, Thoothukudi, Kanyakumari Districts.	1,547.11
6	Organic Certification Inspector-Vellore.	Vellore, Tiruvannamalai, Villupuram, Kancheepuram, Tiruvallur, Cuddalore Districts.	7,313.98
	Total		**11,338.98**

TABLE – 28

DISTRICT-WISE REGULATED MARKETS

District	Regulated Market	District	Regulated Market
1. Kancheepuram	1. Kancheepuram	**5. Vellore**	38. Vellore
	2. Madurantagam		39. Thirupathur
	3. Uthiramerur		40. Arcot
	4. Thirukkalukundram		41. Arakonam
	5. Sunguvarchatram		42. Vaniyambadi
	6. Acharapakkam		43. Kaveripakkam
	7. Chengalpet		44. Gudiyatham
2. Tiruvallur	8. Thiruthani		45. Kalavai
	9.Thiruvallur		46. Ammoor
	10. Red hills		47. Katpadi
	11. Ponneri		48. Ambur
	12. Pallipattu		49. Thimiri
	13. Uthukottai	**6. Cuddalore**	50. Virudhachalam
	14. Gummidipoondi		51. Cuddalore
	15. Nasarethpettai		52. Panruti
3. Tiruvannamalai	16. Thiruvannamalai		53. Thittakudi
	17. Arani		54. Kattumannarkoil
	18. Vandavasi		55. Chidambaram
	19. Chetpet		56. Kurunchipadi
	20. Cheyyar		57. Sethiyathoppu
	21. Polur		58. Srimushnam
	22. Chengam		59. Bhuvanagiri
	23. Pudupalayam	**7.Villupuram**	60. Tindivanam
	24. Vanapuram		61. Thirukoilur
	25. Vettavalam		62. Ulundurpet
	26. Thellar		63. Villupuram
	27.Mangala Mamandoor		64. Chinnasalem
	28. Desur		65. Kallakkurichi
	29. Peranamallur		66. Gingee
	30. Dhusi		67. Thiagadurgam
	31. Kilpennathur		68. Sankarapuram
4. Namakkal	32. Namakkal		69.Thiruvennainallur
	33.Rasipuram		70. Manalurpet
	34. Thiruchengodu		71. Avalurpet
	35. Velur		72. Marakkanam
	36. Namagiripettai		73. Vikaravandi
	37. Cholakkadu		74. Ananthapuram
			75. Valathi
			76. Moongilthurai-pattu

TABLE – 28 – contd. . . .

District	Regulated Market	District	Regulated Market
8. Dharmapuri	77. Dharmapuri	**12. Erode**	116. Erode
	78. Palacode		117. Avalpoonthurai
	79. Pennagaram		118. Kodumudi
	80. Harur		119. Sivagiri
	81. Pappireddipatti		120. Chithode
	82. Kambainallur		121. Bhavani
	83. Denkanikkottai		122. Boothapadi
	84. Papparapatti		123. Anthiyur
9. Krishnagiri	85. Krishnagiri		124. Mylampadi
	86. Hosur		125. Kavundhampadi
	87. Kelamangalam		126. Gobichettipalayam
	88. Pochampalli		127. Nambiyur
	89. Kaveripattinam		128. Vellakkoil
	90. Uthangarai		129. Sathyamangalam
	91. Bargoor		130. Punjai Pulliyampatti
	92. Rayakottai		131. Thalavadi
10. Salem	93. Salem		132. Perundurai
	94. Athur		133. Elumathur
	95. Sankagiri	**13. Tiruppur**	134. Kunnathur
	96. Konganapuram		135. Kangayam
	97. Kollathur		136. Vellankoil
	98. Meicheri		137. Dharapuram
	99. Vazhapadi		138. Moolanur
	100. Thammampatti		139. Alangiam
	101. Thalaivasal		140. Muthur
	102. Omalur		141. Tiruppur
	103. Kadayampatti		142. Avinashi
	104. Gangavalli		143.Sevur
	105. Karumanthurai		144. Palladam
11. Coimbatore	106. Annur		145. Udumalpettai
	107. Karamadai		146. Madathukkulam
	108. Coimbatore		147. Pethappampatti
	109. Sulur		148. Pongalur
	110. Anaimalai	**14. Karur**	149. Kulithalai
	111. Pollachi		150. Karur
	112. Malayadipalayam		151. Irumputhipatti
	113. Negamam		152. Chinnatharapuram
	114. Kinathukkadavu		
	115. Thondamuthur		

TABLE – 28 contd. . . .

