



# **AGRICULTURE DEPARTMENT**

## **POLICY NOTE**

### **Demand No. 5**

## **AGRICULTURE**

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## **INTRODUCTION**

***"Farmers are the linch-pin of the whole world;***

***As they feed even those not in the field"***

**- Thirukural (1032)**

***"My Government is committed to the revival of the Primary Sector through comprehensive new programmes. My Government has planned to take up several measures to achieve the 'SECOND GREEN REVOLUTION' which will be a mission dedicated to the people of Tamil Nadu. We will usher in this second green revolution to improve agricultural production by addressing the productivity gap and through value addition".***

**- Honourable Puratchi Thalaivi Amma**

Agriculture is the prime driving force for food security, rural economy and sustainable socio-economic development of farmers. Agriculture, as a productive sector provides a pathway out of poverty and has an important macro-economic role upon which diverse economies are built. A faster growing agriculture sector alone can increase the agricultural production, raise the per-capita income of the rural community, generate consumer demand driven commodity surplus to promote various agro-processing industries, create avenues for localized employment, slowing down migration towards urban areas, create domestic demand for industrial goods and services and increase exports.

Agriculture, with its allied sectors, is the largest livelihood provider particularly in rural areas. However, Agriculture faces the dual

challenge of becoming more environmentally sustainable while ensuring food security at the same time. Agriculture and food production systems are increasingly vulnerable to burgeoning population, climate variability, environmental degradation, dwindling production resources, rising input costs, labour scarcity and volatile market prices. Government of Tamil Nadu to tide over these challenges has set smart short term to long term **Sustainable Development Goals** to attain the ambitious plan of making Agriculture a vibrant growth engine to achieve food security and improve nutrition by 2023 A.D.

All along, Government of Tamil Nadu to achieve its vision of **Second Green Revolution** in the State has infused a comprehensive policy framework by reinforcing farmer-friendly strategies to increase cropped area; fostering

innovative crop-specific agricultural practices to improve farm productivity and farmers' income; designing robust infrastructure to transform the existing livelihood farming into a commercial and dynamic farming system; mechanising agricultural operations to make farming smarter by saving time and cost; enriching farming knowledge and empowering farming community through use of ICT; establishing well structured marketing system and strengthening extension services for large-scale dissemination of productivity - increasing technologies, capacity building and supplying critical inputs for permeating agriculture even in the most challenged topography.

All such policy reforms brought by the State Government in improving Land Resources, Nutrient conservation and Farm Soil Preservation, Judicious Utilisation of Water

Resources for Crop intensification, Integrated Resource Management, Agriculture Infrastructure Management, Alternate Energy sources to increase farm efficiency, Invigorating Agricultural Extension machinery, Human Resource Management and Distress mitigation-led to a technological transformation in agriculture and enabled the State to remain on high growth trajectory. As a result, the Government of Tamil Nadu has made impressive strides in agricultural sector and the State has almost achieved a two-fold increase in food grain production since the launch of Second Green Revolution in 2011-12. The technological breakthrough in increasing the productivity and the cultivable area has removed the impasse in Agriculture production and paved way for the State to **surpass 100 Lakh MT of Food Grain production in 2011-12, 2013-14, 2014-15 and 2015-16.** As per the Final

Estimate of 2015-16, the **food grain production** of the State is **113.69 Lakh MT** which is **43% increase over the food grain production achieved in 2010-11.**

Agriculture Department of Government of Tamil Nadu also holds the pride of bagging several prestigious awards at National level for introducing novel and promising technologies that resulted in increased food grain production. Government has been lauded with **“Krishi Karman award” four times in a period of five years** by Government of India, once for the best performance in food grain production for the year 2011-12, once for the best performance in pulses production for the year 2013-14, once for the best performance in coarse cereals production for the year 2014-15 and once for the best performance in food grain production for the year 2015-16. The State has also bagged



the **“State Agriculture Leadership Award 2013”**, **“Food Production Program Leadership Award 2015”** and **“Global Agriculture Leadership Award 2016”** from the leading magazine, **“Agriculture Today”** and **“Best Big Agriculture State Award”** from the popular magazine **“India Today”** for its commendable performance across the nation.

Government of Tamil Nadu has also been honoured with the **“National Gold Award for e-Governance”** for the year 2014-15 by Government of India for its innovative spirits. Further, **“Comprehensive Input Supply Management System”**, one of the best practices and models for e-governance introduced by Agriculture Department in Tamil Nadu has been presented with the prestigious National level **“Skoch Platinum Award –**

**2016**” for excellent and efficient implementation of programmes and service delivery.

Although, the Government resorted to bouquet of farmer oriented good agricultural practices to transform the agriculture sector to a newer genre during **2016-17**, the efforts were ravaged by various unabated natural factors such as failure of South West as well as North East Monsoon, non release of Cauvery water by Karnataka, poor storage position in all major reservoirs, Vardah cyclone, severe drought etc., resulting in lesser area under major crops besides causing damage to the standing crops. The agricultural production got affected in 2016-17 due to all these odds. However, this is only temporary and the resilient farming community of Tamil Nadu with the hand holding support extended by the Government of Tamil

Nadu will propel the State to **achieve 100 Lakh MT during 2017-18.**

Tamil Nadu being a water scarce state, Government is taking intensive efforts to popularize the Micro Irrigation system which helps in bringing more crop per drop besides obtaining quality agricultural produce with less inputs. **Tamil Nadu is the only state across the country where 100 percent subsidy is extended for small and Marginal farmers and 75 percent subsidy for other farmers.** Steps are being taken to implement the scheme with higher fund allocation during the current year.

The Government has formulated Tamil Nadu Solar Energy Policy 2012 as a part of eco-friendly measures. As the demand for power is

increasing at this hour, Government is encouraging to utilize Solar Energy in Agriculture at a larger level. Solar Energy utilities such as Solar Pump sets for irrigation, Solar Power light traps for Integrated Pest Management, Solar driers to obtain quality dry produce are being popularized.

Government is taking necessary efforts to reduce the deterioration of commodities and fetch remunerative price for Agriculture Commodities through value addition by adopting suitable Post harvest Management strategies. In the first phase, steps have been taken to provide Infrastructure for Post harvest Management, establish storage godowns and cold storage units besides facilitating the farmers to take the produce (fruits / Vegetables) to the processing units from the aggregation centres at a cost of Rs.398.75 Crore in selected 10 districts.

## **Genesis of the Department**

An independent Department of Agriculture was established in 1882 based on the recommendations of the Indian Famine Commission, 1880. In 1904, the Directorate of Agriculture was carved out as an independent unit with Director of Agriculture and necessary supporting staff. In 1905, the Agricultural College which was under the control of Directorate of Public Instruction was annexed to the Department. Several changes took place in its organizational set up owing to the bifurcation of the State, District and Taluks etc.

## **Snapshots of Tamil Nadu Agriculture**

Tamil Nadu is the eleventh largest State in India by area and the seventh most populous state with 6 percent of the nation's population. The total geographical area of Tamil Nadu is 130.33 Lakh Hectare (4 per cent of the nation's

geographical area).Tamil Nadu being a coastal state (coastal line of 1076 km) is highly vulnerable to seasonal fluctuations causing uncertainty in Agriculture production. Tamil Nadu is one of the most water starved states endowed only with 3 per cent of the nation's water resources putting high stress on irrigation water availability.

The Tamil Nadu land use pattern as per the latest statistical report (2015-16) is given below:

**Table 1.1: Land Use Pattern**

S. No	Details	Area (L.ha)	% wrt to Geographical area
1	Forest	21.57	16.55
2	Net Cropped Area (*)	48.33	37.08
3	Area under Misc. Tree crops	2.34	1.79
4	Permanent Pastures	1.08	0.83
5	Current fallow	9.89	7.59
6	Other fallow	17.29	13.27
7	Culturable Waste	3.24	2.49
8	Land put to non agricultural use	22.01	16.89
9	Barren and unculturable land	4.58	3.51
	<b>Total Geographical Area</b>	<b>130.33</b>	<b>100.00</b>
	Cropping Intensity (%)	126	-

(\*) Difference between Gross Cropped Area (60.74 Lakh Hectare) and Area sown more than once (12.41 Lakh Hectare)

Tamil Nadu being a lower riparian State has to depend on water release from neighbouring states to a large extent. With distinct periods of rainfall and distribution pattern, Tamil Nadu is entirely dependent on monsoon rains for recharging its water resources and thereby, monsoon failures lead to acute water scarcity and severe drought. As the State lies in the rain shadow region of Western Ghats, it is deprived of rains during South West Monsoon season which is the assured monsoon for the rest of the Country. Moreover, the spatial and temporal changes in rainfall distribution add woes to the cropping pattern in the State.

The average annual rainfall of the State is around 921 mm which is less than the National average of 1,200 mm. The quantum of rainfall received during Winter (January - February), Summer (March - May), South-West Monsoon

(June - September) and North-East Monsoon (October - December) is 3%, 14%, 35% and 48% respectively. The per capita availability of water is 750 cubic meters per year as compared to the all India average of 2,200 cubic meters.

Out of the Gross Cropped Area of 60.74 Lakh Hectare, the land suitable for irrigated agriculture is around 35.75 Lakh Hectare of which 80% is brought under food crops and 20% under non-food crops. The details of net area irrigated using various sources of irrigation across the state are as follows:

**Table 1.2: Water Source wise net area irrigated**

<b>Source</b>	<b>Availability (Nos)</b>	<b>Net Irrigated Area (Lakh Ha.)</b>	<b>% wrt to Net Area Irrigated</b>
Canals	2,239	6.72	23.72
Tanks	41,127	4.38	15.45
Wells	18,69,723	17.20	60.72
Others		0.03	0.11
<b>Total</b>		<b>28.33</b>	<b>100.00</b>

The number of operational land holders in the State is 81.18 lakh, operating cultivable land of



64.88 Lakh Hectare. Small and Marginal holders account for 92% of the total holdings operating 61% of the area occupied. The average size of the land holding in the State is 0.80 hectare which is 44% lesser than the average size of land holding of the country (1.15 hectare).

# **1. AGRICULTURE**

## **1.1. Vision, Objectives and Strategies**

**Agriculture sector** is the fulcrum of rural economy and remains as the main occupation and source of livelihood for the rural people. Agriculture, as a driver of economic prosperity, has to be leveraged with the power of technology and innovation to overcome conservative challenges for a progressive inclusive growth in agriculture.

In the recent years, Government of Tamil Nadu has pioneered in multifarious strategies and technologies spearheading an innovation driven transformation in agriculture. Such initiatives broke ground for mightier growth in productivity and production of food grains and other crops which helped Tamil Nadu to hold excellent track record of performance.

Agriculture Department, to achieve the twin goals of doubling the production and tripling the farmers' income through multidimensional agricultural development, has made **impressive changes in the Agriculture Policy** by addressing the challenges of natural resource depletion, ecosystem degradation, climate change and natural disasters.

**Tamil Nadu Vision 2023**, contemplates to make Tamil Nadu "Numero Uno" State in all fronts, especially in Agriculture and secure the benefits of rapid economic growth for all its farmers making Tamil Nadu one among India's most economically prosperous and progressive States.

Government of Tamil Nadu, which is on the anvil of developing agriculture at farm level, has framed the following objectives and strategies to

step up the momentum towards Second Green Revolution.

### **1.1.1.Objectives**

- Strengthen institutional mechanisms for integrated policy, planning, monitoring and evaluation.
- Ensure conservation and sustainable use of natural resources.
- Formulate and popularize appropriate agroclimatic and eco-friendly farming systems which would improve soil health and intensify crop productivity and farm income.
- Increase the income of farmers through agricultural diversification towards high value farming, while retaining the core-competence in area of food crops and nutritional security.

- To develop infrastructure facilities in sectors of seeds, fertilizers, pesticides, agriculture implements, extension services, value addition and marketing across the agricultural supply chain.
- Facilitate adaptation and mitigation to climate change through effective implementation of prescribed framework.

### **1.1.2. Strategies**

- Increasing the area under cultivation by bringing fallow lands under cultivation and reclaiming the problematic soils.
- Increasing agricultural production and productivity by improving soil health and input use efficiency.
- Devising ecology-cum-economics based crop-cafeteria in both irrigated and rainfed regions from which even resource

poor farmers can choose the crop combination and adopt modern crop husbandry which is best suited to realize the full growth potential of the farm.

- Ensuring timely availability of quality inputs such as seeds / planting materials, fertilizers, bio-fertilizers, biocides / bioagents, agriculture machinery etc.
- Reducing cost of cultivation by better crop management, popularizing cost effective indigenous inputs, enhancing input use efficiency, adopting location specific innovative technologies, educating the farmers on good agricultural practices and mechanising the farming operations.
- Promoting utilization of non-conventional energy resources.

- Ensuring participation of private sector in agriculture.
- Promoting agro based infrastructure in rural areas.
- Reducing dependency on monsoons with better irrigation / water harvesting and harnessing methods.
- Developing climate - resilient cropping system with inbuilt protective measures such as crop insurance besides generating alternate sources of livelihood through allied activities to mitigate risk.
- Transferring the evolved technologies and best practices through ICT tools to narrow down the yield gap and promote farmer empowerment.

Tamil Nadu, a farmer-friendly state has set one of the best platforms for agricultural development by introducing innovative

agricultural technologies to re-invent Green Revolution for the second time in the state. Further, the Government has formulated and implemented policies and schemes to achieve a consistent and rapid growth at an accelerated pace.

**Table 1.3: Productivity Position of Tamil Nadu at National Level**

<b>Crop</b>	<b>Position of Tamil Nadu at National Level</b>	<b>Yield in Tamil Nadu (Kg/ha)</b>	<b>All India Average Yield (Kg/ha)</b>
Maize	1	5,360	2,557
Cumbu	1	2,881	1,272
Groundnut	1	2,699	1,400
Total Oilseeds	1	2,294	1,037
Cotton	1	718	461
Coconut	2	10,236	7,164
Rice	2	3,191	2,390
Sugarcane(MT)	3	93	70
Sunflower	3	1,625	753
Jowar	3	1,485	953
Coarse cereals	4	3,066	1,729
Food grains	5	2,529	2,070
Total Pulses	8(*)	689	744

**\* Leap from 14<sup>th</sup> position.**

**(Source: Agricultural statistics at a Glance, 2015)**

Government of Tamil Nadu is pursuing systematic effort to increase the food grain



production by resorting to numerous innovative methods. Relentless efforts taken by the Government for a speedy information dissemination of scientifically proven strategies and schemes, coupled with rapid technology adoption by the farmers led to a prodigious increase in food grain production over 100 L MT in 2011-12, 2013-14, 2014-15 and 2015-16 which building on the success of Second Green Revolution when compared to 2010-11 (75.94 Lakh MT). The food grain production achieved is as follows:

**Table 1.4: Foodgrain production in the past 6 years**

Crop	Food Grain production (L.MT.)					
	2011-12	2012-13	2013-14	2014-15	2015-16 (*)	2016-17 (**)
Rice	74.59	40.50	71.15	79.49	73.57	40.38
Millets	23.24	13.42	32.73	40.79	34.27	16.63
Pulses	3.69	2.13	6.14	7.67	5.85	3.31
<b>Total Food Grains</b>	<b>101.52</b>	<b>56.05</b>	<b>110.02</b>	<b>127.95</b>	<b>113.69</b>	<b>60.32</b>

(\*)Final Estimate (\*\*)Fourth Advance Estimate

### 1.1.3. Area, Production and Productivity Programme for 2017-18.

Tamil Nadu has faced severe unprecedented drought during 2016-17 which happened ever before in the last 141 years, it may affect the food grain production for next two years. The Government of Tamil Nadu which is always farmer friendly in its approaches has formulated far sighted progressive policies to uplift the economic status of the farmers. In this backdrop, the state has programmed the area, production and productivity of various agricultural crops during 2017-18 as indicated below:

**Table 1.5: Programme for 2017-18**

<b>Crop</b>	<b>Area (L.Ha.)</b>	<b>Production (L.MT)</b>	<b>Productivity (Kg/Ha.)</b>
Rice	17.80	60.00	3,370
Millets	9.30	34.00	3,656
Pulses	9.40	6.00	638
<b>Total food grains</b>	<b>36.50</b>	<b>100.00</b>	
Oilseeds	5.00	12.00	2,400
Cotton (*)	1.80	5.77	545
Sugarcane (**)	3.00	309.00	103
<b>Total</b>	<b>46.30</b>		

(\*)Production (L.Bales); (\*\*)Productivity(MT/Ha.)

#### **1.1.4. The Way Forward**

The goal of achieving food and nutritional security inspite of degrading land resources, increasing water scarcity, depleting per capita availability of land, increasing outmigration of agricultural labourers and impacts of climate change have become a big challenge to the state. Government, with an aim to transform agriculture more productive, more resource-efficient and more climate resilient has formulated **specific policies and strategies for agro-ecological intensification** during 2017-18 which are listed below:

1. Achieve **food and nutritional security** by improving the livelihoods of rural farm families **through sustainable agriculture area intensification.**
2. Narrow down the gaps in yield and input use efficiency gaps through **agronomic**

**revolution : Precise crop management** through affordable new technologies that are locally adaptable with easy access to technological information.

3. Adopt **smart technologies for increasing** the **efficiency** of water, nutrients and energy: microirrigation and other water-saving irrigation technologies, site-specific nutrient management, conservation agriculture etc., to **increase the agricultural output**.
4. **Reduce the cost of cultivation** through soil health revitalization, balanced fertilizer application and judicious use of irrigation water thus leading to **increase** in the **income of farmers**.
5. **Precise Input Supply System** with management strategies to ensure equity in

terms of access to critical inputs besides improving the delivery mechanism.

6. Implement socio-economic support programmes to **empower** and benefit **farming communities particularly farm women**.
7. **Transform agriculture** in a multi-faceted manner **across various agricultural subsectors** to respond to diversity of farming environments, objectives and constraints.
8. **Enhance crop – tree - livestock interactions** in a farming system and optimize recycling and use of biomass/ agricultural by-products to **preserve the environment**.
9. **Maximize** the **production potential of rainfed areas**.

10. Formulate **contingency crop plan** based on weather forecast and develop **insurance** module to mitigate crop loss due to climatic risks.
11. Provide **digital agriculture solutions** for seed to seed aspects through ICT tools.
12. **Create** robust **Agriculture Infrastructure** besides strengthening service support systems to promote intensification and diversification of agriculture.
13. Foster **new knowledge-sharing platforms** and **equip the farmers** with a suite of technology options and mechanisms to gain fair access to new profitable markets.

## **1.2. Season – Rainfall**

During 2016, the State received deficient rainfall during winter followed by normal during summer. However, deficient rainfall (225.50 mm, -30%) during the South West Monsoon season and abysmal North East Monsoon played truant in the crop prospects. As per the IMD parlance, the rainfall during North East Monsoon season was “Large Deficient” (168.30 mm) with a deviation of -62% against the normal rainfall of 440 mm **which was the worst ever monsoon failure after 141 Years.**

During 2017, the India Meteorological Department (IMD) has predicted the South West Monsoon rainfall to be Normal for the whole country (98%) and the Southern Peninsula (99%).

### **1.3. Crop Status**

Agriculture is the predominant occupation of the people of Tamil Nadu and the farmers cultivate diverse variety of agricultural crops such as paddy, millets, pulses, oilseeds, cotton and sugarcane.

The state is divided into 7 agro climatic Zones of which Cauvery delta zone comprising the whole of Thanjavur, Nagapattinam, Tiruvarur, and parts of Karur, Ariyalur, Pudukkottai, Cuddalore and Trichy districts is an economically important zone for Tamil Nadu, as it is the **granary of Tamil Nadu**. The other zones are also typically agrarian zones, where varied crops are grown. However, Agriculture in the state depends largely on irrigation through the Cauvery system, onset of South West and North East monsoons, sufficient storage in 15 major reservoirs which receive inflows mainly



during South West Monsoon and the ground water.

The State of Tamil Nadu is at the forefront of Agricultural development and continues to give a thrust for a holistic development with a farmer-centric approach. The Government has come out with pioneering development-oriented policies and initiatives to promote environment friendly, economically viable and technically sound strategies and technologies which are now being replicated by other states. The State Government has been proactive in prioritising key focus areas to augment crop production and productivity of major crops besides increasing the income of the farmers.

All the concerted efforts and focused attention given to the Agricultural Sector has enabled Tamil Nadu to script one of the most

remarkable turnaround to attain the food grain production.

### **1.3.1. Paddy**

**Paddy**, which is the staple food crop of Tamil Nadu is extensively cultivated in all the districts in a normal area of 17.65 Lakh Ha. with an average production of 64.74 Lakh MT. Paddy accounts for about 30% of the gross sown area and 50% of the total irrigated area of the State. Nearly 94% of the paddy area is raised only under irrigated condition.

Paddy is cultivated in three major seasons viz., Kar / Kuruvai / Sornavari (Apr - July), Samba / Thaladi / Pishanam (Aug - Nov) and Navarai / Kodai (Dec - Mar) which is unique in the entire country.

As the average productivity is only 3,668 kg per ha, the State Government, over the years

has taken a plethora of initiatives to introduce multifarious high-end technologies under various schemes to raise the productivity at farm level.

- **System of Rice Intensification (SRI)**, a bouquet of technological practices for judicious use of water was promoted in 5.81 Lakh Hectare (14.35 Lakh Acre) during 2016-17. It has been programmed to promote this initiative in an area of 9.91 Lakh Hectare (24.48 Lakh Acre) during 2017-18.
- The Government which is keen on reducing the weariness of farmers is **promoting Machine transplanting of paddy** from 2014-15. The successful accomplishment of this intervention has propped up the momentum and hence the department **promoted Machine planting** in 1.72 Lakh Hectare (4.25 Lakh Acre) during

2016-17. During 2017-18, it has been programmed to adopt the technology of Machine Planting in 2 lakh Ha.

- **Direct sowing method of paddy cultivation** having advantages of lesser water requirement, lesser cost of cultivation and lesser duration of crops was propagated in an area of 5.15 Lakh Acre to overcome the water scarcity that loomed acrimoniously across the State during 2016-17. The Scheme will be continued during 2017-18 also.
- Government of Tamil Nadu, through many far reaching policy decisions and innovative strategies, have brought perceptible changes in agriculture leading to a rapid transformation from subsistence level of production, to a highly diversified, technology driven and market oriented

commercial production. Such promising approaches that **reorient** our **agricultural system into a more climate-smart and sustainable system** are supported and scaled up under various crop oriented schemes implemented by the Department of Agriculture.

- **National Food Security Mission for Rice** is implemented in 8 districts viz., Pudukkottai, Tiruvarur, Nagapattinam, Ramanathapuram, Sivagangai, Thanjavur, Tiruvannamalai and Cuddalore. During 2016-17, activities such as Cluster demonstrations on direct seeded Rice / Line transplanting / Swarna Sub-1 variety Hybrid Rice Technology and cropping system based demonstrations, green manure planting with paddy, distribution of quality seeds of High Yielding varieties and

hybrids, micro nutrients, plant protection chemicals, bioagents, sprayers, seed drill, rotavators, pumpsets , assistance for custom hiring paddy transplanters and combine harvesters besides cropping system based trainings were taken up at an outlay of Rs.20.64 Crore. The scheme will be continued during 2017-18 also.

- **National Agricultural Development Programme** - With an objective to promote region and problem-specific initiatives so as to increase the productivity and income of the farmers, components such as incentive for production of certified seeds, distribution subsidy for High yielding variety seeds, popularization of machine planting, distribution of nursery trays and power tillers were implemented at a cost of

Rs.63.10 Crore. During 2017-18, components such as Assistance for ploughing, Direct sowing with seed drill and distribution of productivity enhancing inputs will be implemented.

### **1.3.2. Pulses**

Pulses is a remunerative crop that enables the farmers to fetch higher income. In Tamil Nadu, pulses is raised in a normal area of 7.03 Lakh Hectares of which black gram, green gram and redgram occupies 44%, 25% and 7% respectively. The aim of the Government is to increase the pulses area to an extent of 11 Lakh Hectares within a period of 4 years with a key focus on dryland areas.

**Strategies** such as promotion of pulses as pure crop, intercrop, bund crop besides encouraging the farmers to practice rice fallow pulses coupled with micro-irrigation units such

as sprinklers and rainguns are adopted. The major focus is on the following technologies:

- **System of Pulses Intensification**, a package of steps for increasing the productivity was adopted as a whole village concept in **2,000 villages** covering an area of 1.25 Lakh Hectare (3.09 Lakh Acre) during 2016-17. During 2017-18, the technology will be adopted in 2,000 villages.
- **Redgram transplantation**, a novel agricultural practice of raising and transplanting redgram crop is being popularized in districts viz., Krishnagiri, Dharmapuri, Vellore, Theni, Karur and Salem. During 2016-17, the assistance was extended for 8,000 Ha. During 2017-18, the technology will be continued.



- **High yielding varieties** viz., TT401 (Redgram) TU` 40 (Blackgram) released by Bhabha Atomic Research Centre (BARC) are also popularized.
- **National Food Security Mission - PULSES** Considering the high potential to increase pulses productivity in Tamil Nadu besides enabling the farmers to get good returns, pulses cultivation is promoted across the State by integrating the production enhancement activities on a mission mode. Government of Tamil Nadu is implementing **National Food Security Mission for Pulses** in all districts except Chennai and The Nilgiris for pulses production enhancement through utilization of rice fallow and intercropping of pulses with coarse cereals, oilseeds and commercial crops. During 2016-17,

activities such as cluster demonstrations on improved package of practices in Red gram, Black gram and green gram, demonstrations on intercropping with groundnut, cotton and cropping system based demonstrations, distribution of certified seeds of high yielding varieties, assistance for production of pulses seeds, Integrated Nutrient and Pest Management and distribution of resource conservation technology tools viz., tractors, sprayers and rotovators were taken up. Efficient water application tools like sprinkler, mobile raingun, pumpsets, pipes for carrying water were distributed to expand the irrigated area under pulses. Further, marketing support has been initiated through activities like establishment of mini dhal mill, support for branding and setting up procurement centres to grade

and process pulses. The above said activities were taken up with an outlay of Rs.41.64 Crore. The scheme will be continued during 2017-18 also with an outlay of Rs.41.13 Crore.

- Under **NADP**, pulses improvement programme comprising of activities such as foliar spray of DAP, production and distribution incentive for quality certified seeds, promotion of redgram transplantation etc., was implemented at a cost of Rs.23.58 Crore during 2016-17. This scheme will be continued during 2017-18 also.

### **1.3.3. Millets**

Millets provide multiple securities such as food security, fodder security, health and nutritional security and livelihood security. Major millets such as sorghum, cumbu, ragi, maize

and other minor millets such as thinai, varagu, samai, kudiraivali etc are cultivated in an area of 7.54 L.Ha. with a normal production of 25 L.MT. The millets are widely cultivated in Villupuram, Cuddalore, Salem, Namakkal, Tirupur, Erode, Perambalur, Ariyalur, Theni, Dindigul, Virudunagar, Tirunelveli, Thoothukudi, Tiruvannamalai, Dharmapuri and Krishnagiri.

To demonstrate the improved production and post harvest technology in an integrated manner with visible impact to catalyze increased production of millets, Government has evolved result oriented strategies such as distribution of certified seeds, distribution of improved varieties / hybrids as minikit, seed production and sensitizing the farmers on various local and indigenous technologies, supply of critical inputs, generating consumers' demand for millet based food products through awareness creation and

processing and value addition techniques which will be implemented in a massive way under various ongoing / new programmes such as **National Food Security Mission for coarse cereals** and implemented in 10 districts viz., Salem, Coimbatore, Dharmapuri, Krishnagiri, Tiruchirapalli, Perambalur, Tirupur, Dindigul, Theni and Thoothukudi. During 2016-17, an amount of Rs.8.22 Crore has been spent towards the promotional activities of millet cultivation. The scheme will be continued during 2017-18 also.

Similarly, an amount of Rs.2.69 Crore was spent during 2016-17 under **NADP** and an amount of Rs.4.00 Crore has been allotted during 2017-18 to augment Millets production.

#### **1.3.4. Oilseeds and Oil palm**

Government of Tamil Nadu, to increase the area and production of Oilseeds such as

Groundnut, Gingelly, Sunflower and Castor focuses 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. An area of 4.22 L.Ha. is brought under oilseeds every year with a normal production of 9.62 L.MT. **Tamil Nadu ranks first in the productivity of oilseeds** and is concentrated in all the districts except Kanyakumari, The Nilgiris and Chennai.

- **NADP - Integrated production improvement programme for Oil seeds** - The components such as production and distribution of certified seeds, castor as bund crop, Bio fertilizer distribution, seed drill sowing of groundnut with pulses as inter crop, distribution of

manganese sulphate in Gingelly crop are being carried out in all the districts except Kanyakumari, The Nilgiris and Chennai under NADP Oilseeds. During 2016-17, this scheme was implemented with an expenditure of Rs.2.80 Crore. During 2017-18, this scheme is being implemented with a financial allocation of Rs.8.00 Crore.

- **National Mission on Oil seeds and Oil Palm-NMOOP** - National Mission on Oil seeds and Oil palm comprises of three Mini Missions one each for oil seeds , Oil palm and tree borne Oil seeds. To meet the edible oil requirement, the scheme is being implemented from 2014-15 onwards. The State is also promoting oil palm and tree borne oilseeds as an alternate source of vegetable oils so as to bridge the supply-

demand gap. The objective of this Mission is to increase the vegetable oil requirement by Oil seeds, Oilpalm and tree borne Oil seeds. During 2016-17, this scheme was implemented with an expenditure of Rs.12.62 Crore. During 2017-18, this scheme is being implemented with a financial allocation of Rs.18.77 Crore.

- **Mini Mission –I (Oil Seeds)**

Activities such as purchase of breeder seeds, production of Foundation and Certified seeds and distribution of certified seeds, production components such as distribution of Gypsum, Weedicides and Transfer of latest technologies through demonstration in Groundnut are being focused in all the districts except Kanyakumari, The Nilgiris and Chennai.



- **Mini Mission –II ( Oilpalm)**

Components such as providing quality oilpalm seedlings for New area expansion, providing maintenance and intercropping support for previous year plantation, providing subsidy for Oil palm harvesting machinery and tools, borewells, diesel pumpset, vermicompost unit, training of officers and farmers are being implemented in all the Districts except Kanyakumari, Chennai, The Nilgiris, Thoothukudi, Madurai and Ramanathapuram.

- **Mini Mission –III (Tree Borne Oilseeds)**

Activities such as area expansion of Tree Borne Oilseeds plantations such as Neem and Pungam, providing maintenance and intercropping support for previous year

plantation, training of officers and farmers on latest technologies are being implemented in 11 districts, namely Sivagangai, Virudhunagar, Ramanathapuram, Villupuram, Madurai, Thoothukudi, Tiruppur, Dindigul, Pudukkottai, Tiruvannamalai and Tirunelveli.

### **1.3.5. Coconut**

Coconut plays a significant role in the economy of the State. Coconut is cultivated in an area of 4.65 L.ha and Tamil Nadu stands first in coconut production and second in productivity. 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 and adoption of

innovative technologies, effective mechanisation, plant protection and production of value added products.

The schemes of **Coconut Development Board (CDB)** aim at improving the productivity of coconut through area expansion and adoption of scientific technologies to sustain coconut farming. 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, strengthening of Regional Coconut Nurseries and conducting demonstrations to popularize scientific management techniques to increase coconut productivity.

During 2016-17, an amount of Rs. 1.00 Crore was spent for the production of 3.25 Lakh of hybrid coconut seedlings under coconut development board assisted schemes. Also a

sum of Rs. 1.42 Crore was spent under laying out of demonstration Plot scheme in an area of 808.85 Ha.

The schemes assisted by CDB will be continued during 2017-18 with an expected outlay of Rs. 16.02 Crore and this includes the scheme Replanting and Rejuvenation of Coconut Garden at an outlay of Rs. 13.43 Crore.

As Coconut is largely affected by deficient rainfall, pest and diseases and natural calamities, Government of Tamil Nadu sanctioned a scheme **“Replanting and Rejuvenation of Coconut Garden”** during 2016-17 for a total area of 4,470 Hectare (11,175 Acre) for implementation in Coimbatore, Tirupur, Dindigul and Kanyakumari districts at a total cost of Rs.20 Crore with 100 Per cent assistance of Coconut Development Board to

restore the livelihood of the coconut growers. The package includes cutting and removal of old/senile palms at Rs.32,000/- per Ha. (for 32 Palms) assistance for replanting 100 seedlings per Hectare at a maximum of Rs.40/- per seedling and rejuvenation of existing gardens through integrated management practices at Rs.17,500/- per Ha. (in two instalments of Rs. 8,750/- each) as per the norms of Coconut Development Board. The scheme will be implemented in 2017-18.

