AGRICULTURE DEPARTMENT

POLICY NOTE

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Minister for Agriculture

Policy Note 2018-2019

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INTRODUCTION

"சுழன்றும்ஏர்ப் பின்னது உலகம் அதனால்
உழந்தும் உழவே தலை"

(திருக்குறள் : 1031)

Agriculture, though laborious, is the most excellent (form of labour); for people, though they go about (in search of various employments), have at last to resort to the farmer.

My Government will continue to accord the same high priority it accorded in the last five years to agriculture, the premier sector for the country's economic development, providing livelihood for the majority.

Agricultural production can be improved by addressing the productivity gap and

through value addition. We have also set ourselves a goal of increasing the farmers' per capita income by two to three hundred per cent within five years. My Government proposes to achieve this through effective dissemination and adoption of advanced technology to increase productivity of crops, farm based interventions for mixed farming and by convergence of schemes to ensure integrated farm development.

- Honourable Puratchi Thalaivi Amma

Agriculture is the livelihood for every farmer and consequently the economy of the State is primarily focused on agriculture. The role of agriculture in shaping the economy could be reflected from the large proportion of population that depends on agriculture for their livelihood and the significant contribution of agriculture to the State’s income. Due to its predominance,

any positive and negative aspects of developments in the State could be linked with the performance of the agricultural sector. Therefore, even a slight setback in agriculture sector wields an influence on overall economic growth. Hence, rapid agricultural growth continues to be the key to poverty alleviation and overall economic development.

The farmer welfare-centred approach to agricultural development can empower the rural masses with higher income and employment and make inclusive development a reality. Hence, in policies of poverty alleviation and enhancing sustainable development, agriculture has enormous potential. Government of Tamil Nadu, to attain increase in agricultural production in rural areas especially doubling the production based on market driven demand, has formulated various innovative strategies and

disseminated better cultivation practices and crop oriented front end technological interventions such as Collective farming approach by involving Small and Marginal Farmers, integrated approach to enrich the soil fertility; adoption of water conservation measures; encouraging farm mechanisation; Agricultural Services through Information Technology interventions; post-harvest management of crop produce and interlinking agricultural markets through eNAM. These approaches are being implemented in all crop production aspects.

In view of the various challenges to Agricultural operations, the Government of Tamil Nadu is taking concerted efforts and relentless measures to bring about perceptible changes and overall development to tackle these bottlenecks and pave way for a sustainable

Agriculture. In the coming years, the food production is going to be more challenging due to burgeoning population, difficulty in horizontal expanse of land resources, escalating cost of critical inputs, climate variability, environmental degradation, dwindling production resources, labour scarcity and volatile market prices etc., However, the Government of Tamil Nadu which is unfazed by all these constraints is formulating crop specific, season specific, soil specific, climate specific, farm specific approaches for making Agriculture, a more dynamic and climate resilient to ensure food and nutritional security.

The perspective vision **"Second Green Revolution"** in Tamil Nadu is gaining momentum in the recent years. The Government of Tamil Nadu is in the forefront in formulating comprehensive policy framework among all the States by reinforcing farmer-friendly strategies

to increase cropped area; collective cultivation of consumer preferred crops, Specific innovation in Crop production technology, Soil based fertiliser recommendation and application methods, Water saving practices such as Micro Irrigation, System of Rice Intensification(SRI), Changes in selection of cropping pattern to ward off the vagaries of monsoon and reducing input cost fortified with Business vision in crop production, 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 and capacity building activities, enabling the State to be on high growth trajectory in Agriculture. As a result, the Government of Tamil Nadu has made impressive

strides in agricultural sector and the State has achieved 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 **the State surpassed 100 Lakh Metric Tonnes of Food Grain production in 2011-12, 2013-14, 2014-15 and 2015-16.**

The efforts of the Government to introduce bouquet of frontier technologies, quality seeds, bio-fertilizers helped to achieve a quantum jump in food grain production and **the State was honoured with "Krishi Karman"** award for having attained total food grain production of 101.52 Lakh Metric Tonnes by Government of India during the year 2011-12. Since the food grain production surpassed 100 Lakh Metric

Tonnes, the Government of Tamil Nadu was given **"Krishi Karman"** award for the best performance in pulses production of 6.14 Lakh Metric Tonnes during 2013-14 and for coarse cereals production of 40.79 Lakh Metric Tonnes for the year 2014-15.

The exemplary initiatives of the State Government in spearheading food grain production and welfare of the farming community has resulted in bagging the **"Krishi Karman" award the fourth time for the best performance in Total Food grain production of 113.85 Lakh Metric Tonnes during 2015-16.** The award has been presented and felicitated by the Hon'ble Prime Minister of India on 17.03.2018 at New Delhi.

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 of the State across the nation.

Sustaining the momentum, the Government of Tamil Nadu which has the privilege of adopting of Information Technology (IT) based Agriculture in an innovative way, has been awarded with the **“National Gold Award for e-Governance”** for the year 2014-15 by Government of India for its innovative spirits of the State. 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.

Recognizing the sincere efforts taken by the Department of Agriculture for effective implementation of Pradhan Mantri Fasal Bima Yojana in Tamil Nadu during 2016-17, the **Department of Agriculture was honoured with the Chief Minister’s Best Practices Award on the eve of 71st Independence Day Celebrations on 15.08.2017**.

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 and presently functioning as Agricultural University. Several changes took place in its organizational setup owing to bifurcation of the State, Districts and Taluks etc.,

Snapshots of Tamil Nadu Agriculture

Tamil Nadu is geographically located between 8°5' and 13°35' North latitude and between 76°15’ and 80°20' East longitude. As a result of this geographical position, Tamil Nadu enjoys semi-arid to dry sub humid climate, which permits higher crop productivity under irrigation.

The total geographical area of Tamil Nadu is 130.33 Lakh Hectare which constitutes 4 per cent of the Nation’s geographical area (11th Largest State) with coastal line of 1,076 km. Tamil Nadu is the seventh most populous state with 6 percent of the Nation’s population. Tamil Nadu is one of the most water

starved States endowed with only 3 per cent of the nation's water resources putting high stress on irrigation water availability and vulnerable to seasonal fluctuations causing uncertainty in Agriculture production.

The Tamil Nadu land use pattern as per the latest statistical report (2016-17) is given below:

Table 1.1 : Land Use Pattern in Tamil Nadu

S. No	Details	Area (Lakh Ha)	% with referece to Geographical area
1	Forest	21.57	16.55
2	Net Cropped Area (*)	43.47	33.35
3	Area under Misc. Tree crops	2.32	1.78
4	Permanent Pastures	1.08	0.83
5	Current fallow	13.61	10.44
6	Other fallow	18.47	14.17
7	Culturable Waste	3.23	2.48
8	Land put to non agricultural use	22.01	16.89
9	Barren and unculturable land	4.58	3.51
	Total Geographical Area	**130.33**	**100.00**
	Cropping Intensity (%)	118	-

(*) Difference between Gross Cropped Area (51.29 Lakh Hectare) and Area sown more than once (7.82 Lakh Hectare)

According to the Agriculture censes 2010-11, 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 lesser than the average size of land holding of the country (1.15 hectare).

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.

The details of net area irrigated using various sources of irrigation across the state (2016-17) are as follows:

Table 1.2 : Water Source wise net area irrigated

Source	Availability (Nos)	Net Area Irrigated (L.Ha.)	% with reference to net Area Irrigated
Canals	2,239	5.27	22.10
Tanks	41,127	3.02	12.66
Wells	18,72,088	15.54	65.16
Others		0.02	0.08
Total		**23.85**	**100.00**

The area irrigated by wells accounted for 65% followed by Canals (22%) and Tanks (13%). Out of Gross Cropped Area under irrigation (28.45 Lakh ha.) 77 percent is brought under food crops and 23 percent under non-food crops in the State.

Special Initiatives adopted in Agriculture for enhancing Area, production, productivity of Major Crops, Eco System and Farmers' Income in 2017-18.

Government of Tamil Nadu leads all other States in introducing Special and Innovative Agriculture Technological initiatives to augment area, production and productivity of major crops. It is also steadfast in promoting water use efficiency, balanced use of fertilizers, reduced use of pesticide and increased use of eco-friendly Bio-Pesticides and Bio-control agents, processing & value addition, ultimately with an aim to reduce the cost of cultivation, safeguard the environment and fetch remunerative price to the farmers.

Contemplating these objectives, the following package of practices were implemented during 2017-18 for reducing the cost on inputs,

increasing the production by adopting right technology, adopting post harvest management for ensuring right quality produce, ensuring proper market channel for obtaining remunerative price to their quality produce.

- **Kuruvai Cultivation Package, 2017** was implemented in six delta districts **with a budget outlay of Rs. 56.92 Crore**, to protect the livelihood of the delta farmers by encouraging them to take up Kuruvai cultivation utilizing the ground water. **As a result, Paddy and Pulses were cultivated totally in an area of 3.43 Lakh Acre in the delta districts benefiting 1,64,215 farmers.**
- **Samba Package, 2017 was implemented with a budget outlay of Rs. 41.15 Crore in** eight districts, with more focus to direct sowing of paddy, in view of the advantages of

lesser water requirement, lesser crop duration and lesser utilization of inputs. As a result, an area of 10.707 Lakh acre was covered which is an increase of 15% during Samba season in delta districts and 2,52,407 farmers were benefitted by availing the assistance.

- The **Hon'ble Chief Minister of Tamil Nadu launched an Exclusive bilingual (Tamil/English) Mobile Application "Uzhavan"** packed with **9 vital personalized Agricultural Information** on 05.04.2018 for the benefit of farming Community.
- As a part of hand holding support to Rain-fed Farmers, **Mission on Sustainable Dry Land Agriculture is implemented with an aim to benefit 25 Lakh acres of drylands in 1,000 clusters in a phased manner**. Under

Phase I, 200 dryland clusters were formed covering 5 Lakh acre area and various activities such as formation of 876 Farmers club, establishment of 311 Common Water Harvesting Structures & 200 custom hiring centres for farm machinery, assistance for seed and other inputs, summer ploughing, purchase of 50 Value addition machinery and Animal Health Management Activities and in Phase II-400 dryland clusters were formed with 1,541 farmers club and imparted capacity building training for 1.55 lakh farmers were completed at a cost of **Rs. 153.67 Crore benefiting 2.11 Lakh farmers. These initiatives had been telltale evidence as the impact area of Millet increased by 22%, Pulses by 18% and Oilseeds by 16.2% during 2017-18 when compared to 2016-17.**

- **"Collective Farming", a revolutionary concept** to empower the farmers socially and economically is being executed by organizing Small and Marginal Farmers into groups for promoting better adoption of technologies, facilitating effective forward and backward linkages and Credit mobilization. During 2017-18, **1,988 Farmer Producer Groups purchased 8,721 Farm Machineries at a total cost of Rs.99.40 Crore by utilizing the assistance of Rs. 100 crore from the Government of Tamil Nadu benefitting 1,98,800 Small and Marginal Farmers.**

- When Ockhi Cyclone damaged various crops in Kanyakumari, Tirunelveli and Thoothukudi districts, Government **sanctioned a sum of Rs. 10.99 Crore from State Disaster Response Fund for providing input subsidy to** 32,959 **affected farmers** for an affected area of 6,624 ha due to

"Cyclone Ockhi". In order to safeguard livelihood of affected farmers Special livelihood package is being implemented at an outlay of Rs.42.06 Crore.

- **Tamil Nadu stands first among all other States / UTs in disbursement of claims to farmers during 2016-17** under Pradhan Mantri Fasal Bima Yojana (PMFBY). So far, an amount of **Rs.3,274 crore** has been sanctioned as **compensation claims to 10.78 lakh farmers of which Rs.3,137 Crore has been released to 10.29 Lakh farmers.**

- At National level under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) for Micro Irrigation, Tamil Nadu is the only State to provide **100 percent subsidy to Small and Marginal farmers and 75 percent subsidy to other farmers for installation of Micro**

irrigation system. During 2017-18, an amount of Rs.692.26 Crore was allocated to implement Micro irrigation in an area of 3,01,661 acre. **The Government of Tamil Nadu has also extended support by absorbing 12% GST on Micro Irrigation System from State Fund for reducing the financial burden of farmers.**

- The Government has established **Ecopark in Kanyakumari District at a cost of Rs.4 Crore, Centre of Excellence for Cut flowers in Krishnagiri district at a project cost of Rs.8.80 Crore** besides sanctioning a sum of Rs.5 Crore for creating Storage facilities to preserve Onion.
- Farmers were supported with **1.18 lakh Bee Keeping equipments** to promote pollination in Horticultural Crops and assistance

extended for the **installation of 3.165 lakh Sq.meter of Poly Green House.**

- The Government of Tamil Nadu issued orders for **permitting the production of Neera from coconut tree and value addition by amending the existing Prohibition Act. The** eligible Coconut Producers' Companies can obtain licence from the District Collector for tapping Neera.
- **e-National Agriculture Market (e-NAM)** has been implemented in 23 Regulated Markets with the integration of marketing infrastructure for electronic marketing. **Through e-NAM Platform, 1.77 lakh quintals of agricultural produces worth of Rs.24.38 crore have been transacted by 65,228 farmers and 1,333 traders.**
- In order to preserve shorter shelf life produces and ensure better prices for the

farmers, the Government of Tamil Nadu has introduced **Supply Chain Management of fruits, vegetables and other perishables in 10 districts to the tune of Rs. 398.75 crore**. Under this, infrastructure support is being extended to 34 integrated cold chain markets by aggregating produce of farmers at 487 collection points, processing at 58 Primary Processing Centres / Main Markets and providing logistics support including transport and storage to mobilize the produce to terminal markets.

- Mechanization facilitates timely farming operation, reducing drudgery and increasing the agricultural production per unit area of land. Under Agricultural Mechanisation Programmes, **6,641 Agriculture Machinery and implements were distributed to farmers with a subsidy assistance of**

Rs.41.59 Crore. About 738 "Agricultural Machinery and Implements Custom Hiring Centres" were established with a subsidy assistance of Rs.69.18 Crore.

- In order to promote utilization of solar energy in agriculture sector by the farmers, **the Government provided Rs. 49.90 Crore subsidy assistance (90%) for installation of 1,000 Solar powered pumps** upto a capacity of 10 HP and **established 49 Green house type Solar Drying Units for primary processing and Value addition with a subsidy assistance of Rs.73.80 Lakh.**
- In Cuddalore district, location specific interventions **suitable** for **reclamation of problem soils were taken up in an area of 892 ha for an amount of Rs.5.09 Crore, to increase the soil health and productivity**.

- As part of the development of water harvesting structures for irrigation, the **Government of Tamil Nadu has created 629 water harvesting structures at a cost of Rs.21.41 Crore, 840 Farm Ponds in Ramanathapuram District at a cost of Rs.4.19 Crore** and also implemented Rehabilitation of Irrigation Network in Chittar Sub Basin in Tirunelveli District and on farm water management works in an area of 1,118 ha.
- In order to **bring more area under cultivation, the Government of Tamil Nadu has created aditional irrigation potential by extending an assistance of Rs. 220 Crore to the District Watershed Development Agencies** for adopting water saving technologies (Per drop More crop), enhancing recharge of aquifers and sustainable water conservation practices.

1. AGRICULTURE

1.1. Objectives, Strategies and achievements of the Department

Agriculture is the major employer to 65 percent of rural population in Tamil Nadu. It provides livelihood support and ensures food security besides preventing the exodus of rural population to urban areas.

Tamil Nadu, which is known for its traditional farming system and management of resources, leads the country in introducing and adopting innovative technological interventions and farmer friendly, ecologically sustainable initiatives to augment the production and productivity of Agricultural Crops especially food crops.

The Government introduced various policies of safe agricultural practices to protect the environment from the impact of dynamic

changes in Climate, Soil degradation, water scarcity, irrational use of critical inputs and pest, disease menace, ultimately enhancing the production and productivity of demand driven crops so as to increase the farmers' income.

To implement the above strategies, Government of Tamil Nadu has adopted number of technologies and initiatives for increasing the growth in productivity and production of food grains and other crops which helped the State to sustain performance in food grain production. Further, the Government has formulated consistent policies and revolutionary strategic developments which steered the agricultural sector to sustain a more profitable status to the farming community. Not complacent by all these efforts, Government of Tamil Nadu is focussing on various thrust areas of development in the past years such as grouping of farmers to do

Collective Farming for reducing input cost and better pricing for their produce through value addition and empowering groups to increase their bargaining power of farmers by aggregation of produce/Collective approach; Mission on Sustainable Dry land Agriculture (MSDA) - a Mission mode approach for enhancing production and productivity of Millets, Pulses, Oil seeds and Cotton in drylands; Reorienting Crop centric approaches of Food Grain production viz., System of Rice Intensification (SRI), Machine Transplanting, Direct sowing of Paddy, System of Pulses Intensification (SPI), Redgram transplantation, Introduction of High Yielding Varieties of pulses, promotion of lesser water intensive millets cultivation & millet products; Supporting farmers at the time of distress due to natural calamities like drought or flood with Special Packages such as Kuruvai cultivation package, Samba

cultivation Package and Pulses Special Package; Integrated production improvement programme for oil seeds, oil palm and Tree borne oil seeds, Permit for Neera Production from Coconut trees, Mission mode approach for Commercial crops such as Tamil Nadu Cotton Cultivation Mission and cotton based cropping system, Sustainable Sugarcane Initiative (SSI)-Single Bud chip seedling production and transplantation, Mirco Irrigation-to get more crop per drop of water, Protection of farmers from unforeseen damage to standing crops- ameliorative measures, Relief funds and Crop insurance, Establishment of Tamil Nadu State Seed Development Agency (TANSEDA) for production and distribution of quality seeds and Coconut seedlings, Eco sustainable Agricultural Practices - Agro Eco System based Integrated Plant Health Management (AESA), Model Eco friendly Integrated Pest Management Villages, On-farm

production of Bio-cides and Bio-Control agents, Distribution of Green manure seeds, Pluerotus kits, Production and distribution of **Amma Bio fertilisers such as Azospirillum, Rhizobium and Phosphobacteria**, Blue green algae and Azolla, trash mulching and establishment of Vermicompost units.

Promotion of organic farming through cluster approach, under Participatory Guarantee System (PGS), promotion of Traditional agriculture products, Introduction of Point of sale Machine for fertiliser transaction, Mission mode approach on Soil Health - Mission on Soil Health Card, training and capacity building to farmers and officers- Farmer Training Centre, water management training centre, State Agricultural Extension Management Institute (STAMIN) and State Agricultural Management and Extension Training Institute

(SAMETI),Transfer of Agriculture Technology through ICT tools, Farmer oriented Agricultural Extension System- Group approach in Agriculture for multidimensional agricultural development in the State besides production and distribution of Micro nutrient mixtures, Bio fertilizers - carrier and liquid based, bio control agents, Seeds, green manure seeds, Coconut seedlings etc through **880 AMMA Facilitation Centres** / Integrated Agricultural Extension Centres (IAEC).

The implementation and adoption of these result oriented technological interventions by the State have given a glimpse of positivity in doubling the crop production in preference to the markets and rapid economic development of the State to achieve the goal of **"Tamil Nadu Vision 2023"** crowning Tamil Nadu as **"Economically Vibrant"** state in India.

Table 1.3: Productivity Position of Tamil Nadu at National Level

Crop	Position of Tamil Nadu at National Level	Yield in Tamil Nadu (Kg/ha)	All India Average Yield (Kg/ha)
Maize	1	6,549	2,509
Cumbu	1	2,613	1,154
Groundnut	1	2,509	1,486
Total Oilseeds	1	2,230	968
Rice	2	3,918	2,404
Coarse Cereals	2	3,759	1,596
Sugarcane(MT)	2	103	71
Coconut	2	9,238	6,721
Jowar	3	1,558	780
Food grains	3	3,090	2,056
Sunflower	4	1,089	697
Redgram	4	957	656
Cotton	5	442	432

(Source: Agricultural Statistics at a Glance, 2016 released by Government of India, 4th Advance Estimate)

The efforts of Government of Tamil Nadu to overcome the constraints in agriculture sector helped to bring in Agriculture Renaissance which has accelerated the growth in agriculture production resulting in obtaining more than 100 Lakh Metric Tonnes of food grain production during 2011-12 (101.52 Lakh Metric Tonnes), 2013-14 (110.02 Lakh Metric Tonnes), 2014-15 (127.95 Lakh Metric Tonnes) and 2015-16 (113.85 Lakh Metric Tonnes).

Tamil Nadu being a water scarce State, the available water would be used at high priority for irrigating the crops. It is time to conserve the water from other losses during irrigation. Keeping the novel idea of conserving the irrigation water and bringing quality produce, the Government is taking intensive efforts to popularize the Micro Irrigation system which helps in bringing more crops per drop.

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. As of now, the coverage of micro irrigation is one per cent of total irrigated area and hence the Government is taking various innovative measures to expand the area under micro irrigation in Tamil Nadu with higher fund allocation.

During 2016-17, due to various natural impediments such as failure of South West as well as North East Monsoon, non-release of Cauvery water from Karnataka, poor storage position in all major reservoirs, Vardah cyclone, and most importantly severe drought, the State witnessed lesser area under major crops besides damage to the standing crops and hence foodgrain production reached a low level of 52.38 Lakh Metric Tonnes in 2016-17.

The production of food grain crops in the past 7 years is as follows.

Table 1.4: Foodgrain production in the past 7 years

Crop	Food Grain production (Lakh Metric Tonnes.)						
	2011-12	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18 (**)**
Rice	74.59	40.50	71.15	79.49	73.75	35.54	65.92
Millets	23.24	13.42	32.73	40.79	34.25	13.45	37.36
Pulses	3.69	2.13	6.14	7.67	5.85	3.39	6.09
Total Food Grains	**101.52**	**56.05**	**110.02**	**127.95**	**113.85**	**52.38**	**109.37**

(**)Third Advance Estimate

1.1.2. Area, Production and Productivity Programme for 2018-19

The Government has resolved to improve the economic status of the farmers by adopting frontier technologies to larger extent for various crops with participatory appraisal of farmers and extension staff and has laid down the following strategies with a pursuit towards Second Green Revolution in the State.

The strategies are

1. Narrow down the gaps in yield and input use efficiency through agronomic revolution: Precise crop management through affordable new technologies that are locally adaptable with easy access to technological information.
2. Improve the economic status of farmers by farming through the concept of Collective farming and promoting farmers' participation

in agri-business ventures as Farmer Producer Organisation (FPO).

3. Expansion of Area of Cultivation and production of rain-fed crops and encouraging secondary agriculture such as integrated farming.
4. Soil health improvement and increasing the per unit productivity.
5. Adopt smart technologies for increasing the efficiency of water, nutrients and energy: micro irrigation and other water-saving irrigation technologies, site-specific nutrient management, conservation agriculture etc., to increase the agricultural production.
6. Achieve food and nutritional security by improving the livelihoods of rural farm families through sustainable agriculture area intensification.

7. Bring down the cultivation expenses through soil health revitalization, balanced fertilizer application and judicious use of irrigation water thus leading to increase in the income of farmers.

8. Precise Input Supply System with management strategies to ensure equity in terms of access to critical inputs besides improving the delivery mechanism.

9. Implement socio-economic support programmes to empower and benefit farming communities particularly farm women.

10. Transform agriculture in a multi-faceted manner across various agricultural subsectors to respond to diversity of farming environments, objectives and constraints.

11. Enhance crop – tree - livestock interactions in a farming system and optimize recycling

and use of biomass/ agricultural by-products to preserve the environment.

12. Maximize the production potential of rainfed areas.

13. Formulate contingency crop plan based on weather forecast and develop insurance module to mitigate crop loss due to climatic risks.

14. Provide digital agriculture solutions for seed to seed aspects through ICT tools.

15. Create robust Agriculture Infrastructure besides strengthening service support systems to promote intensification and diversification of agriculture.

16. 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.

The excess rainfall received during South West monsoon and the normal rainfall received during North East Monsoon have given fillip to the crop coverage of food crops during 2017-18. The Government of Tamil Nadu has **programmed to achieve 110 Lakh Metric Tonnes of food grains during 2018-19** by formulating region specific and crop-specific technological interventions.

Table 1.5: Programme for 2018-19

Crop	Area (Lakh Ha)	Production (Lakh Metric Tonnes)	Productivity (Kg/ha)
Rice	18.50	69.50	3,757
Millets	9.00	34.00	3,778
Pulses	9.40	6.50	691
Total food grains	**36.90**	**110.00**	
Oilseeds	5.00	12.00	2,400
Cotton (*)	2.40	7.37	522
Sugarcane (**)	3.25	370.52	114
Total	**47.55**		

(*)Production in Lakh Bales of 170 Kg of lint each bale);
(**)Productivity (Metric Tonnes /Ha)

1.2 Season – Rainfall

The India Meteorological Department (IMD) predicted that the year 2017 would be Normal Rainfall year for Tamil Nadu. Much to the prediction, the State has received Excess rainfall during winter season (39.1 mm with +25% deviation), South West Monsoon Season (414.3 mm with +29% deviation) and normal rainfall during summer season (122.6 with -4% deviation) & North East Monsoon season (399 mm with -9% deviation).

During 2018, the India Meteorological Department (IMD) has predicted the South West Monsoon rainfall to be Normal for the whole country (97%) and the Southern Peninsula (99%).

1.3. Crop Status

Agriculture is highly dependent on monsoon rains and the river water in Tamil Nadu. Agricultural crops such as paddy, millets, pulses, oilseeds, cotton and sugarcane are predominantly cultivated following good agricultural practices.

The prime inevitable factors influencing successful Agriculture in Tamil Nadu are irrigation, onset of South West and North East monsoons, sufficient storage in 15 major reservoirs which receive inflows mainly during South West Monsoon and sufficient ground water. However the Cauvery system of irrigation is the major determinant of food grain production especially paddy in the Cauvery delta zone.

During 2017-18, the excess rainfall during South West monsoon and Normal Rainfall during

North East monsoon contributed to significant area coverage under principal crops. Paddy has been cultivated in an area of 18.551 Lakh Ha (42%), Millets in 9.166 Lakh Ha (21%), Pulses in 8.783 Lakh Ha (20%), Cotton in 1.838 Lakh Ha (4%), Sugarcane in 1.880 Lakh Ha (4%) and Oilseeds in 3.998 Lakh Ha (9%).

However, to augment the production throughout the State, the Agriculture Department has taken immense efforts to mobilize critical inputs like seeds, fertilizers, Bio-fertilizers, pesticides, etc,. in time to needy places.

The intensive attention on area convergence and other cultural practices engaged in the agriculture sector are expected to secure a commendable performance in food grain production during 2017-18.

1.3.1. Paddy

Paddy is the principal crop extensively cultivated in all the districts of the State having a unique three-season pattern viz Kar/Kuruvai /Sornavari (April to July), Samba/ Thaladi/Pishanam (August to November) and Navarai/ Kodai (December to March).

Paddy accounts for 42 percent of the total cropped area and accounting for 65 percent of the total food grains production in the State.

Eventhough the release of water from Mettur dam was delayed, an area of 18.55 Lakh ha has been covered during 2017-18 which is more than the normal area of 17.84 Lakh Ha utilizing the ground water potential and rainfall received in the State.

The average productivity of Paddy crop is 3,806 Kg/Ha in terms of Rice and the State

Government has taken various initiatives to increase the productivity and production of paddy at farm level under various schemes.

- **System of Rice Intensification (SRI),** a successful technology recommended for judicious use of water was promoted among the paddy farmers in an area of 6.38 lakh ha during 2017-18 and it is programmed to promote this technology in an area of 10 lakh ha during 2018-19.
- **Direct sowing method of Paddy** cultivation, a strategic technique to overcome the constrains such as delayed/non-release of water from the Mettur dam and deficit north east rainfall, is a promising water & labour saving, less drudgery and more timely crop establishment technique, was adopted in an area of 4.54 lakh ha. during 2017-18 with an assistance of Rs.26.59 Crore for 2.11 lakh ha.

- This crop establishment technique will be continued during 2018-19 also.
- **Machanical Transplanting of Paddy** is promoted from 2014-15 to reduce the drudgery involved in transplantation. The successful accomplishment of this intervention has gained momentum and the department promoted Mechanical Transplanting in 44,300 ha with assistance of Rs.38.15 Crore during 2017-18 and the practice will be promoted during 2018-19 also.

1.3.1.1 National Agricultural Development Programme (NADP) for Paddy: Strategic Rice Production Programme-SRPP:

The Programme is practiced to promote region and problem-specific initiatives for increasing the productivity and production of

paddy thereby increasing the income of the farmers.

During 2017-18, the programme was implemented by providing incentive for Certified Seed production, subsidy for distribution of High yielding variety seeds, assistance for popularization of Mechanical Transplanting, nursery trays, Bio-fertilizers, Micronutrient mixture, Zinc Sulphate, Weedicide, power tillers and promotion of direct sowing by extending ploughing subsidy with a budget outlay of Rs. 28.18 Crore. This programme will be continued during 2018-19.

1.3.1.2 National Food Security Mission for Rice :

The Mission is implemented with an objective to increase the production of Paddy through area expansion and productivity enhancement, enhancing the farm level economy and to

restore the soil fertility and productivity at the individual farm level in eight identified districts viz., Pudukkottai, Tiruvarur, Nagapattinam, Ramanathapuram, Sivagangai, Thanjavur, Tiruvannamalai and Cuddalore. During 2017-18, the components such as Cluster demonstrations, cropping system based demonstrations, distribution of certified quality seeds of High Yielding varieties, hybrids, production enhancing inputs, integrated nutrient and plant protection measures, farm machineries and resources conservation techniques besides cropping system based trainings were implemented with a budget outlay of Rs.14.84 Crore. The scheme will be continued during 2018-19 also.

1.3.2. Millets

Millets are multigrain gluten free small seeds often called poor man's cereals which gained the privilege of farmers to change in consumers'

preference resulting in inclusion of millets poignant from traditional foods basket to commercial food baskets in Tamil Nadu. Millets are providing multiple securities such as food security, fodder security, health and nutritional security and livelihood security. Millets such as Maize, Sorghum, Cumbu, Ragi, Thinai, Varagu, Samai, Kudiraivali etc., are cultivated in Tamil Nadu with a Normal area and Production of 8.013 Lakh Ha and 28.88 Lakh Metric Tonnes respectively.

Considering the importance of millets and its consumption, in order to increase the millet production, various efforts were taken thus resulted **9.17 lakh ha has been brought under Millet cultivation during 2017-18. This resulted in increased coverage of 1.157 lakh ha more, when compared to normal area.**

The millets are commonly cultivated in the districts of Villupuram, Cuddalore, Salem, Namakkal, Tiruppur, Erode, Perambalur, Ariyalur, Theni, Dindigul, Virudhunagar, Tirunelveli, Thoothukudi, Tiruvannamalai, Dharmapuri and Krishnagiri.

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 & value addition techniques are implemented in a massive way under various ongoing and new programmes.

1.3.2.1 National Food Security Mission - Coarse Cereals:

During 2017-18, an amount of Rs.5.77 Crore has been allotted towards the promotional activities such as cluster demonstration of improved packages,

intercropping with pulses and assistance for high yielding varieties of millet cultivation benefiting 26,741 farmers in Salem, Dharmapuri, Krishnagiri, Coimbatore, Tiruppur, Tiruchirapalli, Perambalur, Didigul, Theni and Thoothukudi Districts.

Considering the importance of millets, more emphasis has been given on millet production under NFSM. During the 2018-19, NFSM Coarse Cereals scheme has been divided into two parts, namely NFSM Coarse Cereals (covering maize) as one part and second part is sub-mission on nutri-cereals which includes Sorgham, Cumbu, Ragi and other small millets like Samai, Varagu, Kudhiraivali, etc., The components like laying out of cluster demonstration on improved technologies, certified seed distribution, hybrid seed distribution, demonstration with inter-crop,

integrated nutrient management, integrated pest management, distribution of hand sprayers and publicity are proposed to be implemented.

1.3.2.2 National Agriculture Development Programme- Millets:

An amount of Rs.4.09 Crore has been allotted during 2017-18 for the activities such as assistance for quality seed production and distribution, micro nutrient mixture and Bio-fertilizer. Under this scheme, 1,42,192 farmers have been benefitted in 2017-18.

The State Government will continue its efforts during 2018-19 also to augment Millets production.

1.3.3. Pulses

Pulses are the important sources of dietary protein and play a vital role in improving the soil fertility. Red gram, Black gram, Green gram and

Horse gram are the major pulses cultivated in Tamil Nadu covering a normal area of 7.53 lakh ha. Pulses being a short duration, less water consuming and less input intensive crops, it is cultivated in all the seasons throughout Tamil Nadu. In order to attain the self sufficiency in pulses production by bridging the yield gap and to increase the cropping intensity for creating additional income to the farmers, constant efforts are being taken by the Government of Tamil Nadu in a mission mode approach for years.

As a result, the area which was 6.37 Lakh Ha in 2010-11 has increased to 8.84 Lakh ha in 2014-15 and production which was only 2.45 Lakh Metric Tonnes in 2010-11 has escalated to insurmountable record of 7.67 Lakh Metric Tonnes in 2014-15. The productivity which was hovering around 385 Kg/Ha also

increased to 868 Kg/ha in 2014-15 and set a new bench mark in the production & productivity of pulses in Tamil Nadu. The efforts were continued during 2015-16 & 2016 – 17 and as a result, the pulses area was sustained to an extent of 8 Lakh Ha despite severe occurrence of flood and drought.

The innovative activities were being carried out in a mission mode approach to bring an area of 9.4 Lakh ha and a production of 6 Lakh Metric Tonnes with a productivity of 632 Kg/ha during 2017-18 and covered 8.78 Lakh ha area. Besides, farmers are being integrated into groups to form Farmer Producer Organisation (FPO) through various programmes such as Mission on Sustainable Dryland Agriculture and Collective farming for ensuring easy access to inputs and services at lesser price and as well as

facilitate them to get additional income through value addition.