District	Regulated Market	District	Regulated Market
15. Tiruchirapalli	153. Manapparai	**21. Madurai**	193. Thirumangalam
	154. Thuraiyur		194. Usilampatti
	155. Lalgudi		195. Melur
	156. Thiruchirapalli		196. Madurai
	157. Thottiyam		197. T.Kallupatti
	158. Manachanallur		198. Vadipatti
	159. Thuvarankurichi	**22. Pudukottai**	199. Alangudi
	160. Pullambadi		200. Aranthangi
	161. Thathaiyangarpet		201. Pudukkottai
	162. Kattuputhur		202. Kandarvakkottai
16. Ariyalur	163. Ariyalur		203. Avudayarkoil
	164. Jayankondam		204. Keeranur
	165. Andimadam		205. Keeramangalam
	166. Melanikuzhi		206. Ponnamaravathi
17. Perambalur	167. Perambalur		207. Illuppur
18. Thanjavur	168. Athirama Pattinam		208. Karambakkudi
	169. Ammapettai	**23. Virudhunagar**	209. Virudhunagar
	170. Budalur		210. Rajapalayam
	171. Kumbakonam		211. Sathur
	172. Madukkur		212. Aruppukottai
	173. Orathanadu		213. Srivilliputhur
	174. Pattukottai		214. Watrap
	175. Papanasam		215. Vembakkottai
	176. Peravoorani	**24. Sivagangai**	216. Sivagangai
	177. Thanjavur		217. Thiruppuvanam
	178. Vallam		218. Manamadurai
	179. Thirupananthal		219. Singampuneri
	180. Pappanadu		220. Karaikudi
19. Ramanatha puram	181. Ramanatha Puram		221. Ilayankudi
	182. Paramakudi		222. Devakkottai
	183. Kamuthi	**25. Thoothukudi**	223. Kovilpatti
	184. Thiruvadanai		224. Thoothukudi
	185. Rajasinga mangalam		225. Pudur
	186. Mudukulathur		226. Kadambur
20. Kanyakumari	187. Ethamozhi		227. Kalugumalai
	188. Vadaseri		228. Srivaikundam
	189. Kaliyakkavilai		229. Vilathikulam
	190. Monday Market		230. Ettayapuram
	191. Kulasekaram		231. Sathankulam
	192. Thoduvatti		

TABLE – 28 contd. . . .

District	Regulated Market	District	Regulated Market
26. Tirunelveli	232. Sankarankoil	**29. Theni**	255. Theni
	233. Thenkasi		256. Cumbum
	234. Ambasamudram		257. Bodinayakanur
	235. Valliyur		258. Chinnamanur
	236. Thirunelveli		259. Andipatti
	237. Kadayanallur		260. Uthamapalayam
	238. Thisayanvilai		261. Periyakulam
	239. Pavurchatram	**30. Dindigul**	262. Dindigul
	240. Thiruvenkadam		263. Oddanchatram
	241. Sivagiri		264. Palani
	242. Alangulam		265. Natham
27. Nagapattinam	243. Kivalur		266. Batlagundu
	244. Kuttalam		267. Gopalpatti
	245. Mayiladuthurai		268. Vadamadurai
	246. Nagapattinam		269. Vedachandur
	247. Sembanarkoil	**31. Thiruvarur**	270. Valangaiman
	248. Sirkazhi		271. Koradacheri
	249. Vedaranayam		272. Mannarkudi
	250. Thirupoondi		273. Poonthottam
28. The Nilgiris	251. Udagamandalam		274. Vaduvur
	252. Kothagiri		275. Kudavasal
	253. Coonoor		276. Thiruvarur
	254. Gudalur		277. Thiruthurai poondi

TABLE – 29

INFRASTRUCTURES AVAILABLE IN REGULATED MARKETS (Nos)

