



**AGRICULTURE DEPARTMENT**

**POLICY NOTE**  
**Demand No.5 - AGRICULTURE**  
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**GOVERNMENT OF TAMIL NADU**  
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## Policy Note 2019-2020

### INDEX

S.No.	Contents	Page No.
	Introduction	1-9
1.	Agriculture	10-131
2.	Horticulture and Plantation Crops	132-190
3.	Agricultural Engineering	191-234
4.	Agricultural Education, Research and Extension Education	235-259
5.	Sugar	260-273
6.	Seed Certification and Organic Certification	274-292
7.	Agricultural Marketing and Agri Business	293-345
8.	Tamil Nadu Watershed Development Agency (TAWDEVA)	346-363
9.	Demand	364-367
	Conclusion	368-372

## INTRODUCTION

“உழவார் உலகத்தார்க்கு ஆணி அஃ தாற்றாது  
எழுவாரை எல்லாம் பொறுத்து”

(திருக்குறள்:1032)

*[Meaning: Agriculturists are (as it were)  
the linch-pin of the world for they  
support all other workers who cannot till  
the soil.]*

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Agriculture, with its allied sectors, is the largest source of livelihood in Tamil Nadu. More than two third of rural households in the State still depend primarily on agriculture for their sustenance, with 93 percent of farmers being small and marginal.

The welfare and well being of the State's population mainly depends either directly or indirectly on fortunes of agriculture. Moreover, the primary responsibility of the State Government is to ensure stability in agricultural

sector and sustainability in agricultural production of the State.

Agriculture is undergoing perceptible changes as it gets transformed from traditional to modern economy which is an important step towards economic development. The traditional uncompromising practices followed in the erstwhile years and the systematic method of cultivation impregnated with Good Agricultural Practices focussing on environment for production of food grains are gaining momentum in the modern agriculture. The State Government is promoting environment friendly sustainable agriculture and encouraging farmers to adopt such practices with an objective to meet the demands put forth by the growing population in the food segment as well as the raw materials for agro-based industries in an eco-friendly sustainable way.

The better agricultural accomplishments are the result of continued technological gains and appropriate policies and timely intervention measures of the Government. A strong and vibrant agricultural system forms the primary

pillar in the strategies for overall economic development. The economy of the State still depends to a large extent on agriculture and other allied activities. When agriculture grows, it creates the way for generation of employment, both directly and indirectly in rural and urban areas.

Government of Tamil Nadu is taking all out efforts to increase productivity and farmers' income by adopting frontier agriculture technologies to a larger extent for various crops cultivated in Tamil Nadu by actively involving farmers and extension officers with due research backing.

The Government of Tamil Nadu is taking plethora of sound policies and revolutionary strategies to give impetus to agriculture by bringing in various agrarian reforms and crop specific, season specific, soil specific, climate specific, farm specific approaches in agriculture which is beleaguered by enigmatic weather, uncertainty in rainfall, slumping land area, plummeting water resources, deteriorating soil fertility, unrestrainable pests & diseases,

increased costs of critical inputs, difficulty in horizontal expanse of land resources, labour scarcity and vacillating market prices.

Against all these odds, the Government of Tamil Nadu has set a remarkable footprint in food grain production by achieving more than 100 Lakh Metric Tonnes since 2011-12. The technological breakthrough in increasing the productivity and the cultivable area with interventions such as integrated approach to enrich the Soil fertility; Mission on Sustainable Dryland Agriculture, System of Rice Intensification, Collective farming, Integrated Farming System, Farm mechanisation; adoption of water conservation measures with Micro Irrigation; post-harvest management of crop produces, Risk Insurance, Agro information technological interventions; Organic farming, Food Processing Policy and interlinking agricultural markets through eNAM etc., have removed the impasse in agriculture production and paved way for the State to surpass 100 Lakh Metric Tonnes of Food Grain production Six times in a row during 2011-2012, 2013-2014, 2014-2015, 2015-2016, 2017-18

and 2018-19 (4<sup>th</sup> advance estimate) except 2012-13 & 2016-17 being the years of severe drought. The State was conferred with “**Krishi Karman award**” four times (2011-12, 2013-14, 2014-15 & 2015-16) in a period of seven years by Government of India.

### **Genesis of the Department**

The 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 Instructions was annexed to the Department of Agriculture and presently functioning as Tamil Nadu Agricultural University. Several changes took place in its organizational setup owing to bifurcation of the State, Districts and Taluks.