1.3.3.1 National Food Security Mission – Pulses 2017-18 – is implemented to enable the farmers to get more income from pulse crop in a shorter period, by providing assistance for improved technologies at a subsidized rate in all districts of Tamil Nadu except Chennai and The Nilgris.

During 2017-18, assistances for adoption of improved technologies such as Technology demonstrations, Cropping system based demonstrations, Demonstrations on intercropping with Groundnut, Production and distribution of certified seeds of high yielding varieties, distribution of quality inputs such as Bio-fertilisers, Micro nutrient mixture, Plant Protection Chemicals, Weedicides, Machineries and Water carrying pipes, demonstrations

through NGOs were extended with a financial assistance of Rs.33.42 crore. Further, assistances were also extended under NFSM-Additional area coverage for Rabi Pulses with the financial assistance of Rs. 21.82 crore.

This scheme will be continued during 2018-19 also.

1.3.3.2 National Agriculture Development Programme(NADP) – Pulses improvement Programme comprising of activities such as line sowing, 2% DAP foliar spray, production incentive for quality certified seeds, promotion of Red gram Transplantation and assistance for seed treatment chemical were extended at subsidized rate with a financial assistance of Rs.13.08 crore during 2017-18.

1.3.4. Oilseeds and Oil palm

Oilseed crops are largely grown under rain-fed condition and are more prone to biotic and abiotic stresses. Oilseeds are the major sources of vegetable oil to meet the domestic demand. Oil seeds crops such as Groundnut, Gingelly, Sunflower and Castor are largely cultivated in Tamil Nadu. Among them, Groundnut constitutes 88 percent of Oil seeds of which 60 percent is under Rainfed. An area of 4 Lakh ha was brought under Oil seeds with a normal production of 9.00 Lakh Metric Tonnes. Due to continuous efforts taken by the Government, Tamil Nadu has been able to sustain the first place at National level for Oilseed productivity consecutively for four years from 2011-12 to 2015-16.

The Government is taking appropriate measures to attain self sufficiency in oilseed production through increase in area, production and productivity of oilseed crops.

1.3.4.1 NADP - Integrated Oilseeds Production Improvement Programme.

During 2017-18, improved and new technological interventions such as timely supply of certified seeds, distribution of liquid Biofertilizers and Castor as bund crop are implemented for oilseeds with a financial assistance of Rs.4.24 crore. The programme will be continued during 2018-19 also.

1.3.4.2 National Food Security Mission (NFSM)

National Mission on Oilseeds and Oil Palm (NMOOP) has been implemented in order to

attain self sufficiency in edible oil production since 2014-15 till 2017-18 in Tamil Nadu. The scheme is merged with NFSM and renamed as National Food security Mission - Oil seeds, Oil palm and Tree borne Oil seeds and implemented from 2018-19 in Tamil Nadu.

1.3.4.2.1 NFSM-Oilseeds

For production enhancement of Oil seed crops in Tamil Nadu, the Government is keenly focusing on varietal replacement and increasing irrigation coverage under oilseeds, inter-cropping of oilseeds with cereals / pulses / sugarcane and use of fallow lands after paddy cultivation by rendering subsidy for distribution of certified seeds, production assistance to foundation and certified seeds, demonstration, Gypsum distribution, distribution of quality inputs such as bio-fertilizers, plant protection

chemicals-weedicides and plant protection equipments.

During 2017-18 this programme was implemented with a financial assistance of Rs.10.98 Crore under NMOOP-Mini Mission I – Oilseeds. The activities will be continued under NFSM – Oilseeds during 2018-19.

1.3.4.2.2. NFSM- Oil Palm

The programme is implemented with an aim to expand the area under Oil palm, supply quality planting materials besides to maintain the already established plantations by providing production inputs for intercropping, borewells, diesel/electrical pumpsets, Oilpalm fruit harvesting machineries and tools.

The scheme was implemented during 2017-18 with a financial allocation of Rs.4.43 Crore in all the districts except

Kanyakumari, Virudhunagar, Sivagangai, Chennai, Nilgiris, Thoothukudi and Madurai under NMOOP-Mini Mission II.

It is planned to continue this scheme during 2018-19 under NFSM – Oil Palm.

1.3.4.2.3. NFSM - Tree Borne Oilseeds (TBOs)

This mission, which focuses on promotion of nurseries of tree borne oilseeds and plantation of Neem and Pungam on waste lands and intercropping, is implemented in all districts except Tiruvallur, Tiruchirapalli, Ariyalur, Perambalur, Thanjavur, Tiruvarur, Nagapattinam, Kanyakumari, Chennai and The Nilgiris districts. The scheme was implemented with a financial allocation of Rs. 1.79 Crore during the year 2017-18 under NMOOP-Mini Mission-III.

The scheme will be continued during 2018-19 under NFSM – TBOs.

1.3.5. Coconut

Coconut is cultivated in Tamil Nadu in an extent of 4.34 Lakh Ha with an annual production of about 59,625 lakh nuts and productivity of 13,711 nuts per Hectare per year. There are better prospects in Tamil Nadu to bring more area under coconut and increase the production besides Value Addition in coconut. The Government of Tamil Nadu is implementing schemes like Coconut Development Board assisted schemes and National Agricultural Development programme for increasing the production of coconut.

1.3.5.1. Coconut Development Board assisted schemes include schemes like establishment of Regional Coconut Nurseries (for production of quality planting materials viz.,

Tall x Dwarf and Dwarf x Tall coconut seedlings), Integrated Farming for Productivity improvement (Laying of Demonstration plots), Replanting and Rejuvenation of coconut Garden (removal of old, senile and disease affected palms, Replanting of coconut seedlings and Rejuvenation of coconut gardens). During 2017-18, 5.08 lakh coconut seedlings were produced with an expenditure of Rs.125.11 Lakh and 555.45 ha was covered under demonstration with an expenditure of Rs.97.20 Lakh. Under Replanting and Rejuvenation scheme, 6,189.70 ha was covered with an expenditure of Rs.27.70 crore. All the schemes will be implemented in 2018-19 also.

1.3.5.2. National Agricultural Development Programme (NADP)

During 2017-18, under distribution of coconut seedlings scheme, 51,749 Coconut

seedlings were distributed with subsidy of Rs.12.15 Lakh. Apart from this, under control of red palm weevil scheme, 11,418 ha. was covered with a financial assistance of Rs.78.28 lakh.

1.3.5.3. Production of Neera

In order to protect the interest of the coconut growers, Government of Tamil Nadu has accorded permission vide G.O. No 41, Home, Prohibition & Excise (VIII) Dept Dated 21.12.2017 for the production of Neera from coconut tree. The process of recommending license to the Coconut Producers Company and further activities related to production of Neera is taken up by the Department of Agricultural marketing and Agri business and is discussed in the portion of Agri Business in detail.

1.3.6. Sugarcane

Sugarcane is a significant cash crop accounting for only 5 per cent of the total cropped area. It is cultivated normally in an area of 3.05 Lakh Ha in all the districts of Tamil Nadu except Chennai, Kannyakumari and Nilgiris with a normal production of 318 Lakh Metric Tonnes and an average productivity of 104 Metric Tonnes per Ha. The Government of Tamil Nadu has introduced a new technology called Sustainable Sugarcane Initiatives (SSI) which has the advantage of using single bud chip seedlings, less water and optimum utilization of fertilizers for augmenting the production and productivity of Sugarcane.

Sustainable Sugarcane Initiatives (SSI) is a novel technology promoted from 2011-12 with key practices like raising single bud chip sugarcane seedlings in protrays under shadenet,

production and distribution of single budchip seedlings, precision farming through drip fertigation, generating additional income through intercropping and also improving soil fertility. During 2017-18 the scheme was promoted with the close cooperation of Sugar Mills. 1,597 units of shade nets were installed and 9 crore seedlings were distributed to cover an area of 15,177 acres with an expenditure of Rs.18.33 Crore

During 2018-19, it is programmed to implement the scheme under National Agricultural Development Programme focussing more on increasing production, productivity and sugar recovery by rejuvenating old varieties and promotion of new varieties using Breeder seed and tissue culture seedlings, conducting Demonstrations on single bud chip seedlings & inter cropping in sugarcane and soil enrichment

through trash mulching using trash shredders in an area of 55,000 acre.

1.3.6.1. National Food Security Mission-Sugarcane: This mission mode approach on Sugarcane based cropping system of improvement is implemented in Cuddalore, Villupuram, Salem, Namakkal, Erode, Ariyalur, Thanjavur and Sugarcane Research Station, Cuddalore. During 2017-18, the activities such as Front line Demonstrations on intercropping with pulses, and State level training were implemented at a cost of Rs. 42.96 Lakh.

The mission will be continued during 2018-19.

1.3.7. Cotton:

Cotton is an important commercial crop that plays a pivotal role in promotion of textile industries and ensures stable income to Cotton growers. Cotton is cultivated in 25 districts

except Chennai, Kancheepuram, Tiruvallur, Karur, Pudukkottai, The Nilgiris and Kannyakumari in Tamil Nadu. The average production of cotton is 4 Lakh Bales of 170 kg of lint each, from an area of 1.51 Lakh Ha. The Government of Tamil Nadu is taking multifarious activities to promote area and production of cotton in Tamil Nadu.

1.3.7.1. Tamil Nadu Cotton Cultivation Mission:

An ambitious Tamil Nadu Cotton Cultivation Mission was launched in 2014-15 in the State to increase the productivity and production of cotton by expansion of cotton area. This mission was launched with an objective of bringing 6 Lakh acres (2.40 Lakh ha) over a period of five years.

Due to the earnest efforts taken by the Government such as adoption of water saving

techniques in irrigated & rainfed conditions and promotion of rice fallow cotton in delta districts during 2014-15, an additional area of 89,325 acre (35,730 ha) was covered under cotton.

Under this mission, activities such as area expansion through promotion of summer cotton in irrigated areas and Rice fallow cotton in delta areas, production and distribution of quality varietal seeds, Mechanized harvest, drip irrigation, improved agronomic practices and Integrated Irrigation, Nutrient, Weed and Pest management approaches are being implemented in the major cotton growing districts.

Apart from this, research on development of compact genotypes suitable for high density planting system and mechanized harvest are also initiated through Tamil Nadu Agricultural University.

During 2017-18, this scheme was implemented at a total cost of Rs.3.84 crore.

It is programmed to continue the Mission during 2018-19 with a financial outlay of Rs.10.62 Crore.

1.3.7.2. National Agricultural Developement Programme - Increasing Area and Production of Cotton

Interventions such as production and distribution of quality varietal seeds, Mechanized harvest through distribution of Cotton picking machine, distribution of safety equipments like IPM kit, delta trap for the control of pink boll worm will be implemented in co-ordination with South India Mills Association, Cotton Research and Development Association, Coimbatore. These activities will be taken up during 2018-19.

1.3.7.3. National Food Security Mission-Cotton

National Food Security Mission which mainly accentuates on Cropping System approaches in cotton is implemented in Villupuram, Salem, Dharmapuri, Coimbatore, Perambalur, Madurai, Dindigul, Theni, Tirunelveli, Virudhunagar, Thoothukudi and research stations of Tamil Nadu Agricultural University (TNAU). The interventions focused in the area of Frontline Demonstration on Integrated Crop Management, Desi and Extra Long Staple Cotton seed production, Intercropping and Trials on High Density Planting System for cotton crop were carried out during 2017-18 with an amount of Rs.47.15 lakh. This mission will be continued during 2018-19.

1.4. Special Schemes of Government of Tamil Nadu

The cultivation of water intensive crop i.e., paddy in delta region remained a stalemate

as water could not be released from Mettur Dam due to poor storage position and non-release of water from Karnataka State. Even though the situation was not conducive enough to take up cultivation due to erratic distribution of rainfall and delay in release of water from Mettur Reservoir which affected the normal cultivation of paddy in delta region, the Government was swift enough to announce special packages to manage the cultivation of crops by recommending less water intensive crops like pulses and other innovative interventions alternatively to sustain the crop production and to save the standing crops.

1.4.1. Kuruvai Cultivation Package – 2017

The Hon'ble Chief Minister announced the Kuruvai Cultivation Package 2017 at an outlay of Rs.56.92 Crore, to protect the welfare of the delta farmers and to encourage

the farmers to take up Kuruvai cultivation utilizing the ground water in six delta districts viz., Thanjavur, Nagapattinam, Tiruvarur and parts of Cuddalore, Tiruchirapalli and Ariyalur. This package was announced with an aim to promote less water intensive crops such as pulses instead of high water intensive paddy crop in the delta regions and also to maximize the yield of paddy and pulses by providing assistance for the use of productivity enhancing components. Under this package, 100% assistance was extended for machine transplantation, zinc sulphate and Bio-fertilizer in an area of 80,000 acres; distribution of micronutrient mixture for an area of 25,000 acres; promotion of pulses cultivation through distribution of High yielding pulses seeds; DAP foliar spray and Bio-fertilizer in an area of 57,743 acre**.**

Apart from this, ploughing subsidy was extended for an area of 60,000 acre to effectively utilize the rain water and available irrigation water, In addition, 1,574 units of water conveyance PVC pipes were also distributed at 75 % subsidy.

In Vennar basin of Cauvery Delta and Grand Anaicut region, green manure cultivation was promoted in an area of 20,682 acre to improve the soil health by distributing green manure seeds at 100 % subsidy. All these assistances were extended for the benefit of 1,64,215 farmers. **As a result, Paddy and Pulses were cultivated totally in an area of 3.43 Lakh Acre in the delta districts.**

1.4.2. Samba Cultivation Package – 2017

The Hon'ble Chief Minister of Tamil Nadu announced Samba Package 2017 with a budget outlay of Rs. 41.15 Crore on

28.09.2017 for implementation in Thanjavur, Tiruvarur, Nagapatinam and delta parts of Cuddalore, Pudukkottai, Ariyalur, Tiruchirapalli and Karur to protect the livelihood of the farmers. In view of water release from Mettur dam on 02.10.2017 due to lesser storage position, the farmers were encouraged to resort to direct sowing of Paddy as it had the advantages of lesser water requirement, lesser crop duration and lesser utilization of inputs. The package includes assistance for ploughing to encourage direct sowing in an area of 4.99 Lakh acres; subsidy for distribution of 3,638 Metric Tonnes certified quality seeds; application of weedicide to control weeds in direct sown area of 2.47 lakh acres, and distribution of 621 power tillers.

As a result, an area of 10.70 Lakh acre was covered during Samba season in delta

districts and 2,52,407 farmers were benefitted by availing the assistance.

1.4.3. Mission on Sustainable Dry land Agriculture (MSDA)

The Mission on Sustainable Dryland Agriculture, a new scheme, is a four year project and is being implemented in three phases from 2016-17 onwards with a total outlay of Rs.802.90 Crore for the development of 25 lakh acres of dryland in 25 Districts on cluster basis.

Under this scheme, activities of Department of Agriculture and line Departments such as Agriculture Engineering, Animal husbandry, Agricultural Marketing and Agri Business, TNAU and TANUVAS are integrated for comprehensive development of dry lands in a Mission mode approach.

The scheme mainly focuses on improving the production and productivity of Millets, Pulses, Oilseeds and Cotton. Activities such as baseline survey, formation of village level Farmers Club, Capacity Building, Entry Point Activities, Summer ploughing/ Establishment of water harvesting structures, Agronomic interventions-assistance for seed and other inputs, Assistance for value addition, Assistance for creation of Custom Hiring Centres, Animal Husbandry activities and distribution of fruit seedlings are being taken up to supplement farm income.

During 2017-18, the left over activities in 200 clusters of Phase-I and initial activities in 400 Clusters of Phase –II were carried out with an expenditure of Rs.153.67 Crore.

Activities implemented upto 2017-18

A. Base line Survey

Base line survey was completed in 200 Dryland Clusters of Phase I clusters with Primary Agricultural Co-operative Credit Societies (PACCS) as Nodal Agency at an expenditure of Rs.50 Lakh @ Rs.25,000/- per Cluster during 2016-17. Similarly, Base line survey was conducted in Phase II 400 clusters at a cost of Rs.1 Crore during 2017-18.

B. Farmers' club

Farmers clubs are decision making units that identify common needs of farmers at village Panchayat level. During 2016-17, 876 such farmers clubs have been formed in Phase I 200 clusters by extending financial assistance of Rs.10,000 per club with a financial allocation of

Rs.87.60 Lakh and registered under the Societies Act. During 2017-18, 1,541 farmers club have been formed in Phase II 400 clusters and Rs.1.54 Crore have been spent.

C. Capacity building activities

Capaciaty Building activities have been conducted for skill development of farmers and officers at a total cost of Rs.1.39 Crore for phase I 200 clusters. Totally, 1,125 Officers and 46,428 farmers were trained during 2016-17. Similarly, Rs. 4.16 Crore has been released for Capacity building programme during 2017-18 for Phase II Clusters. A total of 2,120 officers and 1.55 Lakh farmers were given training.

D. Entry Point Activity

Water Harvesting structures have been established under Entry Point Activities

(EPA) component @ Rs.5 Lakh per Cluster, to effectively harvest rainwater in the Clusters. Utilizing the total outlay of Rs.10 Crore, 311 structures including 210 checkdams, 14 village ponds, 32 community ponds and 55 deepening of Ooranies were established in Phase I – 200 Clusters during 2016-17. Further, Rs. 20 Crore is allocated under EPA for Phase II - 400 clusters during 2017-18 and the implementation of activities is in progress.

E. Land Development activities

i. **Summer ploughing**: An assistance of Rs.1,250/- per ha is given to beneficiary farmer as back ended subsidy for summer ploughing to conserve soil moisture. During 2017-18, a sum of Rs.25 Crore has been given as back ended subsidy to

2,11,532 dry land farmers covering 2 lakh ha. in Phase I - 200 clusters

ii. **Establishment of Water Harvesting Structures:** During 2017-18, a sum of Rs.15 Crore has been spent @ Rs.7.50 Lakh per cluster, in Phase I - 200 clusters, for the creation of water harvesting structures such as Field Bunds, Farm ponds and Deepening of Ooranies (Ramanathapuram District) to reduce soil erosion and conserve rain water in farmer's land and the implementation of activities is in progress.

F. Distribution of Seeds and Other inputs (Agronomic Intervention)

During 2017-18 a sum of Rs.50 Crore is extended to the farmers as 50% subsidy for Seeds and other critical inputs and about 5 lakh acres have been covered in Phase-I -

200 clusters for the cultivation of Millets, Pulses, Oil seeds and Cotton.

G. Setting up of Value Addition machinery Units

The State Government has permitted to extend assistance to active Farmers Producer Organisations / Farmers Producers Groups formed under Collective Farming for setting up Value addition Machineries such as Mini dhal mill, Millet processing units and oil expellers in 50 clusters on pilot basis with the subsidy pattern of Rs.10 Lakh / Cluster or 75 % of the machinery cost whichever is lesser for a sum of Rs. 5 Crore. The programme is under implementation.

H. Custom Hiring Centres were established for the benefit of unemployed rural youth with the back ended subsidy of Rs.8 Lakh per cluster to the Farmers Groups for purchasing Agricultural machinery. Utilizing the total outlay

of Rs.16 Crore, 200 Custom Hiring Centres have been established in 24 districts.

I. Animal Husbandry

A sum of Rs. 20 Crore has been provided @ Rs. 10 lakh per cluster for Animal Husbandry activities to maintain cattle health in 200 clusters with Mineral Mixtures and Medicines for Reproductive health and Udder health packages.

J. Supply of Pomegranate & Amla seedlings

During 2017-18, 7,540 Pomegranate and 32,755 Amla seedlings were distributed to dryland farmers in 200 clusters. Balance Seedlings (Pomegranate 14,480 and Amla 51,723) will be distributed immediately after the onset of monsoon.

During 2018-19, balance activities of Phase II 400 Clusters and Initial activities of Phase-III

400 clusters are proposed to be takenup to the tune of Rs.321.16 Crore.

1.4.4. National Mission for Sustainable Agriculture - Rainfed Area Development (RAD)

Rainfed Area Development is being implemented in 21 districts except Chennai, The Nilgiris, Thanjavur, Nagapattinam, Tiruvarur, Tiruchirapalli, Kancheepuram, Tiruvallur, Theni, Tirunelveli and Kanyakumari, to enhance the income of rainfed farmers and to increase the productivity of rainfed crops under National Mission for Sustainable Agriculture (NMSA).

1.4.4.1. Integrated Farming System in Rainfed Areas

The State focuses mainly on small and marginal farmers for promoting the concept of Integrated Farming System involving cropping

systems, milch animals, small ruminants to sustain the livelihood and food security at farm level and at the same time insulating the farmers from any possible crop failure through supplementary production / income derived from residual production systems.

Assistance of Rs. 27,500 is provided for milch cow (1 number) at 50% subsidy along with any of the following cropping system viz.,Cereal / pulses / oilseed / Fibre with inter crop and border crop plantation. Also, Rs.23,500 is being provided for small ruminants (9 female +1 male) at 50% subsidy along with any of the following cropping system viz.,Cereal / pulses/ oilseed/ Fibre crop with inter crop and border crop.

During 2017-18, Integrated Farming System was implemented in 10,376 ha along with distribution of 8,541 Milch animals and

18,350 small ruminants at an expenditure of Rs.27.79 Crore benefitting 10,376 farmers.

1.4.4.2. Value addition and Resource conservation

Under this component, 50% assistance is being provided to farmers for establishing Permanent vermicompost unit @ Rs. 25,000/- per unit and Rs. 6,000/- per unit is provided for establishing HDPE vermi bed. Further, trainings on Integrated Farming System are also conducted for farmers @ Rs.10,000/Training.

During 2017-18, assistance was provided for 1,040 permanent and temporary vermi compost units expending Rs. 1.61 crore.

The scheme Rainfed Area Development with the above components was implemented in 2017-18 with a total outlay of Rs. 30 crore.

During 2018-19 also, the Scheme will be continued with components such as Cropping system suitable for each area, Tree/Silvi pastural/in-situ/ex-situ conservation of Non-Timber Forest Produce (NTFP); permanent vermicompost units and Apiary.

1.4.5. Collective Farming:

Small and Marginal farmers individually have limited capacity to mobilize credit, adopt innovative technologies and to add value to their agricultural produce. Collective approach of organizing the farmers into groups enables them to overcome these challenges, makes them avail these benefits and increases their income. Hence, the Government of Tamil Nadu has announced in the Budget Speech 2017-18 an innovative programme for organizing Small and Marginal Farmers into "Farmer Producer Groups“ which will be federated into "Farmer

Producer Companies“ to promote collective farming for credit mobilization, better adoption of technology and facilitate effective forward and backward linkages.

The synergic movement of farmers empowers their bargaining strength, saving money on Collective purchase of agricultural inputs, collective management of crop cultivation, post harvest management, momentum in value chain and supply chain concepts to reach remunerative price for their produce when marketed collectively.

In 2017-18, 20 small and marginal farmers residing in a village were integrated into Farmers Interest Groups (FIG) and toally 10,000 such FIGs were formed at State level. Five such FIGs were integrated into one Farmer Producer Group (FPG) and totally, 2,000 FPGs were formed with each FPG comprising 100 farmers and covered

two lakh farmers. Seven to ten such FPGs within a district are being federated to form Farmer Producer Companies (FPC). Each Farmer Producer Group was given a corpus fund of Rs.5 lakh by the Government of Tamil Nadu using which the farmers purchased Farm machineries like Tractor, Rotovator, Seed Drill etc., for their common use. During 2017-18, 1,988 Farmer Producer Groups purchased 8,721 Farm Machineries at a total cost of Rs.99.40 Crore and benefitted 1,98,800 small and marginal farmers. Further, Department of Agricultural Marketing and Agribusiness is taking efforts for federating FPGs into FPCs for channelizing funds from Small Farmer Agri Business Consortium.

During 2018-19, another 2,000 Farmer Producer Groups (FPGs) will be formed by organizing 2 Lakh Small and Marginal

Farmers with the financial assistance of Rs.100.42 Crore and upgrade them into Farmer Producer Companies.

1.4.6. Integrated Farming System (IFS)

Integrated Farming System – a farm level intervention to increase farmers' income and livelihood security will be implemented for increasing farm productivity in a sustained manner by adopting appropriate IFS for different agro climatic zones through the technical guidance from Tamil Nadu Agricultural University and Krishi Vigyan Kendras.

During 2018-19, 2,500 IFS units will be established in five districts viz., Tirunelveli, Madurai, Thanjavur, Villupuram, Erode in five blocks each @ 500 units/block representing four agro climatic zones. Either of the three IFS models viz., Wetland, Garden land and Rainfed

models would be established by providing 50% assistance to each IFS unit to the maximum of Rs.1 lakh with the major components such as distribution of Desi cows, Goat, Desi poultry birds, Kitchen garden, Horticultural fruit plants & fodder crops, Duckery, Bio gas plant, farm pond, Apiary, Agro forestry, fodder trees & Slips and Permanent Vermi Compost unit etc., Around 5,000 beneficiaries from farmer families would be benefitted under this project. Further capacity building programme for farmers and officials and exposure visit to farmers would be conducted. The project will be implemented with a total outlay of Rs.50 Crore.

1.5. Climate Change Resilient Measures

Agriculture is a high risk economic activity which is exacerbated by a variety of factors such as agro climatic attributes, weather varialibilty, frequent natural disasters, diminishing water

resources and inadequate and untimely financial services. These factors not only endanger the livelihood and income of farmers but also undermine the viability of Agriculture sector and its potential to alleviate the poverty of farmers.

The Government which is resolved to administer the appalling effects of the climate change on Agriculture, has devised various strategies such as formulating systematic and integrated micro level planning for irrigation management, promoting use of climate resilient inputs, adoption of micro irrigation techniques and adoption of Weather based technologies. Further, risk mitigation measures such as providing relief assistance, Crop Insurance and Crop diversification are being advocated to revive the livelihood of farmers and to minimize the monetary loss of farmers.

1.5.1. Crop Damages Due To Cyclone Ockhi 2017

The cyclone 'OCKHI' which hit the southern coastal districts of Tamil Nadu on 30.11.17, with a wind speed of about 55 to 65 Km/h followed by heavy rainfall in Kanyakumari and Tirunelveli Districts inundated paddy crop raised in an area of 10,547 acre and the heavy wind in Kannyakumari district uprooted several coconut trees resulting in colossal crop damage.

The Government resorted to immediate remedial measures by assisting the farmers in draining the excess water, Gap filling with paddy seedlings, foliar spray with urea and zinc sulphate and active plant protection measures to mitigate the crop damage, due to which 88% of the inundated cropped area were revived from damage.

Government of Tamil Nadu has provided input subsidy of Rs. 79.04 Lakh for an area of

1351.48 acres of agriculural crops affected in Kanyakumari and Tirunelveli Districts from State Disaster Response Fund and directly credited to the account of 4,879 affected farmers.

1.5.2. Crop Insurance

Tamil Nadu agriculture is frequently riddled with natural calamities such as flood, drought and cyclone which disturb the crop cycle. This impacts the production and productivity of crops inspite of the combined efforts of farmers, Government and other stake holders to make Agriculture, a profitable venture. These exintric factors not only endanger the livelihoods and income of small farmers but also undermine the viability of the agriculture sector and its potential to alleviate poverty of the farmers. This is where Crop Insurance comes as handy to the poor farmers who are entangled by various risk factors for which the State Government is implementing Crop Insurance Schemes viz.,

Pradhan Mantri Fasal Bima Yojana (PMFBY) and Coconut Palm Insurance Scheme to extend financial support to farmers suffering from crop loss/damage arising out of unforeseen events; stabilize the income of farmers to ensure their continuance in farming and encourage the farmers to adopt innovative and modern agricultural practices.

Pradhan Mantri Fasal Bima Yojana(PMFBY) is implemented from Kharif, 2016 onwards in all the districts of Tamil Nadu except Chennai. The districts were categorised into three clusters and implemented by three Insurance Companies viz., Agriculture Insurance Company of India Limited, ICICI Lombard GIC and New India Assurance Company Limited during 2016-17 and 2017-18. During 2018-19, the programme will be implemented by three Insurance Companies viz., Agriculture Insurance Company of India Limited, Cholamandalam GIC and New India Assurance Company Limited. This

scheme covers risks like failed sowing/ prevented sowing/planting, post harvest losses, localized calamities (Cyclone, hail storm, landslide, unseasonal rains and inundation in isolated farm) which were not covered under National Agricultural Insurance Scheme (NAIS) implemented besides early payment of compensation to farmers for their crop loss during mid season adversities. **Uniform Seasonality discipline for enrollment and premium amount for loanee and non loanee farmers** is the other benefit under this scheme. Further, the farmers will get accurate compensation for crop loss since **revenue village has been notified as the unit of insurance** for major crops like Paddy, Maize, Black gram, Green gram, Groundnut, cotton, sugarcane etc.

All food crops (Cereals, millets & pulses), oilseeds, cotton, sugarcane, annual / commercial crops are insured under this scheme. All loanee

farmers growing notified crops are enrolled compulsorily, while non-loanee farmers are enrolled on voluntary basis. The premium amount excluding the farmer's share is equally shared by the Central and State Government. The farmer's share of premium for the agricultural crops is as follows:

Table 1.6 : Farmer's share of premium for the agricultural crops

Crops	Season	Rate of Maximum insurance charges payable by farmers
All food grain crops (all cereals, millets & pulses) and Oilseed crops	Kharif	2% of sum insured or actuarial rate whichever is less
	Rabi	1.5% sum insured or actuarial rate whichever is less
Annual commercial/ Annual Horticultural crops	Kharif and Rabi	5% of the sum insured or actuarial rate whichever is less

During 2017-18, it was programmed to insure 40 percent of the Gross cropped area. About **13.91 lakh farmers (3.27 lakh loanee and 10.64 lakh non-loanee) farmers have been enrolled covering an area of 27.56 Lakh acre so far.** A sum of **Rs.522 crore** has been allocated by the State Government towards payment of state share of premium subsidy to the Insurance Companies and a sum of Rs.309.40 crore has been released to Insurance Companies.

During **2018-19**, the programme will be continued and it is programmed to cover 50% of the gross cropped under Crop Insurance. Besides PMFBY, **Coconut Palm Insurance Scheme (CPIS)** which is already under implementation will also be continued in all the districts.

Compensation under Crop Insurance Schemes

i. **PMFBY, 2016-17:** During **2016-17**, a sum of **Rs.565 crore** was released to the Insurance Companies as State share of **premium subsidy,** so far an amount of **Rs.3,274 crore** has been sanctioned as **compensation claims** to **10.78 lakh farmers of which Rs. 3,137 crore has been released to 10.29 Lakh farmers and Rs. 3,018 crore has been credited to 9.71 lakh farmers account. Tamil Nadu stands first among all States / UTs in disbursement of claims to farmers.**

ii. **National Agricultural Insurance Scheme (NAIS),2015-16:** During 2015-16, a sum of Rs.51.46 crore was

released to the Agriculture Insurance Company of India Limited towards 50% State share of premium subsidy and a total sum of **Rs.494.20 crore has been disbursed to 3.62 lakh farmers as compensation amount for affected Paddy II and Rabi crops.**

1.6. Tamil Nadu State Seed Development Agency (TANSEDA)

Tamil Nadu State Seed Development Agency (TANSEDA) was functioning to ensure the timely supply of good quality certified seeds and to encourage the usage of certified seeds among the farmers. TANSEDA was registered as a society under TN Societies Registration rule 1978 under Act 27 of 1975 on 30.04.2015.

Under the control of TANSEDA, there are 880 Agricultural Extension Centres (Amma sevai Maiyams), 40 State Seed Farms, 23 Government

Coconut Nurseries, 16 Coconut Crossing Centers and 116 Seed Processing Units (SPU) out of which 35 modernized seed processing units functioning for the production and distribution of quality seeds of Paddy, Millets, Pulses, Oilseeds, Cotton and Coconut seedlings.

During 2017-18, 26,189 Metric Tonnes of quality certified seeds of Paddy, Millets, Pulses, Oilseeds and Cotton were procured and 23,271 Metric Tonnes certified seeds and 12.93 lakhs of coconut seedlings were distributed to the farmers. The detailed programmes made during 2017-18 are as follows.

Table 1.7: Seed Procurement and Distribution– 2017-18.

Crop	Seed Procurement (Metric Tonnes)		Seed distribution (Metric Tonnes)	
	Target	Acht.	Target	Acht.
Paddy	17,800	17,439	17,800	13,535
Millets	400	573	400	1,037
Pulses	4,000	4,699	4,000	4,328
Oilseeds	3,000	3,459	3,000	4,354
Cotton	40	19	40	17
Total	**25,240**	**26,189**	**25,240**	**23,271**
Coconut Seedling (Lakh Nos)	13.50	11.45	9.55	12.93

After the inception of TANSEDA, uniform seed price policy is adopted for agricultural crops throughout the State. This encourages participation of more number of farmers to organize seed farms to produce quality seeds.

The Seed plan for the year 2018-19 is as follows:

Table 1.8: Seed Procurement and Distribution Plan – 2018-19

Crop	Seed Procurement (Metric Tonnes)	Seed distribution (Metric Tonnes)
Paddy	17,800	17,800
Millets	400	400
Pulses	4,500	4,500
Oilseeds	3,500	3,500
Cotton	20	20
Coconut Seedlings (Lakh Nos.)	10.50	10.50

During 2017-18, Rs.110.48 crore was released to carry out all seed related activities like Procurement of Agricultural inputs, Materials and Supplies, Service & Commitment Charges, Transport Charges and Wages & Operational cost.