Sl. No	Market Committees	Regulated Market	Own Land	Godown	Transaction Shed	Drying Yard	Farmers Rest Room
1	Kancheepuram	15	8	13	8	17	4
2	Vellore	12	8	26	11	13	4
3	Thiruvannamalai	16	14	30	26	27	10
4	Cuddalore	10	6	6	18	13	5
5	Villupuram	17	13	20	47	25	1
6	Salem	19	11	13	11	13	2
7	Dharmapuri	16	8	5	10	21	3
8	Coimbatore	18	18	85	31	57	13
9	Erode	25	19	29	59	46	8
10	Thiruchirapalli	19	14	23	20	18	5
11	Thanjavur	13	7	13	13	20	4
12	Pudukkottai	10	2	3	2	5	--
13	Madurai	6	4	5	4	8	3
14	Ramanathapuram	20	14	22	14	18	11
15	Thirunelveli	20	16	20	15	19	8
16	Kanyakumari	6	5	7	5	8	4
17	Theni	7	5	6	3	7	1
18	Dindigul	8	6	9	5	8	1
19	Nagapattinam	8	4	7	4	9	2
20	Thiruvarur	8	3	10	2	6	--
21	Nilgiris	4	--	--	--	--	--
Total		**277**	**185**	**352**	**308**	**358**	**89**

TABLE - 30

DISTRICT-WISE AGMARK GRADING LABORATORIES

Sl. No.	Name of the District	Name of the Agmark Grading Laboratory
1	Chennai	Principal laboratory
2	Kancheepuram	Chennai (North)
		Chennai (South)
3	Vellore	Vellore
4	Cuddalore	Panruti
5	Thanjavur	Thanjavur
6	Thiruchirapalli	Trichirapalli– I
		Trichirapalli– II
7	Karur	Karur
8	Madurai	Madurai – (North)
		Madurai – (South)
9	Theni	Theni
10	Dindigul	Dindigul
11	Virudhunagar	Virudhunagar
12	Thirunelveli	Thirunelveli
		Thenkasi
13	Thoothukudi	Thoothukudi
14	Kanyakumari	Nagerkoil
		Marthandam
15	Salem	Salem
16	Dharmapuri	Dharmapuri
17	Coimbatore	Coimbatore
18	Erode	Perundurai
		Erode – I
		Erode – II
		Chithode
19	Thiruppur	Thiruppur
		Palladam
		Kangayam – I
		Kangayam – II
		Vellakkoil

TABLE – 31

DISTRICT-WISE FARMERS' MARKETS

1. Kancheepuram	2. Tiruvallur	3. Vellore
1. Kancheepuram 2. Pallavaram 3. Chengalpet 4. Medavakkam 5. Nanganallur 6. Madhuranthagam 7. Keelkattalai 8. Jameenrayapettai 9. Guduvancheri 10. Padappai 11. Sunguvarchatram 12. Kundrathur 13. Thirukalukundram 14. Kannagi nagar	15. Tiruthani 16. Tiruvallur 17. Ambattur 18. Paruthipattu 19. Naravarikuppam 20. Perambakkam	21. Vellore 22. Katpadi 23. Vaniyampadi 24. Gudiyatham 25. Kahithapattarai 26. Ranipettai 27. Arcot 28. Tirupathur 29. Natrampalli
4. Tiruvannamalai	**5. Cuddalore**	**6. Villupuram**
30. Tiruvannamalai 31. Polur 32. Arani 33. Cheyyar 34. Chengam 35. Vandavasi 36. Keelpennathur 37. Tamarai nagar	38. Cuddalore 39. Chidambaram 40. Viruthachalam 41. Panruti 42. Vadalur	43. Tindivanam 44. Villupuram 45. Kallakurichi 46. Ulundurpettai 47. Gingee 48. Sankarapuram
7. Salem	**8. Namakkal**	**9. Dharmapuri**
49. Sooramangalam 50. Ammapet 51. Athur 52. Thathakapatti 53. Mettur 54. Attayampatti 55. Hasthampatti 56. Elampillai 57. Thammampatti 58. Jalagandapuram 59. Edapadi	60. Namakkal 61. Tiruchengode 62. Rasipuram 63. Kumarapalayam 64. Paramathivelur 65. Mohanur	66. Dharmapuri 67. Pennagaram 68. Palacode 69. Harur 70. A.Jattihalli