During 2016-17, under National Agricultural Development Programme, 4.99 Lakh coconut seedlings were distributed to the farmers at a subsidy of Rs.1.07 Crore. Besides, control of Redpalm weevil was also implemented in an area of 10,000 Ha. at an expenditure of Rs.79.23 Lakh and this will be continued in 2017-18 at an outlay of Rs. 80.00 Lakh.

## **Production of Neera from Coconut:**

Neera is a vascular sap tapped from unopened coconut inflorescence. It is an unfermented, non-alcoholic natural health drink that greatly helps for our health. It contains Vitamin A, B, C and minerals such as sodium, Potassium, Iron etc,. Value added products such as Neera Jaggery, Neera Sugar, Neera Jam, Neera Cake, Neera Biscuits, Neera Chocolates and Neera sweets can be produced from Neera. Since Neera has low Glycemic Index(Glucose), diabetic patients can also take Neera. By involving in Neera production, apart from farmers getting additional income creates additional employment opportunities in rural areas.

Considering the long time request of coconut farmers for permitting production of Neera, the Hon'ble Chief Minister of Tamil Nadu on

18.04.2017 made announcement regarding tapping, production, processing, marketing, licensing and providing training for farmers relating to Neera.

Necessary amendments have to be made in the existing Tamil Nadu Prohibition Act, 1937 and Madras Neera or Padani Rules, 1939. Therefore the department of Prohibition and Excise is taking necessary steps for making amendments in the existing Acts and Rules. On receipt of necessary amendments, the department of Agriculture in co-ordination with Coconut Development Board will take steps for imparting training on Neera production to the farmers who are members of Coconut Producers Societies which are registered with Coconut Development Board and registered Co-operative Societies.

### **1.3.6. Sugarcane**

Sugarcane is the most important commercial, irrigated crop grown in a normal area of 3.17 L.ha in all the districts of Tamil Nadu except Kanyakumari with a normal production of 335.58 L.MT and an average productivity of 106 MT per Ha.

**Sustainable Sugarcane Initiative (SSI)**, an innovative set of agronomic practices involving shade net nursery using single bud-chips, transplantation of young seedlings besides adopting new planting methods such as wider spacing, precision farming/drip fertigation was promoted in 275 Ha. (708 Acre) during 2016-17. During 2017-18, an area of 16,000 Ha. (40,000 Acre) will be brought under Sustainable Sugarcane Initiative, besides an additional area of 14,000 Ha. (35,000 Acre) will be brought under Micro Irrigation.



**National Food Security Mission for Sugarcane** based cropping system is implemented during 2016-17 in Cuddalore, Villupuram and Tiruvannamalai districts through Agriculture Research Station, Cuddalore. An amount of Rs. 47.75 Lakh was extended as subsidy towards activities such as Front line Demonstrations on intercropping and Single bud chip technology, Breeder Seed Production, Strengthening of tissue culture laboratory and State level training. The mission will be continued during 2017-18 also with a financial outlay of Rs. 49.42 Lakh.

### **1.3.7. Cotton**

Cotton is cultivated in 1.45 L.Ha. with a normal production of 3.80 lakh bales. Cotton is cultivated in almost all the districts across the state except Kancheepuram, Tiruvallur, Karur, Pudukkottai and Kanyakumari.

The Government of Tamil Nadu, with an objective to **boost cotton productivity and production** by **expansion of cotton area over a period of five years**, through proper transfer of technology launched a special scheme, **Tamil Nadu Cotton Cultivation Mission** during 2014-15 and the scheme is being implemented in all districts except Chennai, The Nilgiris, Kancheepuram, Tiruvallur, Karur, Pudukkottai, Sivagangai and Kanyakumari. This Mission focuses on strategies such as promotion of summer cotton in non-traditional areas and Rice fallow cotton in delta areas at a reduced cost besides increasing the income of the cotton growers by improving the yield and quality of cotton through drip irrigation and fertigation, agronomic management practices, distribution of machinery during 2016-17 at a cost of Rs.8.00 Crores. It is programmed to continue this mission during 2017-18.

**National Food Security Mission for Cotton** based cropping system is implemented during 2016-17 in Virudunagar and Perambalur districts. An amount of Rs.48.42 Lakh has been spent towards frontline Demonstrations on integrated crop management, seed production in DESI and extra long staple cotton and trials on high density planting system. During 2017-18, the mission will be implemented at a total outlay of Rs.51.25 Lakh.

#### **1.4. Special Schemes of Government of Tamil Nadu**

Agricultural innovations and diffusion of new technologies are the key drivers for a dynamic agriculture in the state. Government of Tamil Nadu strives hard to achieve commendable progress in agriculture by introducing multitude of high-end technologies to provide a competitive edge over traditional farming, besides facilitating better standards of living for

the farmers. The Government which is very much considerate towards the farmers focuses on the criticalities in farming and incorporates the state-of-the-art technologies under various special schemes to realize the true potential of agriculture.

#### **1.4.1. Kuruvai Cultivation Package**

During 2016-17, deficient rains during South West Monsoon and delayed opening of Mettur dam (20.09.2016) affected the prospects of Kharif crops. However the timely intervention of the Government in extending assistance through **a Special Assistance Package for Kuruvai** during **2016-17** at an outlay of **Rs.54.65 Crore** for delta farmers gave a fresh lease of life to farmers. Due to the assistance given under the Kuruvai Package, an area of **3.16 Lakh Acre has been covered** against the normal area of 1.00 lakh Acre in filter point areas **benefitting 1,37,903 farmers.**

## **Kuruvai Cultivation Package 2017**

**The Hon'ble Chief Minister of Tamil Nadu, on 12.06.2017, announced the Kuruvai Cultivation Package 2017 at an outlay of Rs. 56.92 Crore** to encourage the delta farmers to take up Kuruvai cultivation utilizing the ground water in six delta districts viz., Thanjavur, Thiruvarur, Nagapattinam districts and parts of Cuddalore, Trichy and Ariyalur. This package aimed to sustain the normal Kuruvai area under cultivation using available ground water in delta districts, by cultivating paddy in an area of 1.60 lakh Acre and promoting less water consuming pulses crop in an area of 1.32 lakh Acre instead of paddy.

The announcement includes 12 hours of three phase power supply and activities like Machine transplantation of paddy and distribution of productivity enhancing

inputs viz., Zinc Sulphate, Liquid Biofertilizer for an extent of 80,000 Acre and Micro Nutrient mixture for an extent of 25,000 Acre for paddy; Distribution of Certified seeds, DAP foliar spray and liquid biofertilizer for an extent of 75,000 Acre for pulses; ploughing subsidy for an area of 60,000 Acre; PVC pipe distribution of 1,300 units and Green manure seeds for 20,000 Acre in Vennar region.

All the components will be implemented at 100% subsidy except PVC pipes (75% subsidy).

#### **1.4.2. Samba Cultivation Package**

As the storage in Mettur Dam was continuously poor and grossly inadequate for raising nursery and main field preparation for cultivating Samba Paddy, **Government of Tamil Nadu announced Samba special Package** for Delta Districts on 18.08.2016 on

the floor of legislative assembly at a total cost of **Rs.64.30 Crore** to encourage the delta farmers of Thanjavur, Nagapattinam, Tiruvarur, Cuddalore, Tiruchirapalli, Karur, Pudukkottai and Ariyalur districts to take up direct sowing in a larger extent as it had advantages such as lesser water requirement, cost of cultivation and crop cycle period and transplantation wherever possible. Meanwhile, Government of Tamil Nadu took earnest efforts for the release of Cauvery water from Karnataka to Tamil Nadu by getting appropriate orders from Hon'ble Supreme Court of India. Pursuant to this, Cauvery water from Mettur dam was released on **20.09.16** for delta irrigation.

The implementation of this package had a major impact on samba cultivation and an area of about **9.55 Lakh Acre** has been covered **benefitting 2,86,306 farmers.**

During 2017-18, the Government will take necessary livelihood restoration measures to take up samba cultivation.

### **1.4.3. Pulses Special Package**

In view of the drought situation, Government of Tamil Nadu which is determined to ensure food and nutritional security in the State has resolved to **promote cultivation of short duration Pulse** crops in areas where sufficient ground water is available by adoption of various technologies for **judicious utilization of available water. A 'Special Package for Pulses cultivation in potential districts'** has been launched during 2016-17 at an outlay of Rs.50 Crore. This programme is being undertaken in **17 districts**, in an area of **59,738 Acre** by extending **100 percent subsidy for critical inputs** at the rate of Rs.2000/- per Acre. Subsidy is also extended for



**distribution of micro irrigation units such as Sprinklers and Rainguns** to ensure the cultivation of pulses crop under irrigated condition.

#### **1.4.4. Sustainable Agriculture in Rainfed areas**

**The Mission on Sustainable Dryland Agriculture (MSDA)**, focuses on improving the **production and productivity of millets, pulses, oilseeds and cotton** in an extent of around **25 Lakh Acre of dryland** in a phased manner from **2016-17 to 2019-20**, for which an amount of **Rs.802.90 Crore** has been sanctioned. The programme will be implemented on a **cluster approach** with participation of farmers and providing capacity building training, developing water harvesting structures, adopting new agronomical interventions, besides value addition to fetch remunerative returns to the dry land farmers. It is proposed to establish

**1000 dry land clusters of 1000 Ha.** each **during** the project period of **four years** with Primary Agricultural Credit Cooperative Societies as the focal unit for each cluster. **During the first phase (2016-17), 200 dry land clusters have been identified for the development of 5 Lakh Acre.** Cluster wise Crop area has been identified and the Cluster Development Team and Block Level Team have been formed to take up the following activities:

- i. Financial assistance will be extended for the entry point activities** like creation of water harvesting structures viz., Farm ponds, Percolation ponds, community ponds and check dams.
- ii. Financial assistance** for Land development activities viz., summer ploughing.

- iii. Agronomical assistance at 50% subsidy** will be extended for distribution of short duration, drought resistant seeds of Pulses, Millets, Oil seeds and Cotton.
- iv. Each nodal Primary Agricultural Cooperative Credit Societies** will be given assistance for setting up Micro Enterprises such as **Mini Dhal Mill, Oil expellers and Millet processing units.** Funds will also be allocated for Farmer Producers Organisation or Farmers Club for establishing Mini Dhal Mills, Oil Expellers, Millet Processing Units, sales outlets, packaging and branding of produce.
- v. Unemployed rural youth** will be encouraged by providing assistance with 80% subsidy per cluster for creating **custom hiring centres.**
- vi. Animal Husbandry activities** will also be promoted by extending assistance at the

rate of Rs.10 lakh per cluster for **cattle feed and cattle health care package.**

**During 2017-18, it is proposed to take up another 400 such clusters covering 10 Lakh Acre of dryland with an outlay of Rs.175.16 Crore.**

**National Mission for Sustainable Agriculture – Rainfed area Development-** Government of Tamil Nadu took another step in quest towards increasing the productivity of rainfed crops and income of the farmers by launching a land mark initiative 'Integrated farming system comprising of rearing milch cows/ goats' under Rainfed Area Development in 2015-16. This scheme focuses on improving the production and productivity of millets, pulses and oilseeds by adopting appropriate water conservation measures and an area of 22,100 Acre was covered with cropping system

based integrated farming system in 2016-17. Besides, resource conservation technologies such as establishment of vermicompost units and farmers trainings were conducted. In 2016-17, an expenditure of Rs.25.32 Crore was incurred under this scheme.

The Scheme will be continued with an outlay of Rs.30.00 Crore in all the districts except Chennai, The Nilgiris, Thanjavur, Nagapattinam, Tiruvarur, Trichirapalli, Kancheepuram, Tiruvallur, Theni, Tirunelveli and Kanyakumari.

#### **1.4.5. Collective Farming**

In Tamil Nadu 81.18 lakhs of land holding are available out of which 92% of operational holdings are small and marginal holdings and it accounts for 61% of total area under cultivation. Small and Marginal farmers have limited capacity to mobilize credit, adopt latest

technologies and to add value to their agricultural produce.

Hence, to make them to avail these benefits and to increase their income, the Government of Tamil Nadu has announced in Budget Speech 2017-18 an innovative programme for organizing small and marginal farmers into **'Farmer Producer Groups'** which will be federated into **'Farmer Producer Organizations'** to promote collective farming for credit mobilization, better adoption of technology and facilitate effective forward and backward linkages.

In 2017-18, as a pilot project, **2,000 such Farmer Producer Groups are proposed to be promoted**, each comprising not less than 100 farmers so as **to cover at least two lakh farmers this year**. Each Farmer Producer Group will be given a corpus fund of Rs.5 lakh

besides channelizing grants and credit available to Farmer Producer Organizations from NABARD and Small Farmer Agri Business Consortium. **A total allocation of Rs.100 Crore has been made for this purpose in 2017-18.**

It is proposed to **cover 40 Lakh farmers over a period** of five years by integrating 10 **'Farmer Producer Groups'** and federate them into a **"Farmers Producer Organization"** within the District.

#### **1.4.6. Micro Irrigation**

Micro Irrigation, a localized irrigation method that saves water and fertilizers is popularized by the State Government in a larger extent due to various advantages such as minimal soil erosion, reduced weed menace, uniform water distribution, maintenance of optimum plant population and increase in productivity and quality of agricultural produce. Considering the

importance of water saving interventions, **Tamil Nadu is the first state in the entire country to provide 100% subsidy for small and marginal farmers and 75% for other farmers for micro irrigation.**

Micro Irrigation Scheme is implemented under “**Pradhan Mantri Krishi Sinchayee Yojana(PMKSJ)**” for both Horticultural and Agricultural Crops. Various agricultural crops like redgram, cotton, sugarcane, maize, coconut and oilpalm are covered under micro irrigation.

Micro Irrigation has gained prominence due to the drought situation that prevailed during 2016-17 and an area of 30,412 Ha. has been covered at an outlay of Rs.126.04 Crore.

**During the year 2017-18, a sum of Rs.803.93 Crore has been allocated for the state, out of which a sum of**



**Rs.394.86 Crore has been allotted to cover agriculture crops in an area of 70,990 Ha.**

### **1.5.Protection of Farmers**

The delay in opening of Mettur dam due to insufficient storage of water and non release of water by Karnataka, poor onset of South West and North East monsoon, prevalence of extreme and continuous dry spell conditions and terminal drought that loomed largely across the State brought a profound impact on the coverage and productivity of major crops especially Paddy. Even though the initial spell during North East Monsoon season spurred the cultivation of samba paddy besides millets, pulses and cotton raised during Rabi season, the transgression in terms of magnitude of rainfall scuttled the prospects of major crops and acted as a major catastrophe to the crops raised during August-December, 2016. Further the State also

witnessed an unprecedented catastrophe due to the Vardha Cyclone.

But unfazed by all these impeding factors, the Government of Tamil Nadu resorted to various farmer livelihood restoration measures which included systematic and integrated micro level planning for irrigation management for enhancing the crop coverage in delta areas, close coordination with Public Works Department and Agricultural Engineering Department, implementation of **Special Packages**, ameliorative measures to revive the affected crops, timely disbursement of crop loans and enrolment of farmers under new crop insurance scheme viz., **Pradhan Mantri Fasal Bima Yojana**.

### **1.5.1.Crop Damage due to Vardah Cyclone**

The Vardah cyclone that crossed the northern coast of Tamil Nadu on 12.12.2016 unleashed its

wrath causing extensive crop damage (above 33 percent) **in a total extent of nearly 1,02,869 Acre (85,515 Acre of agricultural crops and 17,354 Acre of Horticultural crops)** cultivated in Tiruvallur, Kanchipuram, Vellore, Krishnagiri, Salem, Dharmapuri and Tiruvannamalai districts. Immediately, Government of Tamil Nadu extended a relief assistance of Rs.5,465/- per Acre for irrigated crops and Rs.7,287/- per Acre for perennial crops, from the State Disaster Response Fund (SDRF) to bail out distressed famers. A sum of **Rs.55.46 Crore** was disbursed to **64,269 affected farmers.**

### **1.5.2. Ameliorative measures to save the standing crop**

The slow progression of North East monsoon coupled with non availability of water in all reservoirs including Mettur dam created a distress situation throughout the state and the

standing crops that were raised in a vast area due to intensive efforts taken by the Government faced the danger of withering. In this situation, Government not complacent by all the efforts taken previously resorted to various water stress management measures such as foliar application of **Muriate of Potash (MOP) and Pink Pigmented Facultative Methylothroph (PPFM) to protect the standing crop from withering.** Awareness campaigns were also organised to mitigate water stress and ensure optimum utilization of available water. An area of 7.82 Lakh Acre was sprayed with MOP and 7.57 Lakh Acre with PPFM to mitigate drought.

In spite of all these efforts taken by the Government, the situation turned grim as drought that prevailed across the State had a long lasting impact and the standing crops

raised during Samba and Rabi season have withered beyond revival.

### **1.5.3. Drought Relief package due to failure of Monsoons**

During 2016-17, Tamil Nadu experienced **large deficit rainfall during North East Monsoon** coupled with poor storage of water in the reservoirs resulting in a drought situation across the State affecting the Samba and Rabi crops besides depriving the opportunity of bringing more area under major crops. Government of Tamil Nadu constituted a **High Level Committee** to assess the drought situation **based on ground truthing**. Government announced **32 districts of the state as drought - hit** besides extending relief assistance of Rs.5,465/- per Acre for paddy and other irrigated crops; Rs.3,000/- per Acre for rainfed crops and Rs.7,287/- per Acre for perennial crops as per the State Disaster

Response Fund (SDRF) norms. A total area of about **50.35 Lakh Acre** has been affected due to drought and an amount of **Rs.2,247.07 Crore** has been sanctioned as **compensation towards input subsidy** to **32.30 lakh** aggrieved **farmers**.

#### **1.5.4. Crop Insurance**

Implementation of Crop Insurance schemes in Tamil Nadu portrays the exemplary efforts taken by the State Government and Department of Agriculture by its resound success among the farmers. Government of Tamil Nadu with a deep concern to protect the livelihood of the farmers suffering from crop loss sanctioned an amount of **Rs.168.66 Crore as the state share to settle the compensation claims under National Agricultural Insurance Scheme (NAIS) implemented during 2015-16. An amount of**

**Rs.403.79 Crore has been disbursed as compensation to 2,96,550 affected farmers.**

The new Crop Insurance Scheme “**Pradhan Mantri Fasal Bima Yojana**” (PMFBY) conceptualised to protect the farmers from production risks, ensure food security, encourage crop diversification, besides enhancing growth and competitiveness of agriculture sector is implemented with the following **objectives**:

- Extending financial support to farmers suffering crop loss/damage arising out of unforeseen events
- Stabilizing the income of farmers to ensure their continuance in farming
- Encouraging farmers to adopt innovative and modern agricultural practices

PMFBY is being implemented from Kharif, 2016 onwards in all the districts of Tamil Nadu except Chennai. This new scheme covers more risk than National Agricultural Insurance Scheme (NAIS), like failed sowing/ prevented sowing/planting, post harvest losses, localized calamities (Cyclone, hail storm, landslide, unseasonal rains and inundation in isolated farm) and mid season adversities besides early payment of compensation to farmers for their crop loss. Uniform cut-off date for enrolment of loanee and non loanee farmers is the other benefit that will be provided under this scheme. Further, the farmers would get more accurate compensation for crop loss since revenue village has been notified as the unit of insurance.

The districts have been categorised into three clusters and implemented by three Insurance Companies viz., Agricultural Insurance Company of India Limited, ICICI Lombard GIC and New



India Assurance GIC. During 2016-17, **the State Government has extended a sum of Rs.428 Crore as its share of premium subsidy. About 15.37 lakh farmers have been enrolled and 31.85 Lakh Acre** has been insured under the scheme. **Tamil Nadu stands first in the enrolment of non-loanee farmers (12.04 Lakh) in the entire country and is one among the states which has high enrolment of farmers in PMFBY during Rabi 2016-17.**

The farmers enrolled under **Pradhan Mantri Fasal Bima Yojana** would get a **maximum compensation** of Rs 25,000/- per Acre for paddy in Cauvery delta region while farmers of other regions would get Rs.21,500/- to Rs.26,000/- per Acre based on yield loss estimated through the Crop Cutting Experiments at village level. Similarly, farmers are likely to get Rs.12,000/- for pulses, Rs.4,800/- to

Rs.20,000/- for millets, Rs.6,000 to Rs.22,500/- for oilseeds , Rs.16,500 to Rs.25,500/- for cotton and Rs.34,000/- to Rs.60,000/- for sugarcane as compensation per Acre under PMFBY.

The State Government has taken sincere steps to expedite the process of conducting Crop Cutting Experiments and furnishing the yield details to Insurance Companies for speedy disbursement of compensation claims. Due to the efforts taken by the State Government, the **Insurance Companies have released a sum of Rs.928.12 Crore has been sanctioned to be disbursed to 2,92,096 farmers till date.**

**During 2017-18, a sum of Rs.522.70 Crore has been allotted** as State share of premium for implementation of PMFBY to cover 40% of the Gross Cropped Area. Besides PMFBY, Coconut Palm Insurance Scheme (CPIS) which is

already under implementation will also be continued in all the districts.

### **1.6. Tamil Nadu State Seed Development Agency (TANSEDA)**

The use of improved seed coupled with other agricultural inputs, has an immense potential to increase crop production and productivity. The pace of progress largely depends upon development of new and improved varieties of crops and an efficient system for timely supply of adequate quantity of quality seeds / planting materials to farmers.

The Government of Tamil Nadu, envisioned to bring comprehensive reforms in the seed sector by establishing an exclusive agency viz., **Tamil Nadu State Seed Development Agency (TANSEDA)** during 2015-16 for advance seed planning, formulating a perspective plan for organised seed production

and distribution and improving farmers' livelihood through sustainable, innovative and market-led seed network.

The objective of the agency is to encourage the use of certified seeds among the farmers; achieve the Seed Replacement Rate (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; procure and distribute adequate good quality certified seeds/seedlings of all agricultural crops like Paddy, Millets, Pulses, Oilseeds, Cotton and Coconut in time at an uniform rate throughout the state. Seeds of new cultivars / varieties are also popularised and supplied to the farmers for seed production to replace the obsolete ones.

During 2016-17, 24,488 MT of quality certified seeds of agricultural crops were

procured and 20,781 MT were distributed to 5.20 Lakh farmers through 880 Amma Facilitation Centres. Also 9.05 Lakh coconut seedlings were distributed.

The crop wise details of seeds distributed during 2016-17 is indicated below:

**Table 1.6: Seed Procurement and Distribution-2016-17**

<b>Crop</b>	<b>Seed Procured (MT)</b>	<b>Seed Distributed (MT)</b>
Paddy	18,206	15,294
Millets	314	302
Pulses	3,658	3,186
Oilseeds	2,282	1,979
Cotton	28	20
<b>Total</b>	<b>24,488</b>	<b>20,781</b>

During 2017-18, it has been programmed to procure and distribute 25,240 MT Seeds to about 7.20 lakh farmers. Further 9.55 Lakh coconut seedlings will be distributed.

**Table 1.7: Seed Procurement and Distribution Plan-2017-18**

<b>Crop</b>	<b>Seed Procurement (MT)</b>	<b>Seed Distribution (MT)</b>
Paddy	17,800	17,800
Millets	400	400
Pulses	4,000	4,000
Oilseeds	3,000	3,000
Cotton	40	40
<b>Total</b>	<b>25,240</b>	<b>25,240</b>

### **1.6.1. Sub-Mission on Seed and Planting Material (SMSP)**

**Sub-Mission on Seed and Planting Material (SMSP)** subsumed under NMAET is implemented with a sharing pattern of 60:40 between Centre and State. The interventions included in the sub-mission cover the entire gamut of seed chain from nucleus seed to certified seeds for distribution to the farmers besides providing infrastructural support for development of seed sector. As a part of this initiative, activities such as distribution of Foundation/Certified seeds of paddy, millets,

oilseeds and pulses to the farmers at subsidised cost besides training them on scientific methods of quality seed production are taken up every year to meet their own requirement and increase their farm income.

The scheme is being implemented during 2016-17 with an amount of Rs.13.46 Crore. The scheme is continued during 2017-18 also.

### **1.7. Plant Protection**

**Plant protection** plays a vital role in determining the crop productivity and production despite the introduction of numerous technologies, improved varieties and advance crop specific production strategies. Hence, Tamil Nadu is focusing on adoption of **cost effective agro-technical practices** that increase the crop production without causing much damage to the environment. The **strategies contemplated** are creating awareness on the

indiscriminate usage of chemical pesticides, conducting intensive pest surveillance, advocating Integrated plant health management, promoting knowledge on local production of bio-control agents, providing subsidies for technologies that are part of Integrated Pest Management (IPM) practices, increasing the efficiency and capacity of the existing infrastructure to intensify the production of bio-control agents and quality control of Plant protection chemicals. Besides, Government has set up automatic weather stations at block level to record weather parameters and issue pest forecast bulletins to farmers.

The quantity of plant protection chemicals distributed during 2016-17 is furnished below:

**Table 1.8 : Distribution of Plant Protection Chemicals during 2016-17**

Component	Quantity	Value (Rs in Crore)
Dust(MT)	3,055	5.10
Liquid(Lit)	4,94,600	32.00



### **1.7.1. Pest and Disease Surveillance**

Fixed plot survey and roving survey are conducted at weekly intervals and on daily basis respectively, besides, monitoring and forewarning on pest and diseases outbreak. Location / crop / pest specific control measures are recommended to the farmers through SMS, Voice advisories, radio, television, pamphlets, campaigns, etc.

### **1.7.2. Integrated Plant Health Management**

Intensively managed modern agricultural systems have an intrinsic reliance on the use of herbicides and other pesticides that have caused loss of beneficial on - farm biodiversity. Government of Tamil Nadu which is keen on safeguarding the environmental health, adopts **Agro-Ecosystem Analysis (AESAs) based Integrated Plant Health Management (IPHM)**, a sustainable, sensible and smart

approach, that offers crop and region specific protection solutions to address the environmentally sensitive issues by integrating multiple strategies viz., plant health at different stages, built-in compensation abilities of plants, pest – defender population dynamics, soil conditions, climatic factors and farmer’s past experience, have been evolved over Economic Threshold Level (ETL) based approach. This approach is likely to smother the adverse effects on agro-ecosystems and decrease the escalated cost of agricultural production, caused due to problems of pest resurgence, insecticide resistance and sustainability.

As an extension of its Stewardship efforts towards the promotion of **future-friendly eco-sustainable agricultural practices**, Government of Tamil Nadu piloted **150 model "Eco-Friendly Integrated Pest Management**

**Villages” during 2015-16** which gained a warm reception among the farmers and during **2016-17, 100 more villages** were established in 20 selected districts **at a cost Rs.1.00 Crore** to educate, motivate and guide the farmers to adopt **Agro Eco System Analysis (AESA) based IPM strategies and encourage on-farm production of biocides and biocontrol agents.**

The various eco-sustainable practices promoted by the Government have helped to reduce the consumption of pesticides from 10,926 MT of technical grade in 1984-1985 to 2,000 MT in 2016-17.

### **1.8. Fertilizers**

The Department of Agriculture is formulating fertilizer plan every year based on the season, soil type, soil fertility status, farm-wise crop plan and cropping pattern, besides focusing on the

requirements of the farmers. The Government is also taking sincere efforts to get allocation of fertilizers from Government of India in time; prepare a season-wise supply plan and preposition the required quantity of fertilizers to ensure adequate availability of fertilizers to the farmers.

Government of Tamil Nadu has taken exemplary initiatives such as **exempting 4% VAT** on fertilizers and **5% VAT** on Naphtha procured by MFL and SPIC to allow continuing of Naphtha based Urea production in the State besides sanctioning **interest free loans** to Tamil Nadu Cooperative Marketing Federation (**TANFED**) to ensure timely availability of quality fertilizers at affordable prices to farmers. During 2017-18, a sum of Rs.150.00 Crore will be extended for procuring and prepositioning of fertilizers. The fertilizer distribution during

2016-17 and requirement for 2017-18 is furnished below:-

**Table 1.9 :Fertilizer distribution during 2016-17 and Requirement for 2017-18**

( L.MT)

Fertilizer	Distribution 2016-17	Requirement 2017-18		
		Kharif	Rabi	Total
Urea	7.76	3.50	6.59	10.09
DAP	2.51	1.50	1.89	3.39
MOP	2.52	1.30	1.94	3.24
Complex	5.07	2.50	3.18	5.68

Sufficient quantity of Urea, DAP, MOP and Complex fertilizers have already been stocked.

### **1.8.1. Fertilizer Transactions through Point of Sale (PoS) Machine**

Government of Tamil Nadu has given approval for Point of Sale (PoS) enabled fertilizer transaction in all PACCS and Private retailers across the State. Due to this, sale of fertilizer at subsidized rates fixed by the Government is ensured. It also prohibits the sale of subsidized fertilizers for non-agricultural purpose. Due to transparency in the implementation of PoS machines, supply, movement and stock of fertilizers can easily be monitored. The subsidy will be given to fertilizer manufacturers only after ensuring the sale of fertilizer to the genuine farmers through PoS machines besides ascertaining that fertilizers are sold at Maximum Retail Price at all retail points.

About 5,298 and 4,139 PoS devices are being distributed to private retailers and Cooperative retail units respectively.

## **1.9. Soil Health**

The State Government's maiden project of **"Distribution of Farmers Integrated hand Book (FIHB)"** to **67.45 lakh farm holdings** helped the farmers of Tamil Nadu to better understand farm-wise/crop-wise use of nutrients and fertilizers for improving the soil productivity. In continuation to this successful initiative, the Department of Agriculture is also implementing **"Mission Soil Health Card"** scheme launched by Government of India during 2015-16. Under this scheme, from 2015-16 to 2016-17 about 67.67 Lakh Soil Health Cards have been distributed based on grid sampling against a programme of 70.00 lakh.

During 2017-18 it is programmed to collect 6.45 Lakh soil samples and distribute 34.00 Lakh Soil Health card based on the soil test values to Farmers.

### **1.9.1. Biological Management of Soil Ecosystem for Productive Agriculture**

“**Eco-agriculture**”, a new paradigm incorporating a suite of environment friendly approaches, soil fertility building methods, organic plant nutrition and protection techniques is gaining momentum among the farmers as it promotes **on farm production of cost-effective organic inputs** to enhance resource use efficiency, decrease production-technology risk in small farm holdings, increase profitability and ensure productive and sustainable agricultural system.

Government of Tamil Nadu is implementing a multitude of schemes to promote the use of organic inputs in agriculture:

- Annually, 250 MT of **Green Manure Seeds** are procured and distributed to the farmers at a subsidy of 50% for in-situ ploughing in



order to increase organic content in soil. During 2016-17, green manure seeds were distributed for an area of 35,477 Hectare at a cost of Rs.5.07 Crore **under National Agricultural Development Programme**. In 2017-18, the scheme would be continued in all districts except Chennai, The Nilgiris, Ramanathapuram and Sivagangai. Besides, bio-enrichment of soil by **intercropping Green Manure Crop in Rice agro ecosystem** to increase the fertilizer use efficiency and productivity of rice was taken up during 2016-17 in an extent of 1,805 Ha. at a cost of Rs.4.00 lakh **under National Food Security Mission**.

- 5000 Kits each containing 1 Kg of Pleurotus and 5 Kg of Urea are distributed every year to the farmers **at free of cost** to produce

**compost from the farm waste using Pleurotus.**

- Annually 525 MT of **Blue Green Algae** and 500 MT of **Azolla** are produced and distributed to farmers for increasing nitrogen content in soil and reducing the infestation of weed.

The quantity of organic products produced and distributed during 2016-17 and programme for 2017-18 are tabulated below:

**Table 1.10 : Organic products – Distribution during 2016-17 and Programme for 2017-18**

<b>Bioproducts</b>	<b>Annual Target</b>	<b>Quantity 2016 -17</b>	<b>Programme 2017-18</b>
Blue green algae(MT)	525	500	525
Green Manure Seeds(MT)	250	152	250
Pluerotus Kits(Nos)	5,000	5,000	5,000
Azolla(MT)	500	500	500

- Burning of trashes causes environmental pollution, loss of nutrients and destruction of beneficial soil micro-organisms. In view of this, **Sugarcane crop residue management** through trash mulching was implemented during 2016-17.
- Encouraging the farmers to produce required organic manure in their own lands by extending subsidy for **establishment of 1,400 Vermicompost units** at a cost of Rs.2.17 Crore under National Mission for Sustainable Agriculture (NMSA) – Rainfed Area Development. This scheme will be continued during 2017-18 also.
- Promotion of **organic farming through cluster approach** under Participatory Guarantee System (PGS) of certification

under Paramparagat Krishi Vikas Yojana (PKVY), a three year scheme of National Mission on Sustainable Agriculture (NMSA), wherein financial assistance of Rs. 2.94 Crore was extended for mobilization of farmers, capacity building, procurement of organic inputs and establishment of organic input production units. 42 Clusters covering an area of 2,096 Acre in 10 districts is under conversion to organic through Participatory Guarantee System (PGS). In 2017-18, the second year activities would be taken up in 42 clusters at an outlay of Rs. 2.09 Crore. Also the scheme would be implemented in 53 new clusters at an outlay of Rs. 3.75 Crore in 19 districts.