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

Sub-Mission on Seeds and Planting Material (SMSP) under National Mission on Agricultural Extension and Technology (NMAET) has been conceptualised to cover the entire gamut of seed chain for distribution to the farmers and also provide support for infrastructure for development of seed sector in all districts except The Nilgiris and Chennai. As a part of this initiative, activities such as distribution of Foundation/Certified seeds of paddy, millets, pulses and oilseeds 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 was implemented during 2017-18 with an amount of Rs. 21.89 Crore.

It is proposed to continue the scheme during 2018-19 also.

1.7. Plant Protection

State Government is motivating adoption of **sustainable, environment friendly, cost effective innovative technologies to achieve remarkable crop production**. As part of this, the State is advocating various elegance in creating awareness on plant protection measures, ill effects of indiscriminate usage of chemical pesticides, conducting intensive pest surveillance, advocating Integrated plant health management, promoting knowledge on local production of bio-control agents, appraising and adoption of traditional method in plant protection and implementing Integrated Pest Management (IPM) practices.

Government has set up automatic weather stations at block level to record weather

parameters and issue pest forecast bulletins to farmers besides, increasing the efficiency and capacity of the existing infrastructure to intensify the production of Bio-control agents and quality control of Plant protection chemicals. The quantity of plant protection chemicals distributed during 2017-18 is furnished below:

Table 1.9 : Distribution of Plant Protection Chemicals during 2017-18

Component	Quantity	Value (Rs in crore)
Dust(MT)	3,086	5.64
Liquid(Lit)	4,98,592	32.85

1.7.1. Pest and Disease Surveillance

Monitoring the occurrence of pest and disease is a vital step in protecting the crop and to increase Crop Production and Productivity. As part of this, pest and disease surveillance is done through Fixed Plot survey and Roving

survey conducted at weekly interval and on daily basis respectively, besides, monitoring and forewarning on pest and diseases outbreak. Occurrence of pest and diseases, location and crop specific advisories, Location / crop / pest specific control measures are recommended to the farmers through SMS, Voice advisories, radio, television, pamphlets, campaigns, News papers etc.

1.7.2. Integrated Plant Health Management

Government of Tamil Nadu which is consistent on safeguarding the biodiversity in the Agro Eco system from indiscriminate use of Chemical herbicides and other pesticides adopts **Agro-Ecosystem Analysis (AESA) 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 a measure of this continuous efforts to encourage the farmers in integrated pest management and to maintain Eco-friendly poison free food production for the healthy generation, Government of Tamil Nadu has promoted "**Eco-Friendly Integrated Pest Management Villages" since 2015-16 to**

reduce the use of Chemical pesticides for crop protection. As part of this, on-farm production of Bio Control Agents in the farmers' field that are being used for their own use and also for sale. So far, 250 Model IPM villages have been established.

1.7.3. Popularization of solar power light traps

With an aim to adopt Eco friendly approach to protect human health care, ensure residue free products, prevent usage of chemical pesticide besides popularizing integrated pest management among farmers, "Solar Powered Light Traps" are being distributed to the farmers. Light traps attract and destroy harmful insects in the field. During 2017-18, 20,000 Solar Light Traps were distributed with an outlay of Rs. 4 Crore @ 50% subsidy on the cost or Rs.2,000/- whichever is less.

1.7.4 Awarness on Safe usage of Pesticide

The State has taken continuous efforts to protect the farmers health from pesticide inhalation hazards and reduce the pesticide residues in the food crops such as awareness creation through Flex boards, phamplets with the details of Do's and Don'ts , training to all the field staffs, farmers, spray men and pesticide Dealers on safe usage of pesticide. Quality of pesticides has been continuously monitored by Pesticide Inspectors. Screening short film for the safe usage of pesticides is also undertaken in all the farmers meeting in the entire state.

1.8. Fertilizers

Fertilizers are plant nutrients that are essential for crop growth and development which play a vital role in enhancing production and productivity of Agricultural Crops. Every year, Fertilizer plan is drawn by the Department

of Agriculture based on cropping pattern, season, soil type, soil fertility status and farm – wise crop plan, besides focusing on affordability of the farmers. The State Government is also taking sincere efforts to get allocation of fertilizers from Government of India in time; prepare season – wise supply plan and preposition the required quantity of fertilizers to ensure adequate availability of fertilizers to the farmers in time.

The fertilizer distribution during 2017-18 and requirement for 2018-19 is furnished below:

Table 1.10 : Fertilizer distribution during 2017-18 and Requirement for 2018-19

(Lakh MT)

Fertilizer	Distribution 2017-18	Requirement 2018-19		
		Kharif	Rabi	Total
Urea	9.23	3.00	6.90	9.90
DAP	2.75	1.00	1.25	2.25
MOP	3.40	1.50	3.10	4.60
Complex	4.86	2.00	3.90	5.90

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

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

The fertilizer transaction through Point of Sale devices has been commenced from 1st January 2018 at all the fertilizer retail points in the State by following the Government of India guidelines. Under this unique Direct Benifit Transfer (DBT) scheme for fertilizer, the **subsidy amount will be released to the manufacturer/Importer of fertilizer only after the sale is made to individual farmer through PoS devices.**

Accordingly, the sale of all subsidized fertilizers to farmers/buyers would be made through Point of Sale (PoS) devices installed at each retailer shop and the beneficiaries will be identified **through Aadhaar card or Kisan**

Credit Card (KCC) or Voter Identity Card. The manufacturers/importers can claim the subsidy only after the sales made to farmers through PoS devices. Further, it is highlighted that **farmers need not pay additional money more than existing subsidized rate** of fertilizer which is the MRP of the fertiliser grade.

Major salient points of fertilizer transaction through Point of Sale device

- Availability of complete detail of seller and buyer of fertilizer.
- Farmers can purchase fertilizer in a transparent way (no possibility for purchasing fertilizer at higher price)
- Farmer can be allowed to purchase fertilizer, based on Soil Test recommendation / Village fertilizer index or on his own assessment.
- Diversion of fertilizer to non-agricultural purpose will be completely eliminated.

- Fertilizer consumption can be assessed on real time basis enabling the fertilizer movement to needy places.
- Farmers are encouraged to apply balanced and judicious application of fertilizer.

So far, 11,442 PoS devices have been deployed covering both Primary Agriculture Co-operative Credit Societies(PACCS) and Private fertilizer retail points.

The DBT of Fertilizer distribution through POS is monitored by State/District level Nodal officers and District level committees.

1.9. Soil Health

Soil is the basic medium and storehouse of nutrients which determines the suitability of crop in turn a key factor responsible for crop production and productivity. Environmental factors coupled with crop cultivation may lead to depletion of essential nutrients required for crop

growth causing reduction in production and productivity. Tamil Nadu, which determined to restore the soil health of farm holdings, launched "Mission Soil Health Card" during 2015-16 and advocated appropriate fertilizer recommendations based on soil test values.

Under this scheme, during first cycle (2015-16 and 2016-17) 12.87 Lakh soil samples have been collected & analyzed and 67.67 Lakh Soil health cards have been distributed based on grid sampling.

During 2017-18, 6.55 lakh soil samples have been collected and analyzed, So far, 25.88 lakh Soil Health cards were distributed to the farmers.

During 2018-19, it is programmed to collect and analyze 6.45 lakh soil samples and distribute 35 Lakh Soil Health cards based on the soil test values to Farmers.

1.9.1. Soil Survey and Land use Organization:

The objective of this organizatoin is to conduct Soil Survey and Soil resources inventory including the nature of soil occurring in the area, their morphological, physical and chemical characteristics through field studies and laboratory analysis according to internationally recognized system of soil classification and mapping their extent on standard topographic base maps and finally interpreting for variety of uses. The above survey is being taken up through the four soil survey units at Coimbatore, Thanjavur, Vellore and Tirunelveli. During 2017-18, 51,678 ha of area has been surveyed. This programme will be continued in 2018-19 also.

1.9.2. Biological Management of Soil

"Eco-agriculture", is now gaining momentum for conserving biodiversity of soil for enhancing agricultural production and improving livelihood of the famers. The Government of Tamil Nadu is taking strategic innovations encouraging soil, water and crop management which enhance resource use efficiency, decrease production-technology risk in farm holdings, increase profitability and ensure production that have limited negative impacts on surroundings under Agricultural ecosystems.

1.9.2.1. Production and Distribution of Blue Green Algae

The utilization of Blue green algae as a bio-fertilizer for Paddy crop in supplementing nitrogen is highly promising. The Blue Green Algae is produced in the State Seed Farms and distributed to the paddy growing farmers.

During 2017-18, 516 Metric Tonnes of Blue Green Algae has been produced and distributed with a financial achievement of Rs.15.71 lakh.

The programme will be continued during 2018-19 also.

1.9.2.2. Procurement and Distribution of Green Manure Seeds

Green manure crops harbours Nitrogen fixing bacteria, rhizobia in root nodules which fix the atmospheric Nitrogen (60 to 100 kg of N/ha) and increase the solubility of lime phosphates, trace elements etc., through the activity of the soil micro-organisms by producing organic acids during decomposition.

In order to enhance the soil organic matter and to promote the concept of green manuring among the farmers, 257 Metric Tonnes were

distributed expending Rs.1.5 crore under State scheme in 2017-18.

To promote green manuring in more area, Green manure seeds were distributed under National Agricutlural Development Programme at 50% subsidy to an extent of 25,889 ha with an expenditure of Rs.3.77 crore. This programme will be continued in 2018-19 also.

1.9.2.3. Production and Distribution of Pleurotus kits

Using compost is an effective way to increase healthy plant production, reduce the use of chemical fertilizers and conserve natural resources. Pleurotus kits are distributed to the farmers at free of cost to produce compost from farm waste using Pleurotus. During 2017-18, 5,000 Pleurotus kits have been distributed expending Rs.10 Lakh. This programme will be continued in 2018-19 also.

1.9.3. Paramparagat Krishi Vikas Yojana (PKVY)

PKVY is a three year continuous project under National Mission for Sustainable Agriculture (NMSA) implemented from 2015-16 in Tamil Nadu, that aims at promotion of organic farming through cluster approach under Participatory Guarantee System (PGS) of certification. Under this scheme, financial assistance is extended for mobilization of farmers, capacity building, procurement of organic inputs and establishment of organic input production unit, residue analysis, packing, labelling and branding of organic products of cluster. The organic products would be certified on the basis of peer inspection (Lead Resource Person inspection). The scheme is being implemented in 42 clusters covering 2,096 acres in 10 districts by the Department of Agriculture.

The first year activities has been completed expending Rs.295.83 Lakh and second year activities was implemented in 2017-18 expending Rs. 198.22 Lakh. The PGS certified organic produce like Paddy, millets and pulses from the PKVY clusters are marketed in the brand name Tamil Nadu Organic Products (TOP). The third year activities would be taken up during 2018-19 with a financial outlay of Rs.121.63 Lakh.

Further, in 2018-19, it is proposed to form more new clusters under organic farming through Participatory Guarantee System of certification.

1.10. Training to Farmers

Training helps the farmers to gain specific knowledge or skills to improve performance in their regular agricultural activities in the field. It focuses on famers' growth and remunerative

income from their farms and allied sector. Training provides **"Empowerment of farmers"** on decision making in the areas of intensification of crop production and also diversification of their farm enterprises for improving their livelihoods.

Training such as Production oriented, need based short and long duration on – campus and off-campus village based training programmes, method demonstrations and Awareness campaigns are organized under various schemes to make the farmers aware 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 programme is implemented in all districts except Chennai with co-ordinated efforts of Departments of Agriculture, Horticulture and Plantation Crops, Animal Husbandry, Sericulture, Fisheries, Forestry, Agricultural Engineering, Agricultural Marketing and Agri-Business, Seed Certification and Organic Certification, Tamil Nadu Agricultural University, Tamil Nadu University for Veterinary and Animal Sciences and Tamil Nadu Fisheries University.

This Programme includes cafeteria of activities such as Training, Demonstration, Exposure visit, Awards, Information Dissemination activities, Farmers Scientist Interactions, Joint Visits by Scientists and Extension Workers, Organising Kisan Gosthies,

Assessment, Refinement and Validation, Farm School, Innovative activities and Innovative Technology Dissemination Components implemented within the District, State and at Inter-State level during 2017-18 at a cost of Rs.41.75 crore.

It is programmed to implement this scheme with a financial outlay of Rs.75 Crore during the year 2018-19.

1.10.2. Farmers Facilitation Centres

Government of Tamil Nadu is rapidly motivating the farming community through its **22 Farmers Training Centres (FTC) functioning all over the State** 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

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

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) was established in 2012-13 in the premises of STAMIN, to provide consultancy services in areas of project planning, project appraisal, etc.,

Trainings are being imparted to farmers and field functionaries on irrigation technologies and irrigation efficiency at **Water Management Training Centre** at Vinayagapuram, Madurai district since 1985 with a capacity to train 180 field functionaries and 900 farmers annually.

1.10.3. Invigorating Extension System

The Government of Tamil Nadu has strengthened and revamped the existing agriculture extension system through the introduction of Farmers Oriented Integrated Agricultural Extension System. **Fixed schedule of visit for agriculture extension functionaries** who have a direct interface with the individual farmers, farmer clusters and commodity groups etc., are formulated to identify and channelize the field level predicament for improved technological way out.

Under this system, 12,620 village panchayats in 385 blocks are visited by 1,918 Assistant Agricultural Officers (AAO) with fixed schedule plan. 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 in a week to inspect and Deputy Director of Agriculture and Joint Director of Agriculture will make 2 visits in a week for super check.

1.11. Laboratories for Quality Control and Soil Test

The quality of the fertilizers and pesticides are scientifically proven by the estimation of the constituent in the materials analyzed in the Laboratories functioning in the State.

In Tamil Nadu **31** Soil Testing Laboratories, 16 Mobile Soil Testing Laboratories, 14 **Fertilizer Control Laboratories, 15 Pesticide Testing Laboratories (Including 3 Pesticide Testing Laboratories cum Coding centres) One Bio-Fertilizer Quality Control Laboratory, One** Central Control Laboratory **and 2 Organic Fertilizer Testing Laboratories** are functioning.

Government with an aim to increase the analytical performance and **quality control** has constructed new buildings for the laboratories in a phased manner.

The Government is taking authoritative efforts to ensure the quality of fertilizers and pesticides and strictly enforces the provisions of the Fertilizer Control Order (FCO), 1985 enacted under The Essential Commodities Act, 1955 and the Insecticide Act 1968 and Insecticide Rules, 1971 respectively. Fourteen **Fertilizer Control Laboratories** are functioning in the State to test Fertilizer samples collected by Quality Control Inspectors.

During the year 2017-18, 19,672 Fertilizer samples have been analyzed and 730 samples were found non-standard. Action has been taken against all the defaulters. During 2018-19, it is

programmed to analyze 19,600 fertilizer samples.

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

Table1.12: Fertilizer Control Laboratories

S.No.	District	Location
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 included under FCO, 1985, have established two **Organic Fertilizer Testing Laboratories** at Tiruchirapalli and Coimbatore. During 2017-18, 1,273 samples have been analysed.

In order to ensure use of quality pesticides, the Department operates 15 Pesticide Testing Laboratories (PTL) (Including 3 Pesticide Testing Laboratories cum Coding centres). These laboratories check the quality of pesticides by testing samples drawn by the Quality Control Inspectors from Pesticide Manufacturing Units and private sale outlets, in accordance to the Insecticide Act, 1968 and Insecticide Rules, 1971.

During 2017-18, 21,226 samples have been analysed of which 146 samples were found to be misbranded and necessary action has been taken against the defaulters. It is programmed to analyze 21,850 pesticide samples during 2018-19. Government is also taking special efforts to strengthen two Pesticide Testing Laboratories at Kancheepuram and Coimbatore for obtaining accreditation from National Accreditation Board for Testing and Calibration Laboratories (NABL).

Government has issued notification and established 3 tier coding system through Pesticide Testing Laboratory cum Coding centre at Cuddalore, Erode and Theni.

Table 1.13 : Pesticide Testing Laboratories(PTLs) functioning in the State

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

The Central Control Laboratory located at Kudumianmalai, Pudukottai 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 recommendation. State 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

S. No	District	STL*		MSTL**	
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		
8	Namakkal	8	Namakkal	4	Tiruchengode
9	Dharmapuri	9	Dharmapuri		
10	Krishnagiri	10	Krishnagiri	5	Krishnagiri
11	Coimbatore	11	Coimbatore		
12	Tiruppur	12	Tiruppur	6	Tiruppur
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	Kudumiyan-malai		
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		

S. No	District	STL*		MSTL**	
25	Ramanathapuram	25	Paramakudi	13	Paramakudi
26	Sivagangai	26	Sivagangai		
27	Virudunagar	27	Virudhunagar	14	Aruppukkottai
28	Tirunelveli	28	Tirunelveli		
29	Thoothukudi	29	Kovilpatti	15	Kovilpatti
30	Kanyakumari	30	Nagercoil	16	Nagercoil
31	The Nilgris	31	Ooty		

(*)- STL - Soil Testing Laboratories.
(**)- MSTL - Mobile SOIL Testing Laboratories.

1.12. Infrastructure

The Department 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' Hubs, 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.

1.12.1. Production Units for Agricultural Inputs

The Department has established a vibrant seed agency – **"Tamil Nadu State Seed Development Agency (TANSEDA)"** for advance seed planning and formulating a perspective plan for organised seed production and distribution and improving farmers' livelihood through sustainable, innovative and

market-led seed network, procure and distribute adequate good quality certified seeds/seedlings of all agricultural crops, popularizing new cultivars / varieties, 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.

1.12.1.1. State Seed Farms and Coconut Nurseries

Forty State Seed Farms play a vital role in ensuring mass production and timely availability of adequate quantity of improved seeds / planting materials besides serving as model farms to demonstrate the latest technologies to the farmers.

Table 1.15: Seed Production Units

Table 1.15(a): State Seed Farms

S. No	District	Name of the State Seed farm	Total area (acres)
1	Kancheepuram	Panjupettai	58.76
2	Tiruvallur	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	Papparapatti	14.80
16	Tiruppur	Pappankulam	26.88
17	Pudukkottai	Annapannai	601.95
18	Tiruchirapalli	Pudurpalayam	75.97
19		Neikuppaipudur	38.57
20	Karur	Inungur	205.44
21	Thanjavur	Sakkottai	72.18
22	Nagapattinam	Nagamangalam	63.91
23		Thirukadaiyur	45.74

S. No	District	Name of the State Seed farm	Total area (acres)
24	Tiruvarur	Keeranthi	55.70
25		Kanchikudikadu	53.02
26		Devambalpattinam	92.72
27		Nedumbalam	63.73
28		Moongilkudi	47.63
29	Madurai	Vinayagapuram	45.52
30	Theni	Keezhakudalur	47.86
31	Virudhunagar	Devadanam	52.07
32	Tirunelveli	Karaiyiruppu	83.59
33	Kanyakumari	Thirupathisaram	37.20
	Total		**2,441.58**

Table 1.15(b): State Oilseeds Seed Farms

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

Table 1.15(c) : State Pulses Multiplication Farm

S. No	District	Name of the State Seed farm	Total area (acres)
40	Pudukkottai	Vamban	475.00
	Grand Total (40 SSF)		**4,141.13**

During 2017-18, Comprehensive Seed Multiplication Infrastructure including irrigation facility **is being created in State Seed Farms and Coconut Nurseries with an outlay of Rs.30 crore from NABARD.**

Further**,** 23 Government coconut nurseries and 16 coconut crossing centres are also functioning for production and distribution of quality coconut seedlings.

During 2017-18, the State Government has taken efforts to upgrade Six coconut nurseries with infrastructure facilities including irrigation sources at an outlay of Rs. 1.80 Crore**.**

Table1.16:Government Coconut Nurseries and Crossing Centres

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

1.12.1.2.Seed Processing Units

Government also operates 55 major (annual capacity 1,000 Metric Tonnes), 7 medium (annual capacity 500 Metric Tonnes) and 64 mini (annual capacity 200 Metric Tonnes) Seed Processing Units with an annual capacity of 71,300 Metric Tonnes through which seeds produced in the Government owned seed farms and in farmers fields are processed.

Table 1.17 : Seed Processing Units

Sl. No	District	No. of Units			Total
		Major	Medium	Mini	
1	Kancheepuram	2	-	4	6
2	Tiruvallur	3	-	4	7
3	Cuddalore	-	-	3	3
4	Villupuram	5	1	3	9
5	Vellore	1	-	3	4
6	Tiruvannamalai	3	-	6	9
7	Salem	2	1	-	3
8	Namakkal	1	-	2	3
9	Dharmapuri	1	-	2	3
10	Krishnagiri	1	-	2	3
11	Coimbatore	1	-	1	2
12	Tiruppur	1	-	2	3
13	Erode	2	-	2	4

Sl. No	District	No. of Units			Total
		Major	Medium	Mini	
14	Tiruchirapalli	2	-	3	5
15	Perambalur	-	-	1	1
16	Ariyalur	2	-	1	3
17	Karur	2	-	-	2
18	Pudukkottai	2	-	3	5
19	Thanjavur	6	-	1	7
20	Nagapattinam	2	-	5	7
21	Tiruvarur	3	2	2	7
22	Madurai	4	2	-	6
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	2	-	1	3
30	Kanyakumari	1	-	1	2
TOTAL		**55**	**7**	**64**	**126**

1.12.1.3.Micro Nutrient Mixture Production Centres

Even though the requirement of micronutrients to crop is minimum, **Micro nutrients are essentially required** for increasing crop production and productivity and also quality of the produce. Government also

ensures uninterrupted supply of Micro Nutrients by **Micro Nutrient Mixture Production Centre** at Kudumianmalai, Pudukottai district with 14 types of notified Micro Nutrient (MN) mixtures. During 2017-18, 2,439 Metric Tonnes of Micro Nutrient Mixtures have been produced and distributed to farmers.

It has been programmed to produce and distribute Micro Nutrient Mixtures during 2018-19 also.

1.12.1.4. Bio-Fertilizers production Units (BFPU)

Government to offset the exhaustion of soil nutrients due to indiscriminate use of inorganic fertilizers, produce three strains of Bio-fertilizers viz., Azospirillum, Rhizobium and Phosphobacteria in 22 **Bio-Fertilizer Production Units (BFPUs).** These units have an annual production capacity of 3,000 Metric

Tonnes of **carrier based Biofertilizers** and distributed in 200 gm. packets. Further, **Liquid Bio-fertilizers** having shelf life of 12 – 24 months are produced in 12 Liquid Bio fertilizer Production Units.

During 2017-18, 3,000 Metric Tonnes of carrier based Bio-fertilizers and 5.41 Lakh Litre of Liquid Bio-fertilizers were produced and distributed.

During 2018-19, Carrier based Bio-fertilizers and Liquid Bio-fertilizers are being produced and distributed in the name of **"AMMA Bio-fertilizer"**.

The list of BFPUs producing carrier based bio fertilizers and liquid bio fertilizers is tabulated as follows:

Table 1.18 : Bio-Fertilizer Production Units (BFPUs)

S. No	District	BFPU		Liquid BFPU	
1	Kancheepuram	1	Chengalpattu		
2	Cuddalore	2	Cuddalore	1	Cuddalore
3	Tiruvannamalai	3	Polur		
4	Salem	4	Salem	2	Salem
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	Tiruvarur	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

1.12.1.5.Bio-Control Laboratories

Government takes earnest efforts to reinforce Organic **Plant Health Management** wherein bio-control agents and parasites are used for the control of pests and diseases. The Department operate **ten Bio-control labs and two Integrated Pest Management (IPM) Centres** for producing Bio-control agents.

During 2017-18, Bio-control agents such as Trichoderma viridi (103 Metric Tonnes), Pseudomonas fluorescens (45 Metric Tonnes), Nuclear Poly hydrosis Virus (NPV) (2,800 litres) and Trichogramma chilonis (2,300 CC) have been produced in Bio Control Laboratories and IPM Centres and distributed to the farmers through Agricultural Extension Centres.

The production of bio-control agents will be undertaken during 2018-19 also.

Table 1.19 : Biocontrol Laboratory and Integrated Pest Management (IPM) centres

Sl. No	District	Bio Control Laboratory	IPM Centre
1	Kancheepuram		Panchupettai
2	Villupuram	Villupuram	
3	Salem	Seelanaickanpatti	
4	Namakkal	Namakkal	
5	Dharmapuri	Papparapatti	
6	Coimbatore	Coimbatore	
7	Erode	Bhavani	
8	Tiruchirappalli	Tiruchirappalli	
9	Thanjavur	Kattuthottam	
10	Madurai	Vinayagapuram	Vinayagapuram
11	Tirunelveli	Palayamkottai	

Similarly, bio control agents are produced and distributed to the farmers at subsidized cost through Agricultural Extension Centres are as follows:-

Table 1.20 : Bio-control agents

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

1.12.2. AMMA Facilitation Centres

Government of Tamil Nadu, a trend setter for other States in strengthening Agriculture Extension delivery system, duly established **880 AMMA Facilitation Centres** (383 main and 497 Sub Agricultural extension centres) at Block level to provide all Agriculture services to farmers under one roof.

The Amma Facilitation Centers are serving as **"One Stop Centre"** disseminating innovative

technologies and consultation services on key matters, stocking and distributing critical inputs, agriculture implements, plant protection equipments, providing advisories on all "seed to seed" activities, act as a point for implementing formulated schemes and policies of the Government besides, linking farmers to markets, organizing Farmers Producer Groups/ Farmers Producer Organizations to a wide range of service networks. Out of these 880 AMMA Facilitation Centres, **160 Main** Agricultural extension **centres** were upgraded (150 **Integrated Agricultural Extension Centres (IAEC)** & 10 Uzhavar Centres) with housing the offices for the Department of Agriculture, Horticulture, Agricultural Marketing and Agri Business, Seed Certification and Agricultural Engineering and also provided with the facilities of Conference Hall, Computer Centre, etc,.

Similarly, 160 **Sub Agricultural Extension Centres** are being renovated since 2017-18, with additional facilities. These facilities for extension activities would complement the efforts to increase the efficiency in delivery of Agriculture service to farmers.

Table 1.21 : AMMA Facilitation Centres

District	Main AECs(*)	Sub AECs	Total
Kancheepuram	13	16	29
Tiruvallur	14	21	35
Cuddalore	13	17	30
Villupuram	21	27	48
Vellore	20	23	43
Tiruvannamalai	17	24	41
Salem	20	11	31
Namakkal	15	17	32
Dharmapuri	8	8	16
Krishnagiri	10	7	17
Coimbatore	12	14	26
Tiruppur	13	13	26

District	Main AECs(*)	Sub AECs	Total
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
Nilgiris	4	1	5
Total	**383**	**497**	**880**

(*) Agricultural Extension Centres (AECs)

1.13. Tamil Nadu Irrigated Agriculture Modernization (TN-IAM) Project

Tamil Nadu Irrigated Agriculture Modernization [TN-IAM] Project, is a seven year project implemented with the assistance of the World Bank. The World Bank has given approval of Rs.84 Crore for the entire project period starting from 2017-18 to the Department of Agriculture with the objective of enhancing productivity and climate resilience of irrigated agriculture, improve water management and increase market opportunities for farmers and agro-entrepreneurs in 66 selected sub-basin areas of Tamil Nadu. The project will be implemented in selected 18 Sub-basins in Phase I with the following components:

a. **Crop demonstrations** on cluster basis in three crop sequence of Green manure-System

Rice Intensification (SRI)-Rice Fallow Pulses, Pulses, Millets and Groundnut.

b. **Other Crop based Activities** such as Farmers Field Schools; Integrated Pest Management Villages through Establishment of Eco-friendly IPM model villages; Integrated Nutrient Management to enrich the soil fertility Vermi compost (Silpaulin) Units; Production of required seeds for the farmers in the Village itself through Seed Village for Pulses, Groundnut & Green manure crops and Awards for Best Farmers and also for Best Field Officers among the sub-basins have been proposed.

c. **Agricultural Implements** such as power weeder, Hand and Power Operated Sprayers at 50 percent subsidy will be distributed to the Farmers.

d. **Information, Education and Communication Activities** which include Capacity building & Change management trainings for farmers, agricultural labourers and Extension Personnel to create awareness on the water saving crop production technologies have been proposed to be conducted.

1.14. Crop Yield Competitions and Special Awards for Farmers

1.14.1. Crop Yield Competitions Government is advocating various scientific technological initiatives and ensuring its effective implementation by farmers at field level to increase the productivity of crops. To encourage farmers to motivate and adopt progressive farming practices, Crop Yield Competitions are conducted. Every year, Crop Yield Competitions

are conducted for maize, cholam(Irrigated), cumbu(Irrigated), ground nut(Irrigated), redgram, blackgram(Irrigated), greengram (Irrigated), cotton and sugarcane at State Level and 9 prizes are awarded. At district level, crop Yield Competitions are conducted for paddy, maize, cholam (irrigated), cumbu (Irrigated), groundnut (Irrigated), groundnut (rainfed), redgram, blackgram (Irrigated), greengram (Irrigated), cotton and sugarcane and 88 prizes are awarded. An enrolment fee of Rs.100/- for State Level entry and Rs.50/- for district level entry is collected from the farmers.

The cash prizes awarded to the farmers registering highest productivity under Crop Yield Competition at State and District Level are indicated hereunder.

Table 1.22 : Cash prizes at State and District level

(in Rupees)

Crop	State Level		Crop	District Level	
	1st Prize (Rs.)	2nd Prize (Rs.)		1st Prize (Rs.)	2nd Prize (Rs.)
Groundnut, Sugarcane, Cotton & Green gram	25,000	15,000	Paddy, Groundnut, Sugarcane & Cotton	15,000	10,000
Cholam, Cumbu, Maize, Blackgram, Greengram & Redgram.	15,000	10,000	Cholam, Cumbu, Maize, Blackgram, Greengram& Redgram.	10,000	5,000

1.14.2. Special Award for System of Rice Intensification

In Paddy cultivation, an award of Rs.5 Lakh and a citation worth for Rs.3,500/- are distributed to one best performing farmer who has obtained highest productivity by following System of Rice Intensification technology. The

award will be presented by Hon'ble Chief Minister during the Republic Day celebrations.

For the year 2016-17 , SRI Special award was given to Thiru.R.Munusamy of Virupatchipuram Village, Dharmapuri district who obtained 18,184 kg/ha. of paddy adopting System of Rice Intensification technology at the Republic Day function on 26.01.2018 by Hon'ble Chief Minister.

1.15. Agricultural Services through Information Technology

As the gamut of world has shrunk to palm level / village level due to e-services, it has become imperative to adopt the same in Agriculture also. Tamil Nadu is a pioneer State at all India level in e-agriculture as the State provides various informations required by the farmers instantly. The State Department of

Agriculture has established a portal www.tnagrisnet.tn.gov.in during 2010-11 to provide agriculture information service to the farmers of Tamil Nadu and is functioning effectively. The Department of Agriculture is providing basic details of 70 lakhs farmers, farm and soil status, advisory to farmers and availability of agricultural inputs through this portal which is first time by a State at All India Level.

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

Tamil Nadu is the **frontier State** in the entire country in delivering Agricultural Information services to farming community through various Information Technology initiatives. Government of Tamil Nadu has evolved quintessential software for online generation of Fertiliser license through e-Sevai

centres, Android based mobile application **"Agriculture Reporting System"** for monitoring the water storage level in major reservoirs, daily rainfall status and progress on flagship programmes such as Crop Insurance, Micro irrigation, Mission on Sustainable Dryland Agriculture and Collective Farming for the betterment of the farming community.

The scheme was implemented during 2017-18 at a cost of Rs.2.47 Crore and positioned 162 Data Entry operators at Block level to cover 324 blocks for the documentation of beneficiary data.

The scheme is proposed to be continued during 2018-19 also, encompassing development of new softwares and networking all locations for seamless flow of information besides positioning 30 Data Entry operators additionally covering leftover 60 blocks.

1.15.2. Farmer Friendly "UZHAVAN" Android Mobile Application:

The Hon'ble Chief Minister of Tamil Nadu has inaugurated an Exclusive Mobile Application "Uzhavan" in bilingual (Tamil/English) on 05.04.2018 consisting of nine vital personalized Agricultural Information for the benefit of farming Community in the State.

Through this Uzhavan app, farmers can get complete information on real time basis on all **scheme components** & subsidy pattern of assistance, **register himself to avail scheme benefits** on priority basis, first of its kind in the entire country. Farmers who have registered under **Crop Insurance** Scheme may know their application status till they receive the compensation amount under crop insurance, information on **seed and fertilizer availability**

in Government, Private and Cooperative outlets nearer to their residence, information on **Customer Hiring Centre** for hiring farm Machinery, information on **prevailing market prices** in 277 regulated markets, **weather forecast advisories** to take up appropriate cultivation plan and information on **extension officer's visit to their villages**.

The Mobile application will help the farmers by giving real time information and encouraging the farmers to take up farming activities at right time. This Mobile Seva will definitely thrash out the problems arising out of seasonal adversities, non-availability of inputs, non-availability of farm machineries and natural calamities. Till date, this Uzhavan app has been downloaded by over 1 lakh users, further more than 10,000 farmers have registered their name to avail subsidy through this app.

1.16. Human Resource Management

The Department of Agriculture is functioning with 4,835 technical staff and 4,999 non-technical staff, totaling to 9,834 Staff.