TABLE – 31 Contd……

DISTRICT-WISE FARMERS' MARKETS

10. Krishnagiri	11. Coimbatore	12. Nilgiris
71. Hosur 72. Krishnagiri 73. Kaveripattinam 74. Denkanikottai 75. Avallapalli	76. R.S.Puram 77. Singanallur 78. Pollachi 79. Mettupalayam 80. Kurichi 81. Sulur 82. Vadavalli 83. Sundarapuram 84. Palladam	85. Udhagamandalam 86. Coonoor 87. Kothagiri 88. Gudalur
13. Erode	**14. Trichirapalli**	**15 .Perambalur**
89. Sampath Nagar 90. Gobichettipalayam 91. Sathiyamagalam 92. Periyar Nagar 93. Perundurai	94. Anna Nagar 95. K.K.Nagar 96. Thuraiyur 97. Manapparai 98. Musiri 99. Thuvakudi 100. Lalgudi	101. Perambalur 102. Veppanthattai
16. Karur	**17. Thanjavur**	**18. Nagapattinam**
103. Karur 104. Kulithalai 105. Velayuthampalayam 106. Pallapatti. 107. Vengamedu	108. Thanjavur 109. Kumbakonam 110. Pattukottai 111. Tirukattupalli 112. Papanasam	113. Mayiladuthurai 114. Nagapattinam 115. Sirkali
19. Tiruvarur	**20. Pudukottai**	**21. Madurai**
116. Tiruthuraipoondi 117. Mannargudi -1 118. Tiruvarur 119. Needamangalam 120. Muthupettai 121. Mannargudi -2 122. Valangaiman	123. Pudukottai 124. Aranthangi 125. Alangudi 126. Gandarvakottai 127. Karambakkudi 128. Viralimalai	129. Anna nagar 130. Chokkikulam 131. Palanganatham 132. Usilampatti 133. Thirumangalam 134. Melur 135. Anaiyur

TABLE – 31 Contd……

DISTRICT-WISE FARMERS' MARKETS

22. Dindigul	23. Theni	24. Sivagangai
136. Dindigul 137. Palani 138. Chinnalapatti 139. Kodaikkanal 140. Batlagundu	141. Theni 142. Kambam 143. Bodinayakanur 144. Periyakulam 145. Devaram 146. Andipatti 147. Chinnamanur	148. Sivagangai 149. Devakottai 150. Karaikudi 151. Tirupatthur
25. Ramanathapuram	**26. Virudhunagar**	**27. Tirunelveli**
152. Ramanathapuram 153. Paramakudi 154. Kamuthi	155. Aruppukottai 156. Rajapalayam 157. Srivilliputhur 158. Virudhunagar 159. Sivakasi 160. Sathur 161. Kariyapatti 162. Thalavaipuram	163. Sankarankoil 164. Palayamkottai 165. Tenkasi 166. Kandiyaperi 167. Melapalayam 168. Ambasamudram
28. Tuticorin	**29. Kanyakumari**	**30. Ariyalur**
169. Tuticorin 170. Kovilpatti	171. Vadaseri 172. Myladi	173. Ariyalur 174. Jeyankondam
31. Tiruppur		
175. Udumalpet 176. Tiruppur (North) 177. Tiruppur (South) 178. Dharapuram 179. Kangayam		

TABLE - 32

Infrastructures created under National Agriculture Development Programme (NADP)

Sl. No.	Name of the District	Market Complex	Market complex with Cold Storage	Ripening Chambers	Cold Storages	Rural business hub	Traders Shop	Transaction shed
1	Kancheepuram							
2	Cuddalore					1		
3	Villupuram					1	10	
4	Vellore				1	1		1
5	Tiruvannamalai						10	3
6	Salem	1						
7	Namakkal	1		1		1		
8	Dharmapuri				1			2
9	Krishnagiri					1		1
10	Coimbatore	1	3		1	1	10	4
11	Tiruppur					1		
12	Erode		1		1		10	2
13	Trichy		2	1	1			
14	Karur	1						
15	Ariyalur							2
16	Pudukottai				1			
17	Thanjavur							
18	Tiruvarur							
19	Nagapattinam							
20	Madurai	1						1
21	Theni			1	1			
22	Dindigul					1		
23	Ramanathapuram				1		10	
24	Virudhunagar				1	1		
25	Tirunelveli		2	1	1	1	10	1
26	Tuticorin				1			
27	The Nilgiris	1						
	Total	**6**	**8**	**4**	**11**	**10**	**60**	**17**