## **1.10. Training to Farmers**

Training 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. Training such as Production oriented, need based short and long duration on – campus and off-campus (village based) training programmes, method demonstration, awareness campaign are organized under various schemes to make the farmers abreast of latest technologies to increase the production and productivity of various crops at farm level.

### **1.10.1. Sub-Mission on Agricultural Extension (SMAE) - Support to State Extension Programmes for Extension Reforms Scheme (SSEPERS)**

The scheme “**Support to State Extension Programmes for Extension Reforms Scheme (SSEPERS)**” under Sub-Mission on Agricultural Extension (SMAE) aims at making extension system farmer driven and farmer accountable through new institutional arrangements for technology dissemination.

The programme is implemented throughout the state with co-ordinated efforts of Agriculture, Horticulture and Plantation Crops, Animal Husbandry, Sericulture, Fisheries, Forestry, Agricultural Engineering, Agricultural Marketing and Agri Business, Seed Certification and Organic certification department and Tamil Nadu Agricultural University, Tamil Nadu

Veterinary and Animal Sciences University and Tamil Nadu Fisheries University.

This Scheme focuses on encouraging Public Private extension strategies, ensuring an integrated, broad-based extension delivery mechanism consistent with farming system approach with a focus on bottom up planning, adopting group approach to extension in the form of Commodity Interest Groups and Farmers Interest Groups to meet the needs of the farmers, besides, consolidating them as Farmers Producer Organisations, addressing gender concerns by mobilizing farm women into groups and facilitating convergence of farmer centric programmes in planning, execution and implementation. During 2016-17, activities such as training, demonstration, exposure visit, awards, farmer - scientist interactions, joint visits by scientists and extension workers,

organising kisan gosthies and farm school, innovative technology dissemination components are taken up within the district, state and national level at a cost of Rs.31.00 Crore. The scheme will be continued during 2017-18 also.

### **1.10.2. Farmers Facilitation Centres**

Government of Tamil Nadu runs **22 Farmers Training Centres** and imparts training to 28,820 farmers, convenors, farm women and rural youths annually on farm management practices and technologies.

**Table 1.11 : Farmers Training Centres**

<b>S. No</b>	<b>District</b>	<b>Location</b>
1	Kancheepuram	Kancheepuram
2	Villupuram	Tindivanam
3	Vellore	Vellore
4	Tiruvannamalai	Tiruvannamalai
5	Salem	Salem
6	Namakkal	Namakkal
7	Dharmapuri	Dharmapuri



<b>S. No</b>	<b>District</b>	<b>Location</b>
8	Krishnagiri	Krishnagiri
9	Erode	Erode
10	Tiruchirapalli	Tiruchirapalli
11	Perambalur	Perambalur
12	Karur	Karur
13	Pudukkottai	Kudumianmalai
14	Thanjavur	Sakkottai
15	Theni	Theni
16	Dindigul	Dindigul
17	Ramanathapuram	Paramakudi
18	Sivagangai	Sivagangai
19	Virudhunagar	Virudhunagar
20	Tirunelveli	Palayamkottai
21	Thoothukudi	Thoothukudi
22	Kanyakumari	Nagercoil

**Water Management Training Centre** is functioning at Vinayagapuram, Madurai district is functioning from 1985 with a capacity to train 180 field functionaries and 900 farmers annually on irrigation technologies and irrigation efficiency.

**The State Agricultural Extension Management Institute (STAMIN)** functioning

at Kudumianmalai, Pudukkottai district is the main centre for training of Extension Officers of the department. Annually 1,100 field functionaries are trained.

**State Agricultural Management and Extension Training Institute** (SAMETI) had been established in the year 2012-13 in the premises of STAMIN, to provide consultancy services in areas of project planning, project appraisal, etc.,

### **1.10.3. Invigorating Extension System**

The Government is keen on reducing the knowledge gap by strengthening and revamping the existing agriculture extension system through **Improved fixed schedule of visit for agriculture extension functionaries under Farmers oriented Integrated Agricultural Extension System** so as to have a direct interface with the individual farmers, farmer

clusters and commodity groups. Under this system, 12,620 village panchayats in 385 blocks are visited by 1,918 Assistant Agricultural Officers (AAO) in coordination with 385 Block Technology Managers and 770 Assistant Technology Managers. Each AAO will visit 8 segments once in a fortnight which will be monitored by the Block Agricultural Officers and Deputy Agricultural Officers. The Assistant Director of Agriculture will make 3 visits per week to inspect and Deputy Director of Agriculture and Joint Director of Agriculture will make 2 visits per week for super check.

#### **1.10.4. Crop Yield Competitions**

Sound scientific farming technologies are the prime mover in increasing the production and productivity of a crop. Awareness on 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-centric competitions are conducted for irrigated paddy, maize, cholam, cumbu, groundnut, redgram, blackgram, greengram, cotton and sugarcane and rainfed groundnut at District and State level.

Totally, 88 District Level Competitions and 9 State Level Competitions are conducted every year. An enrolment fee of Rs.100/- for Paddy, Groundnut, sugarcane and cotton and Rs.50/- for other crops for State Level entry and Rs.50/- for Paddy, Groundnut, sugarcane and cotton and Rs.25/- for other crops for district level entry is collected from the farmers. The cash prizes are awarded to the farmers achieving highest

productivity at State and District level are indicated below:

**Table 1.12 : Cash prizes at State and District level**

**(Unit Rupees)**

Crop	State Level		District Level	
	1st Place	2 <sup>nd</sup> Place	1st Place	2 <sup>nd</sup> Place
Paddy, Groundnut, Cotton and sugarcane	25,000	15,000	15,000	10,000
Other Crops	15,000	10,000	10,000	5,000

Besides, a medal worth of Rs.3,500/- and a cash prize of Rs.5 lakh are given by the Hon'ble Chief Minister on the Republic Day function to the farmer obtaining the highest yield in paddy adopting System of Rice Intensification (SRI) technique.

#### **1.10.5. National Mission on Agricultural Extension and Technology (NMAET)**

**NMAET** consisting 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) and Sub-Mission on Plant Protection and Plant Quarantine (SMPP) aims to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to the farmers, through judicious mix of extensive physical outreach and interactive methods of information dissemination, use of ICT, popularisation of modern and appropriate technologies, capacity building and institutional strengthening to promote mechanisation, availability of quality seeds, plant protection etc., and encourage the aggregation of farmers into Interest groups to form Farmer Producer Organisations (FPOs).

### **1.11. Laboratories**

Availability of efficacious chemicals and judicious and safe use by the farming community is critical for a sustained increase

in agricultural production and productivity. Hence, the Department with a serious concern to ensure the quality of fertilizers and pesticides strictly enforces the provisions of the Fertilizer Control Order (FCO), 1985 enacted under The Essential Commodities Act, 1955 and the Insecticide Act 1968 respectively. Fourteen **Fertilizer Control Laboratories** are functioning in the State to test samples collected by Quality Control Inspectors. Government with an aim to **strengthen the quality control of fertilizers**, has constructed new buildings and installed sophisticated analytical instruments and equipments in a phased manner.

During the year 2016-17, 17,347 samples have been sent against a programme of testing 17,500 samples and 793 samples were found non-standard. Action has been taken against all the defaulters. During 2017-18, it is

programmed to analyze 19,600 fertilizer samples.

The 14 Fertilizer Control Laboratories functioning in the State are listed below:

**Table 1.13 : Fertilizer Control Laboratories**

<b>S.No.</b>	<b>District</b>	<b>Location</b>
1	Kancheepuram	Kancheepuram
2	Villupuram	Villupuram
3	Salem	Salem
4	Dharmapuri	Dharmapuri
5	Coimbatore	Coimbatore
6	Tiruchirapalli	Tiruchirapalli
7	Thanjavur	Kumbakonam
8	Tiruvarur	Tiruvarur
9	Madurai	Madurai
10	Dindigul	Dindigul
11	Ramanathapuram	Paramakudi
12	Thoothukudi	Kovilpatti
13	Kanyakumari	Nagercoil
14	The Nilgris	Ooty



Government, with an aim to safeguard the interest of farmers in organic cultivation and to ensure the quality of organic manures such as Vermi compost, City Compost and De-oiled cakes which have been recently included under FCO, 1985 have established two new **Organic Fertilizer Testing Laboratories** at Tiruchirapalli and Coimbatore with an annual analyzing capacity of 1,440 Samples.

**Central Control Laboratory** located at Kudumianmalai, Pudukkottai district is the Apex organisation that conducts training for laboratory personnel, helps calibrating and maintaining accuracy of analysis of the laboratories besides providing widespread awareness on soil-test-based fertiliser use being strengthened under Soil Health Management 2016-17 with an outlay of Rs.40.00 lakh.

Government, promotes farm and crop specific nutrient management and enhances the nutrient use efficiency through **31 Soil Testing Laboratories** and **16 Mobile Soil Testing Laboratories** functioning in the State. Annually **11.46 lakh soil samples** are analysed through these laboratories. For analysing the Micro Nutrient status of the soil, **Atomic Absorption Spectrophotometers** have been provided to **all the Soil Testing and mobile soil testing Laboratories.**

The Soil Testing Laboratories (STL) and Mobile Soil Testing Laboratories (MSTL) functioning in the State are listed below:

**Table 1.14 : STLs and MSTLs functioning in the State**

<b>S. No</b>	<b>District</b>	<b>STL</b>		<b>MSTL</b>	
1	Kancheepuram	1	Kancheepuram		
2	Tiruvallur	2	Tiruvallur	1	Tiruvallur
3	Cuddalore	3	Cuddalore		
4	Villupuram	4	Villupuram	2	Villupuram
5	Vellore	5	Melalathur		
6	Tiruvannamalai	6	Tiruvannamalai	3	Tiruvannamalai
7	Salem	7	Salem		

S. No	District	STL		MSTL	
8	Namakkal	8	Namakkal	4	Tiruchengode
9	Dharmapuri	9	Dharmapuri		
10	Krishnagiri	10	Krishnagiri	5	Krishnagiri
11	Coimbatore	11	Coimbatore		
12	Tirupur	12	Tiruppur	6	Tirupur
13	Erode	13	Erode	7	Erode
14	Tiruchirapalli	14	Tiruchirappalli		
15	Perambalur	15	Perambalur	8	Perambalur
16	Ariyalur	16	Ariyalur		
17	Karur	17	Karur	9	Karur
18	Pudukkottai	18	Kudumiyamalai		
19	Thanjavur	19	Aduthurai		
20	Nagapattinam	20	Nagapattinam	10	Nagapattinam
21	Tiruvarur	21	Tiruvarur	11	Tiruvarur
22	Madurai	22	Madurai	12	Madurai
23	Theni	23	Theni		
24	Dindigul	24	Dindigul		
25	Ramanathapuram	25	Paramakudi	13	Paramakudi
26	Sivagangai	26	Sivagangai		
27	Virudunagar	27	Virudhunagar	14	Aruppukottai
28	Tirunelveli	28	Tirunelveli		
29	Thoothukudi	29	Kovilpatti	15	Kovilpatti
30	Kanyakumari	30	Nagercoil	16	Nagercoil
31	The Nilgris	31	Ooty		

In order to ensure use of quality pesticides, the Department runs **15 Pesticide Testing**

**Laboratories(PTL).** These laboratories check the quality of pesticides by testing samples drawn by the Quality Control Inspectors from 147 Pesticide Manufacturing Units and 13,321 private sale outlets, in accordance to the Insecticide Act, 1968 and Insecticide Rules, 1971.

During 2016-17, 21,433 samples have been analysed against a programme of 21,850 samples of which 168 samples were misbranded and necessary action has been taken against the defaulters. It is programmed to analyze 21,850 pesticide samples during 2017-18. Government is also taking special efforts to strengthen 2 Pesticide Testing Laboratories at Kancheepuram and Coimbatore for obtaining accreditation from National Accreditation Board for Testing and Calibration Laboratories (NABL).

**Table 1.15 : PTLs functioning in the State**

<b>S. No.</b>	<b>District</b>	<b>Location</b>
1	Kancheepuram	Kancheepuram
2	Cuddalore	Cuddalore
3	Vellore	Vellore
4	Salem	Salem
5	Dharmapuri	Dharmapuri
6	Coimbatore	Coimbatore
7	Erode	Erode
8	Tiruchirapalli	Tiruchirapalli
9	Thanjavur	Aduthurai
10	Nagapattinam	Nagapattinam
11	Madurai	Madurai
12	Theni	Vaigai Dam
13	Sivagangai	Sivagangai
14	Tirunelveli	Tirunelveli
15	Thoothukudi	Kovilpatti

### **1.12.Human Resource Management**

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, the Department of Agriculture

functions with a total strength of 4835 technical staff (Directorate of Agriculture) and 8275 non-technical staff (including all sister Departments), totaling to 13,110 Staff.

**Table 1.16 : Technical Establishment**  
(Directorate of Agriculture)

<b>Name of the Post</b>	<b>Sanctioned Strength</b>
Additional Director of Agriculture	5
Joint Director of Agriculture	31
Deputy Director of Agriculture	125
Assistant Director of Agriculture	420
Agricultural Officer	1,088
Deputy Agricultural Officer	337
<b>Total Technical officers</b>	<b>2,006</b>
Assistant Seed Officer	509
Assistant Agricultural Officer	2,320
<b>Total field functionaries</b>	<b>2,829</b>
<b>Total Technical Staff</b>	<b>4,835</b>

**Table 1.17 : Non-Technical Establishment**  
(Including all sister Departments)

<b>Name of the Post</b>	<b>Sanctioned Strength</b>
Deputy Director (Administration)	4
Administrative Officer	44
Superintendent	515
Assistant	1521
Junior Assistant	914
Typist	689

<b>Name of the Post</b>	<b>Sanctioned Strength</b>
Depot Manager(Gr-I)	143
Depot Manager (Gr-II)	281
Depot Manager(Gr-III)	589
Steno-Typist (Gr-I)	6
Steno-Typist (Gr-II)	57
Steno-Typist (Gr-II)	146
Driver	560
Lab Assistant	135
Record Clerk	205
Office Assistant / Watchman	2466
<b>Total Non-Technical Staff</b>	<b>8275</b>

### **1.13. Infrastructure**

Government, to meet the emerging challenges in agriculture has modified the extension approaches from time to time. The Agricultural extension machinery which earlier focussed on improving the effectiveness of extension methods and adoption of improved technologies is now playing a vital role in the technological empowerment of research scholars, extension personnel, farmers, farm women and rural youth besides integrating their

activities through participatory extension approaches.

The Department, to efficiently fulfill the needs of farmers who operate in diversified socio-economic environment and enhance their participation in production programmes, has established **agro-extension service hubs** such as soil testing laboratories, fertilizer control laboratories, seed processing units, seed godowns, state seed farms, bio-fertilizer production units, Bio-control laboratories, Parasite breeding centres, IPM centres, Organic fertilizer testing laboratories, Micronutrient mixture manufacturing unit, Farmers' Hub, Farmers Training Centres, Water Management Training Centre, State Agricultural Extension Management Institute (STAMIN) and agricultural extension centres. Besides serving as Extension - advisory service centres these Hubs also serve



as Knowledge - Resource Centres and involve in activities such as disseminating the emerging technologies at the door steps of the farmers, providing one-stop solution for all agriculture related problems, ensuring availability of critical inputs, improving the crop productivity and input efficiency and increasing the income of small and marginal farmers.

### **1.13.1. Production Units for Agricultural Inputs**

The Department has built up a vibrant seed agency – **“Tamil Nadu State Seed Development Agency (TANSEDA)”** for varietal development, varietal protection including revival of traditional promising varieties. sustainable seed production even for small holdings, creation of infrastructure for seed production, processing and storage, imparting training on seed related aspects

besides ensuring timely supply of quality seed/planting materials at an uniform rate throughout the state.

**Forty one** Government owned **State Seed Farms** ensure mass production and timely availability of adequate quantity of improved seeds / planting materials besides serving as model farms to demonstrate the latest technologies thus assisting in raising the income of small and marginal farmers. This Government will take necessary steps for improvement of irrigation facility in State Seed Farms.

**During 2017-18, it is programmed to improve infrastructure facilities in State Seed Farms and Coconut Nurseries with an outlay of Rs. 30.00 Crore financial assistantship from NABARD.**

**Table 1.18: Seed Production Units****Table 1.18(a): State Seed Farms**

<b>S. No</b>	<b>District</b>	<b>Name of the State Seed farm</b>	<b>Total area (Acre)</b>
1	Kancheepuram	Panjupettai	58.76
2	Thiruvallur	Kolandalur	50.72
3	Cuddalore	Miralur	46.98
4		Vandurayanpattu	50.99
5	Villupuram	Kakuppam	31.60
6		Iruvelpattu	50.72
7		Vadakanendal	47.06
8		Vanur	60.36
9	Tiruvannamalai	Athiyendal	14.11
10		Vazhavachanur	36.00
11	Salem	Danishpet	96.40
12		Mettur	57.90
13	Erode	Bhavani	73.61
14		Sathyamangalam	41.89
15	Dharmapuri	Pappalapatti	14.80
16	Thiruppur	Pongalur	39.05
17		Pappankulam	26.88
18	Pudukkottai	Annapannai	601.95
19	Trichy	Pudurpalayam	75.97
20		Neikuppaipudur	38.57
21	Karur	Inungur	205.44

<b>S. No</b>	<b>District</b>	<b>Name of the State Seed farm</b>	<b>Total area (Acre)</b>
22	Thanjavur	Sakkottai	72.18
23	Nagapattinam	Nagamangalam	63.91
24		Thirukadaiyur	45.74
25	Thiruvarur	Keeranthi	55.70
26		Kanchikudikadu	53.02
27		Devambalpattinam	92.72
28		Nedumbalam	63.73
29		Moongilkudi	47.63
30	Madurai	Vinayagapuram	45.52
31	Theni	Keezhakudalur	47.86
32	Virudhunagar	Devadanam	52.07
33	Tirunelveli	Karaiyiruppu	83.59
34	Kanyakumari	Thirupathisaram	37.20
<b>Total</b>			<b>2,480.63</b>

**Table 1.18(b): State Oilseeds Seed Farms**

<b>S. No</b>	<b>District</b>	<b>Name of the State Seed farm</b>	<b>Total area (Acre)</b>
35	Kancheepuram	Musaravakkam	154.95
36	Krishnagiri	Agasipalli	16.69
37	Pudukkottai	Vellalaviduthi	657.35
38	Vellore	Navlock	66.16
39	Erode	Bhavanisagar	28.39
40	Cuddalore	Neyveli (TANCOF)	301.01
<b>Total</b>			<b>1,224.55</b>

**Table 1.18(c) : State Pulses Multiplication Farm**

<b>S. No</b>	<b>District</b>	<b>Name of the State Seed farm</b>	<b>Total area (Acre)</b>
41	Pudukkottai	Vamban	475.00
<b>Grand Total (41 SSF)</b>			<b>4,180.18</b>

Government also operates 16 major, 37 medium and 63 mini Seed Processing Units with an annual capacity of 30,000 MT through which seeds produced in the Government seed farms and in farmers fields are processed.

**Table 1.19 : Seed Processing Units**

<b>Sl. No</b>	<b>District</b>	<b>No. of Units</b>			<b>Total</b>
		<b>Major</b>	<b>Medium</b>	<b>Mini</b>	
1	Kancheepuram	1	1	4	6
2	Thiruvallur	1	1	3	5
3	Cuddalore	-	-	3	3
4	Villupuram	2	3	4	9
5	Vellore	-	1	3	4
6	Tiruvannamalai	2	1	5	8
7	Salem	1	1	1	3
8	Namakkal	-	1	2	3
9	Dharmapuri	-	1	2	3
10	Krishnagiri	-	2	1	3

Sl. No	District	No. of Units			Total
		Major	Medium	Mini	
11	Coimbatore	-	1	1	2
12	Tiruppur	-	1	2	3
13	Erode	1	1	1	3
14	Tiruchirapalli	-	2	3	5
15	Perambalur	-	-	1	1
16	Ariyalur	-	2	1	3
17	Karur	1	1	-	2
18	Pudukkottai	1	1	1	3
19	Thanjavur	2	4	1	7
20	Nagapattinam	-	2	5	7
21	Tiruvarur	1	2	3	6
22	Madurai	1	1	1	3
23	Theni	-	-	2	2
24	Dindigul	1	-	-	1
25	Ramanathapuram	-	2	1	3
26	Sivagangai	-	1	2	3
27	Virudhunagar	-	1	4	5
28	Tirunelveli	-	1	4	5
29	Thoothukudi	1	1	1	3
30	Kanyakumari	-	1	1	2
<b>TOTAL</b>		<b>16</b>	<b>37</b>	<b>63</b>	<b>116</b>

Further there are 23 Government coconut nurseries and 16 crossing centres for production and distribution of quality coconut seedlings.

**Table 1.20 : Government Coconut Nurseries and Crossing Centres**

<b>S. No</b>	<b>District</b>	<b>Coconut Nurseries</b>	<b>Crossing Centres</b>	
1	Kancheepuram	1	Pichivakkam	
2	Tiruvallur	2	Madavaram	1
3	Cuddalore	3	Neyveli	
4	Villupuram			2
5	Vellore	4	Navlock	3
6	Tiruvannamalai	5	Vazhavachanur	
7	Salem	6	Danishpet	4
8	Krishnagiri	7	B.G Pudur	5
9	Coimbatore	8	Aliyarnagar	6
10	Erode	9	Bhavanisagar	7
11	Tiruchirapalli	10	Tiruvarangam	8
12	Pudukkottai	11	Vellalaviduthi	
13	Thanjavur	12	Pattukottai	9
14	Nagapattinam	13	Malliam	
15	Theni	14	Vaigaidam	10
16	Ramanathapuram	15	Uchipuli	11
		16	Devipattinam	
17	Sivagangai	17	Sathurvedi mangalam	12
18	Virudhunagar	18	Devadhanam	13
19	Tirunelveli	19	Senkottai	14
		20	Vadakarai	
20	Thoothukudi	21	Killikulam	15
21	Kanyakumari	22	Puthalam	16
22	Tiruvarur	23	Vaduvur	

Government also ensures timely provision of **Micro nutrients**, a potential source of enhanced

crop nutrition for increasing crop production and productivity and quality of the produce. The Department owns a **Micro Nutrient Mixture Production Centre** at Kudumianmalai, Pudukkottai district with a capacity to produce 2,400 MT of 14 types of notified Micro Nutrient (MN) mixtures annually. During 2016-17, 2,357 MT of MN mixture has been produced and distributed to farmers through Amma Facilitation Centres. It has been programmed to produce 2,400 MT during 2017-18.

Government to offset the exhaustion of soil nutrients due to indiscriminate use of inorganic fertilizers, produces three strains of Bio-fertilizers viz., *Azospirillum*, *Rhizobium* and *Phosphobacteria* in the 22 **Bio-Fertilizer Production Units (BFPUs)** of the Department. These units have an annual production capacity



of 3,000 MT of **carrier based biofertilizers** and distributed in 200 gm. packets. Further, **Liquid Bio-fertilizers** having longer shelf life (12 – 24 months) are produced in 12 Liquid Bio fertilizer Production Units with a production capacity of 6.00 Lakh Litre per annum. During 2016-17, 2,996 MT of carrier based Bio-fertilizers and 2.71 Lakh Litre of Liquid Bio-fertilizers were produced and distributed.

During 2017-18, it is programmed to produce and distribute 3,000 MT of carrier based Bio-fertilizers and 6.00 Lakh Litre of Liquid Bio-fertilizers. The list of BFPUs producing carrier based Bio-fertilizers and liquid Bio-fertilizers is tabulated below:

**Table 1.21 : Bio-Fertilizer Production Units (BFPUs)**

<b>S. No</b>	<b>District</b>	<b>BFPU</b>		<b>Liquid BFPU</b>	
1	Kancheepuram	1	Chengalpattu		
2	Cuddalore	2	Cuddalore	1	Cuddalore
3	Tiruvannamalai	3	Polur		
4	Salem	4	Salem	2	Salem

S. No	District	BFPU	Liquid BFPU
5	Dharmapuri	5 Palacode	
6	Tiruppur	6 Avinashi	
7	Erode	7 Bhavani	
8	Tiruchirapalli	8 Tiruchirapalli	
9	Pudukkottai	9 Kudumianmalai	3 Kudumianmalai
10	Thanjavur	10 Sakkottai	4 Sakkottai
11	Thiruvarur	11 Needamangalam	
12	Theni	12 Uthamapalayam	
13	Ramanathapuram	13 Ramanathapuram	5 Ramanathapuram
14	Tirunelveli	14 Tenkasi	
15	Thoothukudi	15 Thoothukudi	
16	Tiruvallur		6 Puzhal
17	Villupuram		7 Mugaiyur
18	Vellore		8 Gudiyatham
19	Ariyalur		9 Jeyamkondam
20	Madurai		10 Thirumangalam
21	Dindigul		11 Palani
22	Sivagangai		12 Manamadurai

The interaction between the beneficial living organisms and their environment is crucial for a plant's health. Therefore, Government takes sincere efforts to reinforce **Organic Plant Health Management** wherein bio control agents and parasites are used for the control of pests and diseases. The Department operates **10 Bio-control labs and 2 Integrated Pest**

**Management (IPM) Centres for producing Bio-control agents.**

**Table 1.22 : Biocontrol Laboratory, IPM centres and Parasite Breeding Centres**

Sl. No	District	Bio Control Laboratory/ IPM Centre	Parasite Breeding Centre	
			Sugarcane	Coconut
1	Kancheepuram	Panjupettai (IPM)		Chengalpattu
2	Tiruvallur			Putlur
3	Cuddalore		Virudhachalam	Cuddalore
4	Villupuram	Villupuram	Villupuram	
5	Vellore			Melalathur
				Vaniyambadi
				Natrampalli (Tiruppathur)
6	Salem	Seelanaickanpatti		Sukkampatti
7	Namakkal	Namakkal	Mohanur	Paramathivelur
8	Dharmapuri	Pappalapatti	Pappalapatti	Dharmapuri
9	Coimbatore	Coimbatore		Aliyar Nagar
10	Tirupur		Udumalaipettai	
11	Erode	Bhavani	Gobi	Gobi
12	Tiruchirappalli	Tiruchirappalli		Tiruchirappalli
13	Thanjavur	Kattuthottam	Thanjavur	Kattuthottam
14	Madurai	Vinayagapuram		Melur
		Vinayagapuram(IPM)		
15	Ramanathapuram			Uchipuli
16	Sivagangai			Sathurvethi Mangalam
17	Virudhunagar			Devadhanam
18	Tirunelveli	Palayamkottai		Senkottai
19	Thoothukudi			Udankudi
20	Kanyakumari			Bhoodhapandi

The biocontrol agents produced and distributed to the farmers at subsidized cost through Agricultural Extension Centres are listed below:-

**Table 1.23 : Biocontrol agents**

<b>Bio-control agents</b>	<b>Production centres (Nos.)</b>	<b>Pests / Diseases controlled</b>
<i>Trichogramma chilonis</i> (egg parasitoid)	19	Sugarcane Internode borer
Bethylid, Braconid [larval parasites] and Eulophid [prepupal Parasites]	12	Coconut Black headed caterpillar
Green Muscardine fungus [ <i>Metarhizium sp</i> ]	2	Coconut Rhinoceros beetle
Nuclear Polyhedrosis Virus	12	Groundnut Red hairy caterpillar, Prodenia and cotton boll worm
Bio fungicides - <i>Pseudomonas sp</i> , <i>Trichoderma viride</i>	12	Diseases in cotton, pulses and paddy

### **1.13.2. Agriculture Information Dissemination Centres**

Government of Tamil Nadu has established elite extension centres for achieving a faster

and sustainable inclusive growth in agriculture. **880 Amma Facilitation Centres** functioning in the state play a vital role in planning, technology selection, bringing changes in policies, disseminating information on innovative technologies, linking farmers to markets, organizing producer / user groups, linking producers to a wide range of service networks besides serving as **“One Stop Centre”** for stocking and distributing critical inputs, agriculture implements, plant protection equipments, providing advisories on all “seed to seed” activities, etc. Out of these, **146** centres are being upgraded as **Integrated Agricultural Extension Centres (IAEC)**.

**Table 1.24 : Amma Facilitation Centres**

<b>District</b>	<b>Main AECs(*)</b>	<b>Sub AECs</b>	<b>Total</b>
Kancheepuram	13	16	29
Tiruvallur	14	21	35
Cuddalore	13	17	30
Villupuram	21	27	48

<b>District</b>	<b>Main AECs(*)</b>	<b>Sub AECs</b>	<b>Total</b>
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	10	24
Perambalur	4	3	7
Ariyalur	6	3	9
Karur	8	4	12
Pudukkottai	13	20	33
Thanjavur	14	47	61
Nagapattinam	11	33	44
Tiruvarur	10	32	42
Madurai	13	19	32
Theni	8	13	21
Dindigul	13	15	28
Ramanathapuram	11	6	17
Sivagangai	12	9	21
Virudhunagar	11	5	16
Tirunelveli	19	31	50
Thoothukudi	12	16	28
Kanyakumari	10	11	21
The Nilgiris	4	1	5
<b>Total</b>	<b>383</b>	<b>497</b>	<b>880</b>

(\* ) Agricultural Extension Centres (AECs)

## **1.14. Information Technology (IT) Initiatives in Agriculture**

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.

### **1.14.1. National e-governance Plan - Agriculture (NeGP - A)**

**Tamil Nadu** is the **pioneer** in execution of **e-Governance** in Agriculture and the pro-active policies conceived by the Department paved way for the development of an **exemplary Agricultural Management and Information System (AGRI-MIS)** for the farming community in the State. Government of Tamil Nadu has evolved quintessential software for collection of data base of 68 lakh farmers in Tamil Nadu, Monitoring Food grain Yield, Cluster

Based Fixed Tour Programmes of Grass root level extension functionaries, scheme progress, and activities of Uzhavar sandhai, cold storage and Farmer Producer organisations, providing information on real time availability of fertilizer and seed both in private and Government sectors, Automation of entire process of Seed production system, online billing system, Micro irrigation management information system, Automation of process flow of regulated markets, etc. for the betterment of the farming community. Further, the '**Kisan Suvitha**' mobile application developed by Government of India has been **translated in Tamil** for easy access of agricultural information on weather forecast; sale outlets of seeds, fertilizers, pesticides and farm machineries; market forecast; crop protection; farm advisories and Kisan call centre.



The scheme was implemented during 2016-17 at a cost of Rs.2.47 Crore with sharing pattern of 60:40 between Centre and State for establishment of State Project Monitoring Unit besides IT Infrastructure development in Block, District, State Head Quarters and training Centres.

The scheme is proposed to be continued during 2017-18 also for seamless flow and processing of data, documentation and commissioning of software and hardware.

## **2. HORTICULTURE AND PLANTATION CROPS**

The Department of Horticulture and Plantation Crops having been bifurcated from the Department of Agriculture in the year 1979, is functioning with separate service rules from 27.11.2015 onwards.

Horticulture is an integral and important component in the economy of the Nation. Horticultural crops occupy a significant segment of the total agricultural production in the Country. The importance of horticulture can be substantiated by its benefits like high export value, high yield per unit area, high returns per unit area, best utilization of farm land, provision of raw materials for industries, generation of rural employment, promotion of rural Industry and ensuring women's empowerment by providing employment opportunities through Processing, Floriculture, Seed production,

Mushroom cultivation, Nursery preparation, etc. It also improves the economic condition of farmers, and it has become a means of improving livelihood for many unprivileged classes too.

Tamil Nadu is one of the leading horticulture States in India, contributing 7% to the National horticulture production with 6% horticultural crops area at National level. Fruit crops cover an area of 2.95 Lakh Ha. and vegetables in an area of 3.14 Lakh Ha. to meet out the demand of increasing population.

### **2.1. Tamil Nadu Position in Horticultural crops at National Level**

Tamil Nadu is in the forefront at the National level in area, production and production of horticultural crops due to implementation of various special schemes.

Tamil Nadu occupies first place in area under cultivation of Banana (1.18 Lakh Ha.), Tapioca (1.21 Lakh Ha.), Cocoa (24,000 Ha.) and flowers (55,000 Ha.) and subsequently stands first in the production of Banana (56.50 Lakh MT), Tapioca (49.76 Lakh MT), Plantation crops (48.42 Lakh MT) and Loose flowers (3.44 Lakh MT). Tamil Nadu also stands first among all the states in the productivity of Papaya (198.70 MT/Ha.), Pomegranate (32.70 MT/Ha.), Sapota (32.80 MT/ha), Vegetables (30.00 MT/Ha.) and Tapioca (41.30 MT/Ha.).