Table 1.23 : Technical Establishment
(Department of Agriculture)

Name of the Post	Sanctioned Strength
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
Total Technical officers	**2,006**
Assistant Seed Officer	509
Assistant Agricultural Officer	2,320
Total field functionaries	**2,829**
Total Technical Staff	**4,835**

Table 1.24 : Non-Technical Establishment

(Department of Agriculture)

Name of the Post	Sanctioned Strength
Deputy Director (Administration)	2
Administrative Officer	33
Superintendent	183
Assistant	644
Junior Assistant	387
Typist	360
Depot Manager(Gr-I)	141
Depot Manager (Gr-II)	249
Depot Manager(Gr-III)	567
Steno-Typist (Gr-I)	1
Steno-Typist (Gr-II)	37
Steno-Typist (Gr-III)	89
Driver	289
Lab Assistant	135
Record Clerk	159
Office Assistant	588
Watchman	1,133
Telephone Operator	2
Total Non-Technical Staff	**4,999**

2. HORTICULTURE AND PLANTATION CROPS

Horticulture sector has emerged as one of the important and vibrant part of Indian agriculture in recent years. Its role in the Country's nutritional security, poverty alleviation and employment generation programme is becoming increasing important. It offers not only a wide range of options to the farmers for crop diversification for making agriculture more profitable through efficient land use, but also provides ample scope for sustaining large number of agro-industries which generate huge employment opportunities. Horticulture crops identified as a means of diversification, optimum utilization of natural resources and creating skilled employment for rural masses especially women folk.

Keeping pace with increase in demand, area and production under horticultural crops have increased considerably over the years. Horticulture is seen as a source for diversification by the farming community since there is a tremendous scope for increasing their income by adopting latest technologies without affecting the food security. Over the last decade, the area under horticulture grew by about 2.7 per cent per annum and annual production increased by 7.0 per cent.

2.1. Performance of Horticulture Crops in Tamil Nadu at National Level

As per the statistics of Government of India 2017, Tamil Nadu is one among the leading Horticultural States in India, contributing 5.88% towards National Horticulture Production and 5.4% in respect of total horticultural crops area at National level. Tamil Nadu accounts for nearly

4.8% of the area under fruits and 2.5% of the area under vegetables in the Country. In terms of production, the State's share is nearly 6.5% in fruits, 3.6% in vegetables and 19% in flowers. The area coverage for fruits and vegetable crops in Tamil Nadu accounts to 5.68 Lakh Ha, fulfilling the growing nutrition demand of the increasing population. Tamil Nadu is the leading producer of Loose Flowers contributing 19% to Nation's production.

Table 2.1 : Area, Production and Productivity of Horticultural crops in Tamil Nadu (2017-18 and 2018-19)

(Area: Lakhs Ha,Production: Lakhs MT, Productivity : MT/Ha)

NAME OF THE CROPS	2017-18 (Estimated)			2018-19 (Programmed)		
	Area	Produ-ction	Produ - ctivity	Area	Produ-ction	Produ - ctivity
FRUITS	3.03	61.75	20.38	3.33	69.23	20.79

NAME OF THE CROPS	2017-18 (Estimated)			2018-19 (Programmed)		
	Area	Produ-ction	Produ - ctivity	Area	Produ-ction	Produ - ctivity
VEGETABLES	2.28	54.67	23.98	2.74	67.02	24.46
SPICES AND CONDIMENTS	1.06	2.41	2.27	1.24	2.86	2.31
PLANTATION CROPS	7.03	56.59	8.05	7.12	58.46	8.21
MEDICINAL & AROMATIC PLANTS	0.14	1.78	12.69	0.15	1.94	12.94
FLOWERS	0.35	4.83	13.80	0.38	5.35	14.07
TOTAL	**13.89**	**182.03**	**13.11**	**14.96**	**204.86**	**13.69**

The policy of the State mainly focus on **"Doubling the Agricultural production"** and **“Tripling the farmers income”,** making Horticulture **'A Profitable Venture'** through modern technologies, ensuring better livelihood to the Horticulture farmers.

The main strategies of Horticulture department which paves the way for achieving the State's policy are to encourage the use of quality certified varieties / hybrid seeds and quality planting material in area expansion of horticulture crops, promotion of cultivating high value horticultural crops in protected cultivation, high density planting, increased water use efficiency through adoption of Micro irrigation, pollination support through bee keeping for enhancing the production, canopy management and senile orchards rejuvenation, improved horticulture farming practices in rainfed areas, farm mechanization, improved Post Harvest Management techniques and strengthening of infrastructure facilities of State Horticulture Farms for production of quality pedigree planting materials and vegetable seeds.

2.2. Tamil Nadu Horticultural Crop Scenario

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

2.2.1. Fruits

Mango and Banana are the leading fruit crops in Tamil Nadu accounting for over 81% of the total fruit production. Mango holds nearly 53% of total area and the major districts reporting cultivation are Dindigul, Krishnagiri, Dharmapuri, Vellore, Tiruvallur and Salem. Off-season production of Mango and round the year production of Grapes is the unique feature of Tamil Nadu.

Tamil Nadu stands second in area under cultivation of Banana (94,990 Ha) next to Karnataka. Further, Tamil Nadu ranks third in the production of Banana (36.41 Lakh MT),

Sapota (2.14 Lakh MT), Amla (1.64 Lakh MT) and Grapes (0.31 Lakh MT).

Tamil Nadu ranks sixth in the production of fruits amounting to 60.80 Lakh MT cultivated under an area of 3.11 Lakh Ha during the year 2016-17.

Tamil Nadu takes the first place in terms of productivity of the fruit crops Papaya (229.74 MT/Ha), Sapota (31.56 MT/Ha) and Pomegranate (27.43 MT/Ha). Also, Tamil Nadu occupies the second place pertaining to productivity of the fruit crop Amla (19.59 MT/Ha) next to Andhra Pradesh and also Pineapple (33.46 MT/Ha) next to Karnataka.

During 2018-19, the State focus will be towards increased production of quality planting materials in SHFs, High density planting and massive promotion of MI, particularly in Banana and other fruit crops.

Table 2.2 : Major Fruit growing districts

Sl. No.	Name of the Crop	Area (Ha)	Major Fruit Growing Districts
1	Mango	1,76,417	Dindigul, Krishnagiri, Dharmapuri, Vellore and Tiruvallur
2	Banana	94,977	Erode, Thoothukudi, Dindigul, Coimbatore and Kanyakumari
3	Lemon	11,741	Dindigul, Thirunelveli, Theni, Thoothukudi and Virudhunagar
4	Guava	10,786	Dindigul, Madurai, Vellore, Virudhunagar and Cuddalore
5	Amla	8,874	Dindigul, Thirunelveli, Tiruppur, Sivagangai and Theni
6	Sapota	7,830	Dindigul, Vellore, Virudhunagar, Thirunelveli and Theni
7	Orange	3,950	Dindigul, Dharmapuri, Theni, The Nilgiris and Coimbatore
8	Jack fruit	3,017	Cuddalore, Dindigul, Kanyakumari, Namakkal and Pudukkottai
9	Grapes	2,487	Theni, Dindigul and Coimbatore
10	Papaya	1,899	Dharmapuri, Erode and Vellore

2.2.2. Vegetables

Tamil Nadu stands second in *area* under cultivation of Tapioca (0.82 Lakh Ha) next to Kerala.

Tamil Nadu stands first in *production* of Tapioca (26.03 Lakh MT) and the major districts involved in achieving the first place at National level are Villupuram, Namakkal, Dharmapuri, Salem and Erode.

Tamil Nadu also stands first in the productivity of Tapioca (31.72 MT/Ha), Beans (21.08 MT/Ha) and Cabbage (54.25 MT/Ha) and takes the second place in the productivity of Cauliflower (25.62 MT/Ha). Tamil Nadu produced 63.05 Lakh MT of vegetables during the year 2016-17.

The main vegetables grown in Tamil Nadu are Tapioca, Onion, Tomato, Brinjal & Ladies

finger. These account for over 70% of total area as well as the production of vegetables. Hybrid vegetable cultivation is promoted by providing assistance to cultivation. The hybrid vegetable protray seedlings are being raised in State Horticulture Farms and distributed to farmers at subsidized cost to increase the area under vegetable cultivation.

During 2018-19, action will be initiated for increased Certified Seed production of selected vegetables in selected SHFs for expansion of area and promotion of kitchen garden in Households.

Table 2.3 : Major vegetable growing districts

Sl. No.	Name of the Crop	Area (Ha)	Major Vegetable Growing Districts
1	Tapioca	82,070	Villupuram, Namakkal, Dharmapuri, Salem and Erode
2	Onion	35,579	Perambalur, Dindigul, Tiruchirapalli, Namakkal and Tirunelveli
3	Tomato	26,342	Dharmapuri, Salem, Krishnagiri, Dindigul, and Coimbatore
4	Brinjal	13,971	Dharmapuri, Salem, Dindigul, Vellore and Krishnagiri
5	Ladies Finger (Bhendi)	11,077	Dharmapuri, Salem, Dindigul, Tiruvallur and Tiruvannamalai
6	Beans	7,100	Dindigul, Krishnagiri, Vellore, Theni and Erode
7	Potato	6,447	Dindigul, Erode, Niligiris, Krishnagiri and Tiruppur
8	Bitter gourd	2,568	Dharmapuri, Coimbatore, Salem, Dindigul and Cuddalore
9	Carrot	2745	Dindigul, The Nilgiris and Krishnagiri
10	Leafy Vegetables	2,345	Salem, Tiruvallur and Dharmapuri

2.2.3. Flowers

Tamil Nadu continues to take the first place in the production of loose flowers in the Country, the production being 4.09 Lakh MT during the year 2016-17. Tamil Nadu takes the third place in regard to area, by cultivating the flowers in an area of 32,290 Ha and Dharmapuri, Salem, Dindigul, Krishnagiri, and Tiruvannamalai districts play a major role in achieving the target. Assistance is extended for cultivation of loose flowers, bulbous flowers and cut flowers. Quality planting materials are being produced in State Horticulture Farms and distributed to farmers in subsidized cost to encourage flower cultivation.

During 2018-19, it is programmed to cover an area of 38,316 Ha. under flower crops.

Table 2.4 : Major Flower cultivating districts

Sl. No.	Name of the Crop	Area (Ha)	Major Flower Growing Districts
1	Jasmine	13,720	Madurai, Dindigul, Erode, Tiruvallur and Tirunelveli
2	Chrysanthemum	5,371	Dharmapuri, Salem, Krishnagiri, Dindigul and Tiruvannamalai
3	Tube Rose	3,134	Dharmapuri, Madurai, Salem, Tiruvallur and Dindigul
4	Rose	2,157	Dharmapuri, Krishnagiri, Dindigul, Thanjavur and Tiruvallur
5	Marigold	1,903	Krishnagiri, Dharmapuri, Tiruchirappalli and Cuddalore

2.2.4. Spices

In Tamil Nadu major kind of spices like Chilies, Turmeric, Tamarind Coriander, Pepper, Cardamom, Betel vine are grown. Turmeric, a significant spice crop is cultivated in an area of 35,975 Ha and Tamil Nadu catches second position at National level. Tamil Nadu takes the second place with regard to production of Tamarind (48,100 MT) next to Karnataka. Also, Tamil Nadu takes the fourth place in terms of production with a production capacity of 1.49 Lakh MT and the leading districts are Erode, Dharmapuri, Salem Namakkal and Villupuram.

The major districts contributing towards the production of Chillies are Ramanathapuram, Thoothukudi, Sivagangai, Vellore and Dindigul. Attempts are made to bring more area under samba chillies than mundu chillies in Ramnad and Sivaganga Districts through farmers

clusters. This will help farmers to fetch more price due to its high oleoresin content and pave way for establishing value addition unit in that area.

Table 2.5 : Major Spices growing districts

Sl. No.	Name of the Crop	Area (Ha)	Major Growing Districts
1	Chillies	44,561	Ramanathapuram, Thootukudi, Sivagangai, Virudhunagar and Vellore
2	Turmeric	35,975	Erode, Dharmapuri, Salem, Namakkal and Villupuram
3	Tamarind	16,224	Dindigul, Theni, Dharmapuri, Madurai and Kanyakumari
4	Coriander	9,212	Thoothukudi, Ramanathapuram, Virudhunagar and Tiruppur
5	Black Pepper	5,112	Namakkal, Salem, Dindigul, The Nilgiris and Kanyakumari
6	Cardamom	2,423	The Nilgiris, Coimbatore Virudhunagar, Salem and Namakkal.
7	Betel vine	997	Namakkal, Karur, Madurai, Cuddalore and Salem

2.2.5. Plantation Crops

Tamil Nadu ranks second next to Kerala in the production of plantation crops with a production of 41.76 Lakh MT during the year 2016-17. Moreover, Tamil Nadu takes the third place in productivity (6.73 MT/Ha) next to Andhra Pradesh and Gujarat. Tamil Nadu also takes the third place pertaining to area with cultivated area of 6.21 Lakh/Ha during the year 2016-17.

Area expansion and rejuvenation/ replacement of Cashew will be promoted. Tea plantation is provided with a subsidy for installation of Micro Irrigation System from the year 2016-17.

Table 2.6 : Major Plantation Crops growing districts

Sl. No.	Name of the Crop	Area (Ha)	Major Growing Districts
1	Cashew nut	90,958	Ariyalur, Cuddalore, Villupuram, Pudukottai and Theni
2	Tea	69,026	The Niligiris, Coimbatore, Theni, Tirunelveli and Kanyakumari
3	Coffee	33,055	Dindigul, The Nilgiris, Salem, Theni and Coimbatore
4	Arecanut	7,262	Salem, Coimbatore, Namakkal, Erode and The Niligiris
5	Cocoa	2,651	Dharmapuri, Salem, Dindigul, Kanyakumari and Erode.

During the year 2018-19, it is programmed to extend the benefits of GOI schemes to the Tribals in coffee growing area in coordination with Coffee Board.

2.3. Horticulture Department Activities

2.3.1. "Per Drop More Crop" - Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

Water is a critical input in agriculture in nearly all its aspect. How much, at what time and how plants are watered has determining effect on the eventual yield. Micro-Irrigation technology is increasingly seen as a means of addressing the growing competition for scarce water resources. The use of Micro Irrigation technology results in a significant yield improvement over traditional irrigation practices. Periodical and uniform discharge of water through Micro Irrigation system not only helps in enhancing crop productivity and water use efficiency but also reduces the labour cost and controls the weed. Fertigation done through Micro Irrigation not only increases the fertilizer

use efficiency but also increases the quality of the produce. Being water starved State, the State focuses on massive promotion of MI in Agriculture and Horticulture crops particularly in high water consuming Sugarcane and Banana crops.

The scheme is being implemented under "Per Drop More Crop" component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) with a subsidy sharing pattern of 60:40 between the Central and State. **Tamil Nadu is the only state in the country extending 100% subsidy to Small and Marginal farmers and 75% subsidy to Other category farmers. During the year 2017-18, the State Government has taken efforts to absorb the GST in the State share in respect of Micro Irrigation systems so as to reduce the financial burden on the farmers.**

During the last six years (2011-12 to 2016-17), an area of 4,72,027 Acre was brought under Micro Irrigation with a financial expenditure of Rs 1170.88 crore benefitting 1,52,459 Small and Marginal farmers and 53,514 other farmers, totalling to 2,05,973 farmers. In the year 2017-18, efforts are being made to implement MI in an area of 3,01,661 Acre at a financial outlay of Rs.692.26 Crore.

For implementing Micro Irrigation scheme under PMKSY, new software namely **Micro Irrigation Management Information System (MIMIS)** has been launched by the Department of Horticulture and Plantation Crops from the year 2017-18 onwards. The **MIMIS** software was developed in a user friendly way so that the farmers who are willing to avail the Micro Irrigation scheme benefits can register themselves in the common service centres

without any difficulty. The software has been developed both in Tamil and English to enable the farmers to access the information in understandable language. The officials can also monitor the scheme right from registration of the beneficiaries till final subsidy release. The software aids in maintaining transparency in the implementation of the Micro Irrigation scheme.

Table 2.7 : Micro Irrigation – 2017-18 Physical and Financial Target

S. No	Department	Physical (Area in Acre)	Finance (Rs.in Crore)		
			GOI Share	GOTN Share	Total
1	Horticulture	1,41,136	112.84	223.40	336.24
2	Agriculture	1,60,525	112.84	223.39	336.23
	Admin Cost	-	11.87	7.92	19.79
	Total	**3,01,661**	**237.55**	**454.71**	**692.26**

During 2018-19, it has been planned to bring 3,57,945 acres of area under Micro Irrigation at a financial outlay of Rs.982.18 Crore.

2.3.2. National Horticulture Mission (NHM)

National Horticulture Mission with the objective of bringing holistic development of Horticulture in the State is being implemented from 2005-2006 onwards. Focused attention is given to increase the production and productivity of Horticultural crops by adopting strategies such as promotion of hybrids, diversification of traditional cropping system into Hi-tech protected cultivation, high density planting, Rejuvenation of old senile and unproductive Plantation/Orchards, supply of quality planting materials, encouraging pollination through bee keeping, development of infrastructure for Post Harvest Managements, crop specific programmes and intervention of suitable scientific technologies through extension functionaries etc.,

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

In 2016-17, the scheme was implemented at an outlay of Rs.77.43 Crore. During the year 2017-18, the scheme was implemented with a budget allocation of Rs.108.108 Crore. The significant components implemented includes, new area expansion of horticultural crops in

31,000 Acre, Poly Green House, Shade Net House and mulching under protected cultivation in an area of 4,650 acre, distribution of 1,18,940 Nos. of Bee Keeping equipments, establishment of Centre of Excellence for Bee Keeping at State Horticulture Farm, Kanyakumari, promotion of value addition chain for Moringa leaf production at Theni and Dindigul Districts to an extent of 500 Acres.

For the year 2018-19 Government of India has allocated 51% of additional fund because of the best implementation of NHM scheme during the previous year in Tamil Nadu. It is programmed to implement National Horticulture Mission in the year 2018-19 at on outlay of Rs.163.333 Crorewith special focus on new components.

2.3.2.1. Creation of Centre of Excellences (CoE)

Under National Horticulure Mission scheme two Centre of Excellence has been established by adopting Israel techniques. Centre of Excellence for Cut flowers at Thally, Krishnagiri district at a project cost of Rs.8.80 crore and **Centre of Excellence for Vegetables at Reddiyarchatram**, Dindigul District at a project cost of and Rs.10.18 are being established. The Centre of Excellence for Cut flowers Thally, Krishnagiri district was inaugurated on 6th December, 2017.

Action is being taken to establish another four Centre of Excellences at a total financial outlay of Rs. 14.50 Crore. (**Centre of Excellence for Hilly vegetables in Nanjanadu**, The Nilgiris, **Centre of Excellence for Tropical fruits in Tiruchirapalli** district,

Centre of Excellence for Bee Keeping at State Horticulture Farm, **Kanyakumari** and **Centre of Excellence for Traditional Flower crops at Madurai** District**)**

2.3.3. National Agricultural Development Programme (NADP)

With the objective to increase productivity of important crops through focused interventions and maximizing returns to farmers, the National Agricultural Development Programme is implemented in the State with 60:40 sharing pattern between Central and State Government.

From 2011-12 to 2017-18, an amount of Rs.296.61 crore was spent towards the activities like Area expansion of Horticulture crops in 44,152.40 Ha, precision farming in 10,994 Ha, pandal cultivation in 1,647 Ha protected cultivation in 41.80 Ha, distribution of Banana bunch sleeves for 1500 Ha, crop specific

activities like distribution of 88 Nos of Turmeric boilers, 8,688 Nos. of Tapioca sett cutters, 1267 Aluminium ladders, 5029 Plastic crates, 699 Five layered Polythene spread sheets, Distribution of 7,50,000 homestead vegetable seed kits and medicinal plants kit and 96,364 numbers of Moringa and Papaya plants to the Anganwadi and Noon meal centres, construction of 8,390 MT capacity low cost onion storage structures, distribution of light traps, pheromone traps and yellow sticky traps in 38,338 Ha., pollination support through distribution of 6,250 Nos. honey bee hives with bee colonies, assistance for 150 Nos. Turmeric protray nurseries, 105 Nos. permanent vermi compost units, 135 Nos. vermi beds, 912 nos. farmers training, modernization of State Horticulture Farms and establishment of seven new State Horticulture Farms.

During the year 2018-19, Development of Infra structure facilities at Horticulture Research and Training Centre, Thally - Phase–III, Assistance for quality production and risk mitigation in Horticulture crop production in Tamil Nadu, Additional income generation activities, Establishment of New Gardens – Area expansion in Horticulture crops, Onion Development programme, Vegetable seed kit distribution will be implemented at an outlay of Rs.17.88 crore in all Districts.

2.3.4. Perimetro Vegetable Cluster Development Programme

With the main objective of reducing the gap between the producer and consumer, ensuring supply of quality vegetables at lesser price to the urban population besides enabling cluster farmers to derive higher income, Perimetro Programme was implemented from 2011-12 to

2015-16 with the budget allocation of Rs.56.02 Crore. A sum of Rs.35.30 crore was spent towards the implementation of the scheme in the components like Area Expansion, Protected Cultivation, Organic Farming and Human Resource Development.

During the current year 2018-19, from the available balance funds this scheme will be implemented with the financial outlay of Rs.20.72 crore in the components like Area Expansion, Protected Cultivation, Organic Farming and Human Resource Development through Cluster Farmers.

The scheme will be implemented in 28 districts in 6 clusters namely Chennai, Coimbatore, Tiruchirapalli, Madurai, Salem and East Coastal Districts.

Table 2.8 : Details of Cluster wise Fund Allotment

Sl. No	Region	Districts	Fund Allocated (Rs in Crore)
1	Chennai	Kancheepuram, Vellore, Tiruvallur, Villupuram and Tiruvanamalai	6.21
2	Coimbatore	Coimbatore, Erode, The Nilgris and Tiruppur	5.07
3	Tiruchirapalli	Tiruchirapalli, Ariyalur, Perambalur, Karur, Pudukottai and Dindigul	5.11
4	Madurai	Madurai, Theni, Sivagagai, Virudhunagar, and Ramanathapuram	0.99
5	Salem	Salem, Krishnagiri, Dharmapuri, and Namakkal	0.75
6	East Coast Districts	Cuddalore, Tirunelveli, Tuticorin and Kanyakumari	2.59
Total			**20.72**

2.3.5. National Mission on Sustainable Agriculture (NMSA)

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

2.3.5.1. Rainfed Area Development (RAD)

The objective of the scheme is to promote Integrated Farming System (IFS) with emphasis on multitier-cropping, rotational cropping, inter-cropping, mixed-cropping practices with allied activities like horticulture, livestock, fisheries, agro-forestry, apiculture, conservation/ promotion of Non-Timber Forest Products etc. to enable farmers not only in maximizing the farm returns for sustaining livelihood, but also to

mitigate the impacts of drought, flood or other extreme weather events. This scheme is implemented with a sharing pattern of 60:40 between Centre and State.

Horticulture Based farming in 15,085 Ha, 835 Nos of Vermi compost units, 2,232 Nos of Vermi beds and protected cultivation in 59.77 Ha, 96 Demonstrations, 345 Trainings and four numbers of Post harvest storage structure has been achieved with an expenditure of Rs.50.16 crore from 2014-15 to 2017-18 through this scheme .

During the year 2018-19, Horticultural Based Farming, Protected cultivation and Vermi Compost production Structures, Village Level Storage/ Packing/ Processing units and Farmers training and Demonstrations will be implemented in 28 districts viz., Ariyalur, Coimbatore, Cuddalore, Dindigul, Dharmapuri,

Erode, Kancheepuram, Kanyakumari, Karur, Krishnagiri, Madurai, Nagapattinam, Namakkal, Perambalur, Pudukkottai, Ramnad, Salem, Sivagangai, Tanjore, Theni, Tirunelveli, Tiruppur, Tiruvannamalai, Tiruchirapalli, Tuticorin, Vellore, Villupuram and Virudhunagar at an outlay of Rs.21.24 Crore.

2.3.5.2. Paramparagat Krishi VikasYojana (PKVY)

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

The scheme is implemented in 26 districts namely Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul (including Kodaikanal),

Erode, Kancheepuram, Karur, Krishnagiri, Madurai, Namakkal, Pudukkottai, Salem, Sivagangai, Tiruvannamalai, Thanjavur, The Nilgiris, Theni, Tiruppur, Tirunelveli, Tiruvallur, Tiruchirapalli, Thoothukudi, Vellore Villupuram and Virudhunagar districts of the state.

The scheme implementation started in the year 2015-16 to bring an area of 2,550 acre of horticultural crops under Organic cultivation and PGS Certification. In the first year (2015-16), it was implemented in 51 clusters in 26 districts at an outlay of Rs.3.60 Crore. During the year 2016-17, the second year programme was implemented at an outlay of Rs.2.54 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, labelling and branding of

organic produce, custom hiring of agriculture implements etc., are being implemented at an outlay of Rs.0.74 crore and an additional area 550 Acre was brought under organic cultivation and PGS certification by forming 11 new clusters at an outlay of Rs.39 Lakh.

2.3.6. Integrated Horticulture Development Scheme (IHDS)

Area expansion of Horticultural Crops is the main objective of this scheme. Hybrid vegetable seeds and quality planting materials are distributed at 40-50% subsidy in total cost of cultivation upto a maximum of 4 Ha/ beneficiary for Fruits and 2 Ha/beneficiary for Hybrid vegetables flowers through this scheme. This scheme is being implemented in 9 non National Horticulture Mission districts viz., Karur, Kancheepuram, Namakkal, Nagapattinam,

Tiruvarur, Tiruvannamalai, Tiruvallur, Tuticorin and Virudhunagar.

From 2011-12 to 2016-17 area expansion of Horticultural crops was carried out in an area of 78,323 Ha at an outlay of Rs.27.47 Crore. During the year 2017-18, this scheme was implemented at a financial outlay of Rs.4.12 crore with an area expansion of 4,581 Ha in Horticultural crops.

The scheme is proposed to be continued to bring an area of 4,861 Ha under Horticultural crops with an outlay of Rs.4.98 crore in 2018-19.

2.3.7. National AYUSH Mission - Medicinal Plants (NAM-MP)

The objective of the programme is to shift the supply of medicinal plants from forests to farmer's field for long term sustainability.

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), Manathakkali (Black night shade), and Vasambu (Acorus).

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.

During the year 2017-18, this scheme was implemented with an outlay of Rs.2.28 crore to cover an area of 748 Ha under medicinal plants namely Marunthukoorkan, Kanvalikilangu,

Thippili, Kokum and Manathakkali and Amla for second year maintenance in the Districts of Cuddalore, Namakkal, Salem, Tiruvannamalai, Tiruchirapalli, Villupuram, Kanyakumari, Kancheepuram, Dindugul, Karur, Tiruppur, Nagapattinam, Coimbatore, Sivagangai, Tirunelveli and Theni. In 2018-19 this scheme will be continued.

2.3.8. TNIAMP (IAMWARM II) Project (Tamil Nadu Irrigated Agriculture Modernization Project - Horticulture)

TNIAMP is a multi disciplinary project funded by World Bank and implemented by the Government of Tamil Nadu. The main objective of the programme is to accelerate crop diversification from crops requiring more water to high remunerative and less water requiring horticultural crops, through promotion of hi-tech cultivation technologies and water conservation technologies in the proposed sub basins.

In phase-I of IAMWARM Project, which was implemented from 2007-08 to 2014-15, area expansion of horticultural crops was carried out in an area of 49,850 Ha in 61 sub basins at an outlay of Rs. 77.47 Crore. It is programmed to cover an area of 41,916 Ha under Fruits, Hybrid vegetables, Spices and Flowers cultivation at an outlay Rs.210 crore in 66 sub basins of 30 Districts in next 6 years from 2018-19 to 2023-24.

During the first year (2018-19), it is programmed to cover an area of 2,600 Ha under Horticulture crops with an outlay of Rs.17.91 crore in 18 sub basins of 22 districts. The proposed innovative interventions are Horticultural crop demonstration, Promotion of pesticide free vegetables production, Promotion of Micro irrigation, Climate resilience technology of protected cultivation and Mulching in TNIAMP.

2.4. Supply Chain Management

Supply Chain Management Project is implemented at an outlay of Rs. 398.754 crore in 10 districts viz, The Nilgiris, Krishnagiri, Coimbatore, Dharmapuri, Dindigul, Theni, Tirunelveli, Tiruchirapalli, Ramnathapuram and Thoothukudi.

Supply Chain Infrastructure for focus crops will be developed in an integrated manner from farm level till it reaches the ultimate consumer. The project is implemented in-coordination with the Department of Agriculture Marketing & Agri business.

To increase the production of Horticulture crops in the area of Operation, Components like Area Expansion in Fruits, Vegetables and Spices, Micro Irrigation and Adoption & New Technology are implemented by dovetailing the Horticulture schemes.

2.5. Pradhan Mantri Fasal Bhima Yojana (PMFBY) for Horticultural crops

In Tamil Nadu, PMFBY is being implemented since kharif 2016 replacing National Agriculture Insurance Scheme (NAIS) in all districts except Chennai. In this scheme, farmers can insure the notified horticulture crops viz Banana, Tapioca, Turmeric, Onion and Red Chillies in notified revenue villages.

For PMFBY 2016-17, Rs. 52.858 crore has been disbursed as claim compensation to 18,704 farmers for Horticulture crops. For the current year 2018-19 (for both Kharif and Rabi season), it is planned to enroll 50% Gross Cropped area of 2,98,900 acres under Horticulture crops.Under PMFBY 2017-18, during both Kharif and Rabi season, 62,720 farmers have enrolled covering an area of 93,949.8 acres in notified Horticulture crops.

2.6. Collective Farming Scheme for Horticulture:

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, 2,000 Farmer Producer Groups were formed under Agriculture and Horticulture Department with the total allocation of Rs.100 Crore. Out of 2000 FPGs, 505 FPGs were formed under Department of Horticulture.

The Corpus Fund of Rs.24.70 crore was utilized for the purchase of Machineries which

are collectively used for the cultivation purpose of 494 FPGs.

In the current year 2018-19, it is proposed to form 2000 FPGs in the State for both Agriculture and Horticulture Department. Out of 2000 FPGs, 505 FPGs will be formed by the Department of Horticulture.

2.7. Special Livelihood Package for "Ockhi" Cyclone affected horticulture crops

The Cyclone "Ockhi" hit on 29.11.2017 and 30.11.2017 and caused extensive damage to Horticulture crops to an extent of 6,077.56 Ha and affected the livelihood of 28,073 farmers in Kanyakumari, Tirunelveli and Thoothukudi districts. The horticultural crops including Banana, Rubber and Cloves were affected which includes 5467.52 Ha in Kanyakumari, 121.01 Ha

in Tirunelveli and 488.94 Ha in Thoothukudi districts, due to “Ockhi” Cyclone.

Towards rehabilitating the livelihood of affected farmers, Hon’ble Chief Minister has announced a Special Livelihood Package on 11.12.2017 for Banana, Rubber and Clove crops for Rs.21.854 crore. A relief amount of Rs.48,500/- to Rs. 63,500/- per Ha for Banana crop, Rs. 1,00,000/- per Ha for Rubber crop and Rs. 28,500/- per Ha for Clove is being extended as special livelihood package from State Disaster Response Fund (SDRF), State Fund, and also dovetailing from schemes such as MIDH-National Horticulture Mission (NHM), Rainfed Area Development (RAD) under National Mission on Sustainable Agriculture(NMSA) and National Agricultural Development Programme (NADP).

An amount of Rs. 10.20 crore was allocated and so far Rs.9.40 crore was disbursed as input subsidy to affected farmers from State Disaster Response Fund (SDRF). From State Fund, Rs.3.562 crore was allocated to carryout preparatory cultivation works for Rubber (Rs.25,000/Ha) and Clove (Rs. 10,000/Ha).

From MIDH -National Horticulture Mission (NHM) and National Agricultural Development Programme (NADP), an amount of Rs.8.98 crore and Rs. 1.71 crore was diverted respectively for replanting of Banana in 3054.71 Ha at Rs. 35,000/Ha.

Like wise, an amount of Rs. 6.42 crore was diverted from NMSA- Rainfed Area Development for recultivation of Rubber and Rs.8.22 crore was allocated from National Horticulture Mission to promote Bee keeping in Rubber plantations at the rate of Rs.32,000/Ha as subsidy for

purchasing 20 Bee Hives along with Bee colonies. So far, Banana recultivation completed in an area of 1251.78 ha at an outlay of Rs.328.59 Lakhs. For Clove re plantation preparatory work completed and entire allocated amount of Rs.4.22 Lakhs released to the affected farmers. Rubber re plantation completed in an area of 342.36 Ha at an outlay of Rs.85.01 Lakhs.

2.8. State Horticulture Farms (SHFs)

Timely production and distribution of quality pedigree planting materials of Horticulture crops at a reasonable price to the farmers is the objective of the **State Horticulture farms**. Further, these farms also serve as **"Model Demonstration Farms"** on the latest technology, farm mechanization, modern irrigation technologies etc., to the farmers, besides providing employment

opportunities to the landless labourers. There are 61 State Horticulture farms functioning in 29 districts of Tamil Nadu. As a new activity, seed production of high yielding varieties of 10 vegetable crops is being taken up in 17 State Horticulture Farms.

The National Horticulture Board, 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 and realizing the importance of ensuring the availability of quality planting materials in non farm districts like Thoothukudi and Tiruvannamalai actions are being taken to establish 2 new State Horticulture farms.

Steps are being taken to protect the Pomological Station, Coonoor which is functioning since 1949 and serves as a centre to

study different varieties of pedigree fruit plants and their adaptability in hilly region by construction of compound wall with barbed wire at an expenditure of Rs.1.164 Crore.

During the year 2017-18, 9.26 crore numbers of planting materials were produced in State Horticulture Farms and Parks and Gardens and distributed to the farmers. This includes, 8 crore numbers of protray vegetable and flower seedlings and 11.25 Lakh numbers of Medicinal plants.

It is programmed to produce 11.47 crore No.of planting materials in the year 2018-19.