TABLE – 33
Infrastructures created under TN-IAMWARM scheme

S. No	District	Agri Business Centre	Drying Yard	Storage Shed	Collection Centre	Pack house	ABC input shops
1	Ariyalur		1	1	1		
2	Coimbatore	1	10	11			1
3	Cuddalore		5	1			
4	Dharmapuri	1	5	3			
5	Kancheepuram		2	3			
6	Krishnagiri	1	5	1	1		
7	Madurai	3	3		2		
8	Perambalur		5	2			
9	Pudukottai	3	22	15	1		1
10	Ramanadhapuram		14	2			
11	Salem	2	13	5	3	1	1
12	Sivagangai	2	17	7			1
13	Thanjavur		3		1		
14	Theni	1	5		3		
15	Thoothugudi	1	4	1			
16	Tirunelveli	2	9	2	2		
17	Tiruppur	1	32	35			
18	Tiruvallur	1	12	4	3		
19	Thiruvannamalai		7	1			
20	Vellore	2	8	7	3		
21	Villupuram	2	19	5	1		2
22	Virudhunagar	1	25	10	1		
Total		**24**	**226**	**116**	**22**	**1**	**6**

TABLE - 34

Infrastructures created under State Fund, Part II and APEDA schemes

S. No.	Name of the District	Market Complex	Market complex with Cold Storage	Cold storage
1	Villupuram			1
2	Dharmapuri		1	
3	Krishnagiri		1	
4	Coimbatore		1	1
5	Thanjavur	1		
6	Theni		1	
7	Dindigul			4
	Total	**1**	**4**	**6**

TABLE - 35
Infrastructures created under Rural Infrastructure Development Fund (RIDF)

S. No.	Name of the District	Godown in MT			Cold Storages (25 MT)
		2000	5000	10000	
1	Cuddalore	5			2
2	Villupuram	9	1	2	3
3	Vellore	3			3
4	Tiruvannamalai	3	2		7
5	Salem	3			5
6	Namakkal	1			3
7	Dharmapuri	3			2
8	Krishnagiri	1			4
9	Coimbatore	5			6
10	Tiruppur	7	2	1	4
11	Erode	4	1	1	5
12	Trichy	2			
13	Karur				1
14	Perambalur	1			1
15	Ariyalur	1			1
16	Pudukottai				1
17	Thanjavur	5	1	1	1
18	Tiruvarur	2			
19	Nagapattinam	2			
20	Madurai	2			1
21	Theni	4			2
22	Dindigul		1		3
23	Ramanathapuram	3			1
24	Virudhunagar	1			2
25	Sivagangai	1			1
26	Tirunelveli	5			4
27	Tuticorin	1			6
28	Nagarcoil	1			1
	Total	**75**	**8**	**5**	**70**

DEMAND NO.5 AGRICULTURE DEPARTMENT

Estimate of the Amounts Required for Expenditure in 2014-2015

BUDGET ESTIMATE 2014-2015

(Rupees in Thousands)

	Revenue	Capital	Loan	Total
DEMAND FOR GRANT –Voted	5,072,11,22	137,68,47	150,50,00	5,360,29,69
Appropriation Charged	3	…	…	3

Net Expenditure Rupees in Thousands

Head of Account		2012-13	2013-14	2013-14	2014-15
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
2059	PUBLIC WORKS	2,34,99	2,62,00	2,62,00	2,62,00
2401	CROP HUSBANDRY	3,370,05,92	4,228,59,74	4,333,55,06	4,448,33,00
2402	SOIL AND WATER CONSERVATION	127,47,66	124,47,25	128,01,94	84,24,00
2408	FOOD STORAGE AND WAREHOUSING	…	20,00,01	21,28,51	16,44,01
2415	AGRICULTURAL RESEARCH AND EDUCATION	268,65,84	276,44,09	282,57,02	287,02,89
2435	OTHER AGRICULTURAL PROGRAMMES	105,95,35	148,38,09	105,30,50	112,48,99
2501	SPECIAL PROGRAMMES FOR RURAL DEVELOPMENT	16,48,47	17,68,46	48,53,56	48,00,01
2551	HILL AREAS	4,22,84	3,99,33	3,24,43	3,15,67