## **Agriculture Scenario in Tamil Nadu**

Tamil Nadu is geographically located between 8°5' and 13°35' North latitude and between 76°14' and 80°21' East longitude. Tamil Nadu falls in semi-arid to dry sub humid climate. This geographical position supports higher crop productivity under irrigation.

The total geographical area of Tamil Nadu is 130.33 Lakh Ha which constitutes 4 percent of the Nation's geographical area (10<sup>th</sup> Largest State) with coastal line of 1,076 km. 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.

However, the Tamil Nadu Government with its proactive policies and strategic implementation of schemes overwhelmed these challenges and paved the way for continued increase of food grains.

The Tamil Nadu land use pattern as per the latest statistical report(2017-18) is given below:

**Table 1.1: Land Use Pattern in Tamil Nadu**

S. No	Details	Area (Lakh Ha)	% with reference total Geographical area
1	Forest	21.57	16.55
2	Net Cropped Area (*)	46.39	35.59
3	Area under Misc. Tree crops	2.26	1.73
4	Permanent Pastures	1.07	0.82
5	Current fallow	9.92	7.61
6	Other fallows	19.33	14.83
7	Culturable Waste	3.20	2.46
8	Land put to non agricultural use	22.01	16.89
9	Barren and Unculturable land	4.58	3.51
	<b>Total Geographical Area</b>	<b>130.33</b>	<b>100.00</b>
	Cropping Intensity (%)	124	-

(\* ) Difference between Gross Cropped Area (57.30 Lakh Hectare) and Area sown more than once (10.91 Lakh Hectare)

Source: Department of Economics and Statistics, Government of Tamil Nadu, (Provisional)

Tamil Nadu is the sixth most populous State with 6 percent of the Nation's population (2011 Census). According to the 10<sup>th</sup> Agriculture Census 2015-16 (Provisional), the number of operational land holders in the State is 79.38 Lakh, operating cultivable land

of 59.73 Lakh Hectare. Small and Marginal holders account for 93% of the total holdings operating 62% of the area occupied. The remaining 38% of the total Land holdings are occupied by 7% of medium and big farmers. The average size of the land holding in the State is 0.75 hectare which is less than the average size of land holding of the country (1.08 Hectare).

The State's average annual rainfall 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 capital 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 (2017-18) are as follows:

**Table 1.2: Water Source wise Net Area Irrigated**

<b>Source</b>	<b>Availability (Nos)</b>	<b>Net Area Irrigated (Lakh Ha.)</b>	<b>% with reference to Net Area Irrigated</b>
Canals	2,244	5.89	22.43
Tanks	41,120	3.58	13.63
Wells and Bore wells	18,70,841	16.77	63.86
Others		0.02	0.08
<b>Total</b>		<b>26.26</b>	<b>100.00</b>

*Source: Department of Economics and Statistics, Government of Tamil Nadu, (Provisional)*

The area irrigated by wells and borewells accounted for 64% followed by Canals (22%) and Tanks (14%).

# **1. AGRICULTURE**

## **1.1. Goals, Strategies and achievements of the Department**

Government of Tamil Nadu, a leading State in holistic development of Agriculture, has formulated proactive policies, new initiatives and novel technological innovations to overcome the challenges in agriculture and implemented Good Agricultural Practices for the enhancement in production, productivity and total area expansion of food crops and other commercial crops.

The revolutionary strategies in Agriculture policy and planning such as sustainable action plan for Climate change in Agriculture, Climate resilient farming system, Integrated farming system, Collective Farming, Mission on Sustainable Dryland Agriculture, Micro irrigation, procurement of pulses through NAFED, Risk insurance, Organic farming, etc., have supported the farmers resulting in transformation of agriculture as a business.

Government also planned various new approaches for doubling Food Grain production in the State such as System of Rice intensification (SRI), Direct sowing of Paddy, Machine Transplanting of Paddy, Redgram

transplantation, Promotion of Coarse and Nutricereals and popularisation of high yielding varieties etc.,

The State took immediate measures to balance the unfavourable situation and protect the crops by implementing Special Packages such as Kuruvai cultivation package, Samba cultivation Package, Pulses Special Package and Crop Insurance for supplementing and sustaining the income of farmers.

In order to ensure remunerative price to farmers growing Commercial Crops, State Government has taken appropriate promotional measures for enhancing Extra Long Staple cotton production in Tamil Nadu in a Mission mode approach under Tamil Nadu Cotton Cultivation Mission and for better sugar recovery, Sustainable Sugarcane Initiative (SSI) using bud chip method of planting sugarcane, Micro Irrigation, Introduction of New varieties were advocated.