Table 2.9 : List of State Horticulture Farms

Sl. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
1	Ariyalur	Keelapaluvur	2018	7.58
2	Coimbatore	Anaikatty	1986	12.00
3		Kannampalayam	2001	11.20

Sl. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
4	Cuddalore	Neyveli	1985	39.53
5		Virudhachalam	1975	10.43
6	Dharmapuri	Polayampalli	2013	2.73
7	Dindigul	Sandhaiyur	2013	15.20
8		Kodaikanal	1961	1.73
9		Thandikudi	1985	5.45
10		Sirumalai	1980	200.04
11	Erode	Bagudampalayam	2018	10.00
12	Kancheepuram	Attur	1961	12.24
13		Vitchanthangal	1982	23.25
14		Melkadirpur	1982	42.63
15		Melottivakkam	1982	20.60
16		Pichivakkam	1982	34.00
17	Kanyakumari	Kanyakumari	1922	12.64
18		Pechiparai	1967	6.00
19	Karur	Mudalaipatti	1978	23.96

Sl. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
20	Krishnagiri	Thimmapuram	1952	9.51
21		Jeenur	1980	121.96
22	Madurai	Poonjuthi	2012	5.76
23	Nagapattinam	Vanduvanchery	2018	6.54
24	Namakkal	Semmedu	1974	11.60
25		Padasolai	1989	22.67
26	Perambalur	Vengalam	2018	4.72
27	Pudukottai	Kudumianmalai	1974	118.68
28		Vallathirakottai	1977	521.20
29		Nattumangalam	1985	53.02
30	Salem	G.O. Karumandurai	1981	419.77
31		Maniyarkundram	1982	100.00
32		SHF , Karumandurai	1981	39.35
33		Mulluvadi	1985	48.40
34		Sirumalai	1987	8.00
35	Sivagangai	Devakottai	1985	81.19
36		Nemam	1979	38.77

Sl. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
37	Thanjavur	Aduthurai	1988	8.90
38		Marungulam	1966	10.70
39	The Nilgiris	Burliar	1871	6.25
40		Kallar	1900	8.92
41	The Nilgiris	FPU Coonoor	1965	4.05
42		PS Coonoor	1948	10.46
43		Kottery	1974	16.96
44		Doddabetta	1969	2.52
45		Thummanatty	1956	9.80
46		Nanjanad	1917	64.00
47		Devala	1978	80.00
48		Colgraine	1989	20.40
49	Tiruvarur	Moovanallur	2018	8.87
50	Tiruppur	Sankaramanallur	2018	10.12
51	Theni	Periyakulam	1950	9.32
52	Chennai	Madhavaram	1980	4.38
53	Tiruchirapalli	Thorakudi	2013	4.05
54	Tirunelveli	Vannikonendhal	2018	10.86

Sl. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
55	Vellore	Thagarakuppam	1985	34.40
56		Kudapattu	1961	10.08
57		Navlock	1981	84.42
58	Villupuram	A.Sathanur	2018	10.00
59	Virudhunagar	Poovani	1967	9.46
60		Srivilliputhur	1982	46.27
61	Ramnathapuram	Oriyur	2013	14.77
TOTAL				2,602.31

2.9. Parks and Gardens

The Horticulture Department maintains 18 Parks in 7 Districts of the State. These act as recreation centers for the visitors and tourists. It also serves as an educational center for students and Botanists.

The Bryant Park, Kodaikanal was established during 1961 and attracts around 5.5 lakh visitors every year. Face-lifting of Bryant Park

Kodaikanal is being carried out at an amount of Rs.6.80 crore to attract more number of visitors.

Establishment of a Rose garden and Cut flower demo garden at Kodaikanal to act as a cut flower demonstration centre for the farmers of Kodaikanal and surrounding areas is also being carried out with an amount of Rs.11.05 crore during the year 2018-19.

Ecopark at State Horticulture Farm, Kanyakumari was established in an area of 15 acre at a cost of Rs.4.00 crore was inaugurated by Hon'ble Chief Minister on 05.04.2018.

Table 2.10 : Details of Parks & Gardens

Sl. No	Name of the Park / Garden	District	Area (Ha)	Year of Establishment
1.	Government Botanical Garden, Ooty	The Nilgiris	22.00	1848

Sl. No	Name of the Park / Garden	District	Area (Ha)	Year of Establishment
2.	Government Rose Garden, Ooty		14.40	1995
3.	Sim's Park, Coonoor		12.14	1969
4.	Kattery Park (SHF, Kattery)		2.00	2011
5.	Tea Park at Doddabetta, Butterfly Park, Devala		1.70	2015
6.	Bryant Park, Anna Park	Kodaikanal	7.93	1908 2010
7.	Chettiyar Park		2.02	1980
8.	Rose Garden& Cut Flowers Demo garden		4.00	2018
9.	Anna Park	Salem	1.87	1999
10.	Lake View Park, Yercaud		1.27	1999
11.	Rose Garden at SHF, Yercaud.		15.14	1975
12.	Genetic Heritage Garden, Yercaud		10.00	2012

Sl. No	Name of the Park / Garden	District	Area (Ha)	Year of Establishment
13.	Government Botanical Garden, Yercaud-1		8.10	2010
14.	Government Botanical Garden, Yercaud-2		8.10	2010
15.	Semmozhi Poonga	Chennai	3.17	2010
16.	ECO Park, Courtallam	Tirunelveli	14.89	2012
17.	Genetic Heritage Garden, Achadipirambu	Ramnathapuram	4.00	2015
18.	Eco Park, Kanayakumari	Kanyakumari	6.00	2018
		Total	**138.73**	

2.9.1. 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. In order to provide quality planting materials of required quantity at appropriate time to farmers, two new State Horticulture Farms are being established in Tiruvannamalai District and Tuticorin district at an outlay of Rs.1 crore & Rs.2 crore respectively.
3. The Government Botanical Garden, Ooty, The Nilgiris 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.8.492 crore to attract more numbers of tourists throughout the year.

4. Modernization works are being carried out in 6 State Horticulture farms namely Melkadirpur in Kancheepuram district, Virudhachalam in Cuddalore district, Sandhaiyur in Dindigul district, Padasolai in Namakkal district, Mudalaipatti in Karur district and Navlock in Vellore district at an amount of Rs.5.83 Crore.
5. For utilizing the unutilized land in 5 State Horticulture Farms viz, Poovani (Virudhunagar district), Mudalaipatti (Karur district), Vallathirakottai (Pudukottai district), Kudumiyanmalai (Pudukottai district) and Jeenur (Krishnagiri district), works are being carried out for an amount of Rs.2.67 Crore.
6. Under NABARD – RIDF Fund, 19 State Horticulture Farms in 10 districts are being strengthened with additional infrastructure utilizing an amount of Rs.20.76 Crore.

2.10. Flower and Fruit Shows

Every year during spring and summer seasons, fruit and Flower Shows are being conducted in Parks and Gardens that attracts tourist from various corners of the world. The summer festival in Nilgiris district is one of the most prominent festival and consists of fairs, carnivals, flower shows, vegetable and spice shows and several cultural activities that catches the eyes of the visitors. The flower show is the major attraction of this festival as it displays more than 15 varieties of flowers from different countries, which is organised at the Botanical garden that is witnessed by the huge number of spectators.

The Rose Show at Government Rose Garden, Ooty is an important event conducted by this Department. This show exhibits popular and 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.

Flower shows are also organized in Parks and Gardens at Yercaud and Kodaikanal. The major attractions of these shows are structures made with flowers, various types of Flower arrangements, Vegetable carvings, Flower rangoli, Bonsai Gallery. In addition 'Saral Vizha' is conducted at ECO Park, Courtallam in Tirunelveli District.

2.11. Horticulture Training Centres (HTC)

The prime objective of the four Horticulture Training Centres functioning at Madhavaram in Tiruvallur district, Kudumianmalai in Pudukkottai district, Thally in Krishnagiri district and Ooty in The Nilgiris district is to impart training to

farmers in Hi tech Horticulture crop cultivation technologies. Also to impart, in house training to field functionaries of the department about recent advancement in the field of Horticulture science.

From the year 2011-12 to 2017-18, training in Hi-tech Cultivation of horticulture crops was imparted to 26,800 farmers at an outlay of Rs.63.60 Lakh.

During the year 2018-19, it is proposed to impart training to 4,000 farmers with an expenditure of Rs.32 Lakh.

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

From 2018-19 onwards, it is proposed to start two years Diploma in Horticulture at

Horticulture Research and Training Centre, Thally,Krishnagiri district and centre of Excellence for vegetables-Reddiyarchathiram in Dindigul District with an intake of 100 students annually in each under the affiliation of Tamil Nadu Agricultural University.

2.12. Tamil Nadu Horticulture Development Agency (TANHODA)

For implementing various Horticulture Schemes funded by Government of India and Government of Tamil Nadu a "Special Purpose Vehicle" Tamil Nadu Horticulture Development Agency is functioning since 2004. It is a registered society under Tamil Nadu Societies Registration Act, 1975. 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 interest free amount of Rs. 50 crore as revolving fund is utilized for purchase of seeds and water soluble fertilizers for timely supply to the farmers.

2.13. Staff Strength

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 2.11 : Sanctioned Strength

S.No	Designation	Total posting
1	Technical Staffs	2,610
2	Non Technical Staffs	1,223
3	Total	3,833

Table 2.12 : Cadre detail

S. No	Staff details	Total posting
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 – (Deputy Director(Admin), Chief Account Officer, Administrative officer, Accounts officer, Assistant Accounts officer, Superintendent, Assistant, Junior Assistant, other posts)	1,223
	Total	**3,833**

3. AGRICULTURAL ENGINEERING

3.1. Introduction

The Agricultural Engineering Department was formed in the year 1981 and continues to function as a separate department since then. Agricultural Engineering Department in Tamil Nadu was created to provide engineering services to the farmers, by way of helping the farmers to improve the farm productivity and economic upliftment through better soil and water conservation techniques, irrigation management techniques, farm mechanization aspects, post harvest techniques and value addition of farm products, use of green energy in farm operation etc.,

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 of State Farms and Parks.

3.3. Agricultural Mechanization

Mechanization in agriculture is inevitable in the present era. Increasing the net income of the farmer is possible through agricultural mechanization by way of reducing cost through precise application of seeds, manures, fertilizers, weedicides and pesticides etc., through machines besides eliminating the drudgery of farming operations. Mechanization facilitates timely farming operations and helps to increase the agricultural production per unit area of land.

3.3.1. Hiring of Agricultural Engineering Department owned machinery

Agricultural Engineering Department owns a fleet strength of Land Development and Minor Irrigation Machinery for hiring to the needy farmers at nominal hire charges fixed by the Government.

3.3.1.1. Land Development Machinery

Agricultural Engineering Department owns 78 Bull Dozers for land levelling and land shaping, 168 Tractors for ploughing and other farming operations, 63 Laser Levellers for perfect land levelling, 48 Paddy Combine harvesters and 16 tractor operated pumps for draining flood water. This machinery is hired out to the needy farmers at nominal hire charges fixed by Government. Bulldozers, Tractors and water pumps are also engaged for relief works during flood and natural calamities.

The district wise details of Land Development Machinery available for farmers at nominal hire charges are furnished in the following Table.3.1.

Table 3.1. District wise availability of land development machinery

Sl. No	District	Bull dozer	Tractor	Paddy Combine Harvester
1	Kancheepuram	5	10	4
2	Tiruvallur	4	5	
3	Cuddalore	4	11	
4	Villupuram	4	9	
5	Vellore	2	6	
6	Tiruvannamalai	2	3	
7	Dharmapuri	2	3	
8	Krishnagiri	3	3	
9	Salem	2	6	
10	Namakkal	4	4	
11	Coimbatore	3	3	
12	Erode	2	6	
13	Tiruppur	4	3	

Sl. No	District	Bull dozer	Tractor	Paddy Combine Harvester
14	Tiruchirapalli	4	6	
15	Ariyalur	2	4	
16	Perambalur	1	2	
17	Karur	2	3	
18	Pudukkottai	1	4	
19	Tiruvarur	2	16	10
20	Thanjavur	3	14	10
21	Nagapattinam		12	9
22	Dindigul	4	4	
23	Madurai	3	4	5
24	Theni	2	4	
25	Sivagangai	2	3	
26	Ramanathapuram	2	2	
27	Virudhunagar	2	4	
28	Thoothukudi	3	5	
29	Tirunelveli	3	8	10
30	The Nilgris	1	1	
Total		**78**	**168**	**48**

3.3.1.2. Minor Irrigation Machinery

Agricultural Engineering Department also owns 30 Rotary Drills for sinking tube wells in alluvial soil areas, 6 Percussion drills to work in selected alluvial areas and hard rock areas, 33 Hand Boring Sets and 25 Mini Drills for sinking shallow tube wells, 18 Rock Blasting Units for deepening open wells as well as for blasting and removing rocky out crops in farm lands and 21 Resistivity Meters for locating ground water availability for drilling tube wells and bore wells.

The details of Minor Irrigation Machinery available with the Department are furnished in the following Table.3.2.

Table 3.2.District wise availability of Minor Irrigation Machinery

Sl. No	District	Rotary Drill	Percussion Drill	Mini Drill	Others
1	Kancheepuram		1		4
2	Tiruvallur	1	4		7
3	Cuddalore	8			16
4	Villupuram		1		7
5	Vellore				4
6	Tiruvannamalai				2
7	Dharmapuri				2
8	Salem				4
9	Namakkal				2
10	Erode				2
11	Coimbatore				1
12	Tiruppur				2
13	Tiruchirapalli				4
14	Ariyalur	1			1
15	Karur				1
16	Pudukkottai	2			1
17	Tiruvarur	8		2	

Sl. No	District	Rotary Drill	Percussion Drill	Mini Drill	Others
18	Thanjavur	10		19	3
19	Nagapattinam			4	3
20	Madurai				1
21	Theni				1
22	Sivagangai				1
23	Ramanathapuram				1
24	Virudhunagar				2
25	Tirunelveli				3
	Total	**30**	**6**	**25**	**75**

3.3.2. Promotion of Agricultural Mechanization

Under National Agriculture Development Programme(NADP) and Sub Mission on Agricultural Mechanization (SMAM) schemes, Agricultural Mechanization is promoted by providing subsidy assistance to the individual farmers for purchasing agricultural machinery and implements and for the establishment of

Custom Hiring Centres both at block and village levels.

3.3.2.1. Agricultural Mechanization under National Agriculture Development Programme (NADP)

Under NADP, subsidy assistance has been provided to farmers to the tune of Rs. 2.99 crore during the year 2017-18 for the purchase of 607 Agricultural machinery and implements like Power Tiller, Paddy Transplanter, Seed drills, Zero Till Seed cum Fertilizer drill, Seed cum fertilizer drill, Bund former, Straw baler, Power weeder, Brush cutter, Paddy Power Weeder and Chaff Cutter etc.,.

Based on the demand from the farmers, it is proposed to provide subsidy assistance for the purchase of 428 agricultural machinery and implements for Rs.3 crore during the year 2018-19 under this Programme.

3.3.2.2. Sub Mission on Agricultural Mechanization (SMAM)

Under SMAM, subsidy assistance at 50% of the cost will be provided for Scheduled Caste, Scheduled Tribes, Small, Marginal, Women farmers and 40% of cost for other farmers. During 2017-18, an amount of Rs.38.60 crore has been released as subsidy to the farmers towards the distribution of 6,034 agricultural machinery and implements under SMAM.

During the year 2018-19, it is proposed to implement the scheme with the financial assistance of Rs.144.04 crore for the distribution of 23,010 numbers of agricultural machinery and implements to the farmers.

3.3.3. Distribution of Post Harvest Technology and Management Machinery

As a measure to double the farmers' income, subsidy assistance is provided for the purchase

of Post Harvest Technology and Management Machinery and Equipments to facilitate value addition and scientific way of storage of agricultural produce at farm gate level. Assistance is provided to the individual farmers, farmers groups, FPOs, FPGs and Entrepreneurs.

During the year 2017-18, 49 Green house type Solar Drying Units for primary processing and Value addition were established under National Agriculture Development Programme (NADP) with the total subsidy assistance of Rs.73.80 Lakh as per the guidelines of Sub Mission on Agricultural Mechanisation (SMAM).

During the year 2018-19, it is proposed to implement the scheme of "Distribution of Post Harvest Technology and Management Machinery" under National Agriculture Development Programme (NADP) for the produce of Horticulture crops, Food grains and

Oil seeds with a financial assistance of Rs.50 Lakh for the purchase and installation of 62 post harvest processing machinery and units to the farmers.

3.3.4. Private initiatives in establishing agricultural machinery Custom Hiring Centres

Small and Marginal farmers are not in a position to purchase and maintain Hi-tech and costly farm machinery, on their own. In order to help them, subsidy assistance is provided for the establishment of block based and village based Custom Hiring Centres by progressive farmers, Farmers Groups, Entrepreneurs and FPOs for hiring out the agricultural machinery and implements to the needy farmers on nominal hire charges.

A Mobile App named "Uzhavan App" has been hosted by the Hon'ble Chief Minister of Tamil Nadu for the benefit of the farming community

by which the farmers can select and book the needy machinery through mobile call to the Custom Hiring Centres.

3.3.4.1. Block based Custom Hiring Centre

The Custom Hiring Centres (CHC) are the entities with a set of agricultural machinery, implements and equipments intended for hiring to the needy farmers at nominal hire charges. The agricultural machinery and implements Custom Hiring Centres are to be established at a value of Rs.25 Lakh for which backended subsidy upto 40% will be provided. During the year 2017-18, 427 Custom Hiring Centres have been established under NADP and SMAM with a total subsidy assistance of Rs.42.68 Crore.

During the year 2018-19, it is proposed to establish 560 such Custom Hiring Centres under SMAM with the subsidy assistance of Rs.56 Crore.

3.3.4.2. Hi-Tech, High Productive Equipment for Custom Hiring

High cost machinery hubs for sugarcane cultivation operations starting from land preparation to harvesting and residue management are formed in co-ordination with sugar mills to help the cane growers to tide over the labour shortage and to reduce the cost of cultivation.

Sugarcane based Custom Hiring Centres are established through Tamil Nadu Co-operative Sugar mills, FPOs and Entrepreneurs with 40% subsidy assistance to a maximum limit of Rs.60 Lakh with the project cost of Rs.1.50 Crore.

From the year 2015-16, to till date, nine sugarcane based Custom Hiring Centres have been established under NADP in both Co-operative and private sugar mills located in

Kancheepuram, Villupuram, Ariyalur, Perambalur, Tiruvannamalai, Erode and Tanjavur districts with a total subsidy assistance of Rs.4.73 Crore.

During the year 2018-19, it is proposed to establish 7 Sugarcane based Custom Hiring Centres under NADP with a subsidy assistance of Rs.4.04 Crore

3.3.4.3. Village based Custom Hiring Centre in low farm power availability Districts

A group of farmers with minimum eight members are encouraged to establish village based Custom Hiring Centre in districts having low farm power availability so that they can take up their farming operations in time and increase their net income.

Village based Custom Hiring Centres are established upto a project cost of Rs.10 Lakh for

which subsidy assistance of 80% of the project cost upto a maximum of Rs.8 Lakh will be provided. During the year 2017-18, 307 Village based Custom Hiring Centres were established at a cost of Rs.24.55 Crore.

During the year 2018-19, it is proposed to establish 460 Village based Custom Hiring Centres under NADP and SMAM with the subsidy assistance of Rs.36.80 Crore.

3.4. Soil and Water Conservation

Soil and Water are the two vital natural resources which are to be conserved effectively for improving the productivity in sustainable agriculture and to enhance the livelihood of the farming community.

3.4.1. River Valley Project

River Valley Project is being implemented in the catchments of South Pennaiyar and

Cauvery Mettur in Dharmapuri, Krishnagiri and Erode districts under NADP from 2013-14 onwards. Soil and Water conservation measures like Land development activities, Drainage line treatments, Silt retention structures and Water harvesting structures are taken up in the catchment areas.

From 2013-14, totally an extent of 22,714 Ha of catchment area has been covered with 2,467 structures like stone walls, Gabion checks, water harvesting structures etc., with a total expenditure of Rs.30.02 Crore. During the year 2017-18, 208 structures and 35.75 Ha of land development have been taken up to a value of Rs.4.50 Crore.

During the year 2018-19, it is programmed to continue the scheme in the above mentioned catchments.

3.4.2. Dam Rehabilitation and Improvement Project

The World Bank aided Dam Rehabilitation and Improvement project is being implemented in the catchment areas of selected dams of Water Resources Department and Tamil Nadu Electricity Board. This scheme is implemented for preventing siltation in the multipurpose reservoirs by adopting multi-disciplinary integrated approach of soil conservation and watershed management practices in the catchments of Krishnagiri and Kundha Reservoir project areas. Agricultural Engineering Department has implemented soil conservation activities in the past 3 years from 2015-16 to 2017-18 with a total outlay of Rs.15.41 Crore.

During 2017-18, Soil conservation and Drainage line treatment works have been carried out at a cost of Rs.4.90 Crore.

Proposals have been sent for extending the scheme in the catchment areas of Vaigai project in Theni District and Parappalar, Nanganchiar and Kudaganar Reservoir Projects in Dindigul district over a period of 3 years (From 2018-19 to 2020-21) with a total outlay of Rs.23.47 Crore.

3.4.3. 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(SADP) with the objectives of eco-restoration, eco-protection, 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 for ST category, 80 percent subsidy for SC category and 50 percent subsidy for other category farmers. Community based works are carried out with 100 percent Government funding.

During the year 2016-17, administrative approval has been accorded for an outlay of Rs.21.55 crore and Rs.17.23 crore has been released. So far, 748 works have been completed at a cost of Rs.14.29 crore and the remaining works are under progress.

During the year 2017-18, Project approval has been accorded from the State Planning Commission for an outlay of Rs.11.91 crore and Rs.2.62 crore has been released and works are under progress. The programme is to be continued during the year 2018-19.

3.4.4. Deepening of Farm Ponds in Ramanathapuram District

Farm Ponds are small water bodies in the low lying areas of the individual land holdings to store run-off rain water. This water is used for providing supplemental irrigation to the standing crops during the critical growth period for short term crops like Pulses, Chillies and Millets. Creation of farm ponds is very crucial for areas like Ramanathapuram district where there is lower rainfall and no other assured water source.

The ponds are deepened upto about half metre manually under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and further deepened upto two metres by the Agricultural Engineering Department using machinery. During the year 2017-18, 840 farm ponds have been deepened at a cost of Rs.4.19 Crore.

This scheme has been implemented since 2013-14 and so far, 5,210 farm ponds have been deepened at a cost of Rs.25.65 crore and the scheme has been completed.

3.4.5. National Mission on sustainable Agriculture (NMSA)- Water Harvesting Structures through Rainfed Area Development

Agricultural growth can be sustained by promoting conservative use of scarce natural resources through appropriate location specific measures. Under Rainfed Area Development (RAD) component of National Mission on Sustainable Agriculture (NMSA), natural resources management works like Water harvesting structures are created. During the year 2017-18, in phase I, 95 Water harvesting structures viz., Check dams, Percolation ponds, Community and Village ponds were constructed at a cost of Rs.4.64 crore in 21 rain dependent

districts namely Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Karur, Krishnagiri, Madurai, Namakkal, Perambalur, Pudukkottai, Ramanathapuram, Salem, Sivagangai, Tiruvannamalai, Thoothukudi, Tiruppur, Vellore, Villuppuram and Virudhunagar.

In phase II, 23 water harvesting structures have been constructed in 15 districts at a cost of Rs.99 Lakh.

It is also programmed to take up the construction of 561 water harvesting structures, at a cost of Rs.33.19 crore in 23 districts namely., Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Erode, Krishnagiri, Madurai, Perambalur, Ramanathapuram, Salem, Tiruvannamalai, Thoothukudi, Tiruppur, Vellore, Dindugal, Karur, Namakkal, Pudukkottai, Theni,

Tiruchirapalli, Tirunelveli, viluppuram and Virudhunagar during the year 2018-19.

3.5. Water Management

In Tamil Nadu, 95 percent of the surface water and 80 percent of the ground water have already been put into use. There is no further scope of exploiting the resources rather than improving the water use efficiency. Agricultural Engineering Department is engaged in implementing on-farm water management works in Canal, Tanks and Well irrigated areas in order to maximize water use efficiency of the irrigation command areas through integrated approach.

3.5.1. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) - Har Khet Ko Pani- Incentivisation Scheme for Bridging the Irrigation Gap (ISBIG)

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

and to ensure equitable distribution and sharing of water among all farmers, the Centrally Sponsored Command Area Development and Water Management Programme (CAD&WMP) has been implemented in Tamil Nadu since 1980-1981. From the year 2015-16, this scheme has been brought under the Har Khet Ko Pani component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

So far, 2,014 Water User Associations have been formed covering an area of 9,41,004 Ha in 36 command areas and Rs.44.38 crore as Functional Grant have been deposited in Nationalised Banks. The accrued interest is being utilised for the maintenance of field channels and creating infrastructure by the water users associations.

The Government of India has now reintroduced a new comprehensive scheme of

"Incentivisation Scheme for Bridging the Irrigation Gap (ISBIG)".

The scheme aims at covering 30% of the Culturable Command Area (CCA) under micro irrigation, with solar powered pumping system. 30% of the targeted extent will be developed for Conjunctive use of Groundwater. WUAs will be strengthened for Participatory Irrigation Management (PIM); IMTI in Tamil Nadu will be modernised and strengthened for deeper penetration of water education.

During 2018-19, it is proposed to cover an area of 18,193 Ha for an outlay of Rs.171.90 crore in the 8 partly completed commands namely Kalingarayan Anaicut Project in Erode district, Manimuktha Nadhi System in Villuppuram and Cuddalore districts, Pelandurai Anaicut Project in Cuddalore district, Ellis Anaicut Project in Villuppuram 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. In addition to the above, proposals for 19 New Projects to cover an area of 65,334 Ha for an outlay of Rs.418.64 Crore have been sent to Government of India for implementation over a period of 4 years.

3.5.2. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) Per Drop More Crop - Other Interventions

Rainfed areas are subject to the vagaries of monsoon. It is very essential to go for more Water Harvesting Structures both as a conservative strategy and drought proofing strategy. The State Level Sanctioning Committee of PMKSY has approved the Annual Action Plan for the construction of 840 Water Harvesting

Structures for an outlay of Rs.25 Crore. During the year 2016-17, from the first instalment of Rs.11.25 Crore, construction of 377 water harvesting structures were taken up and completed during the year 2017-18. It is proposed to continue the scheme during the year 2018-19 for the balance amount of Rs.15.60 Crore.

3.5.3. Interventions in Micro Irrigation under PMKSY-Per Drop More Crop

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 through the Tamil Nadu Horticulture Development Agency.

Agricultural Engineering Department is entrusted with the recording the measurements of the installed systems. From the year

2017-18, the above works are being taken up by the Agricultural Engineering Department over an area of 1,22,130 Ha.

3.5.4. World Bank Aided Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP)

The Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP) is implemented with the assistance from World Bank over a period of seven years, from 2017-18 to 2023-24 involving the Public Works Department, Agriculture, Agricultural Engineering, Horticulture, Agricultural Marketing, Animal Husbandry and Fisheries departments and Tamil Nadu Agricultural University. A project outlay of Rs.15 Crore is earmarked for Agricultural Engineering Department for creation of 2,800 farm ponds in the 66 sub basin area as a supplementary source of irrigation at critical

stages of crop development. In phase I of the programme 14 sub basins have been selected.

During the year 2017-18, 100 farm ponds were constructed at an outlay of Rs. 69.60 Lakh. The scheme will be continued during 2018-19 with the creation of the remaining 21 farm ponds for an outlay of Rs.12.60 Lakh in the phase I sub basins and 600 farm ponds at an outlay of Rs.3.60 Crore in phase II sub basins.

3.5.5. 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 has been planned for recharging the ground water to

support well irrigation and creating necessary irrigation infrastructure for economic management of all sources of irrigation water. NABARD has sanctioned the project for an outlay of Rs.22.65 Crore with RIDF loan assistance of Rs.21.52 Crore and a State share of Rs.1.13 Crore. The scheme is implemented over a period of three years from 2017-18 to 2019-20.

During the year 2017-18, on-farm water management works have been taken up over an area of 1,118 Ha and 134 water harvesting structures have been created at an outlay of Rs.4.53 Crore.

During the year 2018-19, the scheme is being implemented to cover an area of 2,400 Ha under on-farm development works and 172 water harvesting structures at an outlay of Rs.9.06 Crore.

3.5.6. Reclamation of 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 NADP from 2016-17. In Cuddalore district, location specific interventions suitable for reclaiming the problem soils are being implemented in an area of 1,100 Ha with an outlay of Rs.6.67 Crore to increase the soil health and productivity. So far 892 Ha were taken up for an amount of Rs.5.09 Crore.

During the year 2017-18, the scheme was proposed to continue in Kancheepuram, Villupuram, Ramanathapuram, Tirunelveli and Thoothukudi districts which have about 1,750 Ha of area affected by saline and alkaline problems with an outlay of Rs.10.50 Crore.

On receiving the sanction and approval from Government of India, the scheme will be continued during 2018-19.

3.6. Promotion of Green Energy in Agriculture - Provision of Solar Powered Pumping Systems

In order to help the farmers to meet the energy demand for irrigation and to promote utilization of solar energy in agriculture, the scheme of provision of solar powered pumping system to the farmers with subsidy assistance is being implemented from the year 2013-14. Hon'ble Chief Minister announced the programme of providing solar powered pumping systems to the farmers with 80% subsidy assistance during 2013-14 and 2016-17 and the programme was successfully implemented. So far, 2,826 solar pumps have been installed to the farmers at a total subsidy of Rs.101.40 Crore. The solar pumps are being

utilised effectively. An area of 7,065 Ha has been benefitted by the solar pumps installed so far. The total installed capacity of the solar pumps is 14 MW and the savings in electrical energy obtained is about 1.77 Crore units per year.

Taking into consideration of the huge demand prevailing among farmers, Hon'ble Chief Minister announced the programme of provision of 1,000 solar powered pumps upto a capacity of 10 HP during the year 2017-18 with 90% subsidy assistance to the tune of Rs.49.90 Crore. The sharing pattern of subsidy is 40% by the State, 30% by TANGEDCO and 20% by MNRE.

For availing subsidy assistance under the scheme, the farmers who are already provided with free electricity connection by TANGEDCO shall come forward to relinquish the connection

or the farmers who have registered the applications for free electricity connection with TANGEDCO shall withdraw it in the event of provision of solar powered pumping systems to them.

The program is under progress. The scheme is to be continued during the year 2018-19.

3.7. Infrastructure Development

Agricultural Engineering Department provides technical support to Agriculture, Horticulture, Agricultural Marketing and Agri Business Departments in the Ministry of Agriculture for the Construction of Buildings, Creation and Maintenance of Farms, Parks and Gardens all over Tamil Nadu in addition to developing infrastructure for its own.

3.7.1. Agriculture Infrastructure Development

3.7.1.1. Integrated Agricultural Extension Centre (IAEC)

Integrated Agricultural Extension Centre is an umbrella structure which encompasses the block level offices of Departments of Agriculture, Horticulture, Agricultural Engineering, Agricultural Marketing and Agri Business and Seed Certification to implement the farmer's welfare schemes and provides technical guidance for the benefit of farming community.

Agricultural Engineering Department has so far constructed 46 IAECs under NABARD assistance and 4 works are in nearing completion stage. Under NADP assistance, so far 38 IAECs are constructed and 8 works are also nearing completion stage.

3.7.1.2. Sub Agricultural Extension Centre (SAEC)

Sub Agricultural Extension Centres are constructed at revenue village level to act as, place for distribution of quality inputs, conducting village campaigns and trainings, conducting field demonstrations and act as a meeting point for all the agriculture related department officials for sharing the updated technical information to the farmers.

Agricultural Engineering Department is constructing 17 SAECs for Agriculture Department in 9 districts with a unit cost of Rs.30 Lakh under NADP-2017-18 assistance.

3.7.1.3. Farm and other Infrastructure Development

Agricultural Engineering Department is developing the infrastructure in 40 State Seed

Farms and 21 Coconut Nurseries for Agriculture Department under NABARD-RIDF XXIII-2017-18.

Agricultural Engineering Department has completed 7 Soil Testing and Fertilizer Control Laboratories from the year 2016-17.

Agricultural Engineering Department has been entrusted with construction of 4 Storage Godowns for Liquid Bio Fertilizer Units for Agriculture Department under NADP-2017-18 assistance with a unit cost of Rs.50 Lakh.

3.7.2. Horticulture Infrastructure Development

Agricultural Engineering Department has constructed 15 Horticulture Information and Training Centre and Horticulture Technology Resource Centres from the year 2014-15 for providing training and capacity building to farmers at district level. Creation and

maintenance of all the works in State Horticulture Farms, Parks and Garden maintenance related civil works are assigned to Agricultural Engineering Department under NABARD, Farm Receipt Account (FRA), NHM, NADP and external aided assistance. The creation of Botanical Garden at Kanyakumari district, Centre of Excellence for Cut flowers at Thalli in Krishnagiri District, Centre of Excellence for Vegetables at Reddiyarchatthiram in Dindugal District, Face lifting of Government Botanical Garden, Udhagamandalam, Establishment of Rose Garden at Kodaikanal, Modernization of Bryant Park at Kodaikanal and Renovation of Semmozhi Poonga at Chennai are some of the important works entrusted to Agricultural Engineering Department.

3.7.3. Storage Infrastructure Development

Agricultural Engineering Department has constructed 41 Open Transaction Sheds, Godowns, Cold Storage units in different Districts for Agricultural Marketing and Agri Business Department from the year 2015-16. Construction of 27 storage godowns has been entrusted to Agricultural Engineering Department during 2017-18.

3.7.4. Agricultural Engineering Extension Centre (AEEC)

Agricultural Engineering Extension Centres (AEECs) are the resource centres for the farmers to get technical knowhow on Agriculture mechanization, water harvesting and water management aspects, post harvest processing and value addition etc., for enhancing their income levels.