Tamil Nadu stands second in the production of Aromatic crops (1.62 Lakh MT) at National level.

Tamil Nadu ranks third in the area under cultivation of Grapes (3,000 Ha.), Plantation

(6.35 Lakh Ha.) and Pepper (4,000 Ha.) at the national level.

**Table 2.1 : Area, Production and Productivity of Horticultural crops (2016-17 and 2017-18)**

(Area: Lakh Ha., Production: Lakh MT, Productivity : MT/Ha.)

NAME OF THE CROPS	2016-17 (Estimated)			2017-18 (Programmed)		
	Area	Produc-tion	Produc-tivity	Area	Produc-tion	Produc-tivity
FRUITS	2.95	60.08	20.37	3.13	64.07	20.47
VEGETABLES	3.14	88.83	28.28	3.37	96.43	28.61
SPICES AND CONDIMENT	1.15	8.23	7.15	1.22	8.77	7.19
PLANTATION CROPS	7.15	13.00	1.82	7.57	13.87	1.83
MEDICINAL AND AROMATIC PLANTS	0.11	1.39	12.64	0.11	1.41	12.81
FLOWERS	0.26	3.41	13.12	0.27	3.67	13.59
<b>TOTAL</b>	<b>14.76</b>	<b>174.94</b>	<b>11.85</b>	<b>15.67</b>	<b>188.22</b>	<b>12.01</b>

**Doubling Agricultural production and tripling income of farmers is the prime policy of Tamil Nadu.** Encouraging cultivation of traditional cultivars in horticultural crops, adopting Hi-Tech Horticulture technologies, promoting horticulture as a profitable and viable sector by leveraging technologies, encouraging farm mechanization and improved Post Harvest

Management etc., paves the way for achieving the States' policy.

The strategies of Horticulture Department are to encourage the use of hybrid seeds and quality planting material in area expansion of horticulture crops, hi-tech cultivation, high density planting, promotion of cultivating high value horticulture crops in protected cultivation, use of micro irrigation, pollination support through bee keeping for enhancing the production, Integrated nutrient management, pest and disease management, farm mechanization and improved Post Harvest Management techniques.

## **2.2. Horticultural Crop Scenario in Tamil Nadu**

Tamil Nadu is the largest producer of Horticultural crops in the Country. **It is proposed to increase the area under**

## **horticultural crops from the present level of 34 Lakh Acre to 39 Lakh Acre in 2017-18.**

### **2.2.1.Vegetables**

Tamil Nadu produces on an average 77.72 Lakh MT of vegetables annually. It ranks next to Uttar Pradesh, West Bengal, Madhya Pradesh, Maharashtra and Karnataka at National level. With regard to Tapioca, Tamil Nadu stands first in Area, Production and Productivity. The major vegetables grown in the State are Tomato, Brinjal, Bhendi, Tapioca, Onion, Drumstick, Watermelon, Greens, Hilly Vegetables and Gourds. In 2017-18, it is programmed to increase the area under Vegetables to 3.37 Lakh Ha. from present level of 3.14 Lakh Ha. Hybrid vegetable cultivation will be promoted by providing assistance to cultivation. Special focus will be given to preserve traditional vegetables and Onion

cultivation through Onion development programme. The hybrid vegetable protrait seedlings will be raised in State Horticulture Farms and distributed to farmers at subsidized cost to increase the area under vegetable cultivation.

**Table 2.2 : Details of major vegetable growing districts**

<b>Sl. No.</b>	<b>Name of the Crop</b>	<b>Area (Ha.)</b>	<b>Major Growing Districts</b>
1	Tapioca	87,924	Namakkal, Salem, Villupuram, Dharmapuri and Erode
2	Onion	28,105	Perambalur, Trichy, Tirupur, Dindigul, Tirunelveli and Namakkal
3	Tomato	23,954	Krishnagiri, Salem, Dharmapuri, Theni and Coimbatore
4	Drumstick	12,491	Theni, Dindigul, Theni, Ariyalur, Thoothukudi and Tiruppur
5	Brinjal	11,016	Salem, Krishnagiri, Vellore, Dindigul and Dharmapuri
6	Bhendi	8,925	Salem, Vellore, Dindigul, Dharmapuri and Thiruvanamalai
7	Watermelon	5,623	Kanchipuram,



<b>Sl. No.</b>	<b>Name of the Crop</b>	<b>Area (Ha.)</b>	<b>Major Growing Districts</b>
			Villupuram, Tiruvallur, Tiruvannamalai, Erode and Ariyalur
8	Potato	4,737	The Nilgiris, Dindigul, Krishnagiri and Erode
9	Carrot	3,592	The Nilgiris, Dindigul, Krishnagiri and Theni
10	Bitter gourd	1,877	Coimbatore, Salem, Dindigul, Cuddalore, Krishnagiri, Tiruvaur, Thoothukudi and Theni

### **2.2.2.Fruits**

Tamil Nadu ranks third in production of fruits and is next only to Uttar Pradesh and Maharashtra. Tamil Nadu stands first in area and production of Banana, third in production of Grapes and fourth in production of Sapota in the Country. The area under fruit crops will be increased from present level of 2.95 Lakh Ha. to 3.13 Lakh Ha. in 2017-18 through various crop specific area expansion like High density planting, Mukkani Development Programme, Hill

Banana Development and Choice Fruit Development Programme.

**Table 2.3: Details of major Fruit growing districts**

<b>Sl. No.</b>	<b>Name of the Crop</b>	<b>Area (Ha.)</b>	<b>Major Growing Districts</b>
1	Mango	1,40,367	Krishnagiri, Dindigul, Vellore, Tiruvallur, Theni, Dharmapuri, Madurai, Tirunelveli and Salem
2	Banana	91,410	Erode, Thoothukudi, Coimbatore, Tirunelveli, Trichy, Kanyakumari and Theni
3	Lemon	8,556	Tirunelveli, Dindigul, Trichy, Thoothukudi and Theni.
4	Guava	8,216	Dindigul, Madurai, Virudhunagar, Vellore and Cuddalore
5	Amla	7,665	Tirunelveli, Trichy, Thoothukudi, Dindigul and Virudhunagar
6	Sapota	6,113	Dindigul, Vellore, Virudhunagar, Theni and Tirunelveli.
7	Jack	2,896	Cuddalore, Kanyakumari, Dindigul, Namakkal and The Nilgiris

<b>Sl. No.</b>	<b>Name of the Crop</b>	<b>Area (Ha.)</b>	<b>Major Growing Districts</b>
8	Grapes	2,244	Coimbatore, Dindigul and Theni
9	Papaya	1,114	Erode, Vellore, Tirupur, Theni and Coimbatore
10	Pomegranate	412	Dindigul, Erode, Namakkal, Salem and Tirunelveli

### **2.2.3. Flowers**

Tamil Nadu is the largest producer of loose flowers in the Country. Assistance will be extended for cultivation of loose flowers, bulbous flowers and cut flowers to increase the area under flowers from present level of 26,000 Ha. to 27,234 Ha. Quality planting materials will be produced in State Horticulture Farms and distributed to farmers in subsidized cost.

**Table2.4: Details of major Flower cultivating districts**

<b>Sl. No.</b>	<b>Name of the Crop</b>	<b>Area (Ha.)</b>	<b>Major Growing Districts</b>
1	Jasmine	10,838	Madurai, Erode, Tirunelveli and Krishnagiri
2	Chrysanthemum	2,256	Salem, Krishnagiri,

Sl. No.	Name of the Crop	Area (Ha.)	Major Growing Districts
			Dharmapuri, Tirunelveli and Dindigul
3	Tuberose	2,166	Thiruvannamalai, Erode, Madurai, Dharmapuri and Tiruvallur
4	Rose	1,809	Krishnagiri, Dindigul, Dharmapuri, Tanjavur, Tirunelveli and Madurai
5	Crossandra	492	Dharmapuri, Thiruvannamalai, Vellore, Dindigul and Cuddalore

#### **2.2.4. Spices**

In Tamil Nadu all kinds of spices like Chillies, Garlic, Ginger, Cardamom, Pepper, Cloves, Cinnamon, Curry leaves, Coriander, Turmeric, Tamarind, Nutmeg and All Spice etc. are grown. Tamil Nadu is the fourth largest spice producing State accounting for 9.4% of total production of spices in the Country.

Assistance will be given for cultivation of Seed spices, Rhizomatic spices and Perennial spices to increase the area under spices from the present level of 1.15 Lakh Ha. to 1.22 Lakh Ha.

**Table 2.5: Details of major Spices growing districts**

Sl. No.	Name of the Crop	Area (Ha.)	Major Growing Districts
1	Chillies	44,606	Ramnad, Tuticorin, Sivagangai, Virudhunagar and Dindigul.
2	Turmeric	26,074	Erode, Salem, Dhamapurai, Namakkal and Villupuram
3	Corriander	9,231	Tuticorin, Virudhunagar, Ramnad, Krishnagiri, Tiruppur, Coimbatore and Trichy
4	Pepper	3,997	Dindigul, Namakkal, The Nilgiris, Salem and Kanyakumari
5	Curryleaf	2,221	Coimbatore, Tuticorin, Salem, Tirupur and Erode.

### **2.2.5. Plantation Crops**

The area under Plantation crops will be increased from the present level of 7.15 Lakh Ha. to 7.58 Lakh Ha. Tamil Nadu is the third largest producer of Cashew nut in the Country and the major production of South Indian Tea is from Tamil Nadu.

Area expansion and rejuvenation / replacement of Cashew will be promoted. For the first time in the country, Tea plantation is provided with subsidy for installation of Micro Irrigation System from the year 2016-17. Also, Tamil Nadu will be implementing Revenue Insurance Scheme for Plantation Crops (RISPC) for Tea crop in the Pilot district of Coonoor (The Nilgiris) for the welfare of Tea growers.

**Table 2.6: Details of major Plantation Crops growing districts**

<b>Sl. No.</b>	<b>Name of the Crop</b>	<b>Area (Ha.)</b>	<b>Major Growing Districts</b>
1	Cashew	89,021	Ariyalur, Cuddalore, Pudukkottai, Villupuram, Theni, Tirunelveli and Sivagangai.
2	Tea	69,679	The Nilgiris, Coimbatore, Theni, Tirunelveli, Kanyakumari and Dindigul
3	Coffee	31,536	Dindigul, The Nilgiris, Salem, Theni, Coimbatore and Namakkal
4	Arecanut	6,732	Salem, Coimbatore, Namakkal, The Nilgiris, Erode, Kanyakumari and Dharmapuri.
5	Betelvine	1,826	Namakkal, Thanjavur, Karur, Salem, Cuddalore and Trichy.

## **2. 3. Activities of Horticulture Department**

### **2.3.1. Micro Irrigation scheme under Per Drop More Crop component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**

Micro irrigation is an advanced water conservation and management technology that improves water use efficiency by 40-60%. Irrigation is a critical factor for increasing production and productivity of crop. Since, Tamil Nadu has only 3 percent water resources, the State is keen to use irrigation water more economically and efficiently. Besides water use efficiency, fertilizer use efficiency is also ensured by applying fertilizers through irrigation water directly in the root zones. This irrigation technology minimizes the weed growth and reduces the labour requirement. Through Micro irrigation, area under cultivation is increased with available water leads in doubling the

production resulted in tripling of farmer's income.

In Tamil Nadu, Government has given big thrust to Micro irrigation and it is the only State in the Country which continued its support to provide 100% subsidy to Small and Marginal farmers and 75% subsidy to Other farmers. This scheme is implemented with a sharing pattern of 60:40 between Centre and State.

In the last five years (2011-12 to 2015-16) an area of 3,46,685 Acre was brought under Micro Irrigation at an outlay of Rs.873.02 Crore, benefitting 1,03,342 Small and Marginal farmers and 41,934 Other farmers, totalling 1,45,276 farmers. Further, an area of 86,422 Acre was covered under Micro Irrigation with an outlay of Rs.110.86 Crore benefitting 33,285 farmers through World Bank funded TNIAMWARM



scheme by Agricultural Engineering Department from 2011-12 to 2015-16.

**Table 2.7: Details of achievement from 2011-12 to 2015-16 in Micro irrigation Scheme**

S. No	Year	Total		No. of Beneficiaries		
		Physical (Ha.)	Financial (Rs. in Crore)	SF/MF	Others	Total
1	2011-12	27,550	87.44	13,997	10,559	24,556
2	2012-13	26,538	135.34	23,316	12,036	35,352
3	2013-14	39,780	288.25	32,634	10,553	43,187
4	2014-15	12,518	119.76	8,557	2,155	10,712
5	2015-16	32,288	242.23	24,838	6,631	31,469
	<b>Total</b>	<b>1,38,674</b>	<b>873.02</b>	<b>1,03,342</b>	<b>41,934</b>	<b>1,45,276</b>

(SF- Small Farmer, MF- Marginal Farmer)

During the year 2016-17, installation of Micro Irrigation system is being carried out in an extent of 1,73,650 Acre with a financial outlay of Rs.368.98 Crore, benefiting 1,08,673 farmers. In the year 2017-18, it is programmed to cover an area of 3,40,050 Acre with a financial outlay of Rs.803.93 Crore in Agricultural and Horticultural crops.

**Table 2.8 : Annual Action Plan of Micro Irrigation Scheme for 2017-18**

Sl. No	Crop Details	Physical (Area in Acre)	Finance (Rs. in Crore)		
			GOI Share	GO TN Share	Total
1	Horticultural Crops	1,62,575	135.37	259.45	394.82
2	Agricultural Crops	1,77,475	135.38	259.48	394.86
	Administrative Cost		14.25		14.25
	<b>Total</b>	<b>3,40,050</b>	<b>285.00</b>	<b>518.93</b>	<b>803.93</b>

### **2.3.2. National Horticulture Mission (NHM)**

National Horticulture Mission has been implemented in Tami Nadu since 2005-06 with the main objective to bring holistic growth in Horticulture. The main focus of National Horticulture Mission is to encourage horticulture crops cultivation among farmers. Area expansion of high remunerative horticulture crops such as Vegetables, Fruits, Spices and Condiments, Flowers and Plantation crops is being promoted with adoption of high tech cultivation practices.

This scheme is implemented in 22 districts of Tamil Nadu viz., Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kanyakumari, Krishnagiri, Madurai, Perambalur, Pudukkottai, Ramanathapuram, Salem, Sivagangai, Thanjavur, The Nilgiris, Theni, Tirunelveli, Tiruppur, Trichy, Vellore and Villupuram. National Horticulture Mission is implemented with fund sharing pattern of 60:40 between Centre and State from 2015-16 as a sub scheme under Mission for Integrated Development of Horticulture (MIDH).

From 2011-12 to 2015-16, an amount of Rs.359.23 Crore was spent towards the components like area expansion with establishment of new Garden in an area of 1.48 Lakh Ha. Further, Rejuvenation / Replacement of senile plantation/canopy Management in 20,000 Ha., 4 Nos of Mushroom

cultivation units, Creation of 7 Nos of water resources, Protected Cultivation in 6,000 Ha. Promotion of INM / IPM in 1,000 Ha., Organic Farming in 3,000 Ha. and Pollination Support through 25,756 Nos of bee keeping structures. Integrated Post harvest Management and Creation of Marketing infrastructure is promoted by establishing 219 Nos of Pack houses, 292 Nos of Low cost Onion storage structures, 2 Nos of Cold storages and an Integrated cold chain unit to minimize the post harvest losses by involving more number of farmers in marketing aspects in the Supply chain management system.

Further, end to end projects in specified crops with crop specific high technology and value addition are being promoted for domestic and export market.

During the year 2016-17, the scheme was implemented at an outlay of Rs.78.55 Crore.

It is programmed to implement National Horticulture Mission at an outlay of Rs. 91.72 Crore in the year 2017-18.

### **Creation of Centres of Excellence**

Centres of Excellence are established to display improved technologies to achieve higher productivity. Under National Horticulture Mission, Two Centres of Excellence have been established with technical support from Israel.

**Centre of Excellence for Cut flowers at Thally, Krishnagiri district and Centre of Excellence for Vegetables at Reddiyarchatram, Dindigul district** are being established at a project cost of Rs.8.80 Crore and Rs.10.18 Crore respectively.

The establishment of two more centres viz., **Centre of Excellence for Hill vegetables in Nanjanadu, The Nilgiris and Centre of Excellence for Tropical fruits in Trichy**

**district** at an outlay of Rs. 11.00 Crore is on the line.

### **2.3.3. National Agricultural Development Programme (NADP)**

National Agricultural Development Programme is a shared scheme between Centre and State with 60:40 sharing pattern. From 2011-12 to 2015-16, an amount of Rs.231.48 Crore had been spent towards the activities like Precision farming in 10,994 Ha., Area expansion of Horticulture crops in 30,879 Ha., Pandal cultivation in 1,160 Ha., Protected cultivation in 29 Ha., Banana bunch sleeves in 700 Ha., crop specific activities like distribution of 88 Nos of Turmeric boilers, 8,688 Nos of Tapioca sett cutters, modernization of State Horticulture Farms, Establishment of new State Horticulture Farms and training to farmers etc.,

During the year 2016-17, Productivity Enhancement Programme, Onion Development Programme, Agro Eco System Analysis (AESAs) based Integrated Pest Management for fruits and vegetables, Enhancing production through bee keeping, Mission for promoting Potager garden, Demonstration for establishment of Protray Turmeric seedlings in shadenet nursery at farmer's field and Establishment of New State Horticulture Farms in four Districts of Tamil Nadu were implemented at an outlay of Rs.36.13 Crore in all Districts.

For the year 2017-18, it is programmed to implement the scheme with special focus on new components.

#### **2.3.4. Perimetro Vegetable Cluster Development Programme**

Perimetro Programme is implemented with an objective of reducing the gap between

producer and consumer and to ensure supply of safe and quality vegetables at low price to urban population and higher income to farmers. Under this programme FPO / cluster (FIGs) / SHG / Cooperative / private skilled entrepreneur/ unemployed youth are encouraged to act as Market aggregator to collect vegetables from farmers and supply them to cities.

Vegetable cultivation, Protected cultivation and Establishment of Post harvest and Market infrastructure are being promoted by extending assistance through this scheme.

This scheme is implemented in 28 districts in a cluster approach in 6 clusters namely Chennai, Coimbatore, Trichy, Madurai, Salem and East Coastal districts.



**Table 2.9: Details of cluster wise fund allotment**

<b>Sl. No</b>	<b>Region</b>	<b>Districts</b>	<b>Fund Allocated (Rs. in Crore)</b>
1	Chennai	Kancheepuram, Vellore, Thiruvallur, Villupuram and Thiruvannamalai	17.00
2	Coimbatore	Coimbatore, Erode, The Nilgiris and Tiruppur	17.00
3	Trichy	Trichy, Ariyalur, Perambalur, Karur, Pudukkottai & Dindigul	12.00
4	Madurai	Madurai, Theni, Sivagangai, Virudhunagar and Ramanathapuram	2.55
5	Salem	Salem, krishnagiri, Dharmapuri and Namakkal	2.45
6	East Coast Districts	Cuddalore, Tirunelveli, Tuticorin and kanyakumari	5.02
	<b>Total</b>		<b>56.02</b>

This scheme implementation will be continued in 2017-18 in all clusters with due focus on marketing aspects by providing subsidy to post harvest and market infrastructure.

### **2.3.5. National Mission for Sustainable Agriculture (NMSA)**

NMSA aims to make agriculture sustainable, more productive and remunerative besides climate resilient by promoting location specific Integrated/Composite Farming Systems. Rainfed Area Development and Paramparagat Krishi Vikas Yojana are the components implemented under this scheme.

#### **2.3.5.1. Rainfed area development (RAD)**

RAD aims at promoting Integrated Farming System (IFS) with emphasis on multi tier cropping, rotational cropping, inter-cropping, mixed-cropping practices with allied activities like horticulture, livestock, fishery, agro-forestry, apiculture, conservation/ promotion of NTFPs etc. to enable farmers not only in maximizing farm returns for sustaining livelihood, but also to

mitigate impacts of drought, flood or other extreme weather events.

Rainfed Area Development under National Mission for Sustainable Agriculture is implemented with a sharing pattern of 60:40 between Centre and State.

In the Year 2014-15 and 2015-16, an amount of Rs.16.60 Crore was spent towards Horticulture based farming in 5,560 Ha., 159 Nos of Vermicompost units, 575 Nos. of Vermi beds and Protected cultivation in 44,872 Sq.m.

During the year 2016-17, Horticulture Based Farming, Protected cultivation and Vermicompost production are being implemented in 22 districts viz., Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Karur, Krishnagiri, Madurai, Namakkal, Perambalur, Pudukkottai, Ramnad, Salem,

Sivagangai, Tirupur, Tiruvannamalai, Trichy, Tuticorin, Vellore, Villupuram and Virudhunagar at an outlay of Rs.11.17 Crore.

In 2017-18, it is proposed to implement the scheme at an outlay of Rs.16.64 Crore for Horticulture Based Farming, Protected cultivation, Vermi compost production, Post-harvest storage, Training and Demonstration.

#### **2.3.5.2. Paramparagat Krishi Vikas Yojana (PKVY)**

Organic farming, certification by Participatory Guarantee System (PGS) and marketing the produces in local markets are encouraged in this scheme by cluster approach. This is shared scheme between Government of India and the State Government with a sharing pattern of 60:40. This is a three year continuous programme.

The scheme is implemented in 27 districts viz., Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul (including Kodaikanal), Erode, Kancheepuram, Karur, Krishnagiri, Kanyakumari, Madurai, Namakkal, Pudukkottai, Salem, Sivagangai, Tiruvannamalai, Thanjavur, The Nilgiris, Theni, Tiruppur, Tirunelveli, Tiruvallur, Trichy, Tuiticorin, Vellore, Villupuram and Virudhunagar.

This scheme was started in the year 2015-16 to bring 2,550 Acre of horticulture crops under organic cultivation and PGS certification. In the first year (2015-16), it was implemented in 51 clusters in 27 districts at an outlay of Rs.3.60 Crore. During the year 2016-17, the second year programme was being implemented at an outlay of Rs.1.19 Crore in the same clusters.

During third year ie., 2017-18, assistance for Residue analysis, crop cultivation, conversion of

land to organic, biological Nitrogen harvest planting, packaging, labeling and branding of organic produces, Custom hiring of agriculture implements etc. will be extended at an outlay of Rs.1.47 Crore and an additional area of 900 Acre of land will be brought under organic cultivation and PGS certification by forming 18 new clusters at an outlay of Rs.1.27 Crore.

### **2.3.6. National AYUSH Mission - Medicinal Plants (NAM-MP)**

The objective of the programme is to encourage the cultivation of medicinal plants. This scheme is being implemented with a sharing pattern of 60:40 between Centre and State through Ministry of AYUSH, Government of India.

Under this scheme, assistance of 30% and 50% in the cost of cultivation is extended for growing medicinal plant species such as

Marunthukoorkan (Coleus), Kanvalikilangu (Gloriosa), Nelli (Amla), Thippili (Indian long Pepper), Avuri (Senna), Nithyakalyani (Periwinkle), Thulasi (Ocimum), Vembu (Neem), Manathakkali (Black night shade), Sothu Kattralai (Aloe vera) and Vasambu (Acorus). Cultivation of medicinal plants is promoted in all districts including Villupuram, Tiruvannamalai, Salem, Thoothukudi, Virudhunagar, Vellore, Tirupur, Cuddalore, Dindigul, Madurai, Nagapattinam, Ariyalur, Ramanathapuram, Perambalur and Sivagangai.

For the year 2016-17, the scheme was implemented with an outlay of Rs.2.53 Crore to cover an area of 960 Ha. under Medicinal Plants namely Coleus, Gloriosa and Amla.

It is proposed to implement the Scheme with an outlay of Rs.2.86 Crore to cover an area of 921 Ha. under medicinal plants namely

Marunthukoorkan, Kanvalikilangu, Thippili, Kokum and Manathakkali.

### **2.3.7. Integrated Horticulture Development Scheme (IHDS)**

This scheme is implemented from the year 1992-93 to promote cultivation of Horticultural crops. Hybrid vegetable seeds and quality planting materials are distributed at 40% subsidy in total cost of cultivation through this scheme by State Government. This scheme is implemented with the main objective of area expansion of horticultural crops in 9 non National Horticulture Mission districts namely, Karur, Kancheepuram, Namakkal, Nagapattinam, Tiruvarur, Tiruvannamalai, Tiruvallur, Tuticorin and Virudhunagar.

From 2011-12 to 2015-16, an amount of Rs.24.99 Crore was spent towards the area expansion of 96,146 Ha. of horticultural crops.



During the year 2016-17, this scheme was implemented at a financial outlay of Rs.4.11 Crore with the area expansion of 6,090 Ha. in horticulture crops.

This scheme will be continued for the year 2017-18 with an outlay of Rs.4.11 Crore.

### **2.3.8. TN-IAMP (IAMWARM-II) Project (Tamil Nadu Irrigated Agriculture Modernization Project- Horticulture)**

**TN-IAMP** is a multidisciplinary project funded by World Bank and implemented by the Government of Tamil Nadu. The main objective of the programme is to accelerate crop diversification to horticulture crops especially vegetables, through promotion of hi-tech cultivation and water conservation technologies in the proposed sub-basins.

In IAMWARM-I, horticulture interventions were implemented in 61 sub-basins covering an

area of 49,580 Ha. with high value horticultural crops at an outlay of Rs 77.47 Crores during the year 2007-08 to 2014-15. In the remaining 66 sub basins the IAMWARM-II Project will be implemented in next six years from 2017-18 to 2022-23.

In Tamil Nadu, during the year 2017 -18 to 2022-23 , it is programmed to bring an area of 45,025 Ha. under Fruits, Hybrid vegetables, Spices and Flowers cultivation at an outlay of Rs.210.00 Crore in 66 sub-basins of 30 districts with the approval of World Bank. In 2017-18, the proposed project will be implemented in 18 sub-basins of 22 districts covering an area of 5,748 Ha. under horticulture crops with an outlay of Rs.17.91 Crore.

The Project activities viz., Horticulture Crop demonstration, Promotion of pesticide free vegetables production, Promotion of Micro

Irrigation, Protected cultivation and Mulching will be implemented on receipt of sanction.

#### **2.4. State Horticulture Farms (SHFs)**

The objective of farms is timely production and distribution of pedigree and quality planting materials of Horticulture crops to the farmers. There are 56 State Horticulture farms functioning in 22 districts of Tamil Nadu. The farms also serve as demonstration centres on the latest technology, farm mechanization, modern irrigation technologies etc., to the farmers. As a new venture, high yielding varieties/ hybrids of vegetables and flower seedlings are produced in protrays for distribution to the farmers.

**Table 2.10: List of State Horticulture Farms**

Sl. No.	District	Name of the SHF	Year of Establishment	Area (Ha.)
1	Coimbatore	Anaikatty	1986	12.00
2		Kannampalayam	2001	11.20
3	Cuddalore	Neyveli	1985	39.53
4		Vridhachalam	1975	10.43
5	Dharmapuri	Polayampalli	2013	2.73
6	Dindigul	Sandhaiyur	2013	15.20
7		Kodaikanal	1961	3.25
8		Thandikudi	1985	5.45
9		Reddiarchatram	1994	5.33
10		Sirumalai	1980	200.04
11	Kancheepuram	Attur	1961	12.24
12		Vichanthangal	1982	23.25
13		Melkadirpur	1982	42.63
14		Melottivakkam	1982	20.60
15		Pichivakkam	1982	34.00
16	Kanyakumari	Kanyakumari	1922	12.64
17		Pechiparai	1967	6.00
18	Karur	Mudalaipatti	1978	23.96
19	Krishnagiri	Thimmapuram	1952	9.51
20		Jeenur	1980	121.96
21	Madurai	Poonjuthi	2012	5.76
22	Namakkal	Semmedu	1974	11.60
23		Padasolai	1989	22.67
24	Pudukkottai	Kudumianmalai	1974	118.68
25		Vallathirakottai	1977	521.20
26		Nattumangalam	1985	53.02
27	Salem	Yercaud	1975	6.04
28		Giant Orchard Karumandurai	1981	419.77
29		Gene Bank (Karumandurai)	2014	4.00

Sl. No.	District	Name of the SHF	Year of Establishment	Area (Ha.)
30		Maniyarkundram	1982	100.00
31		Karumandurai	1981	39.35
32		Mulluvadi	1985	48.40
33		Sirumalai	1987	8.00
34	Sivagangai	Devakottai	1985	81.19
35		Nemam	1979	38.77
36	Thanjavur	Aduthurai	1988	8.90
37		Marungulam	1966	10.70
38	The Nilgiris	Burliar	1871	6.25
39		Kallar	1900	8.92
40		FPU Coonoor	1965	4.05
41		PS Coonoor	1948	10.46
42		Doddabetta	1969	4.08
43		Thummanatty	1956	9.80
44		Nanjanad	1917	64.00
45	The Nilgiris	Devala	1978	80.00
46		Colegraine	1989	20.40
47	Theni	Periyakulam	1950	9.32
48	Thiruvallur	Madhavaram	1980	4.38
49	Trichy	Thorakudi	2013	4.05
50	Vellore	Thagarakuppam	1985	34.40
51		Kudapattu	1961	10.08
52		Navlock	1981	84.42
53	Virudhunagar	Poovani	1967	9.46
54		Srivilliputhur	1982	46.27
55	Ramnad	Oriyur	2013	14.77
56	Thiruvannamalai	Thombaretti	2014	3.05
		<b>TOTAL</b>		<b>25,38.16</b>

The National Horticulture Board of Government of India has given accreditation to

35 State Horticulture Farms for production of quality planting materials. Considering the welfare of the farmers of the State, steps are being taken to establish State Horticulture Farms in all districts. The State Horticulture Farms are upgraded and modernized at an expenditure of Rs.22.07 Crore to facilitate production of quality planting materials for distribution to farmers.

During the 2016-17, 6 State Horticulture farms namely Melkadirpur in Kancheepuram district, Virudhachalam in Cuddalore district, Sandhaiyur in Dindigul district, Padasolai in Namakkal district, Mudalaipatti in Trichy district and Navlock in Vellore district are being modernized at an estimated cost of Rs.5.83 Crore. During the year 2016-17, **6.36 Crore numbers** of planting materials were produced in State Horticulture farms and Parks and Gardens.

It is programmed to produce **8.25 Crore numbers** of planting materials in the year 2017-18.

**During the year 2017-18, 19 State Horticulture Farms in 10 districts will be strengthened with Seed Production Infrastructure utilizing an amount of Rs.20.76 Crore of NABARD – RIDF Fund.**

**Table 2.11. List of State Horticulture Farms for Creation of Infrastructure**

<b>S.No</b>	<b>Name of the SHF</b>	<b>District</b>
1	Giant Orchard, Karumandurai	Salem
2	Karumandurai	Salem
3	Nattumangalam	Pudukkottai
4	Padasolai	Namakkal
5	Semmedu	Namakkal
6	Marungulam	Thanjavur
7	Periyakulam	Theni
8	Melottivakkam	Kanchipuram
9	Pitchivakkam	Kanchipuram
10	Attur	Kanchipuram
11	Kudapattu	Vellore
12	Navlock	Vellore
13	Polayampalli	Dharmapuri
14	Thimmapuram	Krishnagiri
15	Jeenur	Krishnagiri
16	Thummanatty	The Nilgiris
17	Nanjanad	The Nilgiris
18	Colgraine	The Nilgiris
19	Kattery	The Nilgiris

## 2.5. Parks and Gardens

The Horticulture Department maintains 13 Parks in 6 districts of the State. These act as recreation centers for the local people and tourists. These are also used as field centres for students of Botany.

**Table 2.12: Details of Parks and Gardens**

Sl. No	Name of the Park / Garden	District	Area (Acre)
1.	Government Botanical Garden, Ooty	The Nilgiris	55.00
2.	Government Rose Garden, Ooty		36.00
3.	Sim's Park, Coonoor		30.35
4.	Kattery Park at State Horticulture Farm, Kattery.		47.4
5.	Tea Park at Dhottabetta & Butterfly Garden, Devala		10.50
6.	Bryant Park, Anna Park & Chettiyar Park, Kodaikanal	Dindigul	31.3
7.	Anna Park & Lake View Park, Yercaud.	Salem	11.25
8.	Rose Garden at SHF, Yercaud.		15.4
9.	Genetic Heritage Garden, Yercaud.		25
10.	Government Botanical Garden, Yercaud.		40.475
11.	Semmozhi Poonga	Chennai	7.93
12.	ECO Park, Courtallam	Tirunelveli	37.23
13.	Genetic Heritage Garden, Achadipirambu	Ramnad	10.00



### **2.5.1. Details of ongoing works:**

1. An Ornamental and Demo Garden at State Horticulture Farm, Madhavaram, Chennai in an area of 20.21 Acre at a cost of Rs.5.73 Crore is being developed to impart field training for the students of the Tamil Nadu Horticulture Management Institute (TNHMI) in various ornamental and horticultural gardening practices.
2. A Rose Garden and Cut Flower Demonstration Unit at State Horticulture Farm, Kodaikanal in Dindigul District is being developed in an area of 11 Acre at a cost of Rs.3.80 Crore to serve as demonstration unit for Cutflower cultivation and a rose garden to attract more number of tourists.