The Certified seeds and Coconut seedlings produced through Tamil Nadu State Seed Development Agency (TANSEDA), On-farm production and distribution of Bio-control agents, adoption of Integrated Pest Management technologies, Production and distribution of Bio fertilizers such as Azospirillum, Rhizobium and Phosphobacteria, production and distribution of

Micro Nutrient mixtures, Soil Health Card based fertilizer recommendation and selling of fertilizers through Point of Sale Machine, ensuring quality of Seeds, Fertilisers and Pesticides by enforcing statutory quality control mechanism have contributed to sustainable production of agricultural and horticultural crops in the State besides retaining farmers' interest in Farming.

The formulated policies, invented technologies, designed schemes and corrective measures in agricultural development by the Government of Tamil Nadu, have been effectively transferred, distributed and disseminated to Extension Officials and Farmers through an institutional mechanism such as Integrated Agricultural Extension Centers (IAEC), Farmers Training Centres, Water Management Training Centre (WMTC), State Agricultural Extension Management Institute (STAMIN) and State Agricultural Management and Extension Training Institute (SAMETI), Farmer oriented Integrated Agricultural Extension System, Uzhavan mobile app, for updating latest technologies and stock position of critical inputs such as Seeds, Fertilizers etc., in Agriculture besides resolving issues in farming.

The adoption of these innovative technological intervention had resulted in increasing agricultural production, generation of farm employment and contribution to higher income of the farmers.

### **Highlights of achievements in Agriculture during 2018-19**

- ❖ **Food grain production in the State surpasses 100 Lakh Metric Tonnes**, sixth time in a row for the past eight years.
- ❖ **"Collective Farming"**, a revolutionary concept of the Government made a remarkable achievement in which 2,000 Farmer Producer Groups **purchased 7,729 Farm Machineries with a corpus fund of Rs.100 crore.**
- ❖ Integrated farming system (IFS) was introduced as a pilot project in 5 districts viz., Villupuram, Erode, Thanjavur, Madurai and Tirunelveli by selecting one block per district, 10 villages per block.

**2,490 IFS units were established benefiting 2,490 farm families at an expenditure of Rs.22.07 crore.**

- ❖ **Uzhavan Mobile application** launched by Hon'ble Chief Minister on 05-04-2018 with 9 vital personalized Agricultural Information has already won the confidence of farmers. **So far, 4.50 Lakh farmers downloaded this App. Now, 6 additional services have been added and a total of 15 services with Artificial Intelligence (AI) technology are provided to Farmers by the Government of Tamil Nadu.**
- ❖ **Mission on Sustainable Dry Land Agriculture is a landmark scheme, implemented from 2016-17 to 2019-20 with an aim to support rainfed farmers of 1,000 clusters covering 25 Lakh acres. During 2018-19, activities were carried out for 400 Clusters covering 10 Lakh acre area of dry land with a total allocation of Rs.296.16 crore benefiting 3.59 lakh dry land farmers. So far, 2,417 Farmers club,**

establishment of 846 Common Water Harvesting Structures and 577 Custom Hiring Centres for farm machinery, assistance for seed and other inputs, summer ploughing 15 lakh acres, purchase of 197 Value addition machinery units and Animal Health Management Activities for 2 lakh cattle were completed. **Further, another 400 new dry land clusters have been formed in 24 districts and the initial activities are being carried out to the tune of Rs.29.16 crore.**

- ❖ Input subsidy Relief Assistance for Gaja cyclone affected Coconut trees and Other Agricultural Crops have been sanctioned. **So far, a total amount of Rs.581.17 crore has been disbursed and credited into the bank account of 1,34,658 affected farmers.**
- ❖ **Tamil Nadu stands first among all other States / UTs in obtaining maximum claim amount for farmers under Pradhan Mantri Fasal Bima Yojana (PMFBY). So far, an amount of**

**Rs.5,348 crore has been sanctioned as compensation claims to 21.75 lakh farmers for 2016-17, 2017-18 and 2018-19. An amount of Rs.5,226 crore as compensation has been credited to 20.21 lakh farmers and the remaining amount are being released periodically.**

### **1.1.1. Area, Production and Productivity Programme for 2019-20**

The Government has launched an ambitious Food Grain Mission revitalized with crop specific strategies for increasing the production of food grains.