Agricultural Engineering Department is constructing 29 Agricultural Engineering Extension Centres (AEECs) at a unit cost of Rs.75 Lakh each at Revenue Division level during the year 2017-18 with the total fund allocation of Rs.21.75 Crore under NABARD-RIDF-XXIII assistance.

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 working 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 in-charge of the administrative and technical control of the departmental activities in the region, while 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

Category of post	Numbers
Chief Engineer	2
Superintending Engineer	14
Executive Engineer	38
Assistant Executive Engineer	125
Other Staff	3836
Total	**4015**

4. AGRICULTURAL EDUCATION, RESEARCH AND EXTENSION EDUCATION

4.1. Introduction

The prime focus of Tamil Nadu Agricultural University is to develop human resource to uplift agriculture through quality Agricultural Education, enhance the production and productivity of crops through Agricultural Research and educate the farmers and Extension Officials through Agricultural Extension Education programmes.

Moreover, developing linkages with farmers and other stake holders by facilitating Agri-business Development in tune with the State and National Agricultural Policy. To enable the farmers and rural youth to adopt new technologies and develop their skills in farming and other farm related activities, many courses

are offered through Open and Distance learning mode. Efforts are taken to transform agriculture into a commercially viable profession and to modify production strategies based on market preference.

4.2. New initiatives

For infrastructure facilities at seven Agricultural Colleges and three Research stations under Tamil Nadu Agricultural University (TNAU), an amount of Rs.108.04 crore has been allocated with financial assistance from NABARD.

At Tamil Nadu Agricultural University, **Center of Excellence in Biotechnology** with research infrastructure meeting Global standards was established at an estimated cost of Rs. 430 crore in a period of 10 years. The required funding will be sourced from State and Central Governments, National

Bank for Agriculture and Rural Development (NABARD), National and international institutions, funding agencies and other participating private institutions. The Government of Tamil Nadu has released Rs.14.45 crore for 2017-18, with the financial assistance from NABARD.

4.3. Infrastructure

During the year 2017-18, infrastructure facilities namely; boys hostels, girls hostels, farm offices and other utility buildings at a cost of Rs.50.79 crore were created at the Agricultural College and Research Institutes at Eachangkottai in Thanjavur district, Kudumiyanmalai in Pudukkottai district and Vazhavachanur in Tiruvannamalai district.

A modernized kitchen cum dining hall was constructed at Coimbatore at a cost of Rs.3.95 crore.

At Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli, ladies hostel and modernized kitchen cum dining hall were established at a cost of Rs.5.775 crore.

Students Amenity Centre at Agricultural College and Research Institute, Madurai was created at a cost of Rs.2.50 crore.

4.4. Agricultural Education

Tamil Nadu Agricultural University currently offers 13 Under-Graduate, 33 Master's degree, 27 Doctoral degree programmes through its constituent colleges. Three constituent diploma institutes are operating under Tamil Nadu Agricultural University offering Diploma in Agriculture / Horticulture. During the year 2017-18, 360 students passed out after

successfully completing diploma course and 806 students were newly admitted. In Under-Graduate programme, 1683 students passed out successfully and 3381 students (1438 in constituent colleges and 1943 in affiliated colleges) were newly admitted. In Post-Graduate degree programme, 398 students passed out and 459 new students were admitted. In Doctoral degree programmes, 97 students passed out successfully and 139 new students were admitted.

The number of applications received for admittance to various Under-Graduate programmes has increased from 9652 during 2011-12 to 49,039 during 2017-18.

Table: 4.4.1 District wise Constituent colleges

Sl. No.	District	Name of the College
1	Coimbatore	Agricultural College and Research Institute, Coimbatore
2		Horticultural College and Research Institute, Coimbatore
3	Coimbatore	Agricultural Engineering College and Research Institute, Coimbatore
4		Forest College and Research Institute, Mettupalayam
5	Madurai	Agricultural College and Research Institute, Madurai
6		Community Science College and Research Institute, Madurai
7	Tiruchirapalli	Anbil Dharmalingam Agricultural College and Research Institute, Navalur Kuttappattu, Tiruchirapalli
8		Horticultural College and Research Institute for Women, Navalur Kuttappattu, Tiruchirapalli
9		Agricultural Engineering College and Research Institute, Kumulur
10	Thanjavur	Agricultural College and Research Institute, Eachangkottai
11	Pudukkottai	Agricultural College and Research Institute, Kudumiyanmalai
12	Tiruvannamalai	Agricultural College and Research Institute, Vazhavachanur

Sl. No.	District	Name of the College
13	Theni	Horticultural College and Research Institute, Periyakulam
14	Thoothukudi	Agricultural College and Research Institute, Killikulam

Table: 4.4.2. District wise Constituent Diploma Institutes

Sl. No.	District	Name of the College
1	Tiruchirapalli	Institute of Agriculture (English Medium), Agricultural Engineering College & Research Institute, Kumulur – 621 712
2	Pudukkottai	Institute of Agriculture (Tamil Medium), National Pulses Research Centre, Vamban – 622 303.
3	Kanyakumari	Institute of Horticulture (English Medium), Horticultural Research Station, Pechiparai – 629 161.

4.4.1. Open and Distance Learning Courses

Tamil Nadu Agricultural University also runs correspondence courses through its Directorate of Open and Distance Learning (ODL). Currently, 21 certificate courses, four Master's degree programmes, five P.G. diploma courses, one Bachelor degree (B. Farm Science) and one Master's degree (M. Farm Science) programme are offered for the benefit of farming community, rural youths and SHGs etc. The University also offers Diploma programme for Input dealers.

4.4.2. Students welfare and Career counselling and placement

During 2017-18, totally, 193 students were placed in various industries through the Directorate of Students Welfare (DSW) namely; Agro Industry (102), Seed Industry (4), Food

Industry (21), NGO / Government (25), Banking (27) and other institutions (14). Communication Laboratory Facility is used to enhance the soft skills of the students. The Directorate also organizes motivational lectures, coaching classes, mock group discussions, interviews and soft skill workshop for better placements of the students.

4.5. Ranks and Awards

4.5.1. Ranking of Educational Institutions

Tamil Nadu Agricultural University was ranked **Seventh position** among the State Agricultural Universities, ICAR institutes and Deemed Agricultural Universities across the Country by the Indian Council of Agricultural Research, New Delhi for the year 2017.

During the year 2017, Tamil Nadu Agricultural University was ranked **17th position among all Universities across India and**

5th position under the category Teaching and Learning resources by the National Institutional Ranking Framework (NIRF), Ministry of Human Resource Development.

The QS BRICS (Brazil, Russia, India, China and South Africa) rated Tamil Nadu Agricultural University in the **105th position in 2018** among the academic institutions in BRICS countries.

4.5.2. Awards conferred on Tamil Nadu Agricultural University

During the year 2017-18, Tamil Nadu Agricultural University was conferred with six awards namely;

KVK, Vridhachalam, Cuddalore district was awarded for the **best performance of Cluster FLD on Oilseeds** on 18.02.2017.

Sir.J.C.Bose Memorial Award awarded by Indian Science Monitor recognizing the

contribution in Forest Ecology and Environment on 28.02.2017.

Pandit Deen Dayal Upahdhyay Rashtriya Krishi Vigyan Protshahan Puraskar award was given to KVK Vellore of Tamil Nadu as National Best KVK Zonal Award for Zone VIII of the ICAR on 15.03.2017.

In recognition of outstanding work on Zn nutrition of crops and its promotional activities in agriculture, **FAI-IZA award** was given on 07.12.2017 by the Fertilizer Association of India, New Delhi and International Zinc Association, Belgium

The National Agricultural Development Programme project on Price forecasting and Development of Market Advisories to interface with E- resource division of AMI&BPC was awarded as the TOP 30 projects in India from the **SKOCH** Innovation Order of Merit Award – 2017 on 21.12.2017**.**

Mr.P.Sivaraj, Ph.D, Scholar, Department of Agricultural Extension and Rural Sociology, TNAU, Coimbatore and State President, AIASA, Tamil Nadu, received the "**National Award - Student of the Year Award 2016**" for his outstanding contribution for undertaking Students Welfare Activities and Empowering the Youth in Agriculture in the State of Tamil Nadu, on 22.02.2017 by Indian Council for Agricultural Research (ICAR), All India Agricultural Students Association (AIASA) at Raichur (Karnataka).

4.6. 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 826 new crop varieties 166 agricultural implements and 1,528 management technologies.

4.6.1. Newly released crop varieties

Tamil Nadu Agricultural University has released eight new crop varieties during 2017-18.

Sl. No.	Crop & Variety	Particulars
1.	Rice ADT 51	Long duration (150-160 days); Suitable for single samba season. Higher grain yield than CR 1009 having similar duration. Grain quality medium slender.
2.	Cowpea VBN 3	Determinate plant type with synchronized maturity and matures in 75-80 days. Resistant to Bean Common Mosaic Virus (BCMV) disease and gives grain yield of 1013 kg/ha under rainfed conditions.
3.	Groundnut TMV 14	Short duration bunch type and matures in 95-100 days. Suitable for all seasons under rainfed and irrigated conditions. Gives 2124 kg/ha dry pod yield under rainfed and 2286 kg/ha under irrigated conditions.
4.	Sunflower COH 3	Hybrid variety; Matures in 90-95 days giving 1613 kg/ha grain yield and high oil yield 666 kg/ha. Moderately resistant to necrosis, leaf spot and powdery mildew.

Sl. No.	Crop & Variety	Particulars
5.	Sugarcane COG 6	Matures in 11 months. Suitable for early season planting (Dec-Jan) for Vellore region, especially in salt affected soils, with higher cane yield than CO 86032. Gives a cane yield of 140.56 t/ha. Suitable for jaggery production.
6.	Sugarcane CO 06022	Suitable for early season planting in all districts of Tamil Nadu and Puducherry and matures in 10 months. Moderately resistant to red rot. Gives a cane yield 140.2 t/ha under normal conditions and tolerant to tillering phase drought. Gives more cane and sugar yield compared to CO86032.
7.	Ribbed Gourd COH 1	Hybrid variety with a seed to seed duration of 140-150 days. Green fruit harvest starts early (35-40 days) and extends upto 120-130 days. Gives a green fruit yield of 33.7 t/ha.
8.	Malai vembu MTP 2	Quick growing short rotation tree, attains 12 m height with 30-45 cm girth in 24 months. Gives a wood yield of 100 t/ha in 24-36 months for pulp and wood yield of 120 t/ha at 60-72 months for plywood purpose.

4.6.2. Research Schemes

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

4.6.2.1. Tamil Nadu Innovation Initiatives programmes (2017-18)

a. Development of nutritionally enhanced, climate-resilient, Premium Quality rice varieties (Rs.2.56 crore)
b. Production and distribution of quality grafted vegetable seedlings (Rs.2.78 crore)
c. Organic inputs and bio inputs characterization for sustainable organic agriculture (Rs.1.32 crore)
d. Ensuring supply of uniform and quality planting material in coconut through micro propagation (Rs.6.63 Crore)

e. Skill development and employment generation in Palmyrah based ventures for rural youth (Rs.1.365 Crore)

f. Optimising farm machanisation practises for different soil types and crops of Madurai District (Rs.1.66 Crore)

4.6.2.2. National Agricultural Development Programme (NADP) (2017-18)

i. Establishment of Pulses-based inoculants production units for sustainable pulse productivity of Tamil Nadu (Rs.3 crore).

ii. Establishment of pilot water soluble fertilizer production units for facilitating farmers for stage wise crop nutrition (Rs.3.63 crore).

iii. Remote sensing based information for crop coverage, yield estimation and drought monitoring (Rs.1.84 crore).

4.7. Agricultural Extension Education

4.7.1. 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 2017-18, 89 On-Farm Testing (OFT) trials ware organized in an area of 167.5 ha benefiting 503 farmers; 190 Front Line Demonstrations (FLDs) of newly released varieties and technologies in 595 locations benefiting 1798 farmers. The KVKs also conducted 369 On-campus and Off-campus training programmes to 15792 farmers and 34 vocational training programmes benefitting 876 farmers.

Table: 4.7. Krishi Vigya Kendras

Sl. No.	District	Location
1	Cuddalore	Virudhachalam
2	Dharmapuri	Papparapatty
3	Kanyakumari	Thirupathisaram
4	Madurai	Madurai
5	Nagapattinam	Sikkal
6	Pudukkottai	Vamban
7	Ramanathapuram	Ramanathapuram
8	Salem	Sandhiyur
9	Tiruvallur	Tirur
10	Tiruvarur	Needamangalam
11	Tiruchirappalli	Sirugamani
12	Vellore	Virinjipuram
13	Villupuram	Tindivanam
14	Virudhunagar	Aruppukottai

4.7.2. Educational Media Centre (EMC)

For the benefit of farming community during the year 2017-18, the Educational Media Centre of TNAU produced 105 video programmes and 182 video lessons were sold.

4.7.3. TNAU Agri-tech Portal (http://agritech.tnau.ac.in)

The Agri-tech 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.

The details of usage of the Agri-Tech Portal are given below:

Sl. No	Particulars	Year (2017 - 2018)
1.	Total viewers of portal	40,00,509
2.	Daily visitors (Average)	5,519 - 8125
3.	Average time spent on site	15 minutes
4.	Repeated hits / day	61%
5.	e-Mails queries answered	275
6.	New visitors / day	1750

4.7.4. Android Apps in Agriculture

It 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 of Government of India.

4.7.5. 'e-Velanmai'

An extension approach was 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.

4.7.6. Agricultural Technology Information Centre (ATIC)

It 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.

4.7.7. Farmers Facility Centre

It provides first-hand information to the farmers about the technologies, and renders analytical services with regard to soil and water and diagnostic services of plant samples besides coordinating scientist-farmer interactions. Every month, on an average, 250 farmers are visited the centre for getting farm advisory services and for soil and water analyses.

4.7.8. 'Uzhavarin Valarum Velanmai'

A monthly Tamil magazine of Tamil Nadu Agricultural University, Coimbatore is published since, 1975 and has a subscriber base of 12,154.

4.7.9. Farmers Mela / Exhibitions

Tamil Nadu Agricultural University KVKs organized the World Soil Health Day campaign where in, 2401 farmers participated. Also, 1333 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 – 2017 and stalls and demonstrations on various technologies were organized and over 30,000 visitors including farmers benefitted.

State Level Farmers day was conducted at Tamil Nadu Agricultural University, Coimbatore on 09.02.2018 & 10.02.2018 and more than 4,000 farmers participated.

4.7.10. Kisan Call Centre (KCC)

It provides services to farmers through a toll-free number 1551 or 1800-180-1551. The callers 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 2017-18, totally, 2,51,015 calls were answered.

4.8. TNAU – Information and Training Centre, Chennai

It conducts training programmes periodically for the benefit of farmers/youth, urban men and women. During the year 2017-18, totally 75 trainings programmes were conducted on 31 varied topics such as; roof gardening, kitchen gardening, landscape gardening, indoor plants care and maintenance, bonsai making, nursery technology, flower arrangement & bouquet making,

vermicomposting, organic farming, water quality standards, urban solid waste and compost technology, mushroom cultivation, herbal cookery, Preparation of bakery products, value addition of millet and milk products to the benefit of 2,177 participants.

4.9. Quality Seed production and distribution

During 2017-18, a total quantity of 1749 quintals of breeder seeds, 1440 quintals of foundation seeds, 206 quintals of certified seeds and 669 quintals of TFL seeds in 175 varieties of principal crops and 29.23 lakh seedlings in various crops were produced and distributed. Apart from these, 2.5 lakh seed packets of flower and vegetable seeds were sold through the Automatic Seed Vending Machines installed at 11 locations.

During 2018-19, it is targeted to produce 1600 quintals of breeder seeds (approximate), 7113 quintals of foundation seeds, 26225 quintals of certified seeds and 1894 quintals of TFL seeds of principal agricultural crops and 105 quintals of certified and 100 quintals of TFL seeds in horticultural crops. Besides, 32.56 lakh seedlings in various horticultural crops are to be produced and distributed.

4.10. 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 2017-18, totally, 96 bulletins each with four advisories were prepared and 96 SMS

were sent to 8.89 lakh farmers per time on six topics viz., agricultural crops, horticultural crops, plantation crops, cattle and small ruminants, poultry and other birds and extreme weather events. Special bulletins were disseminated for Southern districts affected by Ockhi Cyclone.

4.11. Price Forecast and Market Intelligence

In the World Bank Funded sheme Tamil Nadu – Irrigated Agriculture Modernization Project (TN - IAMP) was implemented during 2017-18. The price forecasts for 16 major agricultural and horticultural crops of Tamil Nadu namely; Maize, Black gram, Green gram, Groundnut, Gingelly, Sunflower, Coconut, Copra, Cotton, Tomato, Bhendi, Brinjal, Onion, Turmeric, Coriander, Chillies and Banana (Nendran, Poovan and Karporavalli) were given as market advisories

prior to sowing and prior to harvest to take appropriate decisions by the farmers.

4.12. Agri-Business Development

More than 100 incubatees were enrolled with this Directorate of Agri Business Development and 45 technologies were 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 2017-18, technologies for TNAU Maize Hybrid COH (M) 8 (F1 Commercial Seed), Sugarcane Juice Bottling Technology, Palmyrah (value addition) and TNAU Millet Dehusker were commercialized.

4.13. Intellectual Property Rights

Tamil Nadu Agricultural University obtained Nine 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.

5. SUGAR

5.1. Sugar industry is the second largest agro-based industry in Tamil Nadu and its development is pivotal to the rural economy of the State. There are 43 sugar mills in the State of which 16 are in the cooperative sector, 2 are in the public sector and 25 are in the private sector. Annually sugarcane is cultivated in an area of 2.46 Lakh hectares with an average production of 246 Lakh Metric Tonnes. The average annual production of sugar in Tamil Nadu is 11.30 Lakh Metric Tonnes which accounts for 4.55 % of the national production.

5.2. Sugar industry is one of the largest generators of employment in rural areas. The availability of sugarcane is vital for sustaining the growth of the industry. To promote sugarcane productivity and production, the State Government has been promoting the flagship

technology "Sustainable Sugarcane Initiative (SSI)" under which subsidy assistance is being extended to the sugarcane growers for the installation of shade nets, production of bud chip seedlings etc. For 2017-18, the State Government has extended Rs.30 Crore subsidy for the installation of 1,600 Nos. shade nets and production of 24 Crore bud chip seedlings. During 2017-18 season, it is estimated that the sugar mills in the State will crush 67.15 Lakh Metric Tonnes of sugarcane and to produce 5.88 Lakh Metric Tonnes of sugar.

5.3. To economise and improve the efficacy in water usage and fertigation the farmers are encouraged to adapt micro irrigation in sugarcane cultivation under various schemes. The State Government has been extending 100% subsidy for small and marginal farmers

and 75% subsidy for other farmers for adopting micro irrigation.

5.4. This declining trend in sugarcane availability is attributed to the failure of monsoonal rainfall, increasing cost of cultivation, shortage of harvesting labourers and non-payment of cane price on time etc. Hence to improve this, the Department of Sugar is aiming to achieve vertical growth in sugarcane productivity by covering 50% of the planted area with rejuvenated Co-86032, by undertaking varietal trails to identify new high sugar varieties and by bringing 20% of the area under wider row planting, to aid farm mechanization. Emphasis is also given to application of Bio-inputs and other sugarcane development activities.

5.5. During 2018-19, the Government is programmed to implement technologies such as

rejuvenation of Co-86032 sugarcane variety, cultivation of new sugarcane varieties, promotion of usage of budchip and tissue culture seedlings, intercropping and improvement of soil fertility through trash mulching by extending subsidy of Rs.15 Crore.

5.6. To ensure remunerative sugarcane price to the farmers and its timely payment, the State Government has decided to switch over to the revenue sharing based price fixation model from the current 2017-18 crushing season. Under this new pricing policy, the sugarcane farmers will be assured of Fair and Remunerative Price (FRP) and will receive a share in the profits over and above the FRP. Further to facilitate this transition and to protect the interest of the farmers, transportation charge for sugarcane will be continued to be borne by the sugar mills. The State Government has also assured the farmers

the present SAP of Rs.2,750 Per Metric Tonne by paying the difference between the present State Advised Price (SAP) and the price received under the new revenue sharing formula as transitional production incentive directly to the farmers.

6. SEED CERTIFICATION AND ORGANIC CERTIFICATION

Agriculture is the ultimate driving force of the Nation. Attaining self sufficiency in food production, to meet out the demands of the growing population is the greatest challenge of the day. Therefore to increase the food production and to attain self sufficiency, use of quality inputs in agriculture is essential.

Seed is the fundamental input that determines the yield, 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.

In order to increase the certified seed production and to ensure quality seed supply for

the benefit of the farmers, the Department of Seed certification and Organic Certification is implementing the following programmes namely,

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

6.1. Seed Certification:

Seed Certification wing of the Directorate of Seed Certification and Organic Certification is involved in certification of seeds of notified crop varieties, in accordance with the Indian Minimum Seed Certification Standards (IMSCS).

Seed Certification is a regulatory process to secure and make available seeds with standard qualities of germination, physical purity, genetic purity and seed health as prescribed under the

Indian Minimum Seed Certification Standards (IMSCS).The functions of the seed certification wing are carried out in accordance with the provisions of The Seeds Act 1966 and The Seeds Rules 1968.

Out of the total quantity of seeds certified, the quantity certified under Paddy crop accounts for 92%. Due to increased demand there is a need to increase the certified seed production in Millets, Pulses, Oil seeds and vegetables crops. The certified seed requirement for these crops are met through the seeds produced by the Department. To supplement this, efforts are also taken up by this Department for involving more private seed producers to take up seed certification under millets, pulses, oilseeds and vegetables.

During the year 2017-18 an area of 55,783 Hectares have been registered for seed farm and

a total quantity of 69,244 Metric Tonnes of seeds have been certified under various crops.

Table 6.1. AREA REGISTERED AND QUANTITY CERTIFIED UNDER SEED CERTIFICATION DURING 2017-18

S.No.	Headquarters	Area registered In Hectares	Quantity Certified in Metric Tonnes
1	Kancheepuram	1376	1860
2	Tiruvallur	962	1057
3	Cuddalore	2031	1725
4	Villupuram	3373	4242
5	Vellore	1584	1167
6	Tiruvannamalai	1382	910
7	Salem	1677	624
8	Namakkal	732	2381
9	Dharmapuri	988	531
10	Krishnagiri	938	623
11	Coimbatore	2503	1805
12	Erode	6188	29168
13	Tiruchirapalli	1753	673
14	Perambalur	910	1570
15	Karur	524	238
16	Pudukkottai	1239	641

S.No.	Headquarters	Area registered In Hectares	Quantity Certified in Metric Tonnes
17	Thanjavur	7819	2009
18	Nagapattinam	2551	1876
19	Tiruvarur	6663	1905
20	Madurai	2024	6259
21	Theni	809	1416
22	Dindugal	2136	1891
23	Ramanathapuram	744	336
24	Sivagangai	475	425
25	Virudhunagar	1036	502
26	Tirunelveli	1958	2771
27	Thoothukudi	1313	491
28	Kanyakumari	95	148
	Total	**55783**	**69244**

It is proposed to register an area of 57,000 hectares and to certify 1.10 Lakh metric tonnes of seeds during the year 2018-19.

There are 846 approved seed processing units in Tamil Nadu involved in processing of field run seeds for quality certified seed production.

6.1.1. Government funded schemes

Ongoing Schemes

During the year 2016-17, under National Agricultural Development Programme (NADP), an amount of Rs.155.42 lakhs was sanctioned for construction of Training hall with the purchase of equipments and infrastructure for the conference hall facilities at the premises of Directorate of Seed Certification and Organic Certification, Coimbatore. Construction work is in progress.

6.1.2. Budget announcement during 2017

As announced in the Budget speech 2017, an amount of Rs.100 lakhs was sanctioned towards the purchase of equipments and instruments for strengthening and quality improvement of Seed testing laboratories of the Directorate. The project has been completed.

6.1.3. Certification process online

To quicken and to simplify the certification process, all the activities of certification will be made online for which an exclusive software - SPECS (Seed Production Enforcement Certification System) has been developed. Necessary infrastructure facilities will be created for this purpose.

The IT wing of the Directorate of Agriculture has developed an exclusive software "SPECS" to make certification process online. This is special mention to note that this is the first of its kind among Indian Certification Agencies. "The software programme apart from making certification process online" shall quicken the process of certification activities, link all the activities of the certification department to bring better monitoring and more transparency in the system. Online certification process shall facilitate farmers/seed producers to register

online and to know the progress through "online".

6.2 Seed Quality Control:

Seed Inspection wing of the Directorate of Seed Certification and Organic Certification is involved in Seed Quality Control activities, to monitor and regulate distribution of quality seed by enforcement of the existing seed legislations.

The role of seed quality control wing is to ensure sale of quality seeds to the farmers in the state, by adhering to the provisions prescribed in various seed legislations viz., The Seeds Act 1966, The Seeds Rules 1968, The Seeds (Control) Order, 1983 and The Environment (Protection) Act 1986. The seed sellers in the state are issued licenses by the Department.

At present there are 9,360 licensed seed selling points in the State under Seed Inspection wing. These seed selling points are inspected at least six times in a year by the seed Inspector

and seed samples are drawn for quality check from the seed lots kept for sale. The samples are analyzed in the notified seed testing laboratories and based on the results obtained, actions are initiated against sub standard seed lots. Contraventions of seed legislations detected by the Seed Quality Control wing are dealt with legal actions.

During the year, 2017-18, a total number of 68,796 seed selling point inspections were made as against the annual target of 68,500 inspections and 67,150 seed samples were drawn for quality check as against the annual target of 66,000 seed samples. Sub standard seeds from 1,457 seed lots weighing 1,168 Metric Tonnes valued at Rs.852 Lakhs stopped from selling to the farmers.

It is proposed to make 68,500 seed selling point inspections and to draw 66,000 seed samples for quality check during the year 2018-19.

6.3. Seed Testing

Seed Testing activities are carried out by notified Seed Testing Laboratories to analyse and to ensure seed qualities. Seed testing is essentially a quality test in evaluating the potential of seed lot and provides the vital information on quality aspects of seeds to the farmers.

The implementation of the seed certification and seed quality control programmes are dependent on the results declared by the notified seed testing laboratories of this department. The various seed standards such as germination, physical purity, moisture, seed health and other distinguishable varieties as per the Indian Minimum Seed Certification Standards (IMSCS) are determined in the seed testing laboratories.

At present there are 33 notified seed testing laboratories in our State. The certified seed samples received from the seed certification

wing, the official samples received from the seed quality control wing, and the service samples sent by the farmers, seed dealers and seed producers are tested in the notified seed testing laboratories. Grow out tests are conducted to ascertain the genetic purity of a given seed lot. Genetic Purity tests are conducted for crop seeds for which 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 the Directorate, functioning at Kannampalayam (Coimbatore). A State Seed Testing Laboratory is attached to the Directorate in which referral test for Germination of seed samples is done. Also, detection of Bt toxin for cotton is done in the laboratory. The seed samples for Bt test are sent by Seed Inspectors of the Department.

A total number of 82,204 seed samples were analyzed for quality check during 2017-18 and it

is proposed to analyze 92,000 seed samples for the year 2018-19.

6.3.1 ISTA accreditated seed testing laboratory:

The seed testing laboratory, Coimbatore is the only public sector laboratory in India having the pride of being accreditated by the '**International Seed Testing Association'** (ISTA) in the year of 2014. This laboratory has facilities and the capabilities to analyse seed samples from countries around the world. It is a member laboratory of ISTA from 2007 onwards. This laboratory was accreditated for the scope of germination, Other crop Species (OCS) and physical purity test for crops like cereals, pulses and vegetable crops.

The re-accreditation audit was conducted by ISTA Audit team during April 2017 and the accreditation is extended up to 2019. Being an accreditated laboratory it is authorized to issue

Orange International Seed lot certificates (OIC) and Blue International seed sample certificates (BIC) to the seed exporters.

The Seed Testing Laboratory, Coimbatore was awarded with **"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.

There is a growing demand in the International Seed Market for vegetable seeds. The ISTA accredited Seed Testing Laboratory of Coimbatore is a gateway, even for small entrepreneurs to become exporters. Steps will be taken to give wide publicity to attract more number of exporters to utilize the facilities extended by the laboratory.

Therefore this gateway can be harnessed by implementing export oriented seed production schemes in potential areas.

6.3.2. 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.58.75 Lakhs.

This is the first of its kind among the public sector under takings in the Nation. The DNA Finger Print Laboratory has been notified as "State DNA Finger Print Laboratory" under the Seeds Act 1966 and has a potential to ensure the Genetic Purity of 15 notified varieties of paddy crop which are prominently grown in the state.

6.3.3. Grow out test Farm:

Genetic purity and germination are the very important Seed quality parameters. A technique

called Grow Out Test is used to assess the genetic purity of crop varieties under field condition. The Seed certification and Seed law enforcement wings of this Department periodically send samples to the Grow Out Test farm for assessing genetic purity.

Grow out test plots are examined throughout the growing season with a special emphasis during flowering to maturity. All the plants are examined for the distinguishing morphological characters and screened for genetic purity.

6.4. Training:

The field level functionaries in the department are suitably trained and oriented to perform the different functions such as field inspections, seed processing, seed sampling, seed testing, and in seed legislations. To promote quality seed production and distribution, the following training programmes are organized by the training wing of this Department.

6.4.1. Orientation Training:

Training is given to the newly posted technical officers of the Department on seed certification procedures, field inspections, identification of crop varieties, processing, sampling, tagging, and procedures involved in seed testing and seed quality control.

6.4.2. Refresher Training:

The already positioned technical officers of the department are trained on the latest techniques on seed production, seed testing and seed inspection.

6.4.3. Training to Seed Producers:

Training is given to seed producers on seed production to improve quality seed production.

6.4.4. Training to Seed Dealers:

Training is given to the seed dealers on sale of quality seeds, seed storage and on the regulatory aspects of seed legislation.

6.4.5. Inter-state training:

A total number of 18 officials from the department were sent to other states for obtaining technical know-how.

During the year 2017-18 a total number of 47,418 persons have been trained as against the annual target of 47,000. It is proposed to train 47320 persons during the year 2018-19.

6.5. Organic Certification:

The Tamil Nadu Organic Certification Department (TNOCD) is a Certification body responsible for the inspection and certification of the organic crop production in compliance with the NPOP (National programme on Organic Production) norms.

The TNOCD is accredited by APEDA (Agricultural and Processed Food Products Export Development Authority), New Delhi,

Ministry of Commerce and Industry, Government of India.

The procedures and the quality system followed by the department is on par with the standards of the European Union. TNOCD has the second largest number of individual farmers among the certification bodies functioning in the country. TNOCD also imparts training to the registered organic farmers on National Standard for Organic Production (NSOP) and TNOCD standards.

In co-ordination with the Department of Agriculture, Department of Horticultural and Plantation Crops under ATMA / SEEPERS scheme awareness programmes on Organic Certification was carried out, to bring in more farmers under Organic Certification Programme which in turn helps the export of Organic Products from the State.

An Exclusive website www.tnocd.net has been developed for the benefit of the organic farmers to know the details on registered organic farmers, crops and contact numbers for any other clarification. The website consists of required forms for new registration and other details.

Towards creating awareness on organic certification, TNOCD is participating in the International level exhibition like BIO FACH, New Delhi Organic and Millets Trade Fair, Bangalore University Exhibitions and imparting training to farmers in District and Block Level.

During the year 2017-18 an area of 30,207 acres of land has been inspected under Organic certification. An area of 31,000 acres is proposed for organic farm inspection during 2018-19 for the issue of scope certificate.

TABLE. 6.2. DETAILS ON AREA REGISTERED UNDER ORGANIC CERTIFICATION (2017-18)

S.No	Headquarters of Organic Certification Inspector	Jurisdiction (Districts)	Area Registered (Acres)
1	Coimbatore	Coimbatore, Tiruppur, Nilgiris, Erode, Salem, Namakkal, Dharmapuri and Krishnagiri	**11,654**
2	Tiruchirapalli	Tiruchirapalli, Karur, Perambalur, Ariyalur, Pudukkottai, Thanjavur, Tiruvarur and Nagapattinam	**5,013**
3	Madurai	Madurai, Virudhunagar, Tirunelveli, Sivagangai, Ramanathapuram, Theni, Dindugal, Thoothukudi and Kanyakumari	**5,067**
4	Vellore	Vellore, Tiruvannamalai, Villupuram, Kancheepuram, Tiruvallur and Cuddalore	**8,473**
		Total	**30,207**

6.6. Establishment:

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 is allotted to this department to support the activities of Seed Certification & Organic Certification.

7. AGRICULTURAL MARKETING AND AGRI BUSINESS

Agricultural Marketing and Agri business activities coupled with post harvest management assumes greater importance in the wake of emerging new challenges in agriculture sector, increasing demand for food and improving the standard of living of farming community to achieve sustainable agricultural development.

Since agricultural produce are seasonal in nature, pricing of the produce depends on factors like seasonality, perishability, demand and supply. Most of the farmers in the State are small and marginal, often lacking the ability to produce enough marketable surplus for larger and remunerative markets. As a result, farm gate sales are high in the State and this is due to lack of access to credit, primary processing

facility, information on market prices and quality parameters.

An efficient marketing system would enable the farmers to get the best possible returns, narrow down the price spread between the producer and the consumer and make available all products of farm origin to consumers at reasonable price without impairing on the quality of the produce. Apart from performing physical and facilitating functions of transferring the goods from producers to consumers, the marketing system also performs the function of discovering the prices at different stages of marketing and transmitting the price signals in the marketing chain.