3. An ECO Park at State Horticulture Farm in Kanyakumari is being established District in an area of 15 Acre at a cost of Rs.4.00 Crore to have additional attraction to the visiting tourists of Kanyakumari.
4. In order to provide quality planting materials of required quantity at appropriate time to farmers in Ramnad district, a new State Horticulture Farm at Oriyur of Ramnad district is being established at a cost of Rs.118.18 lakh. Land preparation and creation of water resources has been done at an expenditure of Rs.60.18 lakh in Phase-I.
5. The Government Botanical Garden, Ooty in The Nilgiris district is being face lifted to International standards through construction of glass house, fern house, flower galleries and modernization of

existing infrastructure facilities at a financial outlay of Rs.5.50 Crore to attract more numbers of tourists throughout the year.

## **2.6. Flower and Fruit Shows**

Fruit and Flower Shows are held in Parks every year during spring and summer seasons. Flower shows are organized in Parks and Gardens at Ooty, Yercaud and Kodaikanal. Floral decoration, Indian and Japanese Flower arrangements, Vegetables carvings, Flower rangoli, Bonsai Gallery are the major attractions of these shows.

The Rose Show at Government Rose Garden, Ooty is an important event conducted by this Department. This show exhibits popular and interesting (attractive) structures made out of roses of different colours. Fruit show at Sim's Park, Coonoor (The Nilgiris), Mango show at

Krishnagiri, Vegetables show at Kothagiri (The Nilgiris) and Spice show at Gudalur (The Nilgiris) are very popular among tourists. 'SaraI Vizha' is conducted at ECO Park, Courtallam in Tirunelveli District.

## **2.7. HORTICULTURE TRAINING CENTRES (HTC)**

Horticulture Training Centres are functioning at Madhavaram in Tiruvallur district, Kudumianmalai in Pudukkottai district, Thally in Krishnagiri district and Ooty in The Nilgiris district. Through these training centres, training in Hi-tech cultivation of Horticulture crops is imparted to farmers.

During the year 2016-17, training in Hi-tech Cultivation of horticulture crops was given to 3,000 farmers at an outlay of Rs.7.50 Lakh.

In the year 2017-18, it is programmed to impart training to 3,000 farmers at an outlay of Rs.7.50 Lakh.

Apart from farmers training, 2 years Diploma course in Horticulture is being offered at Horticulture Training Centre, Madhavaram for 40 students every year.

## **2.8. Tamil Nadu Horticulture Development Agency (TANHODA)**

Tamil Nadu Horticulture Development Agency is a registered society under Tamil Nadu Societies Registration Act, 1975 for implementing various Horticulture Schemes funded by Government of India and Government of Tamil Nadu and functions as a “Special Purpose Vehicle” since 2004. The major schemes operated through TANHODA are Mission on Integrated Development of Horticulture (National Horticulture Mission and National Agroforestry and Bamboo Mission), Micro Irrigation scheme under Per Drop More Crop component of Pradhan Mantri Krishi Sinchayee Yojana, National AYUSH Mission - Medicinal

Plants, State Horticulture Farms and Tamil Nadu IAMWARM Project.

TANHODA also serves as a Special Purpose Vehicle for procurement and supply of quality Agricultural and Horticultural inputs and Water Soluble Fertilizers. The Governing Council of TANHODA acts as an Empowered Committee for the Special Purpose Vehicle. An amount of Rs.50.00 Crore as revolving fund is utilized for purchase of seeds and water soluble fertilizers for timely supply to the farmers.

## **2.9. Human Resource Management**

To provide horticultural technologies and Government schemes to farmers and to coordinate departmental activities, staffs are working in Block, District and State level under the Horticulture department.

**Table 2.13: Sanctioned Strength**

<b>S.No</b>	<b>Designation</b>	<b>Total posting</b>
1	Technical Staff	2,610
2	Others	1,223
3	Total	3,833

**Table 2.14: Cadre detail**

<b>S. No</b>	<b>Staffs details</b>	<b>Total posting</b>
1	Additional Director of Horticulture	2
2	Joint Director of Horticulture	6
3	Deputy Director of Horticulture	39
4	Assistant Director of Horticulture	398
5	Horticulture officer	404
6	Deputy Horticulture officer	123
7	Assistant Horticulture officer	1,633
8	Assistant Seed Officer	5
9	Non Technical Staff details Deputy Director(Admin), Chief Account Officer, Administrative officer, Accounts officer, Assistant Accounts officer, Superintendent, Assistant, Junior Assistant, other posts)	1,223
	<b>Total</b>	<b>3,833</b>

## **3. AGRICULTURAL ENGINEERING**

### **3.1. Introduction**

Agricultural Engineering Department applies various techniques to find a solution to the problems arising in the field of Agriculture. In Tamil Nadu, an Agricultural Engineering wing emerged in the year 1946 under the "Grow More Food Programme". More sophisticated planning and special efforts were required to sustain and increase the agricultural production, based on the importance of providing necessary momentum to the Agricultural Engineering activities, the Agricultural Engineering Wing in the Department of Agriculture was separated and the new "Agricultural Engineering Department" was formed and functioning as a separate department from the year 1981.



### **3.2. Activities of Agricultural Engineering Department**

- a) Agricultural Mechanization
- b) Soil and Water Conservation
- c) Water Management
- d) Green Energy Initiatives in Agriculture
- e) Infrastructure development

### **3.3. Agricultural Mechanization**

Agricultural Mechanization helps in increasing the cultivable area, saves the time involved in farming operations from land bed preparation to harvest and post harvest operations, relieves the farmer from laborious and tedious farm works and finally improves the status of the farmers.

#### **3.3.1. Land Development Machinery for hiring out to farmers**

The department is having a fleet strength of land development machinery viz. 81 Bulldozers, 132 Tractors, 63 Laser Levellers, 7 Paddy

transplanters and 48 Paddy combine harvesters for hiring out to farmers at nominal hire charges for taking up works such as land levelling, land shaping, ploughing, paddy transplanting and harvesting etc., Bull dozers and Tractors are also used for relief works during the periods of flood and natural calamities.

During the year 2016-17, 26 Rotavators, 12 Balers and 10 Ridge moulders have been purchased at a total cost of Rs.85.83 Lakh for Agricultural Engineering Department for hiring out to farmers with tractors.

To continue the hiring activity in the areas of land development and land preparation, 50 Tractors with high horse power along with essential implements are proposed to be purchased for Agricultural Engineering Department during 2017-18 under NABARD-RIDF assistance.

The programme of custom hiring of land development machinery to farmers will be continued during the year 2017-18.

The details of land development machinery available for custom hiring in each district are furnished below in the Table 3.1.

**Table 3.1: Districtwise availability of land development machinery**

Sl. No	District	Bull dozer	Tractor	Paddy Combine harvester	Paddy Trans-planter
1	Kancheepuram	5	6	4	
2	Tiruvallur	4	4		
3	Cuddalore	5	10		1
4	Villupuram	3	5		
5	Vellore	2	5		
6	Tiruvannamalai	2	2		
7	Dharmapuri	3	3		
8	Krishnagiri	3	3		
9	Salem	2	4		
10	Namakkal	4	6		
11	Coimbatore	3	3		
12	Erode	2	5		
13	Tiruppur	5	3		
14	Trichy	4	6		1
15	Ariyalur	2	3		
16	Perambalur	1	2		
17	Karur	2	2		
18	Pudukkottai	2	2		
19	Tiruvarur	2	10	10	2

Sl. No	District	Bull dozer	Tractor	Paddy Combine harvester	Paddy Trans-planter
20	Tanjavur	3	8	10	1
21	Nagapattinam		10	9	2
22	Dindigul	5	3		
23	Madurai	3	5	5	
24	Theni	2	2		
25	Sivagangai	2	3		
26	Ramanathapuram	1	2		
27	Virudhunagar	2	3		
28	Thoothukudi	3	3		
29	Tirunelveli	3	8	10	
30	The Nilgris	1	1		
<b>Total</b>		<b>81</b>	<b>132</b>	<b>48</b>	<b>7</b>

### **3.3.2. Minor Irrigation Machinery for hiring out to farmers**

The department is having a fleet strength of minor irrigation machinery viz., 24 Rotary Drills, 7 Percussion Drills, 22 Mini Drills, 42 hand Boring Sets, 7 Long Hole Equipments and 29 Rock Blasting Units for hiring out to the farmers for minor irrigation activities such as sinking of new bore wells and revitalisation of

dried up open wells. Services of 9 Resistivity Meters and 2 Electrical Loggers are provided to farmers to locate the aquifers with good quality of water.

To enable the Agricultural Engineering Department to continue the hiring activity in the areas of Minor Irrigation through construction of tube wells for irrigation, 10 Rotary Drills are proposed to be purchased at a cost of Rs.14.50 Crore for Agricultural Engineering Department during 2017-18 under NABARD-RIDF assistance. The programme will be continued during 2017-18.

The details of Minor Irrigation machinery available for custom hiring in each district are

furnished below in the Table 3.2.

**Table 3.2 : Districtwise availability of minor irrigation machinery**

Sl. No	District	Rotary Drill	Percussion Drill	Mini Drill	Others
1	Kancheepuram		1		5
2	Tiruvallur		5		7
3	Cuddalore	9			15
4	Villupuram		1		9
5	Vellore				4
6	Tiruvannamalai				1
7	Dharmapuri				4
8	Salem				10
9	Namakkal				4
10	Erode				2
11	Tiruppur				1
12	Trichy				3
13	Ariyalur				2
14	Perambalur				1
15	Karur				1
16	Pudukkottai	2			
17	Tiruvarur	6		2	
18	Tanjavar	7		19	2
19	Nagapattinam			1	6
20	Madurai				1
21	Sivagangai				2
22	Ramanathapuram				2
23	Virudhunagar				4
24	Thoothukudi				1
25	Tirunelveli				2
	<b>Total</b>	<b>24</b>	<b>7</b>	<b>22</b>	<b>89</b>

### **3.3.3. Augmentation of mechanization through schemes**

To assist the farmers from the problem of labour shortage in agriculture and to take timely farming operations, subsidy assistance is given to the farmers under agricultural mechanization programmes implemented both under National Agriculture Development Programme (NADP) and Sub Mission on Agricultural Mechanisation (SMAM).

Agricultural machinery and implements of different types, makes and models which are empanelled and approved by Agricultural Engineering Department are distributed to the farmers with the subsidy assistance upto a maximum of 50 percent for small, marginal, scheduled caste, scheduled tribes and women farmers and upto 40 percent subsidy assistance for other farmers or the maximum subsidy amount fixed by Government whichever is less.

Empanelment and approval for the Agricultural machinery and implements given by Agricultural Engineering Department is also applicable for the schemes of National Food Security Mission (NFSM), National Mission on Oilseeds and Oil Palm (NMOOP), Mission on Integrated Development of Horticulture (MIDH) and National Agriculture Development programme (NADP) implemented by Agriculture and Horticulture department.

### **3.3.3.1. National Agriculture Development Programme (NADP)**

Under National Agriculture Development Programme, totally 3,516 numbers of Agricultural machinery and implements like Power tiller, Paddy transplanter, Specialised Self Propelled Machinery like Reaper and Post hole digger, Tractor and Power tiller driven equipments, Power weeder for Garden land and Wet land, Brush cutter, Multicrop thresher, Chaff



cutter, Power operated knapsack sprayer and Manually operated equipments like Paddy drum seeder, Coconut tree climber, Dry land weeder, Manually operated sprayers, etc., were provided to farmers with the total subsidy assistance of Rs.12.65 Crore during the year 2016-17.

During 2017-18, it is proposed to distribute 1,200 numbers of different type, make and models of agricultural machinery and implements at a total cost of Rs.8 Crore under the National Agriculture Development Programme (NADP).

### **3.3.3.2. Sub Mission on Agricultural Mechanization (SMAM)**

Under Sub Mission on Agricultural Mechanization, 2,832 numbers of agricultural machinery and implements were distributed to the farmers with the subsidy assistance of Rs.22.51 Crore during 2016-17.

During the year 2017-18, it is proposed to implement the scheme with the financial assistance of Rs.15.50 Crore for the distribution of 1,820 numbers of agricultural machinery and implements to the farmers.

### **3.3.3.3. Distribution of Post harvest Technology and Management machinery(PHTM)**

Post harvest sector has great potential in Tamil Nadu. This is possible through the use of small gadgets, tools, machinery affordable by small and medium entrepreneurs so that they can opt for processing and value addition in the production itself.

It is proposed to distribute the Post harvest Technology and Management machinery under National Agriculture Development Programme to individual farmers, Self Help Group (SHG), User Groups (UG) of farmers, Co-operative Societies

of Farmers, Farmer Producer Organisations (FPOs) and Entrepreneurs.

#### **3.3.4. Encouraging mechanization through private initiatives**

Custom Hiring Centres of agricultural machinery and implements are very helpful for the farming community to increase the net income of the farmer by way of reducing the cost of cultivation through farm mechanization at each and every stage of crop growth in a timely manner. Small and Marginal farmers are not in a position to purchase the higher cost machinery like Higher horse power tractors, Transplanters, Threshers, Balers etc., and they are unable to maintain the high cost agricultural machinery and implements and hence the Government have decided to hire out agricultural machinery and implements to the needy farmers on nominal hire charge basis through Custom Hiring Centre (CHC).

### **3.3.4.1. Block Level Custom Hiring Centres (CHC)**

The subsidy assistance for forming the Agricultural machinery and implements Custom Hiring Centre at block level is 40 percent of the total unit cost of Rs.25 Lakh or a maximum amount of Rs.10 Lakh per centre and the 60 percent balance amount of Rs.15 Lakh per centre will be the beneficiary group or entrepreneurs' contribution as per Sub Mission on Agricultural Mechanization guidelines issued by Government of India.

During 2016-17, 175 Custom Hiring Centres under National Agriculture Development Programme and 245 Custom Hiring Centres under Sub Mission on Agricultural Mechanization have been established with a total subsidy assistance of Rs.41.92 Crore.

During 2017-18, it is proposed to establish 85 Custom Hiring Centres under National Agriculture Development Programme and 250 Custom Hiring Centres under Sub Mission on Agricultural Mechanization with the subsidy assistance of Rs.33.50 Crore.

#### **3.3.4.2. Custom Hiring Centres for Sugarcane Cultivation**

Increasing the net income of farmer from sugarcane cultivation is a big challenge today and there is a need to incorporate cost effectiveness in the production system by mechanizing the sugarcane cultivation. The farm implements, equipments and machinery are proposed for Mechanized Sugarcane Cultivation through Entrepreneur Development in Tamil Nadu with 40 percent subsidy assistance upto Rs.60 Lakh, for a total project cost upto Rs.150 Lakh per Sugarcane based Custom Hiring Centre. The Custom Hiring Centres will inturn

hire out the sugarcane cultivation machinery to the needy farmers at a nominal hire charge basis in co-ordination with concerned sugar mills. During the years 2015-16 and 2016-17, 5 sugarcane based Custom Hiring Centres have been formed in Kancheepuram, Villupuram, Ariyalur and Perambalur districts with a total subsidy amount of Rs.2.77 Crore.

During 2017-18, it is proposed to establish 5 numbers of Sugarcane based Custom Hiring Centres with a total subsidy assistance of Rs.3 Crore under National Agriculture Development Programme.

#### **3.3.4.3. Village level Custom Hiring Centres**

Dry land crops of pulses and oil seeds play a vital role in attaining food security. Promotion of suitable machinery for dry land cultivation by establishing farm machinery banks is imperative in villages having low farm power availability

districts of Ramanathapuram, Thoothukudi, Sivagangai, Virudhunagar, Tiruvarur, Perambalur, Ariyalur, Karur, Krishnagiri, Thanjavur, Cuddalore, Erode, Tiruppur, Coimbatore, Pudukkottai, Tirunelveli, Madurai, Namakkal, Vellore, Dharmapuri, Villupuram, Salem, Tiruvannamalai and Dindigul where the farm power availability varies from 0.28 to 3.24 kW per Hectare against the requirement of 4 kW per Hectare.

During 2017-18, it is proposed to establish 200 village based farm machinery Custom Hiring Centres each upto a project cost of Rs.10 Lakh by giving 80 percent subsidy with total subsidy assistance of Rs.16 Crore through Farmers Groups, Farmer Producer Organisations (FPOs) or any such entities in low farm power availability districts under National Agriculture

Development Programme and Sub Mission on Agricultural Mechanisation.

The establishment of dry land based farm machinery Custom Hiring Centres are tied up with **“Mission on Sustainable Dry land Agriculture (MSDA)”** in Tamil Nadu.

### **3.4. Soil and Water Conservation**

Soil and Water are the two vital natural resources which are to be conserved effectively for improving productivity in agriculture. The objective of improving the productivity, profitability and prosperity of the farmers and achieving agricultural development on an ecologically sustainable basis can be attained only when conservation, development and management of the land and water resources are ensured. Soil and Water Conservation programmes will improve the productivity on a sustainable basis and ensure the livelihood of



the farming community. The area under Rainfed agriculture, Cultivable waste lands, Current fallows and other fallows are the one which support the entire dry land agriculture and horticulture. They also remain as the catchments for tanks and reservoirs. Soil and Water Conservation measures taken up in these lands enhance the soil moisture availability, prevents soil erosion and land degradation, protects the health of these lands. Soil and Water Conservation assume greater importance in the context of Climate Change and provide the resilience to meet the drought conditions.

#### **3.4.1. Special Area Development Programme**

In order to provide special attention to hill areas and to the forest fringe villages of Western Ghat areas, State Government have formulated a new scheme called Special Area Development Programme and announced the launching of the

scheme from 2015-16 with an outlay of Rs.75 Crore for all the line Departments.

The main objective of the programme is eco-restoration, eco-protection and eco-development and conservation by adopting integrated watershed approach in a holistic manner for sustainable livelihood and enhancing agricultural productivity. The soil and water conservation measures are taken up for individual based works, with 90 percent subsidy and 10 percent contribution for ST category and 80 percent subsidy and 20 percent contribution for SC category and 50 percent subsidy and 50 percent contribution for other category farmers. Community based works are carried out with 100 percent Government funding.

It has been programmed by the Agricultural Engineering Department to take up Soil and Water conservation measures like Gully plugs,

Percolation ponds, Silt detention tanks, Gabion check structures and Landslide treatment related works in this scheme. Administrative approval has been accorded for an outlay of Rs.17.77 Crore for 2016-17 and Rs.12.08 Crore has been released and the works are in progress.

The programme is proposed to be continued for 2017-18 with an outlay of Rs.7.91 Crore.

### **3.4.2. River Valley Project**

In Tamil Nadu, the Centrally sponsored scheme of River Valley Project is being implemented in South Pennaiyar and Mettur catchments in Dharmapuri, Krishnagiri and Erode districts under the National Agriculture Development Programme from 2013-14 onwards. Soil and water conservation measures such as Contour bunding, Land development

activities, Drainage line treatments, Silt detention structures, Water harvesting structures, Support to farm production system, Livelihood support system and Tree plantation are taken up in the catchment areas. The soil and water conservation measures are taken up with 100 percent assistance and work to individual farmers are executed with 50 percent farmer's contribution.

So far, 21,764 Hectare have been covered and 2,022 numbers of structures have been constructed with a total expenditure of Rs.28.40 Crore.

During the year 2017-18, it is programmed to continue the scheme in the above mentioned catchments in 8 micro watersheds by constructing 208 numbers of structures and area based works at an outlay of Rs.4.50 Crore.

### **3.4.3. Dam Rehabilitation and Improvement Project**

The World Bank aided Dam Rehabilitation and Improvement Project is being implemented in the selected dams of Water Resources Department and Tamil Nadu Electricity Board. Agricultural Engineering Department's interventions in Dam Rehabilitation and Improvement Project is to prevent siltation in the multipurpose reservoirs by adopting multi-disciplinary integrated approach of Soil conservation and Watershed management practices in catchment of Krishnagiri and Kundha Reservoir project areas. Agricultural Engineering Department has programmed to implement the soil conservation activities over a period of 3 years (From 2015-16 to 2017-18) with a total outlay of Rs.15.41 Crore. During 2016-17, Soil conservation and Drainage line treatment works of 17,369 Metre length and Silt control

structures of 418 numbers have been carried out at a cost of Rs.7.19 Crore.

During the year 2017-18, it is programmed to implement the scheme with the Soil conservation and Drainage line treatment works for 1,763 Metre length and 192 numbers of Silt control structures with the total outlay of Rs.5.20 Crore.

#### **3.4.4. Water harvesting Structures through Rainfed Area Development**

In order to promote sustainable agriculture in rainfed areas, rainwater harvesting structures are constructed under Rainfed Area Development (RAD) component of National Mission for Sustainable Agriculture (NMSA). During the year 2016-17, 65 check dams were constructed at a cost of Rs.2.85 Crore in 15 districts namely Vellore, Tiruvannamalai, Salem, Namakkal, Dharmapuri, Coimbatore,

Tiruppur, Erode, Pudukkottai, Madurai, Dindigul, Theni, Virudhunagar, Tirunelveli and Thoothukudi.

Second instalment of 87 water harvesting structures at a cost of Rs.4.03 Crore have been sanctioned in 16 districts namely Coimbatore, Cuddalore, Dindigul, Dharmapuri, Karur, Krishnagiri, Madurai, Erode, Namakkal, Pudukkottai, Salem, Tiruppur, Trichy, Vellore, Villupuram and Virudhunagar. Works are under progress. It is programmed to take up construction of water harvesting structures in 21 districts during the year 2017-18.

#### **3.4.5. Deepening of Farm Ponds in Ramanathapuram District**

Farm ponds are cost effective Rain Water harvesting structures which has gained momentum recently among the farming community. The water stored in the farm pond

can be used for supplemental irrigation of rainfed crops like chillies, pulses and millets during critical stages of growth. The ponds are taken up for deepening upto half metre under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and deepening upto two metres by the Agricultural Engineering Department. During 2016-17, 1,352 Farm Ponds have been deepened at a cost of Rs.6.66 Crore.

During the year 2017-18, deepening of 800 Farm Ponds are being taken up at a cost of Rs.4.19 Crore in Ramanathapuram district.

#### **3.4.6. Creation of Water harvesting Structures under PMKSY**

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), an umbrella programme for the Irrigation and Agriculture has been introduced by the Government of India during the year 2015-16 with the sharing pattern of 60:40 by the Centre and State. Reaching water to every



farm is the main objective of the programme. Rainfed areas are subjected to the vagaries of monsoon which is highly unpredictable. Thereby it is very essential to go for more Water harvesting Structures both as a conservative and drought proofing strategy. During 2016-17, 389 numbers of Water harvesting Structures have been taken up for Rs.11.25 Crore.

#### **3.4.7. Dry land Cultivation – Interventions (Mission on Sustainable Dry Land Agriculture – MSDA)**

In order to sustain the Dry Land Agriculture in Tamil Nadu which accounts for 44% of net area and 40% of food grain production for the benefit of farming community a special scheme focusing on improving the production and productivity of millets, pulses and oil seeds was announced by the Government of Tamil Nadu in the Budget Speech 2016-17. Under this scheme, among the various interventions and activities

proposed for 2017-18, Agricultural Engineering Department in coordination with other line departments has proposed to undertake the component of Tractor ploughing operation using Cultivator to conserve valuable soil moisture essential for crop growth at a total cost of Rs.25 Crore, out of which Rs.12.50 Crore is under NADP and Rs.12.50 Crore is under State Fund. An area of 2 lakh Hectares will be covered in 200 clusters by adopting unit cost of Rs.1250 per Hectare as 100 percent assistance to the farmers in the cluster areas.

#### **3.4.8. Reclamation of Problem Soils**

Due to over exploitation of land and water resources, the problem soils such as alkali or saline or acid soils are formed. Adoption of scientific intervention and management will increase the area under cultivation. Hence, with the view to harness the potential of such

problem soils, a Centrally Sponsored Scheme for Reclamation of Problem Soils has been approved by the Government of India for implementation on pilot basis as a sub-scheme of National Agriculture Development Programme from 2016-17. In Cuddalore district, location specific interventions suitable for reclaiming the problem soils to increase the soil fertility and productivity is being implemented in an area of 1,100 Hectare with an outlay of Rs.6.67 Crore.

During the year 2017-18, the scheme is continued in Kancheepuram, Villupuram, Ramanathapuram, Tirunelveli and Thoothukudi districts which have more area affected by saline and alkaline problems with an outlay of Rs.10.50 Crore.

### **3.5. Water Management**

Tamil Nadu is a State with limited water resources and the rainfall in the State is

seasonal. More than 80 per cent of the water potential is utilised for irrigation only. The irrigated agriculture is supported by Canals, Tanks and Wells. The Agricultural Engineering Department is engaged in On Farm Water Management works in Canal, Tanks and Well irrigated areas.

### **3.5.1. Interventions in Micro Irrigation**

To enhance the physical access of water on the farm, to improve the on-farm water use efficiency and to reduce wastage, the Micro Irrigation works are being carried out in Tamil Nadu under PMKSY- Per Drop More Crop component and being implemented by Tamil Nadu Horticulture Development Agency.

During 2016-17, the task of carrying out verification of measurement of Micro Irrigation System installed by the Agriculture and Horticulture departments are being taken up by

the Agricultural Engineering Department for an area of 69,459 Hectare.

During 2017-18, the technical aspects for implementing the Micro Irrigation works are now entrusted with Agricultural Engineering Department for effective implementation. The technical aspects include the approval of layout, and design, validation of quotation, pre-inspection of beneficiary field, measurement, check measurement and super check measurement of Micro Irrigation System layout.

### **3.5.2. Rehabilitation of Irrigation Network in Chittar Sub Basin in Tirunelveli District under NABARD assistance**

Chittar sub-basin area has more than 40 percent of dry lands and fully dependent on rain water. Some of the dry and backward blocks of Tirunelveli fall under this sub-basin. Hence, extensive rain water harvesting, recharging the ground water to support well

irrigation and creating necessary irrigation infrastructure for economic management of all sources of irrigation water are planned. NABARD has sanctioned the project for an outlay of Rs.22.65 Crore with RIDF assistance of Rs.21.52 Crore and a State share of Rs.1.13 Crore. The scheme is to be implemented within a period of three years from 2017-18.

During 2017-18, suitable soil and water conservation practices are proposed to be carried out at an outlay of Rs.4.53 Crore.

### **3.5.3. World Bank Aided Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP)**

The Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP) is proposed to be implemented with the assistance from World Bank with an objective of increasing agriculture productivity in canal irrigated areas of Tamil Nadu over a period of seven years, from

2017-18 to 2023-24 with integrated approach by the Public Works Department, Agriculture, Agricultural Engineering, Horticulture, Agricultural Marketing, Animal Husbandry and Fisheries departments and Tamil Nadu Agricultural University. The project outlay of Rs.15 Crore is earmarked for Agricultural Engineering Department for taking up the Construction of farm ponds in the 66 sub-basin area as a supplementary source of additional irrigation at critical stages of crop development.

During 2017-18, it is programmed to construct 500 numbers of Farm Ponds with an outlay of Rs.3 Crore.

#### **3.5.4. Command Area Development and Water Management Programme in Canal and Tank commands**

In order to reduce the loss of water in the field channels of canal and tank irrigated areas and to ensure equitable distribution of water

among head reach and tail end farmers by adoption of rotational water supply system, the Centrally Sponsored Command Area Development and Water Management Programme (CAD&WMP) is being implemented in Tamil Nadu since 1980-1981, equally shared between Central and State Governments.

From the year 2015-16, this scheme is being implemented under Pradhan Mantri Krishi Sinchayee Yojana - har Khet Ko Pani component. Under this scheme, in the approved Command Area Projects, On Farm Development (OFD) works such as, Construction of concrete field channels, Creation of Infrastructure for Micro Irrigation, Construction of diversion box with shutters and Construction of cart track crossing are being executed by the Agricultural Engineering Department.



For adopting Rotational Water Supply (RWS) system and for continuing maintenance of infrastructures, Water Users Associations (WUAs) are formed and One Time Functional Grant are released to the Water User Associations.

So far, 2,014 numbers of Water User Associations have been formed covering an area of 9,41,004 Hectare in 36 command areas and Rs.44.38 Crore as Functional Grant have been deposited in Nationalised Bank and the same has been utilised for the maintenance of field channels and structures.

During 2016-17, an area of 13,229 Hectare has been covered for an outlay of Rs.43.82 Crore in the commands namely Kalingarayan Anaicut Project in Erode district, Manimuktha Nadhi System in Villupuram and Cuddalore districts, Pelandurai Anaicut Project in Cuddalore

district, Ellis Anaicut Project in Villupuram district, Cheyyar Anaicut System in Tiruvannamalai district, Kalingalar Nichabanadhi Irrigation Project in Tirunelveli district, Kelavarapalli Reservoir Project in Krishnagiri district and Kudhiraiyar Reservoir Project in Dindigul district.

The Government of India has now introduced a "Scheme of Incentivisation for Bridging the Irrigation Gap (ISBIG)" for the balance area of 19,066 Hectare in the 8 ongoing Command Area Development and Water Management Projects (CAD&WMP) is being programmed under PMKSY from the year 2017-18.

### **3.6. Green Energy Initiatives in Agriculture**

The Government is committed to mitigate the climate change effects by bringing out policies conducive to promote green energy in the State. Energy consumption in agriculture sector is

about 20 percent. With increase in demand for energy, promotion of solar energy in agriculture is found to be a viable option. Solar energy is a green source of energy available in abundance in nature. The State is endowed with abundant sunshine hours and the possibility of utilization of solar energy in agriculture sector is bright.

In order to promote utilization of solar energy in agriculture sector by the farmers, the Government is providing subsidy assistance to the farmers for installation of solar powered pumping systems and solar driers.

### **3.6.1. Provision of Solar Powered Pumping Systems**

In order to promote utilization of solar energy in agriculture, the programme was implemented during 2013-14 for providing 500 numbers of fixed type solar powered pumping systems with 80 percent subsidy assistance to the farmers

and in order to promote utilization of solar energy on a large scale, Hon'ble Chief Minister announced the programme of providing 2000 numbers of solar powered pumping systems to the farmers with 80 percent subsidy assistance during 2013-14 and the programme was successfully implemented.

Under the above programmes, 2,293 numbers of 5 HP, AC Solar pumps have been installed to the farmers at a total subsidy of Rs.80.77 Crore. An extent of about 5,730 Hectare is benefitted by the solar pumps installed and the beneficiary farmers are operating the solar pumps in effective manner. The total installed capacity of the solar pumps is 11 MW and the savings in electrical energy obtained is about 1.44 Crore units per year.

Besides, taking into consideration of the farmers' demand, the Hon'ble Chief Minister

announced the programme towards the implementation of provision of 500 numbers of solar powered pumps up to a capacity of 10 HP during 2016-17 with 80 percent subsidy assistance to the tune of Rs.21.90 Crore. During 2016-17, 203 numbers of Solar Pumps were installed and Rs.6.06 Crore provided as subsidy assistance. Balance solar powered pumps have been installed during the year 2017-18 and are being put into effective operation by the farmers.

In view of huge demand prevailing among the farmers to avail the benefits of the solar pumps programme, the scheme is to be continued during the year 2017-18.

### **3.6.2. Provision of Solar Driers**

Upto 2016-17, 132 Solar Driers were installed in various districts of Tamil Nadu and subsidy to the tune of Rs.2.79 Crore has been

released to the farmers. With the help of solar driers, the farmers of Trichy, Thanjavur, Virudhunagar, Tirunelveli, Kancheepuram and Krishnagiri districts, have made value addition for the produce like dry fruits of banana, pineapple and mango, dry chillies, dried moringa leaves and curry leaves, copra etc. This has helped the farmers to get higher profit by selling the value added products.

### **3.7. Infrastructure Development**

Agricultural Engineering Department is being the technical nodal Department of Agriculture Ministry and all the Infrastructure including Farm Development works and Civil works for Agriculture, Horticulture, Agricultural Marketing and Agri Business Departments are being implemented by this Department.