**Table 1.3: Foodgrain production in the past 6 years**

Crop	Food Grain production (Lakh Metric Tonnes)					
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19 (**)
Rice	71.15	79.49	73.75	35.54	66.38	64.54
Millets	32.73	40.79	34.25	13.45	35.19	33.81
Pulses	6.14	7.67	5.85	3.39	5.56	5.67
<b>Total Food Grains</b>	<b>110.02</b>	<b>127.95</b>	<b>113.85</b>	<b>52.38</b>	<b>107.13</b>	<b>104.02</b>

*(\*\*)Fourth Advance Estimate*

However, deficit rainfall received in later part of North East Monsoon and attack of Fall Army Worm pest on Maize in Southern India, the post effect of Gaja Cyclone had detrimental effect to the standing crops. The estimated food grain production as per the forth advance estimate for 2018-19 is 104.02 Lakh Metric Tonne and it is likely to increase when the final estimates are arrived.

**The surpass of more than 100 Lakh Metric Tonnes of Food grain production** has been made possible due to special thrust given for adoption of various agricultural technologies such as System of Rice Intensification, Direct sowing of Paddy, System of Pulses Intensification, Improved Agronomic practices for Coarse Cereals and Nutricereals, implementation of schemes such as Integrated Farming System, Collective Farming, Mission on Sustainable Dryland Agriculture, Judicious water usage by implementation of Micro irrigation on a large scale,etc.

In sequel to this, Government of Tamil Nadu has programmed to achieve 115 Lakh Metric Tonnes of Food grain production during 2019-20 and has conceptualised a lot of technology packed smart schemes right from sowing to marketing the commodity and thereby accelerating the growth in Agriculture sector and to build a strong, vibrant climate resilient cropping system besides increasing the production & productivity of crops and ultimately the income of the Farmers.

**Table 1.4: Programme for 2019-20**

Crop	Area (Lakh Ha)	Production (Lakh MT)	Productivity (Kg/Ha)
Rice	18.50	72.00	3891
Millets	9.00	36.00	4001
Pulses	9.40	7.00	744
<b>Total food grains</b>	<b>36.90</b>	<b>115.00</b>	
Oilseeds	5.20	12.80	2462
Cotton (*)	2.40	7.37	522
Sugarcane (**)	3.25	370.52	114
<b>Total</b>	<b>47.75</b>		

(\*)Production in Lakh Bales ; 170 Kg of lint for each bale;

(\*\*)Productivity (Metric Tonnes/Ha)

The Government of Tamil Nadu which is in the pursuit of ushering in Second Green Revolution with the objective of **“Doubling the Food Grain Production and Tripling the Farmers income”** has launched crop and site specific strategies propelled by farm level interventions to improve the economic status of the farmers by implementing multi front development schemes and innovative technologies to a larger extent for various crops with participatory appraisal of farmers and extension staff for ensuring inclusive growth in the State's agriculture.

**The Strategies are,**

1. Increase the yield of food grain, oilseeds and commercial crops by introducing site Specific Crop management technologies.
2. Increase on-farm income of the farm families by bringing down the cost of critical inputs, eliminating drudgery of farm labour, inter cultural operations, Post harvest management etc,.
3. Establishment of robust infrastructure facilities for production and distribution of critical inputs besides promoting

intensification and diversification in agriculture.

4. Cost reduction in fertilizer application by adopting soil test based fertilizer recommendation and devising the mechanism of fertilizer distribution based on soil health card value.
5. Special thrust for dryland and summer crops targeted with proper plan to cover additional area and crop diversification. Judicious utilization of available irrigation water, Integrated Nutrient Management and Integrated Crop protection measures to reduce crop loss and ensure sustainable production system in dry land area.
6. Focus on generating off-farm income opportunities to raise farmers' income by extending assistance for setting up Farm and Value addition Machinery, Custom Hiring Centres, Dealership on micro irrigation system, Dealership for Input distribution, Kudimaramathu works, Work order for creation of Rain Water Harvesting structures, etc., to active Farmer Producer Groups formed under Collective Farming.

7. Extensive campaigns for effective transfer of technology by integrating all stakeholders in agriculture.
8. Enrichment of Soil Health by adopting ecological engineering principles and farming practices.
9. Agro technological information dissemination and real time problem solving right from seed to seed by introducing **"My Farm Guide"** through Uzhavan app and adopting modern Information Embedded Intelligence Technological Tools such as Artificial Intelligence (AI) for providing instant solutions to the farm problems.
10. Encouraging the adoption of climate resilient practices, insulating the famers from income loss supported by crop insurance and formulation of crop contingency plan based on weather forecast and other measures tackling the risk due to natural calamity.
11. Fostering Integrated farming practices by integrating farming with allied sector stepping towards additional income of the farmers and also for ecological regeneration, diversification, soil health

improvement and increasing the per unit productivity.