Department of Agricultural Marketing and Agri Business is taking various technological interventions to ensure remunerative price to the farmers by augmenting infrastructure

facilities for marketing and post-harvest management. In the recent past, thrust is being given for promoting farmer producer organization (FPO), Act and rules to promote contract farming, creating e-trading facilities, reforming Marketing Act and Rules, formulating food processing policy, etc.,

The prime activities of the Department are as follows:

i. Augmenting infrastructure for Post-harvest management and Marketing of Agricultural produce.

ii. Minimizing post harvest losses and enhancing shelf-life through storage godowns, cold storages, ripening chambers, drying yards, etc.

iii. Improving the socio-economic status of farmers through promotion of Farmer Producer Organization (FPO) .

iv. Reforming Agricultural Marketing Act & Rules to improve the marketing efficiency and to protect the interest of the farmers.

v. Facilitation of marketing avenues to farmers *viz.,* Regulated Markets, Farmers Markets, Specialized Market Complexes.

vi. Value addition and processing through Public Private Partnership (PPP) mode by creation of infrastructure.

vii. Dissemination of market related information for the benefit of farmers and other stakeholders.

viii. Agmark laboratories to ensure quality and unadulterated food products to consumers.

ix. Imparting skills on post harvest management, processing, value addition, grading to the farmers by organising capacity building programmes.

7.1. AGRICULTURAL MARKETING ACTIVITIES

7.1.1. Market Committees and Regulated markets

In Tamil Nadu, 23 Market Committees have been established under which 281 Regulated Markets are functioning as per the provisions of Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987 and Rules 1991. For better regulation of buying and selling of agricultural produce, these Regulated Markets were established. Every market committee is established with a notified area for transaction of notified agricultural produce.

For trading of agricultural produce, Regulated Markets act as a common platform between farmers and traders. Agricultural produce brought to Regulated markets by farmers are sold through adopting the secret bid method. No fee is collected from farmers for the services rendered. One percent of the sale value of the produce is collected as market fee from Traders. Besides, license fee is also collected from traders and weighmen. During 2017-18, about 27.94 lakh MT of agricultural produce were sold by farmers and Rs.128.86 crore was collected as revenue.

Facilities like storage godown, transaction sheds, drying yard, farmers' rest room, traders shop, cold storages, market complex with cold storages, etc., are provided in the regulated markets.

To meet out farmer's immediate money requirement and to protect farmers from distress sale during glut seasons, pledge loan facility is extended to the maximum of Rs.3 lakh. During 2017-18, about 2,290 farmers availed pledge loans to the tune of Rs.37.57 crore.

Traders can also avail pledge loan upto the maximum of Rs.2 lakh to meet out their short term requirements. During the year 2017-18, pledge loan was issued to the tune of Rs.6.87 crore to 524 traders. It is programmed to provide pledge loan to the tune of Rs.65 crore for farmers and Rs.8 crore for traders in 2018-19.

Market information is an important tool in any agricultural marketing system. In order to provide regular and timely information on prices of agricultural commodities prevailing in

regulated markets, under "Marketing Research and Information Network (MRIN)" scheme 184 regulated markets were linked to a central portal (http:// agmarknet.nic.in) and computers were provided to Regulated markets for collection and dissemination of price and market-related information.

Table 7.1. District and Market Committee wise Regulated Markets

S. No.	District	Market Committee	No. of Regulated Market
1	Kancheepuram	Kancheepuram	7
2	Tiruvallur		8
3	Cuddalore	Cuddalore	10
4	Villupuram	Villupuram	18
5	Vellore	Vellore	12
6	Tiruvannamalai	Tiruvannamalai	18
7	Salem	Salem	14
8	Namakkal		6
9	Dharmapuri	Dharmapuri	7
10	Krishnagiri		9
11	Coimbatore	Coimbatore	10
12	Tiruppur	Tiruppur	15

S. No.	District	Market Committee	No. of Regulated Market
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	Tiruvarur	Tiruvarur	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
	Total		**281**

Table 7.2. Infrastructure available in Regulated Markets (No.s)

S. No	Market Committee	Own Land	Godown	Transaction Shed	Drying Yard	Specialised Market Complex	Cold Storage	Rural Business Hub	Weighing and Bagging Machine	Trader Shops
1	Kancheepuram	8	10	8	16	-	1	-	-	-
2	Vellore	8	26	15	11	-	6	1	-	-
3	Tiruvannamalai	14	26	45	12	-	7	-	1	10
4	Cuddalore	7	11	23	15	-	4	1	-	10
5	Villuppuram	14	31	55	18	-	4	1	2	-
6	Salem	14	22	21	16	1	17	1	-	-
7	Dharmapuri	8	16	8	20	2	10	1	-	10
8	Coimbatore	10	30	19	30	3	12	1	-	10
9	Erode	15	37	33	34	2	7	1	-	10
10	Tiruchirapalli	10	15	16	20	4	8	-	-	-
11	Thanjavur	7	21	20	5	2	3	-	-	-
12	Pudukkottai	2	3	2	4	1	2	-	-	-
13	Madurai	5	9	4	7	1	3	-	-	-
14	Ramanatha puram	14	29	55	21	1	7	1	-	25
15	Tirunelveli	17	28	17	15	2	18	1	-	10
16	Kanyakumari	5	10	3	4	2	2	-	-	-
17	Theni	5	12	4	7	3	7	-	-	-
18	Dindigul	6	9	6	8	1	7	1	1	-
19	Tiruvarur	7	13	9	8	-	1	-	-	-
20	Nagapattinam	5	11	6	5	-	-	-	-	-
21	The Nilgiris	-	0	1	-	-	-	-	-	-
22	Tiruppur	13	54	29	45	1	6	-	-	-
23	Perambalur	4	7	15	8	-	3	-	-	-
	Total	**198**	**430**	**414**	**329**	**26**	**135**	**10**	**4**	**85**

7.1.2. e-National Agriculture Market (e-NAM)

e-National Agriculture Market is aimed to increase the income of farmers which will also have the incidental benefit of moderating price raises. The scheme is implemented in 585 mandis all over the country. In Tamil Nadu, 30 Regulated Markets are being integrated to e-National Agriculture Market in 2 phases.

Benefits of e-NAM

- Farmers have more option for selling their produce.
- Traders have access to large national market for secondary trading.
- Bulk buyers, processors, exporters have direct participation in local mandis.
- Mandis have opportunity for collection of better fee due to increased transaction.

Amendments made in the existing Tamil Nadu Agricultural Marketing (Regulation) Act

1987 to include e-Trading, Single Point Levy of Market Fee and Unified Single License to implement e-National Agriculture Market. In the 1st phase, 15 Regulated Markets viz. Kalavai, Ammoor, Tirukovilur, Ulundurpet, Gingee, Annur, Gobichettipalayam, Sathyamangalam, Anthiyur, Paramakudi, Cumbum, Dindigul, Tiruppur, Udumalpet and Pethappampatti have been integrated with e-NAM portal from October 2017. Government of India has sanctioned a sum of Rs.4.50 crore under Agri-Tech Infrastructure Fund (ATIF) @ Rs.30 lakh per Regulated Market.

Further in 2nd phase, to extend e-NAM benefits, another 15 Regulated Markets viz. Kilpennathur, Vandavasi, Virudhachalam, Avalurpet, Tindivanam, Villupuram, Vikiravandi, Kallakurichi, Anaimalai, Perundurai, Lalgudi, Vellakoil, Paramathivelur, Harur and Madurai

have been selected, for which Government of India have sanctioned Rs.4.50 crore under Agri-Tech Infrastructure Fund (ATIF) @ Rs.30 lakh per Regulated Market. Out of the above 15, so far 8 regulated markets have been integrated under e-NAM.

In the above 23 Regulated Markets, so far 2.35 lakh quintals of agricultural produce to the worth of Rs.34.51 crore have been transacted by 93,650 farmers and 1,598 traders through e-NAM platform. It is programmed to increase the transaction around 4 lakh quintals by increasing the number of produce handled in each of the e-NAM market in 2018-19.

7.1.3. e-Trading in Regulated Markets and Agricultural Producers cooperative Marketing Society

To upgrade agricultural marketing infrastructure and integrate important Regulated Markets and co-operative markets, it is proposed

to introduce e-trading in 15 Regulated Markets and 8 Agricultural Producers Co-operative Marketing Society on a pilot basis.

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.

So far 6,528 farmers and 3,303 traders have participated in e-trading and sold Rs.72.05 crore worth of 10,127 MT of Turmeric at Perundurai Regulated Market, Erode District.

For intermandi and interstate trading through e-NAM portal, grading and assaying are used to find the quality of the agriculture produce. At present, grading and assaying are done for cotton, copra, chillies, maize, groundnut, paddy in 10 Regulated Markets viz. Annur, Anaimalai,

Anthiyur, Sathyamangalam, Tiruppur, Pethappampatti, Udumalpet, Paramakudi, Dindigul, Cumbum by Agricultural Officers of Agmark laboratories with available assaying equipment.

Now an amount of Rs. 62.73 crore has been sanctioned under NABARD-Warehouse Infrastructure Fund for 15 Regulated Markets. Action is being taken for procurement of grading and assaying equipments. During 2018-19 remaining 15 Regulated Markets will also be equipped for grading and assaying of agricultural commodities under NABARD – Warehouse Infrastructure Fund assistance.

7.1.4. Unified Single License

At present the traders who obtain licence in a particular Market Committee cannot trade in Regulated Markets of other Market Committees which ties the hands of the traders beyond their

markets which in turn hampers the opportunity of farmers in getting better price. To overcome this and to provide expanded market access to the traders and farmers Unified Single Licence is introduced.

As per G.O. (Ms) No. 68 Agriculture (AM3) Department, dated 14.3.2018 and G.O. (Ms) No. 69 Agriculture (AM3) Department, dated 14.3.2018 orders have been issued and Notification to amend Tamil Nadu Agricultural Produce Marketing (Regulation) Rules 1991 for the purpose of enforcing the amendments made in Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987.

A trader who obtained Unified Single License is allowed to trade in all the notified markets of the State which provide expanded market access. i.e. State as a single market to the traders. This License is valid for three years.

7.1.5. Contract Farming Act in Tamil Nadu

As a part of the endeavour to increase income of farmers, various reform measures are being introduced in the State.

One of the components for reforms in the Regulated Market system is to introduce a specific regulation for contract farming to provide effective legal framework for regulating the contracts and to sort out issues likely to arise on account of contracts by parties.

The basic objective of contract farming is to facilitate the farmers to benefit from a pre-agreed future price for their produce, besides efficiency in resource management and knowledge at production stage. The buyers can get assured supply at a predetermined price. Contract will also assist in creating new markets, efficiency and economics of scale, ensuring quality standards, facilitating diffusion of

modern technologies, minimizing transaction costs, coping with information asymmetries, price volatility and sharing of risk.

Based on the model Contract Farming Act of Government of India, Tamil Nadu Agricultural Produce Contract Farming (Promotion and Facilitation) Act, 2018 will be framed during 2018-19 and Contract Farming Act will be brought into force for the benefit of the farmers and contract farming sponsors.

7.1.6. Infrastructure facilities created under Warehouse Infrastructure Fund (WIF)

Warehouse Infrastructure fund envisages extension of loans to Public and Private Sector for construction of warehouses, silos, cold storages and other cold chain infrastructure. Market infrastructure in Regulated Market were augmented by creating 100 Market Infrastructure such as 49 transaction sheds, 35 storage godowns,

1 coconut market complex, 2 cold storages, 3 office buildings, 4 weigh bridges, 5 rubber rollers and one processing centre at a total cost of Rs.83.35 crore under WIF (2014-15).

Administrative sanction has been issued and works are in progress for construction of 46 Godowns with storage capacity of 79,000 MT at a total cost of Rs.99.51 crore with NABARD loan assistance under WIF 2017-18 (Rs.94.126 crore) and Market Committee/ Tamil Nadu State Agricultural Marketing Board Fund (Rs. 5.384 crore) in 44 Regulated Markets.

7.2. AGRI BUSINESS ACTIVITIES

Opportunities have been emerged for Agri-Business activities such as value addition, packaging, retailing and exports of agricultural products, etc. To promote backward and forward linkages related to production, processing, marketing and distribution of raw and processed

agricultural products and to implement various schemes 29 Deputy Directors of Agriculture (Agri Business) are functioning at district level.

7.2.1. Supply Chain Management of fruits, vegetables and other perishables

The project of "Supply Chain Management of fruits, vegetables and other perishables" is implemented to address the issue of integration amongst the various facilities and stakeholders for effective and efficient handling of produce across the entire supply chain. The entire supply chain management system is to be implemented by adopting Hub and Spoke model with terminal market as Hub which is linked to a number of Primary processing centers as spokes. This project is the first of its kind in Tamil Nadu.

The project is being implemented in 10 districts of Krishnagiri, Dharmapuri, Coimbatore, The Nilgiris, Thiruchirapalli,

Dindigul, Theni, Ramanathapuram, Thoothukudi and Tirunelveli in Tamil Nadu at a total cost of Rs.398.7542 crore (Rs.378.8165 crore by way of term loan of NABARD Warehouse Infrastructure Fund + State Government contribution of Rs.19.9377 crore). Detailed Project Report was prepared by NABARD Consultancy Services (NABCONS) and administrative sanction was issued on 21.06.2016.

Objectives of the project are to integrate the farmer producers with major market centers, processors and consumers, to provide integrated and complete supply chain management infrastructure and support services for perishable fruits and vegetables, to reduce post-harvest losses and provide uninterrupted supply of quality produce to the consumers round the year at affordable price, to educate the farmers on the best farm management practices for

increasing production and marketable surplus, to ensure remunerative prices to the farmers and to convert surplus production into value added products.

Supply chain infrastructure for focus crops will be developed in an integrated manner from farm level till it reaches the ultimate consumer. Interventions will be at farm level for productivity improvement by providing improved technological support, supply of seeds and other inputs and for marketing improvement by identification of collection points, setting up of primary processing centers and integrating to terminal markets besides cold chain infrastructure.

This project will set up market infrastructure at 58 Primary Processing Centres / Main Markets and providing logistics support including transport and storage to take the produce to

terminal markets. Post harvest infrastructure like pack house, cold storage, irradiation plant, Individual Quick Freezing (IQF), grading and packing facilities, storage godowns, e-auction, shops, processing lines, hot water/vapour heat treatment plant, farmers training center etc., are created in Primary Processing Centers/Main Markets. Backward linkages to ensure uninterrupted supply of Horticulture commodities to the Primary Processing Centres and forward linkages are to be established to fetch long term returns and sustain the project.

As announced in the Budget speech 2018-19, this scheme also covers farmers clusters through on-farm development to increase the production and productivity of horticultural crops for which funds are dovetailed from on-going schemes of Horticulture Department.

Table 7.3. Location of Main Markets / Primary Processing Centers

Sl. No.	District	Nos. and Name of the PPC/ Main markets	
1	Krishnagiri	10	Krishnagiri, Hosur, Kamandoddi, Denkanikottai, Thattiganapalli, Royakottai, Alapatti, Kundarapalli, Kaveripattinam, Pochampalli.
2	Dharmapuri	4	Dharmapuri, Palacode, Pennagaram Agricultural Producers Co-Operative Marketing Society Ltd., Harur.
3	Coimbatore	7	Chikkadasampalayam, Sulur, Vadakkipalayam, Pooluvapatti, Pichanur, Anaimalai, Pollachi.
4	Nilgiris	9	Chikkadasampalayam, Hosahatty, Anikorai, Dhavanai, Uthagai - Rose Garden, Nilgiris Co-Operative Marketing Society Ltd. - New Allanji, Sullikoodu, Uppatti, Ayyankolli.

Sl. No.	District	Nos. and Name of the PPC/ Main markets	
5	Tiruchirapalli	11	Kallikudi, Lalgudi, annachanallur, Thiruchendurai, P.K.Agaram, M.Puthur, Arasalur, Pidaramangalam, Thuraiyur Agricultural Producers Co-Operative Marketing Society Ltd., Uppiliapuram (South), Thathaiyangarpettai.
6	Dindigul	3	Palani, Palani Agricultural Producers Co-Operative Marketing Society Ltd., Gopalpatti.
7	Theni	3	Theni, Chinnamanur, Cumbum.
8	Ramanathapuram	3	Paramakudi, Mudhukulathur, Kamuthi Agricultural Producers Co-Operative Marketing Society Ltd.
9	Thoothukudi	3	Srivaikundam, Pudur, Vilathikulam.

10	Tirunelveli	5	Palayamkottai, Valliyoor, Pavoorchatram, Sankarankovil, Kadayanallur.
	Total	**58**	

Out of 58 work sites for Primary Processing Centres / Main Market, work orders have been issued for 55 work sites for construction of post harvest infrastructure and works are nearing completion in 10 districts.

State Level Monitoring Committee under the Chairmanship of the Additional Chief Secretary (Finance) and District Level Monitoring Committees under the Chairmanship of District Collector were formed in all the Supply Chain Management Project Districts for effective monitoring of the project.

After completion of civil works, machineries would be installed in the Primary Processing Centers and would be brought into operation.

Memorandum of Understanding was signed between the NITI Aayog and Government of Tamil Nadu on 04.11.2017 at New Delhi to take the project to the next stage under Development Support Services to States for Infrastructure (D3S-I).

The project is expected to attract additional investments in the sector and create employment opportunities along the entire value chain, besides reduction in post harvest losses.

7.2.2. Agmark Grading

Agmark is a quality certification mark on agricultural products in India, assuring that they conform to a set of standards approved by the Government of India. Agmark is legally enforced

by the Agricultural Produce (Grading and Marking) Act of 1937 (and amended in 1986) by Directorate of Marketing and Inspection, Government of India. Presently Agmark standards cover quality guidelines for 222 commodities. This scheme is a voluntary scheme.

In Tamil Nadu, 30 State Agmark Grading Laboratories and 1 Principal Agmark Grading Laboratory are functioning for grading of products under Agmark. Products graded are rice, pulses, ghee, honey, ground spices, whole spices, sago, vegetable oils, gram flour, compounded asafoetida etc., During 2017-18 agricultural commodities to the tune of 19.68 lakh quintals were graded. It is programmed to grade 22.32 lakh quintals of agricultural commodities in 2018-19.

7.2.3. Farmers' Market

Uzhavar Sandhais (Farmers' Market) function to facilitate direct marketing between farmers and consumers without any interference of middlemen thereby enabling remunerative price to farmers producing vegetables and fruits and to provide fresh fruits and vegetables to consumers at a price less than retail prices. At present, 179 Uzhavar Sandhais are functioning in Tamil Nadu. Facilities such as shops to farmers, electronic balances, drinking water and sanitary facilities are provided in Farmers Market at free of cost. Cold storage units with 2 MT capacity are established in 27 Farmers Markets. Daily price details of Uzhavar sandhais are uploaded in AMRS mobile app. During the year 2017-18, on an average, 2016 MT of fruits and vegetables worth Rs.6.36 crore was sold per day in Farmers Market and 7,818 farmers and 4.05 lakh consumers were benefitted.

Table 7.4. District-wise Uzhavar Sandhai

Sl.No.	District	No. of Uzhavar Sandhai
1	Kancheepuram	14
2	Tiruvallur	6
3	Vellore	9
4	Tiruvannamalai	8
5	Cuddalore	5
6	Villupuram	6
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	Tiruvarur	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
	Total	**179**

7.2.4. Specialized Market Complexes

Value addition of agricultural produce fetch better price to farmers for which adequate infrastructure for drying, storage, cold storage, grading, sorting, packing are created by the Department every year. Commodity specific Market Complexes were constructed with cold storage, godown, grading and sorting hall, drying yard, etc., in various districts for paddy, turmeric, onion, lemon, coconut, tender coconut, hilly vegetables, tomato, flowers, chillies, mango, grapes, banana and spices at a cost of Rs.83.50 crore are as follows.

Table 7.5. District-wise Specialized Market Complexes

S.No	District	Place	Commodity
1	Coimbatore	Thippampatti	Tender Coconut
2		Karamadai	Hilly vegetables
3	Tiruppur	Pongalur	Onion
4		Pethappampatti	Coconut
5	Thanjavur	Pattukottai	Coconut
6		Tiruvaiyaru	Banana

S.No	District	Place	Commodity
7	Madurai	Mattuthavani	Paddy
8	Dindigul	Ottanchatram	Vegetables
9	Erode	Karumdichelli palayam	Turmeric
10		Gobichettipalayam	Fruits and vegetables
11	Krishnagiri	Krishnagiri	Mango
12	Dharmapuri	Palacode	Tomato
13	Theni	Cumbum	Grapes
14		Odaipatti	Banana
15		Chinnamanur	Banana
16	Trichirapalli	Tiruchendurai	Banana
17		Thuraiyur	Vegetables and fruits
18		Tiruchirapalli	Banana
19	Perambalur	Chettikulam	Onion
20	Tirunelveli	Kadayanallur	Lemon
21	Namakkal	Mohanur	Banana
22	Thoothukudi	Srivaikundam	Banana
23	Kanyakumari	Thovalai	Flowers
24		Thovalai	Spices
25	Ramanathapuram	Ettivayal	Chillies
26	Pudukottai	Rajendrapuram	Coconut

7.2.5. e-Learning centres

The e-learning centres have been created to disseminate information on post harvest management and marketing through exhibits, audio visual aids, touch screen kiosk, documentaries on various agricultural marketing

interventions and latest developments in agri business sector. During 2016-17 under National Agriculture Development Programme in first phase e-learning centres have been established at a cost of Rs.7 crore in 10 districts. In 2017-18, 10 e-learning centres are being established at a cost of Rs.7.34 crore.

Table 7.6. District-wise e-Learning centres

S. No	2016-17	2017-18
1	Erode	Krishnagiri
2	Tiruvarur	Madurai
3	Viruthunagar	Theni
4	Thanjavur	Kanyakumari
5	Sivagangai	Karur
6	Tiruvannamalai	Tiruchirapalli
7	Tiruvallur	Pudukottai
8	Dharmapuri	Dindigul
9	Villupuram	The Nilgiris
10	Cuddalore	Coimbatore.

7.2.6. Value addition machineries/ equipments

The Department has created facilities for grading, processing and value addition in Regulated Markets like turmeric polisher and boiler machineries, chilli assaying units, cashew processing machineries, cotton quality testing equipment and grain silos under National Agriculture Development Programme at a cost of Rs.8.62 crore in 2016-17.

During 2017-18 in order to reduce the post harvest losses and to provide value addition in tomato, 5 mobile tomato puree vending machines to the tune of Rs. 2 crore under NADP will be provided for the benefit of farmers of Krishnagiri, Coimbatore and Dharmapuri districts.

7.2.7. Cold Storage units

To enhance the shelf-life and minimise the post harvest losses in perishables without reducing the quality, so far 111 cold storage units were created all over Tamil Nadu with a total capacity of 13,555 MT and put into use. Efforts are being taken for full utilisation of Cold storages by making awareness among farmers.

Table.7.7. Capacity-wise Cold Storages

S. No.	Capacity (MT)	No	Total Capacity(MT)
1	5	6	30
2	20	1	20
3	15	2	30
4	25	75	1875
5	50	6	300
6	100	9	900
7	200	2	400
8	500	4	2000
9	1000	4	4000
10	2000	2	4000
	Total	**111**	**13555**

In addition, 27 cold storage units with 2 MT capacity each have been established at Uzhavar Sandhais.

7.2.8. Terminal Market Complexes

Terminal Market Complex will operate on a Hub and Spoke model, wherein the Terminal Market Complex (Hub) would be linked to a collection centres (spokes) located at key production areas to allow easy access to farmers. In a Hub, common infrastructural facilities like the State of art modernized grading and packing facilities, cold storage, ripening chamber, quality control lab and electronic auction centre will be developed.

The Government of Tamil Nadu have taken initiatives for setting up of Modern 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 Markets at Chennai and Madurai regions are being established in Tamil Nadu.

Terminal Market Complex for Chennai region is to be established in 35 acres of land in Navalur village, Sriperumbudur Taluk, Kanchipuram District with a project cost of Rs.135 crore by the selected Private Enterprise M/s URC Construction Private Ltd who have formed a Special Purpose Vehicle namely Ulavar Kalanjiam Limited for implementation of the project.

For establishment of Terminal Market Complex in Madurai Region with a project cost of Rs.120.06 crore, 50 acres of land has been selected at Mukkampatty and Thiruvathavur villages in Melur Taluk, Madurai District. The selected private Enterprise M/s. R.R Industries limited and consortium partners have formed a special purpose vehicle namely M/s Bhumi Agri Markets Pvt Ltd. Post-harvest Infrastructure facilities will be created for Chennai and Madurai

Terminal Market Complexes after signing of Operation, Management and Development Agreement for the project.

7.2.9. Food Processing

7.2.9.1 Tamil Nadu Food Processing Policy:

Tamil Nadu has about 24,000 food processing firms registered as Small and Micro Enterprises (SMEs) and has about 1,300 medium and large units forming 6% of total registered units. The Food Processing Policy for Tamil Nadu is being formulated in line with the Draft Model Food Processing Policy developed by Ministry of Food Processing Industries, Government of India.

7.2.9.2. Ultra and Mega Food Parks:

Government of Tamil Nadu is taking steps to create an Ultra and Mega Food Parks at 10 Districts viz. Villupuram, Salem, Cuddalore, Tiruvannamalai, Krishnagiri, Erode, Tirunelveli,

Virudhunagar, Theni, Dindigul. NABCONS, a NABARD Consultancy services has been entrusted to undertake feasibility study and prepare Detailed Project Reports (DPR) for establishment of Ultra & Mega Food Parks. Based on the report action will be initiated for establishing food parks with needy basic infrastructure for participation of entrepreneurs on Public Private Partnership (PPP) mode.

7.2.9.3 Neera

Neera, the sweet sap of the coconut palm, is gaining momentum as a popular drink on account of its highly nutritive value, delicious taste and agreeable flavour. Tetrapacked Neera can be preserved upto 6 months in refrigerated condition.

In order to benefit the coconut farmers in getting remunerative price through value addition the existing prohibition act has been

relaxed for enabling Neera production and value addition. Department of Agricultural Marketing and Agri Business at district level has been entrusted with the task of forwarding eligible applications from coconut producers companies to get license from District Collectors for tapping Neera. A Steering Committee has been formed with eminent members from institutions, Farmer Producer Organizations and Departments to finalise the technology for Neera tapping, solve emerging issues and to take forward Neera tapping in a sustainable manner. Steps are being taken to organize Capacity building trainings for farmers of Farmer Producer Organizations in reputed institutions on Neera tapping technologies, preservations and value addition.

Coconut Neera and its value added products are bound to have an excellent market potential

in the coming years. Promotion of Neera and value addition will bring employment generation and better returns to the coconut farmers.

Hon'ble Chief Minister of Tamil Nadu issued licences to 3 coconut producers companies on 01.06.2018 to tap and produce Neera and its value added products.

7.2.10. Tamil Nadu Small Farmers Agri-business Consortium (TNSFAC)

The objective of Tamil Nadu Small Farmers' Agribusiness Consortium [TNSFAC] is linking Small farmers to technologies as well as to markets by providing both forward and backward linkages. The TNSFAC is a society functioning in association with Government, Private sector, cooperatives, banks notified by the Reserve Bank of India / financial institutions. Farmer Producer Organisation programme is being implemented by TNSFAC in Tamil Nadu.

7.2.10.1. Farmer Producer Organisation (FPO):

TNSFAC is the nodal agency for implementing FPO programme in the State. The project will be implemented for a period of 3 years.

Project objectives

- Mobilising farmers into groups at village level and building up their associations to Farmer Producer Organisations (FPOs) to plan and implement product - specific cluster / commercial crop cycles.
- Strengthening of farmers capacity by sensitising of best agricultural practices for enhanced productivity.
- Ensuring access to and usage of quality inputs and services for intensive agriculture production and enhancing cluster competitiveness.

- Facilitating access to fair and remunerative markets including linking of producer groups for marketing opportunities through market aggregators.

Table 7.8. Year-wise Farmer Producer Organisations

Sl. No.	Year	No. of FPOs	Budget outlay (Rs. in lakh)
1	2014-15 (NADP)	9	413.00
2	2014-15 (NADP Pulses)	10	426.72
3	2014-15 - NMSA	1	42.50
4	2015-16 (NADP)	5	214.50
5	2015-16 (NMSA)	3	128.68
6	2016-17(NADP)	12	518.52
7	2016-17(NMSA)	2	86.42
8	2017-18 (NADP)	10	432.10
9	2017-18 (NMSA)	3	129.09
	Total	**55**	**2391.53**
	Proposed in 2018-19		
1	NADP	50	1000.00
2	NMSA	3	60.00
3	TNIAMP	26	839.28

Table 7.9. Crop wise, Year wise Farmer Producer Organisations

Sl. No.	District	Crop
2014-15 National Agriculture Development programme (Rs.839.72 lakh)		
1.	Dindigul	Guava
2.	Tiruchirapalli	Banana
3.	Krishnagiri	Mango
4.	Coimbatore	Vegetables
5.	Dharmapuri	Minor Millets
6.	Cuddalore	Maize
7.	Ramnathapuram	Chillies
8.	Tiruvannamalai	Samai
9.	Virudhunagar	Millets
10.	Thanjavur	Pulses
11.	Salem	Pulses
12.	Pudukkottai	Pulses
13.	Villupuram	Pulses
14.	Tuticorin	Pulses
15.	Nagapattinam	Pulses
16.	Tiruvannamalai	Pulses
17.	Dharmapuri	Pulses
18.	Krishnagiri	Pulses
19.	Vellore	Pulses

Sl. No.	District	Crop
2014-15 National Mission for Sustainable Agriculture (Rs. 42.50 lakh)		
20.	Villupuram	Millets & pulses
2015-16 National Agriculture Development Programme (Rs. 214.50 lakh)		
21.	Pudukottai	Coconut
22.	Pudukottai	Organic cereals
23.	Tiruppur	Maize
24.	Virudhunagar	Mango
25.	Namakkal	Millets & pulses
2015-16 National Mission for Sustainable Agriculture (Rs.128.68 lakh)		
26.	Perambalur	Maize & onion
27.	Theni	Coconut
28.	Nagapattinam	Pulses
2016-17 National Agriculture Development Programme (Rs. 518.52 lakh)		
29.	Salem	Minor millets
30.	Virudhunagar	Maize
31.	Erode	Ragi
32.	Virudhunagar	Millets
33.	Kanchipuram	Millets & Pulses
34.	Tiruvanamalai	Pulses
35.	Tiruvanamalai	Oilseeds

Sl. No.	District	Crop
36.	Tiruchirapalli	Groundnut
37.	Cuddalore	Pulses
38.	Coimbatore	Coconut
39.	Madurai	Coconut
40.	Sivagangai	Coconut
2016-17 National Mission for Sustainable Agriculture (Rs. 86.42 lakh)		
41.	Thanjavur	Coconut
42.	Tiruvarur	Pulses
2017-18 National Agriculture Development Programme (Rs. 432.10 lakh)		
43.	Tiruvallur	Pulses
44.	Tirunelveli	Banana / Coconut
45.	Nilgiris	Tea
46.	Nagercoil	Banana
47.	Karur	Minor Millets
48.	Erode	Vegetables
49.	Coimbatore	Vegetables
50.	Tiruppur	Coconut
51.	Kanchipuram	Pulses
52.	Vellore	Pulses / Vegetables

Sl. No.	District	Crop
2017-18 National Mission for Sustainable Agriculture (Rs. 129.09 lakh)		
53.	Cuddalore	Banana / Coconut
54.	Salem	Millets / Flowers
55.	Krishnagiri	Flowers / Pulses

During 2016-17, under National Food Security Mission Rs.154 lakh has been sanctioned for upgradation of 10 Pulses FPOs out of which Rs.54 lakh is provided for setting up of mini dhal mill, Rs.50 lakh for branding and marketing of milled pulses and Rs.50 lakh to set up procurement centre. The scheme is under implementation.

Under National Agriculture Development Programme, Rs.41 lakh has been sanctioned for upgradation of 6 millet FPOs for establishment of 6 Millet Processing Units for the year 2016-17. The scheme is under implementation.

The Government of Tamil Nadu have launched a flagship programme in 2017-18 called Collective Farming for organizing small and marginal farmers in the State. Under this scheme, farmers were grouped into Farmer Interest Groups (FIGs) with 20 members and 5 FIGs were clubbed to form Farmer Producer Groups (FPGs) with 100 farmers. These collective groups were promoted by Agriculture and Horticulture Department with support for collective farming activities (infrastructure machineries) facilitated by Agricultural Engineering Department. The FPGs based on different criteria, would thereafter be federated into homogenous groups to form FPOs, by Department of Agricultural Marketing & Agri Business for promoting marketing activities. Accordingly, it is proposed to form 50 FPOs under NADP and 3 FPOs under NMSA during 2018-19.

7.2.11. TN-IAMP

Tamil Nadu Irrigated Agriculture Modernization Project (TN-IAMP) is being implemented from 2017-18 to 2020-23 in 66 sub-basins with a project cost of Rs.125 crore.

During 2018-19, it is programmed to implement the following interventions in 18 sub-basins, to set up Agri Business Promotion Facility (ABPF) Cell and to strengthen TN-IAMP Cell at Headquarters.

1. Formation of 26 nos. of Farmer Producer Organization
2. Supporting 10 existing Farmer Producer Organizations for business plan expansion.
3. Modernization and Digitization of 3 Regulated Markets.
4. Piloting e-Negotiable warehouse receipt model in 4 selected godowns.
5. Conducting studies on value chain analysis and direct marketing.

6. Facilitating Public Private Partnership (PPP) mechanism.
7. Supporting Agro-entrepreneurs who provide services to farmers

7.2.12. Human Resource Management

Department of Agricultural Marketing and Agri business has been re-organised vide G.O.Ms. No. 30, Agriculture (AA1) Department, Dt. 6.2.2018 and G.O.Ms.No.96, Agriculture (AA1) Department, Dt. 02.04.2018, to promote Agricultural Marketing and Agri Business activities, implement various schemes, disseminate Agricultural Technologies and Market Informations to farmers through field functionaries and thereby enhance their income and socio-economic condition. Under this Department 1,307 Department staff and 1,637 Market Committee staff are functioning in the State.