### **3.7.1. Integrated Agricultural Extension Centre (IAEC)**

The Integrated Agricultural Extension Centre (IAEC) to serve as a one stop access point at Block level for the farmers wherein the field level officers of the agriculture and allied departments are positioned for providing extension services, distribution of input as well as implementation of all other welfare schemes of all agricultural and allied departments.

Agricultural Engineering Department is executing the construction of 50 numbers of IAEC funded by NABARD – RIDF XX and 46 numbers of IAEC under NADP for Agriculture Department.

### **3.7.2. Soil Testing Lab, Fertilizer Control Lab and Liquid Bio Fertiliser Laboratory**

Agricultural Engineering Department has renovated 7 Liquid Bio Fertiliser Laboratory and

constructing Soil Testing Laboratory and Fertiliser Control Laboratory in 7 locations under National Agriculture Development Programme for Agriculture Department.

During 2017-18, it is programmed to construct 6 numbers of Storage Godowns for Liquid Bio Fertiliser Unit under National Agriculture Development Programme for Agriculture Department.

### **3.7.3. Farm Infrastructure Development in Agriculture and Horticulture Departments**

Agricultural Engineering Department is implementing the Infrastructure for Farm Development and other related Civil works in all the 41 State Seed Farms (SSF) for Agriculture Department.

Agricultural Engineering Department has commenced 17 works and programmed to



execute another 59 works during 2017-18 under National Agriculture Development Programme, Farm Receipt Account (FRA) and NABARD -RIDF XXII for State Horticulture Farms (SHF) for Horticulture Department in various farm locations in Tamil Nadu.

The department is also implementing the construction of 10 District Horticultural Information and Training Centres and 5 District Horticultural Technology Resource Centres under National Agriculture Development Programme for Horticulture Department.

#### **3.7.4. Agricultural Engineering Extension Centre (AEEC)**

Exclusive Agricultural Engineering Extension Centres are essential to promote the Agricultural Engineering techniques, to popularize the innovative agricultural machinery to the farmers

through educational procedure, conducting exhibition and demonstration of agricultural machinery and implements, training to farmers for the economical use of irrigation water, imparting training to the farmers to increase the agricultural production and to improve the living standards of farming community. Hence, it is proposed to construct 30 numbers of Agricultural Engineering Extension Centre for Agricultural Engineering Department with an unit cost of Rs.75 Lakh under NABARD – RIDF assistance at a total outlay of Rs.22.50 Crore during the year 2017-18.

### **3.8. Establishment**

One Chief Engineer (Agricultural Engineering)  
- General, one Chief Engineer (Agricultural Engineering) - River Valley Project, three

Superintending Engineers and two Executive Engineers are positioned at Headquarters level.

There are 11 Superintending Engineers at regional level, 31 Executive Engineers at district level, 5 Executive Engineers for special schemes, 125 Assistant Executive Engineers at revenue division level and for special schemes and 3,836 other staff in the department.

The Superintending Engineers are incharge of the administrative and technical control of the departmental activities in the region, the Executive Engineers are in charge of all the Agricultural Engineering activities of the respective districts and the Assistant Executive Engineers are responsible for the implementation of Agricultural Engineering Departmental activities within the revenue divisional area.

**Table 3.3. Staff Details**

<b>Category of post</b>	<b>Numbers</b>
Chief Engineer	2
Superintending Engineer	14
Executive Engineer	38
Assistant Executive Engineer	125
Other Staff	3,836
<b>Total</b>	<b>4,015</b>

## **4. AGRICULTURAL EDUCATION, RESEARCH AND EXTENSION EDUCATION**

### **4.1. Introduction**

The Government of Tamil Nadu implements various schemes with major focus on food and nutritional security of the poor. In accordance with these Governmental efforts, Tamil Nadu Agricultural University (TNAU) is undertaking various agricultural activities under 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 the farmers and rural youth to adopt new technologies and develop their skills in farming and other farm related activities and farm business ventures, so as to meet the emerging challenges in food production and to run farming as a commercially profitable venture.

## **4.2. Infrastructure**

At Coimbatore, National Accreditation Board for Testing and Calibration Laboratories (NABL) approved Laboratory, Lecture Halls, Insect Museum, Post Graduate Lecture hall and laboratory, Laboratory complex in the Department of Sustainable Organic Agriculture Centre and Multi-media Laboratory were constructed at Rs. 10.81 crore.

Also, in Tamil Nadu Agricultural university, the following works are in progress: Students' hostel, Library, Modernized kitchen-cum-dining hall, Rhizotron laboratory, Tissue culture production centre, Laboratory buildings for Centre of Excellence in Molecular Breeding and Advanced Genotyping, Construction of Administrative buildings, Farm offices, Study centre, Examination centres and infrastructure facilities at Citrus Research Station, for a total amount of Rs.206.75 crore.

### **4.3. Agricultural Education**

Tamil Nadu Agricultural University currently offers 13 Under-Graduate, 33 Master's degree, 26 Regular Doctoral degree programmes and 27 Part-time Ph.D. research programmes and four Integrated Ph.D. programmes through its 14 constituent colleges. Three constituent diploma institutes are operating under Tamil Nadu Agricultural University offering Diploma in Agriculture / Horticulture. During the year 2016-17, 584 passed out after successfully completing diploma course and 503 students were newly admitted. In Under-Graduate programme, 1,453 passed out successfully and 2,879 students (1,366 in constituent colleges and 1,513 in affiliated colleges) were newly admitted. In Post-Graduate degree programme, 494 passed out and 464 new students were newly admitted. In Doctoral degree

programmes, 108 students passed out successfully and 178 students were newly admitted.

The number of applications received for admittance to various Under-Graduate programmes has increased from 9652 during 2011-2012 to 49,039 during 2017-2018. Consequently, the sanctioned strength has increased from 1,365 to 3,080 during the above period.

**Table 4.1. District wise Constituent colleges**

<b>Sl. No.</b>	<b>District</b>	<b>Name of the College</b>
1	Coimbatore	Agricultural College and Research Institute, Coimbatore
2		Horticultural College and Research Institute, Coimbatore
3		Agricultural Engineering College and Research Institute, Coimbatore
4		Forest College and Research Institute, Mettupalayam
5	Madurai	Agricultural College and Research Institute, Madurai
6		Home Science College and Research Institute, Madurai



<b>Sl. No.</b>	<b>District</b>	<b>Name of the College</b>
7	Tiruchirapalli	Anbil Dharmalingam Agricultural College and Research Institute, Navalur Kuttappattu
8		Horticultural College and Research Institute for Women, Navalur Kuttappattu
9		Agricultural Engineering College and Research Institute, Kumulur
10	Thanjavur	Agricultural College and Research Institute, Eachangkottai
11	Pudukkottai	Agricultural College and Research Institute, Kudumiyamalai
12	Tiruvannamalai	Agricultural College and Research Institute, Vazhavachanur
13	Theni	Horticultural College and Research Institute, Periyakulam
14	Thoothukudi	Agricultural College and Research Institute, Killikulam

#### **4.3.1. Open and Distance Learning Courses**

Under Open and Distance Learning mode, 24 certificate courses and three Master's degree programme are being offered. For farmers, one Bachelor of Farm Technology (B.F.Tech) and one Master of Farm Technology (M.F.Tech)

programmes are being offered. The University also offers six P.G. diploma courses and two new diploma courses namely; Diploma programme for Input dealers and Multimedia in Agriculture are offered.

#### **4.3.2. Students welfare and Career counselling and placement**

Tamil Nadu Agricultural University provides career counselling to the students through the Directorate of Students Welfare (DSW). During 2016-17, totally, 193 students were placed in various industries namely; Agro Industry (61), Seed Industry (2), Food Industry (9), NGO / Government (30), Plantation (1), Banking (81) and other institutions (9). A state-of-the-art 'Communication Laboratory' is also made available to improve the soft skills of the students. The Directorate also organizes motivational lectures, coaching classes, mock

group discussions and interviews and soft skill workshop for better placements of the students.

#### **4.4. Ranks and Awards**

##### **4.4.1. Ranking of Educational Institutions**

During the year 2016-17, Tamil Nadu Agricultural University was ranked first among the State Agricultural Universities by the National Institutional Ranking Framework (NIRF), Ministry of Human Resource Development and was ranked 17<sup>th</sup> position among all Universities across India.

The QS BRICS (Brazil, Russia, India, China and South Africa) rated Tamil Nadu Agricultural University in the 130-140<sup>th</sup> position in 2016 among the academic institutions in BRICS countries.

Career 360 ranked Tamil Nadu Agricultural University as the No.1 State Agricultural University in India during 2016.

#### **4.4.2. Awards conferred on Tamil Nadu Agricultural University**

During the year 2016-17, Tamil Nadu Agricultural University was conferred with six awards namely; Plaque of appreciation by Cereal systems initiatives for South Asia (coordinated by CIMMYT, Mexico) given to Soil and Water Management Research Institute, Thanjavur for its commitment in improving the lives of small and marginal farmers in Cauvery Delta; Skoch-Order-of-Merit (Top 100 projects in India) for Block Level Weather Forecast awarded to the Agro Climatic Research Centre, TNAU, Coimbatore; Skoch- Order - of - Merit (Top 100 projects in India) for the Value Chain on Industrial Agroforestry scheme in Tamil Nadu to Forest College and Research Institute, Mettupalayam by the Skoch Group, New Delhi; Mahindra Samridhi India Agri award for 2016 for popularising Millet processing technology in India

to Post Harvest Technology Centre, TNAU, Coimbatore, Best Weed Management Centre Award for 2016-17 was awarded to the Weed Management Centre of Agronomy Department under All India Coordinated Research Scheme by Weed Research Directorate at Jabalpur and Krishi Vigyan Kendra of Cuddalore district was awarded the Best cluster of Front Line Demonstrations in Oilseeds for the year 2015-16 by the Department of Agricultural Extension, Indian Council of Agricultural Research.

#### **4.5. Agricultural Research**

Under Tamil Nadu Agricultural University, 14 colleges and 39 stations undertake research across the State on location specific and crop specific problems. The University, so far, has released 819 new crop varieties 165 agricultural implements and 1,527 management technologies.

#### 4.5.1. Newly released crop varieties

Tamil Nadu Agricultural University has released 12 new crop varieties during 2016-17.

**Table 4.2. Newly released crop varieties**

Sl. No.	Crop / Variety	Salient features
1	Rice Co 52	Medium duration (130–135 days). Resistant to blast and sheath blight diseases. Suitable for <i>late samba / thaladi</i> season.
2	Barn yard millet MDU 1	Matures in 95-100 days. Grain yield - 2,200-2,500 kg/Ha. under irrigated and 1500-1700 kg/Ha. under rainfed conditions.
3	Redgram Co 8	Matures in 170-180 days. Resistant to Sterility Mosaic Virus Disease (SMD) and root rot disease.
4	Blackgram ADT 6	Matures in 65 - 70 days. Mean grain yield is 741 kg/Ha. Resistant to Yellow Mosaic Virus (YMV), Leaf Curl Virus (LCV) and powdery mildew diseases.
5	Blackgram KKM 1	Matures in 65-70 days. The mean grain yield is 607 Kg/Ha. Moderately resistant to Yellow Mosaic Virus, pod borer and root knot nematode.

<b>Sl. No.</b>	<b>Crop / Variety</b>	<b>Salient features</b>
6	Sesamum VRI 3	White seeded variety. Matures in 75-80 days. The mean seed yield is 1,055 kg/Ha. in Summer season
7	Castor YRCH 2	The mean bean yield of 2,089 kg/Ha. Resistant to wilt and tolerant to semi-looper, spodoptera, leaf hopper and capsule borer.
8	Cotton K12	Medium staple cotton with mean cotton yield 1193 kg/Ha. Resistant to leaf hopper and tolerant to drought.
9	Sugarcane CoC (Sc) 25	Cane yield 153.65 t/Ha. Moderately resistant to red rot and tolerant to water stress.
10	Snake gourd CoH 1	Average yield of 27.5 kg/plant. It recorded less downy mildew, powdery mildew and anthracnose incidences.
11	Bottle gourd PLR 1	Matures in 130-135 days. It is nutritive and yields 32.4 t/Ha.
12	French Beans Ooty 3	Matures in 70 - 90 days. Mean pod yield is 39.81 t/Ha.

#### **4.5.2. Newly released farm machinery**

Tamil Nadu Agricultural University has released one new farm machinery during 2016-17.

**Table 4.3. Newly released farm machinery**

<b>Sl. No.</b>	<b>Salient features</b>
1	<b>Aonla de-seeding machine</b> Removes seeds from 100 kg Aonla fruits per hour. The cost of de-seeding is Rs. 3/kg and the cost of the machine is Rs.60,000.

**4.5.3. Newly released management technologies**

Tamil Nadu Agricultural University has released four new management technologies during 2016-17.

**Table 4.4. Newly released management technologies**

<b>Sl. No.</b>	<b>Salient features</b>
1	<b>Biomass hot air generation system integrated with solar tunnel dryer</b> Drying capacity is 2 tonnes of copra or turmeric per batch.



<b>Sl. No.</b>	<b>Salient features</b>
2	<p><b>Pre-harvest spray of Enhanced Freshness Formulation to extend the shelf life of mango fruits</b>            2% spray at 30 and 15 days prior to harvest extends the shelf life of mango fruits by 2-4 weeks.</p>
3	<p><b>TNAU Energy SOFT 2016 software</b>            Helps to take decisions based on energy efficient agricultural technologies</p>
4	<p><b>TNAU Weather SOFT 2016 software</b>            Handling large volume of weather data.            User friendly</p>

#### **4.5.4. Research Schemes**

Tamil Nadu Agricultural University has its various research interventions with new focussed projects sanctioned by different funding agencies:

##### **4.5.4.1. Tamil Nadu Innovation Initiatives programmes(2016-17)**

1. Promotion, commercialization, post harvest processing and industrial application of annatto (*Bixaorellanal.*) as

- a source of Natural dye. (Sanctioned amount: Rs. 2.24 crore)
2. Revitalization of millets for nutritional security and enhanced productivity (Sanctioned amount: Rs. 1.878 crore).
  3. Mitigating occupational drudgery of farm women through ergonomic interventions (Sanctioned amount: Rs.1.77 crore).
  4. Establishment of integrated organic sylvo Pasture Models suitable for alfisol tracts of Tamil Nadu at Dryland Agricultural Research Station, Chettinad in Sivagangai district (Sanctioned amount: Rs.3.95 crore).

#### **4.5.4.2. National Agricultural Development Programme (NADP) (2016-17)**

1. Mango Research Centre, Paiyur in Krishnagiri district (Sanctioned amount: Rs. 2 crore)

2. Diversified Agricultural cafeteria with the State of Art Technologies for Third Generation (Sanctioned amount: Rs.7 crore)
3. Construction of Farmers Trainees Hostel at Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirapalli (Sanctioned amount: Rs. 2.57 crore)
4. Promotion of organic cultivation for quality black pepper production from Kolli Hills of Tamil Nadu (Sanctioned amount: Rs. 21.389 lakh)
5. Enhancing pulses production in Delta and Non-delta districts, (Sanctioned amount: Rs. 53.50 lakh)

## **4.6. Agricultural Extension Education**

### **4.6.1. Krishi Vigyan Kendras (KVK)**

There are 14 Krishi Vigyan Kendras (KVK) functioning under the control of Tamil Nadu

Agricultural University with a mandate of Technology Demonstration and Adoption. During 2016-17, the Tamil Nadu Agricultural University KVKs have organized 117 On-Farm Testing (OFT) in an area of 285 Ha. benefiting 498 farmers; 363 Front Line Demonstrations (FLDs) of newly released varieties and technologies in 793 locations benefiting 2,237 farmers. The KVKs also conducted 481 On-campus and Off-campus training programmes to 16,667 farmers and 30 vocational training programmes and 2,867 farmers got benefited.

**Table 4.5. Krishi Vigya Kendras under TNAU**

<b>Sl. No.</b>	<b>District</b>	<b>Location</b>
1	Cuddalore	Virudhachalam
2	Dharmapuri	Papparapatty
3	Kanyakumari	Pechiparai
4	Madurai	Madurai
5	Nagapattinam	Sikkal
6	Pudukkottai	Vamban
7	Ramanathapuram	Ramanathapuram

8	Salem	Sandhiyur
9	Thiruvallur	Tirur
10	Thiruvarur	Needamangalam
11	Tiruchirappalli	Sirugamani
12	Vellore	Virinjipuram
13	Villupuram	Tindivanam
14	Virudhunagar	Aruppukottai

#### **4.6.2. Educational Media Centre (EMC)**

For the benefit of farming community during the year 2016-17, the Educational Media Centre of TNAU produced 125 video programmes and conducted 278 video shows and 317 video lessons were sold.

#### **4.6.3. TNAU Agritech Portal (<http://agritech.tnau.ac.in>)**

The Agritech portal contains about nine lakh pages of information related to agriculture and allied sciences in Tamil and English. About 40 lakhs users visited the site and had used the information.

**4.6.4. Android Apps on Expert System** has been developed in Tamil and English languages for crops namely; paddy, sugarcane, ragi, coconut, banana and for animal husbandry enterprises like cow and buffalo, goat rearing and poultry. Totally, 12 Android Apps were uploaded in the Google Play Store and mgov App Store.

**4.6.5. 'e-Velanmai'** an extension approach has been successfully implemented in 13 districts jointly by TNAU and Department of Agriculture. *e-Velanmai-FCMS* App was created. Trainings were imparted to farmers and Extension Officers in 100 blocks. In total, 2,939 advisories were offered using the App.

**4.6.6. Agricultural Technology Information Centre (ATIC)** acts as a single window delivery system of technology and inputs. The centre sells inputs like seeds, planting materials, bio-

fertilisers, crop boosters and technical books for the benefit of farmers. During 2016-17, the ATIC has earned an amount of Rs. 3.18 lakh by sale of various inputs particularly the crop boosters and seeds of crop varieties.

**4.6.7. Farmers Facility Centre** provides farmers with first hand information about the technologies, and renders analytical services with regard to soil and water and diagnostic services of plant samples besides coordinating scientist-farmer interaction. Every month, on an average, 230 farmers are visiting the centre for getting farm advisory services and for soil and water analysis.

**4.6.8. 'Uzhavarin Valarum Velanmai'** a monthly Tamil magazine of Tamil Nadu Agricultural University, Coimbatore is published since 1975 and has a subscriber base of 12,865.

#### **4.6.9. Farmers Mela / Exhibitions**

Tamil Nadu Agricultural University KVKs organized the World Soil Health Day campaign where in, 2,173 farmers participated. Also, 667 Soil Health Cards were issued. Awareness programmes, technical sessions, demonstrations, exhibitions and video shows were organized.

Tamil Nadu Agricultural University participated in the CODISSIA Agricultural fair – 2016 and stalls and demonstrations on various technologies were organized and over 25,000 visitors including farmers benefitted.

State Level Farmers day was conducted at Tamil Nadu Agricultural University, Coimbatore on 08.01.2016 and more than 5,000 farmers participated. Kuruvai (Kharif) and Samba / Thaladi (Rabi) pre-season training campaigns were conducted in all the 14 KVKs and totally



7,900 farmers and extension officials participated.

**4.6.10. Kisan Call Centre (KCC)** provides services to farmers through a toll-free number 1551 or 1800-180-1551. The caller can interact in their local language with the experts. This Centre functions on all working days between 7.00 am and 10.00 pm. During the year 2016-17, 23,000 calls were answered.

**4.7. TNAU – Information and Training Centre, Chennai** periodically conducts training programmes for the benefit of farmers/youth, urban men and women. During the year 2016-17, 65 training programmes were conducted on 31 varied topics such as; roof gardening, kitchen gardening, fruits and vegetable processing, indoor plants, mushroom cultivation, vermicomposting, organic farming,

preparation of spicy products and bakery products benefitting 2,231 participants.

#### **4.8. Seed production programme**

During 2016-17, a total quantity of 1,719 quintals of breeder seeds, 1,352 quintals of foundation seeds, 3,241 quintals of certified / TFL seeds in 175 varieties of principal crops and 28.93 lakh seedlings of various crops were produced and distributed. Apart from these, 7 lakh seed packets of flower and vegetable seeds were sold through the Automatic Seed Vending Machines installed at 11 locations.

During 2017-18, it is targeted to produce 1880 quintals of breeder seeds, 6467 quintals of foundation seeds and 25,750 quintals of certified / TFL seeds of principal agricultural and horticultural crops. Besides, 29.61 lakh seedlings of various horticultural crops are to be produced and distributed.

#### **4.9. The Agro Climate Research Centre**

In order to make weather based crop decision based on the statistics received from the Automatic Weather Stations, the Agro Climate Research Centre (ACRC) is making block level medium range weather forecast. Agro advisory bulletins are prepared twice in a week. During 2016-17, totally 102 bulletins each with four advisories were prepared and 102 SMS were sent to 8.68 lakh farmers per time (Totally 8.85 crore) on 6 topics viz., agricultural crops, horticultural crops, plantation crops, cattle and small ruminants, poultry and other birds and extreme weather events.

#### **4.10. Price forecast and Market intelligence**

Tamil Nadu Agricultural University through the Domestic and Export Market Intelligence Cell (DEMIC) forecasts local market prices of agricultural produces before sowing and before

the harvest seasons. The market advisories are disseminated both in print and electronic media. Price forecasting is done for 24 crops / produces like; Maize, Sorghum, Ragi, Cumbu, Blackgram, Bengalgram, Greengram, Groundnut, Gingelly, Sunflower, Coconut, Copra, Cotton, Potato, Carrot, Beetroot, Tomato, Bhendi, Brinjal, Small onion, Turmeric, Coriander, Red chilly and Banana (Nendran and Poovan).

During 2016-17, depending upon the crop, 23 advisories on pre-sowing and 39 advisories on pre-harvesting were sent to about 4 lakh farmers. The price forecast had more than 90 per cent reliability for pre-sowing and 94 per cent reliability for pre-harvest.

#### **4.11. Agri-Business Development**

More than 100 incubatees were enrolled with this Directorate of Agri Business Development and 25 technologies have been commercialized.

Through National Research Development Corporation, Ministry of Science and Technology, the following technologies were commercialized; TNAU Coconut tonic, TNAU Panchagavya, TNAU strains of *Pseudomonas* and *Trichoderma*, TNAU Master Trap and Ready to cook Mix Food from Pearl millet. During the year 2016-17, technology for maize hybrid seed production for COH (M) 8 and sugarcane juice bottling technology were commercialized.

#### **4.12. Intellectual Property Rights**

Tamil Nadu Agricultural University has obtained seven patents and 59 findings have been filed for obtaining patent. Tamil Nadu Agricultural University has also registered 64 crop varieties under Protection of Plant Varieties and Farmers Rights (PPV&FR) as extant varieties.

#### **4.13 Human Resource Management**

Under Tamil Nadu Agricultural University 14 colleges, 39 research stations and 14 Krishi Vigyan Kendras are functioning. Out of the total sanctioned posts of 1396, Directors / Deans (46), Professors (423), Associate Professors (74) and Assistant Professors (635) were positioned. Steps are taken to fill up 218 vacant positions.

Tamil Nadu Agricultural University is undertaking research to release new technologies in order to encourage the farmers.

## **5. SUGAR**

Sugarcane, the core raw material for Sugar Industry is being cultivated in the State in an area of 3.17 Lakh hectares with an average annual production of 336 Lakhs Metric Tonnes. Tamil Nadu stands fourth in Sugarcane cultivation and Sugar production in the Country. Sugarcane produced in the State is crushed in the 43 Sugar mills viz., 16 Co-operative Sugar mills, 2 Public Sector Sugar mills and 25 Private Sugar mills.

Sustainable Sugarcane Initiative (SSI), Micro Irrigation and Farm Mechanization etc. are encouraged in Sugarcane cultivation with subsidy assistance by the State Government to ensure increased production and productivity. These initiatives aim to promote Sugarcane cultivation by ensuring judicious use of inputs such as seed, fertilizers, irrigation water and to

overcome the problem of labour shortage in Sugarcane cultivation.

Sugarcane is a highly water intensive crop and the area under cultivation is coming down and hence to enhance productivity and compensate production loss due to area reduction, the Government of Tamil Nadu has set a target of extending Drip Irrigation to 35,000 Acre and bringing 40,000 Acre under SSI method of cultivation during 2017-18. Under SSI Scheme, it is proposed to install 1,600 Shade Nets and produce 24 Crore Bud Chip seedlings with a total subsidy assistance of Rs.30 Crores under NADP. The SSI scheme will be implemented by Department of Sugar through Sugar mills in Co-ordination with Department of Agriculture. The districtwise Sugarcane area proposed for the year 2017-18



under SSI Scheme and Micro Irrigation is as follows:-

**Table: 5.1. Districtwise area under SSI & MI for Sugarcane**

Sl. No	Name of the District	Area Coverage proposed under SSI with Drip irrigation (Acre)	Area Coverage proposed under Micro irrigation (Acre)
1	Ariyalur	988	513
2	Coimbatore	350	125
3	Cuddalore	4488	1763
4	Dharmapuri	2738	3513
5	Dindigul	138	375
6	Erode	1388	6738
7	Kancheepuram	1000	--
8	Karur	750	--
9	Krishnagiri	613	625
10	Madurai	363	638
11	Nagapattinam	50	--
12	Namakkal	1038	713
13	Perambalur	975	275
14	Pudukkottai	663	463
15	Salem	1650	375
16	Sivaganga	913	--
17	Thanjavur	963	538
18	Theni	613	888
19	Tirunelveli	625	--
20	Tirupur	163	513
21	Tiruvallur	775	100
22	Thiruvannamalai	5463	3288
23	Tiruvarur	50	--
24	Trichy	1625	--

25	Tuticorin	250	--
26	Vellore	1913	838
27	Villupuram	9150	12725
28	Virudhunagar	313	--
	<b>Total</b>	<b>40,000</b>	<b>35,000</b>

Further, with the aim to improve the economic development of Sugarcane farmers, Government of Tamil Nadu announces State Advised Price (SAP) for every Sugar season over and above the Fair and Remunerative Price (FRP) announced by Government of India. Government of India announced FRP of Rs.2300/- per Metric Tonne of Sugarcane linked to 9.5% average sugar recovery with an incentive of Rs.24.20 per Metric Tonne for every 0.1% increase in sugar recovery for the Sugar season 2016-17 and the State Advised Price announced by Government of Tamil Nadu is Rs. 2850/- Metric Tonne of Sugarcane. The State Government have constituted a Committee to study and recommend to Government the

methodology for fixing remunerative price. Government Officials, Representatives of Sugar Mills and Cane Growers will act as members of this Committee.

## **6. SEED CERTIFICATION & ORGANIC CERTIFICATION**

Seed is the most important factor that determines the yield potential, quality and uniformity of the produce which ultimately decides the market value. Therefore, the income of the farmer totally depends upon the use of quality certified seeds. Hence, the farmers should take utmost care in selection of appropriate seed source and variety.

The Department of seed certification & Organic Certification implements the following activities which ensures distribution of quality certified seeds to the farmers of the State.

- Certification of seeds of notified crop varieties, in accordance with the Indian Minimum Seed Certification Standards (IMSCS).
- Seed Quality Control activities, to monitor and regulate distribution of quality seed by

enforcement of the existing seed legislations.

- Seed Testing activities, to analyse and ensure seed qualities in the notified Seed Testing Laboratories.
- Imparting training to the persons involved in the seed industry in the aspects of seed legislations and certified seed production.
- Implementation of Organic certification programme as per the standards of National Programme for Organic Production (NPOP).

### **6.1. Seed Certification**

The Seed Certification wing performs the functions of the seed certification agency which are carried out in accordance with the provisions of The Seeds Act 1966 and The Seeds Rules 1968. Seed certification is a regulatory process to secure, maintain and make available certified

seed with qualities such as germination, physical purity, genetic purity, moisture content and seed health as prescribed under the Indian Minimum Seed Certification Standards (IMSCS).

In the recent years the quantity of seeds certified under paddy crop contributes to the major share to the tune of 85 to 90% of the total quantity of certified seeds produced. There is a need to increase the certified seed production in crop seeds of Millets, Pulses, Oil seeds and vegetables. Concerted efforts are being taken up by this Department, for the involvement of more number of private seed producers to take up seed certification under crops of pulses, oilseeds and vegetables. There are 846 approved seed processing units functioning in Tamil Nadu to process the field run seeds to improve the quality of certified seed production.

Further, strengthening of Seed Certification wing of Directorate of Seed Certification and Organic Certification is being carried out at a cost of Rs.1.55 crores towards construction of Conference hall / Meeting hall with the purchase of equipments and infrastructure under National Agricultural Development Programme.

**Table 6.1 AREA REGISTERED UNDER SEED CERTIFICATION 2016-17**

<b>S.No.</b>	<b>Headquarters</b>	<b>Area registered In Hectares</b>
1	Kancheepuram	1,093
2	Tiruvallur	899
3	Cuddalore	2,124
4	Villupuram	3,276
5	Vellore	1,616
6	Tiruvannamalai	1,185
7	Salem	1,398
8	Namakkal	519
9	Dharmapuri	944
10	Krishnagiri	912
11	Coimbatore	898
12	Tiruppur	1,113
13	Erode	1,150
14	Trichy	1,721
15	Perambalur	292
16	Ariyalur	344
17	Karur	447

<b>S.No.</b>	<b>Headquarters</b>	<b>Area registered In Hectares</b>
18	Pudukkottai	1,154
19	Thanjavur	8,158
20	Nagapattinam	2,547
21	Thiruvavur	6,596
22	Madurai	1,886
23	Theni	457
24	Dindugal	1,152
25	Ramad	604
26	Sivagangai	502
27	Virudhunagar	1,311
28	Tirunelveli	2,022
29	Thoothukudi	953
30	Kanyakumari	131
31	The Nilgiris	0
	<b>Total</b>	<b>47,404</b>

During the year 2016-17, an area of 47,404 Hectares has been registered for certification and 1,01,709 MT of various crop seeds have been certified.

It is proposed to register an area of 57,000 hectares and to certify 1,10,000 MT of seeds during the year 2017-18.



## **6.2. Seed Quality Control**

The Government is keen in ensuring the timely availability of quality seeds for which seed distribution system is properly monitored by Quality Control wing of seed certification department 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.

Seed selling licenses are issued to all the seed dealers in the State under provisions of The Seeds (Control) Order, 1983. At present 9,493 licensed seed dealer points are functioning in the State. These licensed seed dealer points are inspected regularly for adherence to seed legislations and maintenance of seed quality. Any violation under the seed legislations or sale

of sub standard seed lots is dealt with legal or departmental actions.

The details of the licensed seed selling points functioning in the state at present are detailed below.

**Table 6.2. DETAILS OF LICENSED SEED SELLING POINTS** (in numbers)

<b>Detail</b>	<b>Government</b>	<b>Quasi Govt.</b>	<b>Private</b>	<b>Total</b>
Licensed seed selling Points	1,417	1,333	6,743	9,493

During the year, 2016-17, a total number of 68,685 inspections were conducted in 9,493 seed selling points and 68,062 seed samples were drawn for quality check. During the inspections, Sub-standard seeds of 920 seed lots valued at Rs.6.46 crores, weighing 819 MT were identified and prevented from being sold to the farmers.

It is proposed to make 69,000 seed selling point inspections and to draw 69,000 seed

samples to ensure quality seeds distribution to farmers during 2017-18.

### **6.3. Seed Testing**

Seed Testing is essential to support the implementation of the seed certification and seed quality control. Seed Testing Laboratories evaluate seed quality parameters such as germination and other distinguishable varieties. Genetic purity of seed lots is determined at the Grow-out Test farm, the Glass house, and the DNA Finger Print Laboratory.

At present there are 33 notified seed testing laboratories in the State.

**Table 6.3 DETAILS ON NOTIFIED SEED TESTING LABORATORIES**

<b>Sl.No.</b>	<b>Headquarters</b>	<b>Jurisdiction (Districts )</b>
1	Kancheepuram	Kancheepuram
2	Tiruvallur	Tiruvallur and Chennai.
3	Cuddalore	Cuddalore
4	Villupuram	Villupuram
5	Vellore	Vellore
6	Tiruvannamalai	Tiruvannamalai
7	Salem	Salem
8	Namakkal	Namakkal
9	Dharmapuri	Dharmapuri

<b>Sl.No.</b>	<b>Headquarters</b>	<b>Jurisdiction (Districts )</b>
10	Krishnagiri	Krishnagiri
11	Coimbatore	Coimbatore and parts of Tiruppur
12	Referral lab & Bt Lab, Coimbatore	Entire State
13	Glass house Lab, Coimbatore	Entire State
14	Grow Out Test farm, Coimbatore	Entire State
15	DNA Finger Print Lab, Coimbatore	Entire State
16	Erode	Erode and parts of Tiruppur
17	Trichy	Trichy
18	Perambalur	Perambalur and Ariyalur
19	Karur	Karur
20	Pudukkottai	Pudukkottai
21	Thanjavur	Thanjavur
22	Nagapattinam	Nagapattinam
23	Tiruvarur	Tiruvarur
24	Madurai	Madurai
25	Theni	Theni
26	Dindigul	Dindigul
27	Ramad	Ramad
28	Sivagangai	Sivagangai
29	Virudhunagar	Virudhunagar
30	Tirunelveli	Tirunelveli
31	Thoothukudi	Thoothukudi
32	Kanyakumari	Kanyakumari
33	The Nilgris	The Nilgris

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.