Head of Account		2012-13	2013-14	2013-14	2014-15
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
2702	MINOR IRRIGATION	8,26,22	11,42,45	8,84,13	9,26,71
2705	COMMAND AREA DEVELOPMENT	18,81,81	28,96,86	21,62,33	22,59,99
2810	NEW AND RENEWABLE ENERGY	-	-	2,51,40	27,48,60
2852	INDUSTRIES	...	...	25	...
3451	SECRETARIAT – ECONOMIC SERVICES	7,90,96	8,44,67	9,10,86	9,74,88
4401	CAPITAL OUTLAY ON CROP HUSBANDRY	35,20,61	73,01,49	50,69,47	1,82,09
4402	CAPITAL OUTLAY ON SOIL AND WATER CONSERVATION	50,91,98	23,89,57	50,59,15	3,14,28
4435	CAPITAL OUTLAY ON OTHER AGRICULTURAL PROGRAMMES	118,53,25	25,39,88	31,54,75	100,00,07
4551	CAPITAL OUTLAY ON HILL AREAS	9,57,32	6,73,62	5,92,00	6,50,01
4702	CAPITAL OUTLAY ON MINOR IRRIGATION	2,02,36	1	1	...
4705	CAPITAL OUTLAY ON COMMAND AREA DEVELOPMENT	25,08,51	36,22,94	35,48,85	26,22,02
6401	LOANS FOR CROP HUSBANDRY	150,00,00	150,00,00	30,00,00	150,00,00
7610	LOANS TO GOVERNMENT SERVERNTS ETC.	...	30,00	74,46	50,00

DEMAND NO.5 AGRICULTURE DEPARTMENT
BUDGET ESTIMATE 2014-2015

(Rupees in Thousands (Gross))

Head of Department			Revenue	Capital	Loan	Total
05 01	Secretariat	Voted	9,74,88	...	50,00	10,24,88
05 02	Directorate of Agriculture	Charged	1	...	...	1
		Voted	4,128,79,30	96,95	150,00,00	4,279,76,25
05 03	Directorate of Agricultural Marketing and Agri. Business	Voted	89,81,88	100,00,07	...	189,81,95
05 04	Directorate of Seed Certification	Voted	33,45,03	...	...	33,45,03
05 05	Directorate of Horticulture and Plantation Crops	Charged	1	...	...	1
		Voted	255,06,36	85,14	...	255,91,50
05 06	Agricultural Engineering Department	Charged	1	...	...	1
		Voted	273,56,84	35,86,31	...	309,43,15
05 07	Agro Engineering Services	Voted	34,83	...	...	34,83
05 08	Tamil Nadu Agricultural University, Coimbatore	Voted	280,69,42	...	...	280,69,42
05 09	Directorate of Organic Certification	Voted	62,68	...	...	62,68
	Total	**Charged**	3	...	...	3
		Voted	5,072,11,22	137,68,47	150,50,00	5,360,29,69

PART-II SCHEMES 2014-15

(Rupees in lakhs)

SL. No.	Description of the Scheme	Total
	SECRETARIAT	
	Component – 1	
1	Purchase of 1 Rack server with 3 years operation and maintenance charges to Tamil Nadu State Data Centre	9.30
	AGRICULTURE DEPARTMENT	
	Component – 1	
2	Construction of New Building for Agricultural Extension Centre at Annavasal blocks in Pudukkottai District	60.00
	HORTICULTURE AND PLANTATION CROPS DEPARTMENT	
	Component – 1	
3	Creation of Infrastructure facilities for Central Horticulture Training Centre at Kudimiyanmalai, Pudukottai District	45.13
4	Extension of District Horticulture Extension and Training Centre at Erode	20.00
5	Extension of District Horticulture Extension and Training Centre at Trichy	20.00
	Component – 2	
6	Production and distribution of planting material Dendrobium cultivation (Orchids) to the farmers at a subsidized rate and demonstrate the Orchids cultivation in Tamil Nadu	50.00
	AGRICULTURAL ENGINEERING DEPARTMENT	
	Component – 2	
7	Installation of Gravity flow PVC Buried pipeline system in Kuvalaikanni Periyakulam in Sankarankoil block in Tirunelveli District	25.20

	AGRICULTURAL MARKETING AND AGRI BUSINESS DEPARTMENT	
	Component – 1	
8	Strengthening of State Agmark Grading Laboratories by providing Scientific equipments	33.07
	SEED CERTIFICATION	
	Component-1	
9	Purchase of Vehicle as Replacement for condemned vehicles.	57.50
	TAMIL NADU AGRICULTURAL UNIVERSITY	
	Component-1	
10	Establishment of foliar diagnostic laboratory at Agricultural College and Research Institute, Killikulam	55.00
	Component-2	
11	Promotion of Research on Sustainable Organic Agriculture	120.00
12	Village level De-husking machine for millet processing	22.76
13	Lean farming for sustainable crop productivity improvement	25.95
14	Revenue model to improve soil organic content by promoting greenmanure seed production through demonstration and training cum awareness programme	42.59
	Total	**586.50**

Agri. S.S.Krishnamoorthy
Minister for Agriculture