Table 7.10 Details of Department Staff

S. No.	Name of the Post	Sanctioned Post
1	Additional Director of Agriculture	1
2	Joint Director of Agriculture	3
3	Deputy Director of Agriculture (AB)	32
4	Assistant Director of Agriculture	8
5	Agriculture Officer	170
6	Deputy Agricultural Officer	47
7	Asst. Agricultural Officer	627
8	Administrative Officer	1
9	Asst. Accounts Officer	1
10	Other non-technical staff	417
	Total	**1307**

Table 7.11 Details of Market Committee Staff

S. No	Name of the Post	Sanctioned Post
1	Senior Secretary / Dy. Director of Agriculture	2
2	Senior Secretary / Deputy Director	2
3	Secretary / Asst. Director of Agriculture	10
4	Secretary / Assistant Director	9
5	Superintendent	200
6	Engg. Supervisor	9
7	Supervisor	345
8	Other non-technical staff	1060
	Total	**1637**

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, fifty percent 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 Tamil Nadu State Agricultural Marketing 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, Tiruchirapalli and Madurai is 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 2017-18, 150 trainings were conducted utilizing an amount of Rs.6.45 lakh in which 3,000 farmers were benefitted. It is

programmed to conduct 180 training programmes to benefit 3,600 farmers in 2018-19.

7.3.2.2. Capacity Building Training to staff

The Training Centre of Tamil Nadu State Agricultural Marketing Board functioning at Salem, caters to the training needs of staff of Agricultural Marketing & Agri Business Department as well as farmers. During 2017-18, 29 training programmes were conducted utilizing an amount of Rs.13.64 lakh in which 462 technical staff and 114 farmers were benefitted.

It is programmed to conduct 30 training programmes to benefit 402 staff and 200 farmers in 2018-19.

7.3.2.3. Construction Works

The Engineering wing of Agricultural Marketing Board executes construction of infrastructural facilities such as godowns, transaction sheds, Market complex, cold storage facilities, drying yards etc., under NADP, NABARD–RIDF/WIF and Market Committee fund. During the year 2017-18, 174 works with a financial outlay of Rs.176.33 crore were undertaken by this wing. In 2018-19 also construction works will be executed.

Table 7.12. District-wise Regulated Markets

Sl. No	District	Regulated Markets
1	Kancheepuram (7Nos.)	Kancheepuram, Madurantagam, Uthiramerur, Thirukkalukundram, Sunguvarchatram, Acharapakkam, Chengalpet
2	Tiruvallur (8 Nos.)	Thiruthani, Tiruvallur, Redhills, Ponneri, Pallipattu, Uthukottai, Gummidipoondi, Nasarethpettai

Sl. No	District	Regulated Markets
3	Cuddalore (10 Nos.)	Virudhachalam, Cuddalore, Panruti, Thittakudi, Kattumannarkoil, Chidambaram, Kurunchipadi, Sethiyathoppu, Srimushnam, Bhuvanagiri
4	Villupuram (18 Nos.)	Tindivanam, Thirukoilur, Ulundurpet, Villupuram, Chinnasalem, Kallakkurichi, Gingee, Thiagadurgam, Sankarapuram, Thiruvennainallur, Manalurpet, Avalurpet, Marakkanam, Vikaravandi, Ananthapuram, Valathi, Moongilthuraipattu, Thirunavalur.
5	Vellore (12 Nos.)	Vellore, Thirupathur, Arcot, Arakonam, Vaniyambadi, Kaveripakkam, Gudiyatham, Kalavai, Ammoor, Katpadi, Ambur, Thimiri
6	Tiruvannamalai (18 Nos.)	Tiruvannamalai, Arani, Vandavasi, Chetpet, Cheyyar, Polur, Chengam, Pudupalayam, Vanapuram, Vettavalam, Thellar, Mangala mamandoor, Desur, Peranamallur, Dhusi, Kilpennathur, Adamangalam puthur, Naidumangalam
7	Salem (14 nos.)	Salem, Athur, Sankagiri, Konganapuram, Kollathur, Meicheri, Vazhapadi, Thammampatti, Thalaivasal, Omalur, Kadayampatti, Gangavalli, Karumanthurai, Edapadi
8	Namakkal (6 Nos.)	Namakkal, Rasipuram, Thiruchengodu, Paramathivelur, Namagiripettai, Cholakkadu

Sl. No	District	Regulated Markets
9	Dharmapuri (7 Nos.)	Dharmapuri, Palacode, Pennagaram, Harur, Pappireddipatti, Kambainallur, Papparapatti
10	Krishnagiri (9 Nos.)	Krishnagiri, Hosur, Kelamangalam, Pochampalli, Kaveripattinam, Uthangarai, Bargoor, Rayakottai, Denkanikkottai.
11	Coimbatore (10 Nos.)	Annur, Karamadai, Coimbatore, Sulur, Anaimalai, Pollachi, Malayadipalayam, Negamam, Kinathukkadavu, Thondamuthur
12	Tiruppur (15 Nos.)	Kunnathur, Kangayam, Vellankoil, Dharapuram, Moolanur, Alangiam, Muthur, Tiruppur, Avinashi, Sevur, Palladam, Udumalpettai, Madathukkulam, Pethappampatti, Pongalur
13	Erode (18 Nos.)	Erode, Avalpoonthurai, Kodumudi, Sivagiri, Chithode, Bhavani, Boothapadi, Anthiyur, Mylampadi, Kavundhampadi, Gobichettipalayam, Nambiyur, Vellakkoil, Sathyamangalam, PunjaiPulliyampatti, Thalavadi, Perundurai, Elumathur
14	Tiruchirapalli (10 Nos.)	Manapparai, Thuraiyur, Lalgudi, Thiruchirapalli,Thottiyam, Manachanallur, Thuvarankurichi, Pullambadi, Thathaiyangarpet, Kattuputhur
15	Karur (4 Nos.)	Kulithalai, Karur, Irumputhipatti, Chinnatharapuram

Sl. No	District	Regulated Markets
16	Perambalur (1 No.)	Perambalur
17	Ariyalur (4 Nos.)	Ariyalur, Jayankondam, Andimadam, Melanikuzhi
18	Pudukkottai (10 Nos.)	Alangudi, Aranthangi, Pudukkottai, Kandarvakkottai, Avudayarkoil, Keeranur, Keeramangalam, Ponnamaravathi, Illuppur, Karambakkudi
19	Thanjavur (13 Nos.)	Athiramapattinam, Ammapettai, Budalur, Kumbakonam, Madukkur, Orathanadu, Pattukottai, Papanasam, Peravoorani, Thanjavur, Vallam, Thirupananthal, Pappanadu
20	Tiruvarur (8 Nos.)	Koradacheri, Kudavasal, Valangaiman, Thiruthuraipoondi, Poonthottam, Mannarkudi, Tiruvarur, Vaduvur.
21	Nagapattinam (8 Nos.)	Kivalur, Kuttalam, Mayiladuthurai, Nagapattinam, Sembanarkoil, Sirkazhi, Vedaranayam, Thirupoondi
22	Madurai (6 Nos.)	Thirumangalam, Usilampatti, Melur, Madurai, T.Kallupatti, Vadipatti
23	Theni (7Nos.)	Theni, Cumbum, Bodinayakanur, Chinnamanur, Andipatti, Uthamapalayam, Periyakulam
24	Dindigul (8 Nos.)	Dindigul, Ottanchatram, Palani, Vedasendur, Vadamadurai, Gopalpatti, Natham, Batalagundu

Sl. No	District	Regulated Markets
25	Ramanatha puram (6 Nos.)	Ramanathapuram, Paramakudi, Kamuthi, Tiruvadanai, Rajasingamangalam, Mudukulathur
26	Virudhunagar (7 Nos.)	Virudhunagar, Rajapalayam, Sathur, Aruppukottai, Srivilliputhur, Watrap, Vembakkottai
27	Sivagangai (7 Nos.)	Sivagangai, Thiruppuvanam, Manamadurai, Singampuneri, Karaikudi, Ilayankudi, Devakkottai
28	Tirunelveli (11 Nos.)	Sankarankoil, Thenkasi, Ambasamudram, Valliyur, Tirunelveli, Kadayanallur, Thisayanvilai,Pavoorchatram, Thiruvenkadam, Sivagiri, Alangulam
29	Thoothukudi (9 Nos.)	Kovilpatti, Thoothukudi, Pudur, Kadambur, Kalugumalai, Srivaikundam, Vilathikulam, Ettayapuram, Sathankulam
30	The Nilgiris (4 Nos.)	Udagamandalam, Kothagiri, Coonoor, Gudalur
31	Kanyakumari (6 Nos.)	Ethamozhi, Vadaseri, Kaliyakkavilai, Monday Market, Kulasekaram, Thoduvatti

Table 7.13. District-wise Farmers' Markets

District	Farmers' Markets
1. Kancheepuram (14 Nos.)	Kancheepuram, Pallavaram, Chengalpet, Medavakkam, Nanganallur, Madhuranthagam, Keelkattalai, Jameenrayapettai, Guduvancheri, Padappai, Sunguvarchatram, Kundrathur, Thirukalukundram, Kannaginagar
2. Tiruvallur (6 Nos.)	Tiruthani, Tiruvallur, Ambattur, Paruthipattu, Naravarikuppam, Perambakkam
3. Vellore (9 Nos.)	Vellore, Katpadi, Vaniyampadi, Gudiyatham, Kahithapattarai, Ranipettai, Arcot, Tirupathur, Natrampalli
4. Tiruvannamalai (8 Nos.)	Tiruvannamalai, Polur, Arani, Cheyyar, Chengam, Vandavasi, Keelpennathur, Tamarainagar
5. Cuddalore (5 Nos.)	Cuddalore, Chidambaram, Viruthachalam, Panruti, Vadalur
6. Villupuram (6 Nos.)	Tindivanam, Villupuram, Kallakurichi, Ulundurpettai, Gingee, Sankarapuram

District	Farmers' Markets
7. Salem (11Nos.)	Sooramangalam, Ammapet, Athur, Thathakapatti, Mettur, Attayampatti, Hasthampatti, Elampillai, Thammampatti, Jalagandapuram, Edapadi
8. Namakkal (6Nos.)	Namakkal, Tiruchengode, Rasipuram, Kumarapalayam, Paramathivelur, Mohanur
9. Dharmapuri (5Nos.)	Dharmapuri, Pennagaram, Palacode, Harur, A.Jattihalli
10. Krishnagiri (5Nos.)	Hosur, Krishnagiri, Kaveripattinam, Denkanikottai, Avallapalli
11. Coimbatore (9Nos.)	R.S.Puram, Singanallur, Pollachi, Mettupalayam, Kurichi, Sulur, Vadavalli, Sundarapuram, Palladam
12. Nilgiris (4Nos.)	Udhagamandalam, Coonoor, Kothagiri, Gudalur
13. Erode (5Nos.)	Sampath Nagar, Gobichettipalayam, Sathiyamagalam, Periyar Nagar, Perundurai
14. Trichirapalli (7Nos.)	Anna Nagar, K.K.Nagar, Thuraiyur, Manapparai, Musiri, Thuvakudi, Lalgudi

District	Farmers' Markets
15. Perambalur (2Nos.)	Perambalur, Veppanthattai
16. Karur (5Nos.)	Karur, Kulithalai, Velayuthampalayam, Pallapatti., Vengamedu
17. Thanjavur (5Nos.)	Thanjavur, Kumbakonam, Pattukottai, Tirukattupalli, Papanasam
18. Nagapattinam (3Nos.)	Mayiladuthurai, Nagapattinam, Sirkali
19. Tiruvarur (7Nos.)	Tiruthuraipoondi, Mannargudi -1, Tiruvarur, Needamangalam, Muthupettai, Mannargudi -2, Valangaiman
20. Pudukottai (6Nos.)	Pudukottai, Aranthangi, Alangudi, Gandarvakottai, Karambakkudi, Viralimalai
21. Madurai (7Nos.)	Anna nagar, Chokkikulam, Palanganatham, Usilampatti, Thirumangalam, Melur, Anaiyur
22. Dindigul (5Nos.)	Dindigul, Palani, Chinnalapatti, Kodaikkanal, Batlagundu

District	Farmers' Markets
23. Theni (7Nos.)	Theni, Kambam, Bodinayakanur, Periyakulam, Devaram, Andipatti, Chinnamanur
24. Sivagangai (4 Nos.)	Sivagangai, Devakottai, Karaikudi, Tirupatthur
25. Ramanathapuram (3 Nos.)	Ramanathapuram, Paramakudi, Kamuthi
26. Virudhunagar (8 Nos.)	Aruppukottai, Rajapalayam, Srivilliputhur, Virudhunagar, Sivakasi, Sathur, Kariyapatti, Thalavaipuram
27. Tirunelveli (6 Nos.)	Sankarankoil, Palayamkottai, Tenkasi, Kandiyaperi, Melapalayam, Ambasamudram
28. Tuticorin (2 Nos.)	Tuticorin, Kovilpatti
29. Kanyakumari (2Nos.)	Vadaseri, Myladi
30. Ariyalur (2 Nos.)	Ariyalur, Jeyankondam
31. Tiruppur (5 Nos.)	Udumalpet, Tiruppur (North), Tiruppur (South), Dharapuram, Kangayam

Table 7.14. District-wise Agmark Grading Laboratories

Sl. No.	District	Location of Agmark Grading Laboratory	
1	Chennai	Principal laboratory	Commissionerate of Agricultural Marketing and Agri Business
2	Kancheepuram	Chennai (North)	
		Chennai (South)	
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	Thirunelveli	Thirunelveli	
		Thenkasi	
13	Thoothukudi	Thoothukudi	
14	Kanyakumari	Nagerkoil	
		Marthandam	
15	Salem	Salem	
16	Dharmapuri	Dharmapuri	
17	Coimbatore	Coimbatore	
18	Erode	Perundurai	
		Erode – 1	
		Erode – 2	
		Chithode	
19	Tiruppur	Tiruppur	
		Palladam	
		Kangayam – 1	
		Kangayam – 2	
		Vellakkoil	

Table 7.15. District wise cold storages

Sl.No.	District	Place	Capacity (MT)
1	Coimbatore	Pollachi	25
2		Senjeri	25
3		Anamalai	25
4		Thondamuthur	25
5		Annur	25
6		Karamadai	50
7		Chikkadasanpalayam	500
8		Kinathukadavu	500
9		Vadakipalayam	25
10		Singanallur Uzhavar sandhai	15
11		Singanallur Uzhavar sandhai	2
12		R.S.Puram	2
13	Cuddalore	Cuddalore	25
14		Panruti	25
15		Virudachalam	25
16		Cuddalore	2
17	Dharmapuri	Dharmapuri	1000
18		Harur	25
19		Pennagaram	25
20		Palacode	50
21	Dindigul	Dindigul	25
22		Oddanchatram	15
23			5
24		Palani	25
25			5
26		Bathalagundu	5
27		Gopalpatti	25
28	Erode	Avalpoonthurai	25
29		Kodumudi	25
30		Anthiyur	25
31		Sathyamangalam	25
32		Punjaipuliampatti	25
33		Sathyamangalam	100
34		Gopichettipalayam	1000
35	Kanyakumari	Monday Market	25
36		Vadaseri	2

37	Karur	Karur (Rayanur)	25
38		Karur	2
39	Krishnagiri	Krishnagiri	50
40		Krishnagiri	25
41		Pochampalli	25
42		Uthangarai	25
43		Hosur	25
44		Hosur	2
45	Madurai	Tirumangalam	25
46		Chokkikulam	2
47		Anna Nagar	2
48	Namakkal	Namagiripettai	25
49		Paramathivelur	25
50		Tiruchengode	25
51		Rasipuram	2
52		Namakkal	2
53		Mohanur	5
54	Perambalur	Chettikulam	50
55		Perambalur	25
56		Ariyalur	25
57	Pudukottai	Ilupur	100
58		Alangudi	25
59	Ramanathapuram	Paramakudi	50
60		Kamuthi	25
61		Ettivayal	2000
62	Salem	Salem	25
63		Athur	25
64		Vazhapadi 1	25
65		Vazhapadi 2	25
66		Gangavalli	25
67		Meicheri 1	25
68		Meicheri 2	100
69		Suramangalam	2
70		Athur	2
71		Ammapettai	2
72		Tathagapatti	2
73		Asthampatti	2
74	Sivagangai	Singampunari	25
75	Thanjavur	Valapakudi	100
76		Thanjavur	25

77		Kumbakonam	2
78	Theni	Cumbum	25
79		Theni	25
80		Chinnamanur	50
81		Cumbum	5
82		Cumbum	500
83		Cumbum	2
84		Theni	2
85	Thoothukudi	Kovilpatti	25
86		Thoothukudi	25
87		Puthur	25
88		Kazhagumalai	25
89		Srivaikundam	20
90		Vilathikulam	100
91		Ettyapuram	25
92		Sathankulam	25
93		Thoothukudi	2
94	Tirunelveli	Sankarankoil	500
95		Thenkasi	25
96		Ambasamutharam	25
97		Ambasamutharam	200
98		Valliyur	25
99		Tirunelveli	25
100		Pavoorchatram	1000
101		Kadayanalur	200
102		Palayankottai	2
103	Tiruvannamalai	Tiruvannamalai	25
104		Vettavalam	25
105		Chengam	25
106		Chetpet	25
107		Polur	25
108		Vandavasi	25
109		Cheyyar	25
110	Trichirapalli	Tiruchendurai	1000
111		Tuvarankurichi	100
112		Turaiyur	100
113		Kallikudi	2000
114		Kattuputhur	25
115		Tiruchirapalli (K.K.Nagar)	2
116		Anna Nagar	2

117		Anna Nagar	5
118	Tiruppur	Vellakoil	25
119		Palladam	25
120		Avinasi	25
121		Udumalpet	25
122		Pongalur	50
123		Tiruppur(North)	2
124	Vellore	Vellore	25
125		Tirupathur	25
126		Vaniyambadi	25
127		Jolarpet	25
128		Gudiyatham	2
129		Vaniyambadi	2
130	Villupuram	Kallakurichi	25
131		Ulundurpet	25
132		Villupuram	25
133		Tindivanam	15
134	Virudhunagar	Virudhunagar	100
135		Rajapalayam	25
136		Aruppukottai	25
137	Tiruvarur	Mannargudi	2
138	Kancheepuram	Nanganallur	2

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 Interventions (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:

a) 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.
b) Developing / augmenting distribution network where irrigation sources (both assured and protective) are available or created.
c) Promotion of rain water conservation and run off 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.

Table 8.1 : Watershed Activities & Components

Sl. No.	Components	Activities
i)	Land Development **(Natural Resource Management)**	Land leveling, Contour Bunding, Stone Bunding, Retaining Wall, Summer Ploughing, Vegetative Bunding and Continuous Trenching
ii)	Water Resources Development **(Natural Resource Management)**	Formation of New Tanks / Ooranies, Farm Pond, Percolation Pond, Desilting of Existing Tanks and Supply Channels
iii)	Common Property Development **(Natural Resource Mangement)**	Construction of Check dams, Cattle ponds, Supply channels, Desilting of Ooranies, Desilting of tanks and ponds.
iv)	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 farmers.
(v)	Plantation	Plantations relating to Horticulture, Socio-Agro Forestry, Fodder Development, Crop Demonstration and Homestead Garden
vi)	SHG and Livelihood Interventions for Landless Farmers	Revolving fund Rs.24,000/- is provided to Self Help Group and grant is provided to Landless Farm Labourers and user groups of Watershed.

During 2017-18, Government of India has allocated an amount of Rs.137.92 crore with State share which has been released to the District Watershed Development Agencies for implementation as below:

Table 8.2 : PMKSY Districtwise allocation

(Rs. in crore)

Sl. No.	Name of the District	Allocation
1	Coimbatore	4.72
2	Cuddalore	6.21
3	Dharmapuri	5.66
4	Dindigul	4.47
5	Erode & Tiruppur	5.01
6	Kancheepuram	4.95
7	Karur	11.90
8	Krishnagiri	5.92
9	Madurai	4.10
10	Namakkal	5.00
11	Perambalur & Ariyalur	5.15
12	Pudukottai	4.16
13	Ramanathapuram	7.93
14	Salem	7.73
15	Sivagangai	3.91
16	Theni	4.27
17	Thoothukudi	9.70

Sl. No.	Name of the District	Allocation
18	Tiruchirapalli	7.01
19	Tirunelveli	4.99
20	Tiruvallur	5.30
21	Tiruvannamalai	2.21
22	Vellore	6.40
23	Villuppuram	4.10
24	Virudhunagar	7.12
	TOTAL	**137.92**

For the above amount of Rs.137.92 crore achievement details of work is given in para 8.2.2.

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 (Per drop More crop), enhancing recharge of aquifers and introduce sustainable water conservation practices, creation of additional irrigation potential and bringing more area under cultivation. With the above aim, linking of Micro Irrigation is ensured.

During 2017-18, Government of India has allocated an amount of Rs.220 crore with State share which has been released to the District Watershed Development Agencies for implementation as below:

Table 8.3 : PMKSY Other Interventions Allocation

(Rs. in crore)

Sl. No.	Name of the District	Allocation
1	Coimbatore	8.72
2	Cuddalore	10.50
3	Dharmapuri	8.02
4	Dindigul	4.44
5	Erode and Tiruppur	9.32
6	Kancheepuram	7.80
7	Karur	9.42
8	Krishnagiri	6.77
9	Madurai	9.02
10	Namakkal	8.76
11	Perambalur and Ariyalur	6.12
12	Pudukottai	12.10
13	Ramanathapuram	8.72
14	Salem	11.02
15	Sivagangai	6.54
16	Theni	7.35
17	Thoothukudi	15.32

Sl. No.	Name of the District	Allocation
18	Tiruchirapalli	12.00
19	Tirunelveli	9.52
20	Tiruvallur	8.06
21	Tiruvannamalai	9.07
22	Vellore	8.04
23	Villuppuram	11.06
24	Virudhunagar	12.31
	TOTAL	**220.00**

The districts wise achievement details for the total released amount of Rs.357.92 crore under watershed development and other interventions are given below.

Table 8.4 : Natural Resource Management Achievement details for 2017-18:

(in Nos.)

Sl. No	District	Physical Achievement			
		Farm Ponds	Check Dams	Others (*)	Total
1	Coimbatore	55	137	922	1114
2	Cuddalore	15	25	738	778
3	Dharmapuri	68	314	606	988

Sl. No	District	Physical Achievement			
		Farm Ponds	Check Dams	Others (*)	Total
4	Dindigul	166	280	469	915
5	Erode & Tiruppur	136	237	389	762
6	Kancheepuram	19	243	1144	1406
7	Karur	159	133	581	873
8	Krishnagiri	176	244	662	1082
9	Madurai	8	459	611	1078
10	Namakkal	80	203	519	802
11	Perambalur & Ariyalur	101	596	401	1098
12	Pudukkottai	41	127	784	952
13	Ramanatha puram	77	0	1103	1180
14	Salem	164	204	657	1025
15	Sivagangai	195	0	490	685
16	Theni	22	491	259	772
17	Thoothukudi	254	432	1522	2208
18	Tiruchirapalli	88	551	472	1111
19	Tirunelveli	106	473	190	769
20	Tiruvallur	9	342	533	884

Sl. No	District	Physical Achievement			
		Farm Ponds	Check Dams	Others (*)	Total
21	Tiruvannamalai	36	354	642	1032
22	Vellore	62	527	198	787
23	Villupuram	51	377	909	1337
24	Virudhunagar	77	721	1281	2079
	Total	2165	7470	16082	25717

(*) Percolation Ponds, New Village Ponds, Renovation of Village Ponds, Rejuvenation of Abandoned Wells etc.

Table 8.5 Farm Production System and Livelihood Support System activities achievement details for 2017-18

(in Nos.)

Sl. No.	District	Sprayer (nos)	Agricultural implements	Goat / Cattle	Others (**)	Total
1	Coimbatore	41	89	16	231	377
2	Cuddalore	31	242	6	179	458
3	Dharmapuri	201	6	293	617	1117
4	Dindigul	83	17	6	288	394
5	Erode & Tiruppur	107	32	14	189	342
6	Kancheepuram	42	0	53	520	615

Sl. No.	District	Sprayer (nos)	Agricultural implements	Goat / Cattle	Others (**)	Total
7	Karur	20	114	21	221	376
8	Krishnagiri	39	32	65	297	433
9	Madurai	150	73	24	501	748
10	Namakkal	86	90	99	347	622
11	Perambalur & Ariyalur	140	88	106	355	689
12	Pudukkottai	126	159	0	398	683
13	Ramanathapuram	58	125	3	446	632
14	Salem	11	61	33	360	465
15	Sivagangai	20	61	54	185	320
16	Theni	11	44	0	750	805
17	Thoothukudi	53	85	10	243	391
18	Tiruchirapalli	111	24	68	215	418
19	Tirunelveli	77	235	52	389	753
20	Tiruvallur	35	215	106	382	738
21	Tiruvannamalai	188	166	160	593	1107
22	Vellore	61	44	79	532	716
23	Villupuram	85	125	138	110	458
24	Virudhunagar	86	162	2	291	541
	TOTAL	**1862**	**2289**	**1408**	**8639**	**14198**

(**) ***Sewing machine, petty shop, vermicompost etc.***

These two schemes are proposed to be continued during 2018–19 with tentative allocation of Rs.238.54 crore (including Central and State share).

8.3 Watershed Development Fund (WDF) assisted by NABARD:

This scheme is started during 2004. It is funded by State Government (with 50% loan) and NABARD (50% grant assistance). Works taken up under these projects are similar to PMKSY – Watershed Development works.

Totally 168 Projects have been sanctioned by Steering Committee of which 63 Projects have been completed through Tamil Nadu Watershed Development Agency and handed over to NABARD. Out of the remaining 105 Projects, 64 Projects are under the fold of NABARD and 41 Projects are under Tamil Nadu Watershed Development Agency.

Major Components of WDF:

(i)	**Physical Area Treatment**	Activities like Stone Field bunds, Contour trenches, Water Absorption Trenches, Dug wells, Recharge pits, Farm ponds, Percolation Ponds, Sunken Ponds, Agro Forestry, Agro-Horticulture, Silvi-pasture, Grass seeding in watershed areas.
(ii)	**Drainage line treatment**	Activities like Stone gulley plugs, Renovation of water harvesting structures, Desilting of ponds, tanks, repair of supply channels.
(iii)	**Livelihood Support for landless women**	Income generating activities for Self Help Groups and landless Women
(iv)	**Training**	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 the year 2017-18, State Government have allocated a sum of Rs.5.880 crore for 25 Projects and a sum of

Rs.5.220 crore was released to 9 Districts as detailed below:

Table 8.6 Fund Release details under WDF

(Rs. in crore)

Sl. No.	Name of the District	Allocation
1	Dindigul	0.387
2	Kancheepuram	0.158
3	Krishnagiri	1.337
4	Madurai	0.965
5	Pudukottai	0.160
6	Ramanathapuram	0.782
7	Theni	0.548
8	Thoothukudi	0.624
9	Virudhunagar	0.259
	TOTAL	**5.220**

This scheme is proposed to be continued during 2018-19 with tentative allocation of Rs.2.748 crore in respect of 6 new Watershed Projects.

8.4 TAWDEVA as a Nodal Agency:

TAWDEVA acts as the Nodal Agency for channelizing funds for the schemes funded by the Government of India viz. **National Agriculture Development Programme, National Mission for Sustainable Agriculture and Pradhan Mantri Krishi Sinchayee Yojana.**

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 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 I.A.S.

The following staff are working in TAWDEVA by deputation from various departments / outsourcing / retired persons.

Headquarters:

Sl.No	Name of the post	No. of posts
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	Assistants	9
10	Other supporting staff	28
	TOTAL	**46**

8.6 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 with the following staffs.

The following staff are working in TAWDEVA by deputation from various departments / outsourcing / retired persons and contract.

Sl. No	Name of the post	No. of posts
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)	368
	TOTAL	**506**

9. DEMAND NO.5 AGRICULTURE

BUDGET ESTIMATE 2018-19

(Rupees in Thousands)

	Revenue	Capital	Loan	Total
DEMAND FOR GRANT – Voted	**8,323,87,22**	**461,87,96**	**130,50,00**	**8,916,25,18**
Appropriation Charged	**4**	**...**	**...**	**4**

Net Expenditure

(Rupees in Thousands)

Head of Account		2016-17	2017-18	2017-18	2018-19
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
2059	PUBLIC WORKS	1,42,40	2,54,20	2,56,00	2,56,00
2401	CROP HUSBANDRY	5,341,65,57	6,081,30,97	6,564,37,80	7,091,97,69
2402	SOIL AND WATER CONSERVATION	101,45,16	98,52,37	145,51,78	135,20,44
2408	FOOD STORAGE AND WAREHOUSING	....	....	....	100,00,00
2415	AGRICULTURAL RESEARCH AND EDUCATION	432,54,75	475,79,32	532,63,21	554,59,31
2435	OTHER AGRICULTURAL PROGRAMMES	148,00,27	174,55,91	185,80,38	208,52,78
2501	SPECIAL PROGRAMMES FOR RURAL DEVELOPMENT	152,56,09	185,91,50	194,30,60	192,79,00
2551	HILL AREAS	62,45	91,95	80,97	91,46
2702	MINOR IRRIGATION	7,89,23	9,42,30	9,24,58	10,36,21
2705	COMMAND AREA DEVELOPMENT	1,85,80	34	34	34
2810	NEW AND RENEWABLE ENERGY	3,85,17	52	8,54,36	8,50,00
3451	SECRETARIAT – ECONOMIC SERVICES	9,79,03	10,15,72	11,87,99	13,32,25

Head of Account		2016-17	2017-18	2017-18	2018-19
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
4401	CAPITAL OUTLAY ON CROP HUSBANDRY	110,00,00	139,05,05	58,01,73	81,88,60
4402	CAPITAL OUTLAY ON SOIL AND WATER CONSERVATION	16,77,51	28,22,13	21,46,36	123,36,02
4435	CAPITAL OUTLAY ON OTHER AGRICULTURAL PROGRAMMES	133,15,23	269,82,39	120,91,27	256,63,26
4705	CAPITAL OUTLAY ON COMMAND AREA DEVELOPMENT	41,87,57	8	8	8
6401	LOANS FOR CROP HUSBANDRY	-	130,00,00	130,00,00	130,00,00
7610	LOANS TO GOVERNMENT SERVERNTS ETC.	33,80	50,00	50,00	50,00

DEMAND NO.5 AGRICULTURE
BUDGET ESTIMATE 2018-19

[Rupees in Thousands (Gross)]

Sl. No	Head of Department			Revenue	Capital	Loan	Total
1	05 01	Secretariat	Voted	13,32,25	...	50,00	13,82,25
2	05 02	Directorate of Agriculture	Charged	2	...	...	2
			Voted	6,073,93,34	49,46,61	130,00,00	6,253,39,95
3	05 03	Directorate of Agricultural Marketing and Agri. Business	Voted	240,33,69	256,63,26	...	496,96,95
4	05 04	Directorate of Seed Certification	Voted	59,39,64	1,00,00	...	60,39,64
5	05 05	Directorate of Horticulture and Plantation Crops	Charged	1	...	...	1
			Voted	1,033,93,23	16,86,99	...	1,050,80,22
6	05 06	Agricultural Engineering Department	Charged	1	...	...	1
			Voted	354,48,86	137,91,10	...	492,39,96
7	05 07	Agro Engineering Services	Voted	59,98	...	...	59,98
8	05 08	Tamil Nadu Agricultural University, Coimbatore	Voted	546,91,62	...	...	546,91,62
9	05 09	Directorate of Organic Certification	Voted	94,61	...	...	94,61
Total			Charged	4	...	...	4
			Voted	8,323,87,22	461,87,96	130,50,00	8,916,25,18

CONCLUSION

The Government which is committed to transforming Agriculture as a remunerative profession, steadfast in achieving this set target has come out with appropriate technology and various schemes having focus on improving the yield per unit of land and water.

Success of Agriculture depends very largely on optimum usage of water and assured irrigation. Hence, the Government is taking intensive efforts to popularize the Micro Irrigation system which helps in bringing more crops per drop.

Further, the Government has introduced Collective Farming infusing collectivism and retaining farmers' interest in farming for effective and collective utilization of precious land and water resources, reducing input cost

and better pricing for their produce as collective approach;

Mission on Sustainable Dry land Agriculture (MSDA)- a Mission mode approach for enhancing production and productivity of Millets, Pulses, Oil seeds and Cotton in dry land areas is a model scheme of its kind in the country.

Supporting farmers at the time of distress due to natural calamities, Special Packages such as Kuruvai cultivation package, Samba cultivation Package, Pulses package and permit for Neera Production from Coconut trees have been initiated.

Mission mode approach for Cotton and Soil Health Card based fertiliser recommendations, Sustainable Sugarcane Initiative (SSI), Protection of farmers from unforeseen damage to standing crops, efforts to save the farmers who were affected due to crop loss and provide compensation through Crop Insurance scheme,

Seed supply chain through Tamil Nadu State Seed Development Agency (TANSEDA), Eco sustainable Agricultural Practices, Transparency in distribution of fertilizers through Point of Sale Machines for fertiliser transaction, Uzhavan App for transparency in availing benefits of Central and State Government Schemes on realtime basis, Supply Chain Management and e-trading in Agriculture Markets, farmer oriented Agricultural Extension System for multi-dimensional agricultural development in the State are among the initiatives of the Government to give an impetus to Agriculture.

The futuristic pro-active initiatives of the State Government **will further spearhead the agriculture sector to bring further prosperity amongst the farmers of Tamil Nadu.**

R.DORAIKKANNU
Minister for Agriculture