Under Seed Testing during 2016-17, a total number of 88,348 seed samples were analyzed for quality check.

During 2017-18, it is proposed to analyse 92,000 seed samples.

### **6.3.1. Strengthening of Seed Testing Laboratories:**

During 2017-18, Laboratory standards of the notified Seed Testing Laboratories will be

strengthened under National Agriculture Development Programme (NADP).

### **6.3.2. Special & Outstanding activities carried out in Seed Testing.**

#### **a. Establishment of DNA Finger Print Laboratory**

To speed up the activities of the seed testing laboratories, 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 ensure the seed standards, Government has taken up outstanding efforts by establishment of a DNA Finger Print 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. The DNA Finger Print Laboratory at present has a potential to ensure the Genetic Purity of

15 notified varieties of paddy crop which are most popularly grown in the state.

**b. Taking seed testing to International levels**

To support and to encourage seed export, it is essential to upgrade the seed testing standards on par with international standards. 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).

**Seed Testing Laboratory, Coimbatore is the only laboratory among the Government Institutions accredited by the International Seed Testing Association (ISTA), Zurich, Switzerland.**

The Seed Testing Laboratory, Coimbatore was awarded **The Best Performing Laboratory in India** by the **Government of India, Ministry of Agriculture & Farmers**

**welfare** during the **eighth National Seed Congress held at Hyderabad during October 2015**. This laboratory has facilities and the capabilities to analyse seed samples from countries around the world. Certification of ISTA accredited lab is mandatory for export and import of seeds from the country.

The Seed Testing Laboratory, Coimbatore has obtained Government Order for issuing “Orange International Certificate” and “Blue International Certificate” for the qualifying seed lots for export purpose.

#### **6.4. Training**

The training wing takes up capacity upgradation of seed producers, dealers and farmers on latest trends in seed production, seed certification and seed legislations. During 2016-17, a total number of 49,080 persons were trained by this Department.

Training will be given during 2017-18 also.



## **6.5. Organic Certification**

Organic Certification is the procedure by which a written assurance is given by the certification department that clearly identified production or processing system which confirm to the specified requirement. The primary objective of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people.

Tamil Nadu Organic Certification Department (TNOCD) was established to carryout inspection and certification of organic production system in accordance with NPOP (National Programme for Organic Production). 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 during the year 2007.

**A sustained effort with successful performance by the Tamil Nadu Government has ensured the continuation & extension of the accreditation status till 2018.** This Organic Certification wing has the unique feature of having the largest number of individual farmers among the 28 organic certification bodies functioning in the country. Organic Certification carried out by this Department is on par with standards of European Union. Tamil Nadu Organic Certification Department also imparts free training to registered organic farmers on National Standards for Organic Production and Tamil Nadu Organic Certification Department Standards.

During the year 2016-17, an area of 30,910 acres of land have been registered under Organic Certification.

**Table 6.4 DETAILS ON AREA REGISTERED UNDER ORGANIC CERTIFICATION 2016-17**

<b>S.No.</b>	<b>Headquarters of Organic Certification Inspector</b>	<b>Jurisdiction (Districts)</b>	<b>Area Registered (Acres)</b>
<b>1</b>	Coimbatore	Coimbatore, Tiruppur, The Nilgiris, Erode, Salem, Namakkal, Dharmapuri and Krishnagiri	7,879
<b>2</b>	Trichy	Trichy, Karur, Perambalur, Ariyalur, Pudukkottai, Thanjavur, Thiruvarur and Nagapattinam	4,792
<b>3</b>	Madurai	Madurai, Virudhunagar, Tirunelveli, Sivagangai, Ramanathapuram, Theni, Dindugal, Thoothukudi and Kanyakumari	5,189

<b>S.No.</b>	<b>Headquarters of Organic Certification Inspector</b>	<b>Jurisdiction (Districts)</b>	<b>Area Registered (Acres)</b>
<b>4</b>	Vellore	Vellore, Tiruvannamalai, Villupuram, Kancheepuram, Tiruvallur and Cuddalore	13,050
		<b>Total</b>	<b>30,910</b>

During 2017-18, it is proposed to register an area of 31,000 acres under Organic Certification.

### **6.6 Human Resource Management**

Director of Seed Certification and Organic Certification is the head of the department with headquarters at Coimbatore. Under the control of Director of Seed Certification and Organic Certification, one Joint Director of Seed Certification, one Joint Director of Seed Inspection, one Quality Manager, 15 Deputy Directors of Seed Inspection, 37 Assistant Directors, 150 Seed Certification Officers,

70 Seed Inspectors, 63 Agricultural Officers (Seed Testing), and 6 Organic Certification Inspectors are working in this department as technical Officers. Apart from this, a sanctioned strength of 500 non-technical staff are allotted to this department to support the activities of Seed Certification & Organic Certification.

## **7. AGRICULTURAL MARKETING AND AGRI BUSINESS**

Tamil Nadu is one of the main agrarian states in the country and a major producing State of food grains, fruits, vegetables and other agricultural produce. Proper marketing of agricultural produce is essential to promote sustainable agriculture by seeking to maximize benefits from the resources deployed for production and optimize market operations to increase income of farmers. Agriculture marketing covers the entire gamut of agriculture activities like assessment of demand and supply for farm-inputs, most efficient agronomic practices, post-harvest handling of farm products including transportation of products from farm gate to processing industries and ultimate consumers, shaping of public policies and programmes related to pricing, handling, purchase and sale of agricultural products. An efficient agriculture Marketing system

therefore aids in efficient allocation of resources, creation of wealth, equitable income distribution among stakeholders, provide stability to the market.

Agri-Business opportunities have emerged for value addition, packaging, retailing and exports of agricultural products, etc. Adoption of latest technology and management techniques have gained ascendancy as only 4.6% of total agricultural production is processed and nearly 35% of fruits and vegetables are lost in storage and transport due to lack of adequate cold chain and processing facilities. Provision of adequate marketing infrastructure, growth oriented business environment and Agri-business friendly policy paradigm will make agriculture more sustainable and aid in alleviating the urban-rural disparity.

In the above context, Department of Agricultural Marketing and Agri Business is taking concerted efforts to enhance farmers' income and improve their socio economic status. The Department's key activities are as follows:

### **Key activities**

1. Formation and promotion of Farmer Producer Organization (FPO) to improve the socio-economic status of farmers.
2. Promotion of Commodity Groups for creation of market linkages.
3. Creating infrastructure facilities for Post-harvest Management and Marketing of farm produce.
4. Creating marketing opportunities through Regulated Markets, Farmers' Markets, Specialized Market Complexes to farmers.



5. Minimizing post harvest losses and enhancing shelf-life through storage godowns, cold storages, ripening chambers, drying yards, etc.
6. Creation of infrastructure for value addition and processing through Public Private Partnership (PPP) mode.
7. Dissemination of market information and intelligence and crop advisories to farmers.
8. Ensuring quality assurance for unadulterated food products through Agmark laboratories.
9. Capacity building programmes to impart skills on post harvest management, processing, value addition, grading to the farmers.

## **7.1. AGRI MARKETING ACTIVITIES**

### **7.1.1. Market Committees and Regulated Markets**

Regulated Markets are established for better regulation of buying and selling of agricultural produce. Every market committee is established with a notified area for transaction of the notified agricultural produce. In Tamil Nadu, 23 Market Committees have been established under which 278 Regulated Markets are functioning as per the provisions of Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987, Rules 1991.

Regulated Markets act as a common platform to farmers and traders for trading of agricultural produce. Agricultural produce brought to the regulated markets by farmers are sold through adopting the secret bid method. Services like storage godown, transaction sheds, pledge loan, etc., are

provided in the regulated markets. 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 weigh men. During 2016-17, about 31.74 lakh MT of agricultural produce were sold by farmers and Rs.119 Crore was collected as market fee.

In the year 2017-18, it is targeted to bring arrivals to the tune of 33.33 lakh MT and to collect Market fee an amount of Rs.148.77 Crore.

**Table.7.1 District and Market Committee wise Regulated Markets**

<b>S. No</b>	<b>District</b>	<b>Market Committee</b>	<b>No. of Regulated Market</b>
1	Kancheepuram	Kancheepuram	7
2	Thiruvallur		8
3	Cuddalore	Cuddalore	10
4	Villupuram	Villupuram	17
5	Vellore	Vellore	12
6	Thiruvannamalai	Thiruvannamalai	16

S. No	District	Market Committee	No. of Regulated Market
7	Salem	Salem	14
8	Namakkal		6
9	Dharmapuri	Dharmapuri	8
10	Krishnagiri		8
11	Coimbatore	Coimbatore	10
12	Tiruppur	Tiruppur	15
13	Erode	Erode	18
14	Tiruchirapalli	Tiruchirapalli	10
15	Karur		4
16	Perambalur	Perambalur	1
17	Ariyalur		4
18	Pudukkottai	Pudukkottai	10
19	Thanjavur	Thanjavur	13
20	Thiruvarur	Thiruvarur	8
21	Nagapattinam	Nagapattinam	8
22	Madurai	Madurai	6
23	Theni	Theni	7
24	Dindigul	Dindigul	8
25	Ramanathapuram	Ramanathapuram	6
26	Virudhunagar		7
27	Sivagangai		7
28	Tirunelveli	Tirunelveli	11
29	Thoothukudi		9
30	The Nilgiris	The Nilgiris	4
31	Kanyakumari	Kanyakumari	6
	<b>Total</b>		<b>278</b>

**Table.7.2. Infrastructure available in Regulated Markets (in Nos)**

S. No	Market Committee	Own Land	Godown	Transaction Shed	Drying Yard	Market Complex with Cold Storage	Market Complex	Cold Storage	Rural Business Hub	Weighing and Bagging Machine	Trader Shops
1	Kancheepuram	8	9	8	16	-	-	-	-	-	-
2	Vellore	8	24	15	11	-	-	3	1	-	-
3	Tiruvannamalai	14	35	26	12	-	-	7	-	1	10
4	Cuddalore	7	12	19	15	-	-	2	1	-	10
5	Villuppuram	14	28	46	18	-	-	4	1	2	-
6	Salem	13	19	12	16	-	-	9	1	-	-
7	Dharmapuri	8	16	8	20	2	-	7	1	-	10
8	Coimbatore	10	29	17	30	1	-	7	1	3	10
9	Erode	15	34	49	34	-	-	7	1	-	10
10	Tiruchirapalli	10	13	26	20	2	-	1	-	-	-
11	Thanjavur	7	23	10	5	--	1	1	--	1	-
12	Pudukkottai	2	3	2	4	-	-	2	-	-	-
13	Madurai	5	8	4	7	-	1	1	-	-	-
14	Ramanathapuram	14	22	6	21	-	-	6	1	-	25
15	Tirunelveli	17	28	17	15	1	-	12	1	-	10
16	Kanyakumari	5	11	4	4	-	2	1	-	-	-
17	Theni	5	12	4	7	2	-	2	-	-	-
18	Dindigul	6	9	6	8	-	-	7	1	1	-
19	Thiruvarur	7	12	4	8	-	-	-	-	-	-
20	Nagapattinam	5	11	3	5	-	-	-	-	-	-
21	The Nilgiris	-	-	-	-	-	1	-	-	-	-
22	Tiruppur	13	59	26	45	1	-	4	-	-	-
23	Perambalur	4	8	14	8	-	-	-	-	-	-
	<b>Total</b>	197	425	326	329	8	5	82	10	8	85

Pledge loan facility is extended to farmers' upto the maximum of Rs.2 lakh to meet their immediate fund requirement and Protest farmers from distress sale during glut seasons. During 2016-17, about 3,054 farmers availed pledge loans to the tune of Rs.48.22 Crore. Traders can also avail pledge loan upto the maximum of Rs.1 lakh to meet short term requirements. During the year 2016-17, pledge loan was issued to the tune of Rs.4.98 Crore to 518 traders.

In the year 2017-18, it is targeted to issue pledge loan to the tune of Rs.53.06 Crore for farmers and Rs.5.50 Crore for traders.

Dissemination of market related information like daily price and arrival information of agricultural produce is being effected through "www.agmarknet.gov.in" web portal for which computers have been provided to Regulated

markets under Marketing Research and Information Network (MRIN) scheme.

The Department created facilities for grading, processing and value addition in Regulated Markets like turmeric post-harvest machineries, chilli assaying units, cashew processing machineries, cotton quality testing equipments and grain silos under National Agriculture Development Programme at a cost of Rs.8.62 Crore in 2016-17.

Government of India launched the electronic “National Agriculture Market” (e-NAM) in 2016 and created a common e-platform to integrate Regulated Markets at the national level. This would extend the market beyond the immediate physical location of the regulated markets for selling farmers' produce, traders to access large national market and the bulk buyers, processors,

exporters to have direct participation in local markets.

To implement e-National Agriculture Market in the State, amendments have been brought in the existing Tamil Nadu Agricultural Marketing (Regulation) Act 1987 to enable and provide for e-Trading, Single Point Levy of Market Fee and Unified Single License. During 2017-18, in the first phase, 15 Regulated Markets will be taken up for integration into e-NAM by availing financial assistance from Government of India under Agriculture Technology Infrastructure Fund (ATIF).

### **7.1.2. e-Trading in Regulated Markets and Agricultural Producers co-operative Marketing Society**

As announced in 2017-18 Budget speech, the State is already in the process of upgrading agricultural marketing infrastructure and integrating important Regulated Markets



and co-operative markets in continuation of which it is proposed to introduce e-trading in 15 Regulated Markets and 10 Agricultural Producers Co-operative Marketing Societies on a pilot basis. A comprehensive study by NABCONS for the above task is under progress.

Introducing e-trading in Regulated Markets will bring transparency, speed up the trading process, provide easy access of markets to traders and better price to farmers, reduction of marketing cost and increase efficiency in operation of sale procedures, etc.,

Trial runs on e-trading at Vellore and Perundurai Regulated Markets are under progress. So far, 1491 farmers and 685 traders have participated in e-trading and sold Rs.10.07 Crore worth of 1599 MT of Turmeric during the current year at Perundurai Regulated Market.

### **7.1.3. Infrastructure created under Rural Infrastructure Development Fund (RIDF):**

The main objective of Rural Infrastructure Development Fund (RIDF) supported by National Bank for Agriculture and Rural Development (NABARD) is to provide loans to State Governments and State-owned corporations to enable them to complete ongoing rural infrastructure projects.

During the last five years, the Department has constructed 70 cold storage units at a cost of Rs.22.26 Crore, 88 storage godowns at a cost of Rs.127.60 Crore, Specialised Market Complex for Banana at Ambasamudram Regulated Market in Tirunelveli District at a cost of Rs.1.30 Crore, Collection centres for fruits and vegetables at Mettupalayam in Coimbatore District and at Oddanchatram in Dindigul District at a cost of Rs.3.60 Crore and integrated commodity

Management facility at Avalpoondurai in Erode District and at Palani Regulated Market in Dindigul District at a cost of Rs.1.18 Crore. In addition, construction of Central Market for vegetables, fruits and flowers at Kallikudi in Thiruchirapalli District at a cost of Rs.65 Crore is under progress.

#### **7.1.4. Infrastructure created under Warehouse Infrastructure Fund (WIF)**

NABARD extends financial assistance under Warehouse Infrastructure Fund (WIF) since 2014-15 for construction of warehouses, silos, cold storages and other cold chain infrastructure.

Market infrastructure in Regulated Markets are augmented by creating 100 market infrastructure viz.35 storage godowns, 49 Transaction sheds, 1 Market Complex, 2 cold storages, 3 Office blocks, 4 weigh bridges,

5 Rubber roller and 1 Processing centre at a total cost of Rs.83.35 Crore.

#### **7.1.5. Formation of State and District level Committees**

For effective functioning of Regulated Markets, provision of adequate and relevant infrastructure on the basis of felt need is very essential. Accordingly, a District Level Committee has been formed in every districts under the chairmanship of District Collector and comprising of stakeholders like farmers, traders and officials as members. The committee will assess and recommend the requirement of Regulated Markets in each Market Committee and send it to Headquarters for approval. This has been a long standing demand of both farmers' and traders' associations.

Formation of State Level Committee to monitor and suggest measures for improving

efficiency of Regulated Markets is under consideration.

## **7.2. AGRI BUSINESS ACTIVITIES**

Agribusiness activities primarily encompass backward and forward linkages related to production, processing, marketing, trade and distribution of raw and processed agricultural products. At district level, 29 Deputy Directors of Agriculture (Agri Business) are promoting Agri Business activities and advocating marketing related information to farmers through field functionaries. Various schemes are under implementation by the department to develop Agri business in the State.

### **7.2.1. Supply Chain Management of Fruits, Vegetables and other perishables**

The Department is implementing the project 'Supply Chain Management of Fruits, Vegetables

and other Perishables' with a total financial outlay of Rs.398.75 Crore to reduce post-harvest losses with appropriate systems, to connect farmers with major market centres, processors and consumers, to convert surplus production into value added products, to provide uninterrupted supply of quality fruits and vegetables to the consumers, etc. This will result in improving the supply chain of fruits and vegetables and also in increasing income of farmers. The project is being implemented in 10 districts viz., Krishnagiri, Dharmapuri, Coimbatore, The Nilgiris, Ramanathapuram, Thoothukudi, Tirunelveli, Thiruchirapalli, Dindigul and Theni.

The key focus of this project is to create the requisite infrastructure for post-harvest management, storage and marketing of perishables like fruits and vegetables. The

project envisages to create an integrated cold chain by aggregating fruits and vegetables of farmers at collection points, processing at primary processing centres and providing logistics support including transport and storages to take the produce to designated markets. This will not only improve the quality of produce available and reduce post harvest losses but also result in realization of higher prices to farmers.

Administrative sanction has been obtained and Project Management Consultant was appointed for the project and the implementation of the project has commenced.

### **7.2.2. Farmers' Market**

The Farmers' Markets / Uzhavar Sandhais function with the objective of ensuring fair price to the Farmer's produce without the interference of intermediaries and supply of fresh fruits and

vegetables to the consumer's at a reasonable price. At present, there are 179 Uzhavar Sandhais' functioning in Tamil Nadu.

In last year on an average 2410 MT. of Vegetables, Fruits worth of Rs.6.79 Crore sold by 9,015 farmers, 4.02 lakh consumers were benefitted per day through Farmer's markets.

To monitor the functioning of markets at State level, daily arrival of fruits and vegetables, their value, number of farmers benifitted and approximate number of consumers coming to the markets are uploaded daily in a new mobile app developed by the department.

**Table.7.3 Details of Uzhavar sandhai in districts**

<b>Sl.No.</b>	<b>District</b>	<b>No. of Uzhavar Sandhai</b>
1	Kancheepuram	14
2	Thiruvallur	5
3	Vellore	9
4	Tiruvannamalai	8
5	Cuddalore	5
6	Villupuram	6



<b>Sl.No.</b>	<b>District</b>	<b>No. of Uzhavar Sandhai</b>
7	Salem	11
8	Namakkal	6
9	Dharmapuri	5
10	Krishnagiri	5
11	Coimbatore	9
12	The Nilgiris	4
13	Erode	5
14	Tiruchirapalli	7
15	Perambalur	2
16	Karur	5
17	Thanjavur	5
18	Nagapattinam	3
19	Thiruvarur	7
20	Pudukkottai	6
21	Madurai	7
22	Dindigul	5
23	Theni	7
24	Sivagangai	4
25	Ramanathapuram	3
26	Virudhunagar	8
27	Tirunelveli	6
28	Thoothukudi	2
29	Kanyakumari	2
30	Ariyalur	2
31	Tiruppur	5
	<b>Total</b>	<b>179</b>

### **7.2.3. Specialized Market Complexes**

The Department has so far created Commodity specific Market Complexes with cold

storage, godown, grading and sorting hall, drying yard, etc., in various districts for paddy, turmeric, coconut, tender coconut, hilly vegetables, tomato, onion, mango, grapes, banana and other vegetables at a total cost of Rs.64.07 Crore.

**Table.7.4. Details of Specialized Market Complexes**

<b>S. No</b>	<b>District</b>	<b>Place</b>	<b>Commodity</b>
1	Coimbatore	Pethappampatti	Coconut Tender coconut
		Thippampatti	
2	Thanjavur	Pattukottai	Coconut
3	Madurai	Mattuthavani	Paddy
4	Dindigul	Ottanchatram	Vegetables
5	Erode	Karumandi chellipalayam	Turmeric
6	Coimbatore	Karamadai, Pongalur	Hilly vegetables, onion
7	Krishnagiri	Palacode	Mango
8	Dharmapuri	Dharmapuri	Tomato
9	Theni	Cumbum, Odaipatti	Grapes, Banana
10	Perambalur	Chettikulam	Onion

<b>S. No</b>	<b>District</b>	<b>Place</b>	<b>Commodity</b>
11	Trichy	Tiruchendurai, Thuraiyur	Banana, Vegetables and fruits
12	Tirunelveli	Kadayanallur	Lemon
13	Erode	Gobichettipalayam	Fruits and vegetables
14	Theni	Chinnamanur	Banana
15	Namakkal	Mohanur	Banana
16	Thoothukudi	Srivaikundam	Banana
17	Trichirapalli	Trichirapalli	Banana
18	Thanjavur	Tiruvaiyaru	Banana

#### **7.2.4. Terminal Market Complexes**

The Terminal Market Complex project aims to link farmers to markets and provide professionally managed alternate marketing structures with state of – the - art technology to farmers for sale of their agricultural produce adopting the Hub & Spoke model.

The Government of Tamil Nadu have taken initiatives to set up 3 Terminal Market Complex

for fruits, vegetables and other perishables in important regions by encouraging private investment on Built, Own and Operate (BOO) basis in Public Private Partnership mode.

Terminal Market Complex for Chennai region will be established in an extent of 35 Acre at Navalur village, Sriperumbudur taluk, Kanchipuram District at a project cost of Rs.135 Crores including subsidy of Rs.48 Crore under National Horticulture Mission, by Private Enterprise M/s.URC Construction Private Ltd through their Special Purpose Vehicle, Ulavar Kalanjiam Limited.

For Madurai region, a project with a project cost of Rs.120.06 Crores including NHM subsidy of Rs.46.25 Crore will be set up in a 50 Acre area at Mukkampatty and Thiruvathavur villages in Melur Taluk, Madurai District by private Enterprise M/s R.R Industries limited

through their Special Purpose Vehicle M/s.Bhumi Agri Markets Pvt Ltd. Post-harvest Infrastructural facilities will be created for Chennai and Madurai Terminal Market Complexes after signing of Operation, Management and Development Agreement.

#### **7.2.5. Tamil Nadu Small Farmers Agri-business Consortium (TNSFAC)**

Tamil Nadu Small Farmers' Agribusiness Consortium is functioning to uplift the socio-economic status of small farmers by promoting agri business activities in the State through Venture Capital Assistance and Farmer Producer Organization.

##### **7.2.5.1. Venture Capital assistance (VCA)**

Venture Capital Assistance is sanctioned by central SFAC to set up Agri Business projects by entrepreneurs. It is a soft loan to be repaid by beneficiary after completion of project. So far,

Venture Capital Assistance of Rs.25.07 Crore has been sanctioned for 78 projects.

### **7.2.5.2. Farmer Producers Organisation**

Farmer Producer Organizations are promoted in the State with objectives of fostering technology penetration, enhancing productivity, ensuring access to inputs and services and facilitating access to fair and remunerative markets.

During the past 3 years, 42 Farmer Producer Organizations have been formed at a cost of Rs.17.87 Crore in various districts by Tamil Nadu Small Farmers Agri Business Consortium under National Agriculture Development Programme (NADP) and National Mission for Sustainable Agriculture (NMSA) for pulses, millets, banana, coconut, oilseeds, groundnut, guava, mango, minor millets, maize, chillies and vegetables.

During 2016-17, under National Food Security Mission, Rs.154 lakh was sanctioned for upgradation of 10 Pulses FPOs. Mini Dal mills at the cost of Rs.54 lakh are being set up. Branding and marketing of milled pulses and setting up of procurement centre at the cost of Rs.50 lakh and Rs.50 lakh respectively are being taken up. The scheme is under implementation.

Under National Agricultural Development Programme, Rs.96 lakhs has been sanctioned for upgradation of 6 millet FPOs for the year 2016-17. Each FPO will be provided Rs.16 lakhs for establishment of Millet Processing unit at a cost of Rs.6 lakhs, packaging, branding and marketing of processed millets at a cost of Rs.5 lakh and to set up procurement centre at a cost of Rs.5 lakh. The scheme is under implementation.

### **7.2.6. IAMWARM**

The TN-IAMWARM-I Project was implemented covering 5,012 tanks from 61 sub-basins with an extent of 6.70 lakh hectares at a total cost of Rs.53.78 Crore. Interventions like creation of infrastructure facilities, formation of Commodity Groups and linking with markets were taken up. Under this project 6,577 commodity groups were formed benefitting 1.73 lakh farmers. An increase of 6-12% income to the farmers of commodity groups and reduction of post harvest losses was also achieved.

Activities like creation of post harvest infrastructures such as Agri Business Centre, Drying yard, Collection Centre, Storage shed, Storage-cum-drying yard, pack house, distribution of Post harvest equipment were also taken up for commodity groups.



The Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP-II) is planned for the six year period from 2017-18 to 2022-23 in 66 sub-basins with a project cost of Rs.125 Crore. In 2017-18, it is programmed to implement the project at a cost of Rs.24.46 Crore in 18 sub-basins.

#### **7.2.7. e-Learning centre**

The e-learning centres have been created to disseminate information regarding post harvest management and marketing through exhibits, audio visual aids, kiosk (touch screen), documentaries on various agricultural marketing interventions and latest developments in agri business sector. Under National Agricultural Development Programme (2016-17) in first phase e-learning centres are being established at a cost of Rs.7 Crore in 10 districts.

In 2017-18, 9 e-learning centres will be established at a cost of Rs.7.34 Crore.

### **7.2.8.Agmark Grading**

'Agmark' is a quality certification mark on agricultural products in India. AGMARK is legally enforced by the Agricultural Produce (Grading and Marking) Act of 1937 (and amended in 1986) by Directorate of Marketing and Inspection, Government of India. AGMARK standards cover quality guidelines for 213 different commodities. In Tamil Nadu, there are 30 State Agmark Grading Laboratories in 19 districts and 1 Principal Agmark Grading Laboratory at Chennai.

In 2016-17, 21.53 lakh quintals of food products were graded through these laboratories. In 2017-18, it is targeted to grade 22.32 lakh quintals of food products through Agmark laboratories. Further in the year

2017-18 it is programmed to strengthen the labs by providing equipment at a cost of Rs.1.19 Crore under NADP.

#### **7.2.9. Agro Marketing Intelligence and Business Promotion Centre (AMI & BPC)**

Agro Marketing Intelligence and Business Promotion Centre (AMI & BPC) was established at Trichy to render market information in coordination with TNAU at a cost of Rs.43 lakh. Through this centre, crop advisory, market information and intelligence services are being disseminated through mobile SMS to the registered farmers and staff of the Department. So far price forecast SMS for maize, turmeric, onion, tomato, coconut, banana, sunflower, chillies, blackgram, tapioca, sorghum, carrot, beetroot have been delivered to 22.50 lakh registered farmers and staff of the Department.

### **7.2.10 Food Processing Incubation cum Training Centre**

Food Processing Incubation cum Training Centres at Kinathukadavu, Coimbatore district and at Srirangam, Trichy district have been established at the cost of Rs.2.20 Crore under State fund. MoU has been signed with Tamil Nadu Agricultural University to impart training to agri entrepreneurs. TNAU is conducting value addition trainings at both centres since May 2017.

### **7.2.11. Human Resource Management**

To promote Agricultural Marketing and Agri Business activities, to disseminate Agricultural Technology and Market Information to farmers through field functioneries and to uplift their socio-economic conditions, 1,310 Deptment staff and 1,631 Market Committee staff are functioning in the State.

**Table. 7.5. Details of Department Staff**

<b>S. No</b>	<b>Name of the Post</b>	<b>Sanctioned Post</b>
1	Joint Director of Agriculture	3
2	Deputy Director (Agri Business)	29
3	Agriculture Officer	172
4	Deputy Agricultural Officer	52
5	Asst. Agricultural Officer	635
6	Administrative Officer	1
7	Asst. Accounts Officer	1
8	Other non-technical staff	417
<b>Total</b>		<b>1310</b>

**Table.7.6. Details of Market Committee Staff**

<b>S. No</b>	<b>Name of the Post</b>	<b>Sanctioned Post</b>
1	Secretary	21
2	Superintendent	196
3	Engg. Supervisor	9
4	Supervisor	345
5	Other non-technical staff	1060
<b>Total</b>		<b>1631</b>

### **7.3. TAMIL NADU STATE AGRICULTURAL MARKETING BOARD**

As per G.O. Ms. No.2852, Agriculture Department, dated 24.10.1970, State Agricultural Marketing Board was established in the year 1970. Subsequently, in accordance with "The Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987" and as per G.O. Ms. No.299 Agriculture (AM.1) Department dated 13.06.1995, Tamil Nadu State Agricultural Marketing Board was reconstituted as Statutory Board. The Board consists of 29 members headed by a President appointed by Government.

#### **7.3.1. Source of Income**

The Market Committees contribute fifteen per cent of their revenue to the Board. Out of the fifteen per cent, 50% is set apart as Market Development Fund, from which market developmental activities are carried out and the

remaining fifty percent of the amount is spent towards establishment expenditures.

### **7.3.2. Functions of the Board**

#### **7.3.2.1. Post-harvest and Scientific Storage Training to farmers**

The Publicity and Propaganda wing of the Board, functioning at Chennai, Coimbatore, Trichy and Madurai are conducting regular training programmes to create awareness on Post harvest technology, scientific storage, importance of value addition, market intelligence and ongoing Agricultural Marketing Schemes among the farmers.

During 2016-17, 164 trainings were conducted utilizing an amount of Rs.7.05 lakh in which 3280 farmers were benefitted.

#### **7.3.2.2. Capacity Building Training to staff**

The training centre of the Tamil Nadu State Agricultural Marketing Board at Salem caters to

the training needs of staff of Agricultural Marketing & Agri Business Department and farmers. During 2016-17, 25 training programmes were conducted to technical staff and farmers at this centre.

### **7.3.2.3. Construction Works**

The Engineering wing of Marketing Board executes construction of Agricultural Marketing infrastructural facilities such as godowns, transaction sheds, Market complex, cold storage facilities, drying yards etc., under NADP, RIDF, WIF-NABARD scheme and Market Committee fund. During the year 2016-17, 65 works with a financial outlay of Rs.133.39 Crores were undertaken by this wing.



## ANNEXURE

**Table.7.7. District-wise Regulated Markets**

District	Regulated Market
<b>1. Kancheepuram (7Nos.)</b>	Kancheepuram, Madurantagam, Uthiramerur, Thirukkalukundram, Sunguvarchatram, Acharapakkam, Chengalpet
<b>2. Tiruvallur (8Nos.)</b>	Thiruthani, Thiruvallur, Redhills, Ponneri, Pallipattu, Uthukottai, Gummidipoondi, Nasarethpettai
<b>3. Tiruvannamalai (16 Nos.)</b>	Thiruvannamalai, Arani, Vandavasi, Chetpet, Cheyyar, Polur, Chengam, Pudupalayam, Vanapuram, Vettavalam, Thellar, MangalaMamandoor, Desur, Peranamallur, Dhusi, Kilpennathur
<b>4. Namakkal (6Nos.)</b>	Namakkal, Rasipuram, Thiruchengodu, Velur, Namagiripettai, Cholakkadu
<b>5. Vellore (12Nos.)</b>	Vellore, Thirupathur, Arcot, Arakonam, Vaniyambadi, Kaveripakkam, Gudiyatham, Kalavai, Ammoor, Katpadi, Ambur, Thimiri
<b>6. Cuddalore (10Nos.)</b>	Virudhachalam, Cuddalore, Panruti, Thittakudi, Kattumannarkoil, Chidambaram, Kurunchipadi, Sethiyathoppu, Srimushnam, Bhuvanagiri
<b>7. Villupuram (17Nos)</b>	Tindivanam, Thirukoilur, Ulundurpet, Villupuram, Chinnasalem, Kallakurichi, Gingee, Thiagadurgam, Sankarapuram, Thiruvennainallur, Manalurpet, Avalurpet, Marakkanam, Vikaravandi, Ananthapuram, Valathi, Moongilthuraipattu
<b>8. Dharmapuri (8Nos.)</b>	Dharmapuri, Palacode, Pennagaram, harur, Pappireddipatti, Kambainallur, Denkanikkottai, Papparpatti

<b>District</b>	<b>Regulated Market</b>
<b>9. Krishnagiri (8Nos.)</b>	Krishnagiri, Hosur, Kelamangalam, Pochampalli, Kaveripattinam, Uthangarai, Bargoor, Rayakottai
<b>10. Salem (14Nos.)</b>	Salem, Athur, Sankagiri, Konganapuram, Kollathur, Meicheri, Vazhapadi, Thammampatti, Thalaivasal, Omalur, Kadayampatti, Gangavalli, Karumanthurai, Edapadi
<b>11. Coimbatore (10Nos.)</b>	Annur, Karamadai, Coimbatore, Suler, Anaimalai, Pollachi, Malayadipalayam, Negamam, Kinathukkadavu, Thondamuthur
<b>12. Erode (18 Nos.)</b>	Erode, Avalpoonthurai, Kodumudi, Sivagiri, Chithode, Bhavani, Boothapadi, Anthiyur, Mylampadi, Kavundhampadi, Gobichettipalayam, Nambiyur, Vellakkoil, Sathyamangalam, PunjaiPulliyampatti, Thalavadi, Perundurai, Elumathur
<b>13. Tiruppur (15 Nos.)</b>	Kunnathur, Kangayam, Vellankoil, Dharapuram, Moolanur, Alangiam, Muthur, Tiruppur, Avinashi, Sevur, Palladam, Udumalpettai, Madathukkulam, Pethappampatti, Pongalur
<b>14. Karur (4 No.s)</b>	Kulithalai, Karur, Irumputhipatti, Chinnatharapuram
<b>15. Tiruchirapalli (10Nos.)</b>	Manapparai, Thuraiyur, Lalgudi, Thiruchirapalli, Thottiyam, Manachanallur, Thuvarankurichi, Pullambadi, Thathaiyangarpet, Kattuputhur
<b>16. Ariyalur (4Nos.)</b>	Ariyalur, Jayankondam, Andimadam, Melanikuzhi
<b>17. Perambalur (1No.)</b>	Perambalur
<b>18. Thanjavur (13Nos.)</b>	Athiramapattinam, Ammapettai, Budalur, Kumbakonam, Madukkur, Orathanadu, Pattukottai, Papanasam, Peravoorani, Thanjavur, Vallam, Thirupananthal, Pappanadu

<b>District</b>	<b>Regulated Market</b>
<b>19. Ramanathapuram (6Nos.)</b>	Ramanathapuram, Paramakudi, Kamuthi, Thiruvadana, Rajasingamangalam, Mudukulathur
<b>20. Kanyakumari (6Nos.)</b>	Ethamozhi, Vadaseri, Kaliyakkavilai, Monday Market, Kulasekaram, Thoduvatti
<b>21. Madurai (6Nos.)</b>	Thirumangalam, Usilampatti, Melur, Madurai, T.Kallupatti, Vadipatti
<b>22. Pudukkottai (10Nos.)</b>	Alangudi, Aranthangi, Pudukkottai, Kandarovakkottai, Avudayarkoil, Keeranur, Keeramangalam, Ponnamaravathi, Illuppur, Karambakkudi
<b>23. Virudhunagar (7Nos.)</b>	Virudhunagar, Rajapalayam, Sathur, Aruppukottai, Srivilliputhur, Watrap, Vembakkottai
<b>24. Sivagangai (7Nos.)</b>	Sivagangai, Thiruppuvanam, Manamadurai, Singampuneri, Karaikudi, Ilayankudi, Devakkottai
<b>25. Thoothukudi (9Nos.)</b>	Kovilpatti, Thoothukudi, Pudur, Kadambur, Kalugumalai, Srivaikundam, Vilathikulam, Ettayapuram, Sathankulam
<b>26. Tirunelveli (11Nos.)</b>	Sankarankoil, Thenkasi, Ambasamudram, Valliyur, Tirunelveli, Kadayanallur, Thisayanvilai, Pavorchatram, Thiruvekkadam, Sivagiri, Alangulam
<b>27. Nagapattinam (8Nos.)</b>	Kivalur, Kuttalam, Mayiladuthurai, Nagapattinam, Sembanarkoil, Sirkazhi, Vedaranayam, Thirupondi
<b>28. The Nilgiris (4Nos.)</b>	Udagamandalam, Kothagiri, Coonoor, Gudalur
<b>29. Theni (7Nos.)</b>	Theni, Cumbum, Bodinayakanur, Chinnamanur, Andipatti, Uthamapalayam, Periyakulam

<b>District</b>	<b>Regulated Market</b>
<b>30.Dindigul (8Nos.)</b>	Dindigul, Oddanchatram, Palani, Natham, Batlagundu, Gopalpatti, Vadamadurai, Vedachandur
<b>31. Thiruvarur (8Nos.)</b>	Valangaiman, Koradacheri, Mannarkudi, Poonthottam, Vaduvur, Kudavasal, Thiruvarur, Thiruthuraipoondi

**Table.7.8. District-wise farmers Markets**

<b>District</b>	<b>Farmers' Markets</b>
<b>1.Kancheepuram (14Nos.)</b>	Kancheepuram, Pallavaram, Chengalpet, Medavakkam, Nanganallur, Madhuranthagam, Keelkattalai, Jameenrayapettai, Guduvancheri, Padappai, Sunguvarchatram, Kundrathur, Thirukalukundram, Kannaginagar
<b>2.Tiruvallur (6 Nos.)</b>	Tiruthani, Tiruvallur, Ambattur, Paruthipattu, Naravarikuppam, Perambakkam
<b>3.Vellore (9Nos.)</b>	Vellore, Katpadi, Vaniyampadi, Gudiyatham, Kahithapattarai, Ranipettai, Arcot, Tirupathur, Natrampalli
<b>4.Tiruvannamalai (8Nos.)</b>	Tiruvannamalai, Polur, Arani, Cheyyar, Chengam, Vandavasi, Keelpennathur, Tamarainagar
<b>5.Cuddalore (5Nos.)</b>	Cuddalore, Chidambaram, Viruthachalam, Panruti, Vadalur
<b>6.Villupuram (6Nos.)</b>	Tindivanam, Villupuram, Kallakurichi, Ulundurpettai, Gingee, Sankarapuram
<b>7.Salem(11Nos.)</b>	Sooramangalam, Ammapet, Athur, Thathakapatti, Mettur, Attayampatti, hasthampatti, Elampillai, Thammampatti, Jalagandapuram, Edapadi

<b>District</b>	<b>Farmers' Markets</b>
<b>8.Namakkal (6Nos.)</b>	Namakkal, Tiruchengode, Rasipuram, Kumarapalayam, Paramathivelur, Mohanur
<b>9.Dharmapuri (5Nos.)</b>	Dharmapuri, Pennagaram, Palacode, harur, A.Jattihalli
<b>10.Krishnagiri (5Nos.)</b>	Hosur, Krishnagiri, Kaveripattinam, Denkanikottai, Avallapalli
<b>11.Coimbatore (9Nos.)</b>	R.S.Puram, Singanallur, Pollachi, Mettupalayam, Kurichi, Sulur, Vadavalli, Sundarapuram, Palladam
<b>12. The Nilgiris (4Nos.)</b>	Udhagamandalam, Coonoor, Kothagiri, Gudalur
<b>13.Erode (5Nos.)</b>	Sampath Nagar, Gobichettipalayam, Sathiyamagalum, Periyar Nagar, Perundurai
<b>14.Trichirapalli (7Nos.)</b>	Anna Nagar, K.K.Nagar, Thuraiyur, Manapparai, Musiri, Thuvakudi, Lalgudi
<b>15.Perambalur (2Nos.)</b>	Perambalur, Veppanthattai
<b>16.Karur (5Nos.)</b>	Karur, Kulithalai, Velayuthampalayam, Pallapatti., Vengamedu
<b>17.Thanjavur (5Nos.)</b>	Thanjavur, Kumbakonam, Pattukottai, Tirukattupalli, Papanasam
<b>18. Nagapattinam (3Nos.)</b>	Mayiladuthurai, Nagapattinam, Sirkali
<b>19.Tiruvarur (7Nos.)</b>	Tiruthuraiipoondi, Mannargudi -1, Tiruvarur, Needamangalam, Muthupettai, Mannargudi - 2, Valangaiman
<b>20.Pudukkottai (6Nos.)</b>	Pudukkottai, Aranthangi, Alangudi, Gandarvakottai, Karambakkudi, Viralimalai
<b>21.Madurai (7Nos.)</b>	Anna nagar, Chokkikulam, Palanganatham, Usilampatti, Thirumangalam, Melur, Anaiyur

<b>District</b>	<b>Farmers' Markets</b>
<b>22.Dindigul (5Nos.)</b>	Dindigul, Palani, Chinnalapatti, Kodaikkanal, Batlagundu
<b>23.Theni (7Nos.)</b>	Theni, Cumbum, Bodinayakkanur, Periyakulam, Devaram, Andipatti, Chinnamanur
<b>24.Sivagangai (4Nos.)</b>	Sivagangai, Devakottai, Karaikudi, Tirupattur
<b>25.Ramanathapuram (3Nos.)</b>	Ramanathapuram, Paramakudi, Kamuthi
<b>26.Virudhunagar (8Nos.)</b>	Aruppukottai, Rajapalayam, Srivilliputhur, Virudhunagar, Sivakasi, Sathur, Kariyapatti, Thalavaipuram
<b>27.Tirunelveli (6Nos.)</b>	Sankarankoil, Palayamkottai, Tenkasi, Kandiaperi, Melapalayam, Ambasamudram
<b>28.Thoothukudi (2Nos.)</b>	Thoothukudi, Kovilpatti
<b>29.Kanyakumari (2Nos.)</b>	Vadaseri, Myladi
<b>30.Ariyalur (2Nos.)</b>	Ariyalur, Jeyankondam
<b>31.Tiruppur (5Nos.)</b>	Udumalpet, Tiruppur (North), Tiruppur (South), Dharapuram, Kangayam

**Table.7.9. District-wise Agmark Grading Laboratories**

<b>Sl. No.</b>	<b>District</b>	<b>Location of Agmark Grading Laboratory</b>	
1	Chennai	Principal laboratory	Commissionerate of Agricultural Marketing and Agri Business
2	Kancheepuram	Chennai (North)	
		Chennai (South)	

<b>Sl. No.</b>	<b>District</b>	<b>Location of Agmark Grading Laboratory</b>
3	Vellore	Vellore
4	Cuddalore	Panruti
5	Thanjavur	Thanjavur
6	Thiruchirapalli	Trichirapalli - 1
		Trichirapalli - 2
7	Karur	Karur
8	Madurai	Madurai (North)
		Madurai (South)
9	Theni	Theni
10	Dindigul	Dindigul
11	Virudhunagar	Virudhunagar
12	Tirunelveli	Tirunelveli
		Thenkasi
13	Thoothukudi	Thoothukudi
14	Kanyakumari	Nagercoil
		Marthandam
15	Salem	Salem
16	Dharmapuri	Dharmapuri
17	Coimbatore	Coimbatore
18	Erode	Perundurai
		Erode - 1

<b>Sl. No.</b>	<b>District</b>	<b><i>Location of Agmark Grading Laboratory</i></b>
		Erode - 2
		Chithode
19	Thiruppur	Thiruppur
		Palladam
		Kangayam - 1
		Kangayam - 2
		Vellakkoil



## **8. Tamil Nadu Watershed Development Agency (TAWDEVA)**

### **8. 1 Introduction**

Tamil Nadu Watershed Development Agency was established in 2002 with objectives to conserve water resources and promote efficient use of water for increasing productivity of the crops.

Following are the two watershed development programmes implemented by Tamil Nadu Watershed Development Agency:

- 1. Pradhan Mantri Krishi Sinchayee Yojana – Watershed Development (PMKSY-WD) and Other Intervention (Per drop more crop)**
- 2. Watershed Development Fund (WDF) assisted by NABARD.**

In addition, TAWDEVA acts as the Nodal Agency for channelizing funds for the following schemes funded by the Government of India:

1. National Agriculture Development Programme (NADP)
2. National Mission for Sustainable Agriculture (NMSA)
3. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

## **8.2. Pradhan Mantri Krishi Sinchayee Yojana - PMKSY**

The Government of India have introduced a new umbrella programme called Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) during the year 2015-16.

### **PMKSY will focus on:**

Creation of new water sources, repair, restoration and renovation of defunct water sources, construction of water harvesting structures, secondary & micro storage, groundwater development, enhancing potentials of traditional water bodies at village level.

Developing / augmenting distribution network where irrigation sources (both assured and protective) are available or created.

Promotion of rain water conservation and runoff control measures to improve ground water recharge so as to create opportunities for farmer to access recharge water through shallow tube / dug wells.

### **8.2.1 Pradhan Mantri Krishi Sinchayee Yojana-Watershed Development (PMKSY-WD) (the erstwhile Integrated Watershed Management Programme)**

Integrated Watershed Management Programme (IWMP) has been subsumed into Pradhan Mantri Krishi Sinchayee Yojana-Watershed Development (PMKSY-WD) and implemented in convergence with the existing irrigation development programmes.

This scheme is being implemented through 24 District Watershed Development Agencies in 26 Districts covering 2,770 watersheds. The scheme expenditure is shared by the Central and State Governments up to 2014-15 in the ratio of 90:10. From 2015-16 onwards the sharing pattern has been revised as 60:40 between Central and State Governments. The following development activities are carried out:

<b>Activity</b>	<b>Components</b>
Land Development ( Natural Resource Management)	Land leveling, Contour Bunding, Stone Bunding, Retaining Wall, Summer Ploughing, Vegetative Bunding and Continuous Trenching
Water Resources Development ( Natural Resource Management)	Formation of New Tank / Oorani, Farm Pond, Percolation Pond, Desilting of Existing Tanks and Supply Channels
Common Property Development ( Natural Resource Management)	Construction of Check dams, Cattle ponds, Supply channels, Desilting of Ooranis, Desilting of tanks and ponds.
Farm Production System and Micro Enterprises	A grant of maximum of Rs.24,000 is provided to carry out farm based activities and non-farm activities to formers.
Plantation	Plantation relating to Horticulture, Socio-Agro Forestry, Fodder Development, Crop Demonstration and Homestead Garden
SHG and Livelihood Interventions for Landless Farmers	Revolving fund Rs.24,000/- is provided to Self Help Group and subsidy is provided to Landless Farm Labourers and user groups of Watershed.

During 2016-17 an amount of Rs.103.93 Crores has been allocated by Government of India with State Government share and released to the District Watershed Development Agencies for Implementation as below:

(Rs. in Crores)

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Allocation 2016-17</b>
1	Coimbatore	4.37
2	Cuddalore	1.78
3	Dharmapuri	3.39
4	Dindigul	3.56
5	Erode & Tiruppur	3.09
6	Kancheepuram	4.30
7	Karur	2.61
8	Krishnagiri	6.62
9	Madurai	3.91
10	Namakkal	2.60
11	Perambalur & Ariyalur	10.67
12	Pudukkottai	2.83
13	Ramad	2.00
14	Salem	6.00
15	Sivagangai	6.80
16	Theni	2.23
17	Thoothukudi	6.78
18	Tiruchirapalli	4.19
19	Tirunelveli	3.39

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Allocation 2016-17</b>
20	Tiruvallur	3.26
21	Tiruvannamalai	6.82
22	Vellore	2.22
23	Villuppuram	4.23
24	Virudhunagar	6.27
	<b>TOTAL</b>	<b>103.93</b>

The achievement details for the above amount of Rs.103.93 Crores is given in para 8.2.2.

This scheme is proposed to continue during 2017-18 with tentative allocation of Rs.137.916 Crores (including Central and State Government share).

### **8.2.2. PMKSY – Other Interventions (Per drop more crop)**

This Scheme aims in enhancing the adoption of precision-irrigation and other water saving technologies, enhancing recharge of aquifers and introduce sustainable water conservation practices, creation of additional irrigation

potential and bringing more area under cultivation.

During 2016-17, an amount of Rs.55.82 Crores has been allocated by Government of India with State Government and released to the District Watershed Development Agencies (Rs.37.82 Crores), Rural Development Department (Rs.6.75 Crores) and Agricultural Engineering Department (Rs.11.25 Crores) for Implementation as below:

(Rs. in Crores)

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Allocation 2016-17</b>
1	Coimbatore	1.62
2	Cuddalore	1.50
3	Dharmapuri	1.84
4	Dindigul	2.65
5	Erode	1.00
6	Tiruppur	0.62
7	Kancheepuram	3.13
8	Karur	1.35
9	Krishnagiri	2.27
10	Madurai	1.62

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Allocation 2016-17</b>
11	Namakkal	1.11
12	Nagapattinam	0.20
13	The Nilgiris	0.06
14	Ariyalur	0.25
15	Perambalur	2.88
16	Pudukkottai	2.12
17	Ramnad	2.48
18	Salem	2.50
19	Sivagangai	2.52
20	Tiruvarur	0.15
21	Thanjavur	0.65
22	Theni	1.18
23	Thoothukudi	3.10
24	Tiruchirapalli	2.54
25	Tirunelveli	1.70
26	Tiruvallur	2.03
27	Tiruvannamalai	3.42
28	Vellore	3.03
29	Villuppuram	2.55
30	Virudhunagar	3.75
	<b>TOTAL</b>	<b>55.82</b>



The achievement details for the above amount of Rs.55.82 Crores and Rs.103.93 Crores (8.2.1) totalling Rs.159.75 Crores is given below.

**Natural Resource Management Achievement details for 2016-17**  
(in nos.)

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Farm Pond</b>	<b>Check Dam</b>	<b>Others*</b>	<b>Total</b>
1	Coimbatore	26	13	145	184
2	Cuddalore	3	0	46	49
3	Dharmapuri	22	107	143	272
4	Dindigul	34	63	195	292
5	Erode	9	26	68	103
6	Tiruppur	0	10	0	10
7	Kancheepurm	20	136	476	632
8	Karur	17	8	52	77
9	Krishnagiri	68	122	381	571
10	Madurai	9	75	130	214
11	Namakkal	26	42	189	257
12	Nagapattinam	4	0	0	4
13	The Nilgiris	0	0	5	5
14	Ariyalur	2	5	352	743
15	Perambalur	0	384	0	384
16	Pudukkottai	5	5	61	71

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Farm Pond</b>	<b>Check Dam</b>	<b>Others*</b>	<b>Total</b>
17	Ramad	2	0	134	136
18	Salem	2	127	253	382
19	Sivagangai	88	0	221	309
20	Tiruvarur	15	0	0	15
21	Thanjavur	14	0	0	14
22	Theni	1	7	5	13
23	Thoothukudi	105	104	211	420
24	Tiruchy	16	221	323	560
25	Tirunelveli	35	118	4	157
26	Tiruvallur	1	42	41	84
27	Tiruvanamalai	22	112	272	406
28	Vellore	20	233	82	335
29	Villupuram	24	77	152	253
30	Virudhunagar	30	69	154	253
	<b>Total</b>	<b>620</b>	<b>3006</b>	<b>4090</b>	<b>6821</b>

\* Percolation Pond, New Village Pond, Renovation of Village Pond, Rejuvenation of Abandoned Well.

**Livelihood Support System activities achievement details for  
2016-17**

**(in nos.)**

<b>Sl. No.</b>	<b>District</b>	<b>Sprayer (nos)</b>	<b>Agricultural implements</b>	<b>Goat / Cattle</b>	<b>Others (Sewing machine, petty shops, vermin compost etc.)</b>	<b>Total</b>
1	Coimbatore	48	38	34	100	220
2	Cuddalore	119	130	0	60	309
3	Dharmapuri	20	16	37	1	74
4	Dindigul	37	20	0	0	57
5	Erode	32	22	14	11	79
6	Tiruppur	0	0	0	0	0
7	Kancheepurm	0	0	0	0	0
8	Karur	15	31	0	0	46
9	Krishnagiri	0	16	206	0	222
10	Madurai	0	17	0	6	23
11	Namakkal	0	35	0	0	35
12	Nagapattinam	0	0	0	0	0
13	The Nilgiris	0	0	0	0	0
14	Ariyalur	0	0	0	0	0
15	Perambalur	69	106	0	1	176
16	Pudukkottai	21	98	0	0	119
17	Ramnad	61	123	24	0	208
18	Salem	21	11	0	0	32

Sl. No.	District	Sprayer (nos)	Agricultural implements	Goat / Cattle	Others (Sewing machine, petty shops, vermin compost etc.)	Total
19	Sivagangai	51	50	67	0	168
20	Tiruvarur	0	0	0	0	0
21	Thanjavur	0	0	0	0	0
22	Theni	42	49	0	0	91
23	Thoothukudi	12	9	0	0	21
24	Tiruchy	62	39	0	0	101
25	Tirunelveli	29	96	13	0	138
26	Tiruvallur	0	0	0	0	0
27	Tiruvanamalai	48	38	34	100	220
28	Vellore	119	130	0	60	309
29	Villupuram	20	16	37	1	74
30	Virudhunagar	37	20	0	0	57
	<b>TOTAL</b>	<b>639</b>	<b>906</b>	<b>395</b>	<b>179</b>	<b>2119</b>

This scheme is proposed to continue during 2017-18 with tentative allocation of Rs.83.333 Crores (including Central and State Government share).

### **8.3. Watershed Development Fund (WDF) assisted by NABARD:**

The watershed development fund projects are implemented under loan assistance from NABARD from 2004. These works are similar to PMKSY-Watershed Development works (other than District Watershed).

This scheme is being implemented by NABARD and Tamil Nadu Watershed Development Agency in 168 selected watersheds. Out of this, all works in 63 watersheds have been completed through Tamil Nadu Watershed Development Agency and handed over to NABARD. Further, out of the remaining 105 watersheds, in 64 watersheds works are being carried out through NABARD and in 41 watersheds works are being carried out through Tamil Nadu Watershed Development Agency in Full Implementation Phase with 50% grant from State and 50% grant from NABARD.

<b>Activity</b>	<b>Components</b>
<b>Physical Area Treatment</b>	Activities like Stone Field bund, Contour trenches, Water Absorption Trench; Dug well, Recharge pits, Farm pond, Percolation Pond, Sunken Pond, Agro Forestry, Agro-Horticulture, Silvi-pasture, Grass seeding in watershed areas.
<b>Drainage line treatment</b>	Activities like Stone gully plugs, Renovation of water harvesting structure, Desilting of ponds, tanks, repair of supply channels.
<b>SHG and Livelihood Interventions for Landless Farmers</b>	Income generating activities for Self Help Groups and landless Women
<b>Training</b>	Training to Watershed Association Communities and beneficiaries in the Watershed – through participatory Rural Appraisal and help them to develop a need based watershed specific plan.

During 2016-17, an amount of Rs.6.35 Crores has been allocated by State

Government and released to the District Watershed Development Agencies for implementation by NGO under supervision of NABARD as detailed below:

(Rs. in Crores)

<b>Sl. No.</b>	<b>Name of the District</b>	<b>Allocation 2016-17</b>
1	Dharmapuri	0.230
2	Dindigul	0.728
3	Kancheepuram	0.706
4	Karur	0.138
5	Krishnagiri	0.481
6	Madurai	0.546
7	Namakkal	0.218
8	Pudukkottai	0.337
9	Ramad	1.161
10	Theni	0.549
11	Thoothukudi	0.612
12	Tirunelveli	0.155
13	Virudhunagar	0.496
	<b>TOTAL</b>	<b>6.357</b>

This scheme is proposed to continue during 2017 - 2018 by State Government.

## **8.4 TAWDEVA as a Nodal Agency:**

TAWDEVA acts as the Nodal Agency for channelizing funds for the following schemes funded by the Government of India:

(Rs. in Crores)

<b>Name of the Scheme</b>	<b>Last year Allocation 2016-17</b>	<b>Tentative Allocation during 2017-18</b>
<b>1 National Agriculture Development Programme (NADP)</b>	338.11	370.15
<b>2.National Mission for Sustainable Agriculture (NMSA)</b>	66.75	87.58
<b>3.Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)</b>	159.75	221.25

## **8.5 Establishment:**

Tamil Nadu Watershed Development Agency (TAWDEVA) is primarily created for implementing the Watershed Development Programme with funding from Government of India Schemes / State Resources. This Agency is headed by the Agricultural Production Commissioner and Principal Secretary to



Government as Chairman and Director of Agriculture as Vice-Chairman and Managing Director and day to day operations and functions are managed by Executive Director in the cadre of IAS.,

The following staff are working in TAWDEVA by deputation from various departments / outsourcing / retired persons:

**Headquarters:**

<b>Sl. No</b>	<b>Name of the post</b>	<b>No. of posts</b>
1	Financial Controller	1
2	Joint Director (Sociologist)	1
3	Deputy Director of Agriculture	1
4	Assistant Director of Agriculture	1
5	Assistant Executive Engineer	1
6	Manager (Administration)	1
7	Agricultural Officer	2
8	Accounts Officer	1
9	Assistant	9
10	Other supporting staff	26
	<b>TOTAL</b>	<b>44</b>

## **District Watershed Development Agency:**

The District Watershed Development Agency functioning in 23 Districts headed by the District Collector as Chairman and the Joint Director of Agriculture as Project Officer.

The following staffs are working in TAWDEVA by deputation from various departments / outsourcing / retired persons and contract:

<b>Sl. No</b>	<b>Name of the post</b>	<b>No. of posts</b>
1	Deputy Director of Agriculture (Planting Technologist)	23
2	Soil and Water Conservation Engineer (AE / AEE)	23
3	Assistant Director of Agriculture/ Extension Officer	23
4	Accounts Officer	23
5	Assistant & Data Entry Operator	46
6	Watershed Development Team Members (WDT Member)	470
	<b>TOTAL</b>	<b>608</b>

## 9. DEMAND NO.5 AGRICULTURE

### BUDGET ESTIMATE 2017-18

(Rupees in Thousands)

	Revenue	Capital	Loan	Total
<b>DEMAND FOR GRANT – Voted</b>	7,047,39,46	437,09,65	130,50,00	7,614,99,11
<b>Appropriation Charged</b>	4	...	...	4

### Net Expenditure

(Rupees in Thousands)

Head of Account		2015-16	2016-17	2016-17	2017-18
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
2059	PUBLIC WORKS	2,25,70	2,52,00	2,52,00	2,54,20
2401	CROP HUSBANDRY	5,021,93,97	5,555,94,03	5,446,02,82	6,081,30,97
2402	SOIL AND WATER CONSERVATION	92,63,51	95,23,77	110,25,21	98,52,37
2415	AGRICULTURAL RESEARCH AND EDUCATION	377,20,32	415,54,72	451,01,86	475,79,32

Head of Account		2015-16	2016-17	2016-17	2017-18
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
2435	OTHER AGRICULTURAL PROGRAMMES	133,87,09	144,83,42	149,22,52	174,55,91
2501	SPECIAL PROGRAMMES FOR RURAL DEVELOPMENT	188,25,15	189,50,00	184,74,12	185,91,50
2551	HILL AREAS	78,64	93,15	86,82	91,95
2702	MINOR IRRIGATION	8,32,34	10,04,78	8,72,58	9,42,30
2705	COMMAND AREA DEVELOPMENT	3,93,24	3,50,34	3,58,20	34
2810	NEW AND RENEWABLE ENERGY	10,97,88	76,50	3,91,86	52
2852	INDUSTRIES	48	...	...	...
3451	SECRETARIAT – ECONOMIC SERVICES	9,50,10	10,23,55	9,54,99	10,15,72
4401	CAPITAL OUTLAY ON CROP HUSBANDRY	115,53,50	95,50,03	130,12,73	139,05,05
4402	CAPITAL OUTLAY ON SOIL AND WATER CONSERVATION	16,14,23	22,94,89	18,95,39	28,22,13

Head of Account		2015-16	2016-17	2016-17	2017-18
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
4435	CAPITAL OUTLAY ON OTHER AGRICULTURAL PROGRAMMES	72,96,29	167,15,13	152,39,63	269,82,39
4551	CAPITAL OUTLAY ON HILL AREAS	...	6,50,01	...	...
4705	CAPITAL OUTLAY ON COMMAND AREA DEVELOPMENT	13,10,49	64,45,62	64,28,18	8
6401	LOANS FOR CROP HUSBANDRY	145,84,12	150,00,00	150,00,00	130,00,00
7610	LOANS TO GOVERNMENT SERVERNTS ETC.	5,00	50,00	50,00	50,00

## DEMAND NO.5 AGRICULTURE BUDGET ESTIMATE 2017-18

[Rupees in Thousands (Gross)]

Sl. No.	Head of Department		Revenue	Capital	Loan	Total	
1	05 01	Secretariat	Voted	10,15,72	...	50,00	10,65,72
2	05 02	Directorate of Agriculture	Charged	2	...	...	2
			Voted	5,414,18,43	1,38,05,03	130,00,00	5,682,23,46
3	05 03	Directorate of Agricultural Marketing and Agri. Business	Voted	118,41,03	269,82,39	...	388,23,42
4	05 04	Directorate of Seed Certification	Voted	48,83,71	1,00,00	...	49,83,71
5	05 05	Directorate of Horticulture and Plantation Crops	Charged	1	...	...	1
			Voted	685,64,66	2	...	685,64,68
6	05 06	Agricultural Engineering Department	Charged	1	...	...	1
			Voted	293,03,12	28,22,21	...	321,25,33
7	05 07	Agro Engineering Services	Voted	49,08	...	...	49,08
8	05 08	Tamil Nadu Agricultural University, Coimbatore	Voted	475,85,60	...	...	475,85,60
9	05 09	Directorate of Organic Certification	Voted	78,11	...	...	78,11
Total			Charged	4	...	...	4
			Voted	7,047,39,46	437,09,65	130,50,00	7,614,99,11

## CONCLUSION

**Government of Tamil Nadu, an epitome of indomitable spirit, exceptional agility and organizing skill** has revived the Primary sector through pragmatic and far sighted policy reforms with avant-garde features. The exalted objective of the Government to enhance agricultural production, increase the farmers' income and steer the economic growth of the State has led to an **intensive agricultural transformation** for which **the State has consistently won awards and accolades at the national level for good performance.**

The Government with a perspective vision to **tripling the farmers income**, has unveiled manifold **sector - specific strategies** and **farmer - centric policies** for increasing productivity of crops, diversification of production system and realization of

remunerative prices. The relentless efforts taken by the Government for **bridging the yield gap** at farm level, dissemination and adoption of improved **crop - specific technologies to cut down the cost of production, assurance of quality** of farm inputs like seed, pesticides and fertilizers, **precise irrigation management** to conserve water, Integrating farm and non-farm sectors for **employment generation even during the off season / adverse season**, intensive **farm mechanisation, strengthening economic infrastructure** in rural areas, **Post-harvest management** of the produce, processing and value addition, modernising and **integrating agricultural markets**, promoting food processing and other agro based industries have not only created value for realization of higher prices by farmers but also have generated higher farm income and surplus for further investment on farms. **Management of**



**risk** is yet another domain wherein, Government has brought reforms in Crop Insurance Schemes to offset **yield risk** and established well organised and systematic market mechanisms to manage **price risk**.

Government of Tamil Nadu, not complacent with all these endeavours, has come out with **stretch goals and strategic plans to make its vision a reality** by improving farmers' access to production and processing services besides reliable, stable and guaranteed marketing models. The strategies contemplated for future agriculture development are **enhancing cultivated and irrigated area, maximising resource use efficiency** through production and distribution of quality inputs, increasing focus on farm mechanization for labour-saving and **commercialisation of agriculture, promoting** extensive use of

**renewable sources of energy** viz., solar power and bio-fuels, **reducing post-harvest losses** by establishing robust infrastructure for storage/cold storage and food processing, ensuring a **better farm gate price**, creating **stabilised farm market**, encouraging “**aggregator model**” and “**Whole Value Chain approach**” to increase production and productivity as well as link small holder farmer groups to markets for surplus produce, adopting **climate-smart farming practices** and new crop insurance scheme, promoting **livelihood diversification strategies** such as integrated farming system, poultry, beekeeping and fishery and extensive use of **Information and Communication Technology** (ICT) based system for information and knowledge management.

Government of Tamil Nadu has planned to meticulously execute **High Value Agriculture**, an amalgam of good strategies, well-designed programmes, adequate resources and good governance, to fulfil the food and nutritional demand of the State, generate higher farm income, improve rural employment, check rural exodus and strengthen the rural economy.

**R.DORAIKANNU**  
**Minister for Agriculture**