12. Encouraging Good Agricultural Practices among farming community as a strategy with foresighted vision of ensuring quality in food and fodder for domestic consumption and Export.
13. Judicial usage of water, Nutrient, Plant protection Chemicals and labour for conserving energy and cost which ultimately will increase in resource & input use efficiency and bring quality produces.
14. A Comprehensive Input Supply and Management System ensuring quality of critical inputs besides improving the delivery mechanism.
15. Empowerment of Women farmers by extending handholding support in farming and allied activities.
16. Improving marketing efficiency by reducing the price spread between producer and consumer/export prices of agricultural produce.

17. Creation of water harvesting structures like Percolation ponds, farm ponds, community ponds, checkdams, Village ponds for ground water recharge and crop production.
18. Providing extension and advisory services on real time basis to farmers and other stakeholders by using Information and Communication Technology for optimizing their productivity and income.
19. Linking farmers with Markets can be either "top down" in which sources of demand seek a group of farmers to fulfill that demand, or "bottom up" in which groups of farmers are integrated to seek sources for supply through value addition of Agriculture produce.

## **1.2. Season – Rainfall**

The monsoon forecast is crucial, as it directly influences agricultural production and has a spiralling impact on inflation and growth. The India Meteorological Department (IMD) predicted that the year 2018 would be a Normal Rainfall year for Tamil Nadu. True to the prediction, the State received Excess rainfall during summer season (154.1 mm, +20%

Deviation) & Normal South West Monsoon Season (282.9 mm, -12% Deviation) bringing a fillip to the crop prospects. However, the deficient rainfall received during North East Monsoon (336.5 mm, -24% Deviation) & winter (16.7, -46% Deviation) seasons influenced the cropping pattern and had a impact on area, production and productivity.

**Table 1.5: Area, Production & Productivity  
2018-19 (4<sup>th</sup> Advance Estimate)**

Crop	Area (Lakh Ha)	Production (Lakh MT)	Productivity (Kg/Ha)
Rice	17.22	64.54	3,748
Millets	9.12	33.81	3,708
Pulses	8.26	5.67	687
<b>Total food grains</b>	<b>34.60</b>	<b>104.02</b>	
Oilseeds	3.93	9.09	2,313
Cotton (*)	1.33	2.69*	343
Sugarcane (**)	1.65	162.07	98**
<b>Total</b>	<b>41.51</b>		

\*- bales of 170kg of lint in lakh \*\* - MT

Source: Department of Economics & Statistics, Govt. of TN.

During 2019, the India Meteorological Department (IMD) has predicted the South West Monsoon rainfall to be near Normal for the whole country (96%).

### **1.3. Crop Status**

A variety of food grain crops such as paddy, millets, pulses, oilseeds, and other crops cotton and sugarcane are predominantly cultivated in different parts of Tamil Nadu, based on soil characteristics, rainfall distribution, irrigation pattern, cropping pattern and other ecological and social characteristics. However, 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 are the influential factor for successful cultivation of Crops.

The normal rainfall during South West monsoon and deficit Rainfall during North East monsoon contributed to Crop area coverage under principal crops during 2018-19. As per the fourth Advance Estimate, out of the total area of 41.51 Lakh Ha. covered so far, Paddy was cultivated in an area of 17.22 Lakh Ha.

(42%), followed by Millets in 9.12 Lakh Ha. (22%), Pulses in 8.26 Lakh Ha. (20%), Oilseeds in 3.93 Lakh Ha. (9%), Sugarcane in 1.65 Lakh Ha. (4%) and Cotton in 1.33 Lakh Ha. (3%).

The Food Grain Mission revitalized with crop specific strategies for increasing the production of food grains launched during 2011, would support and monitor in augmenting the area, productivity and production of food grains with technological innovations and critical input supply. The State has drawn various districtwise, blockwise, village-wise plan to bridge the gap between the potential and actual productivity which would be the decisive factor for commendable performance in food grain production during 2019-20.

### **1.3.1. Paddy**

Paddy on an coverage occupies 33% of the gross sown area and 53% of the gross area irrigated of the State and 62% of the total food grains production in Tamil Nadu. Paddy is cultivated in a normal area of 17.59 lakh hectare

with normal production of 65.26 Lakh Metric Tonne.

About 40% of the paddy area is cultivated in delta districts comprising of Thanjavur, Nagapattinam, Tiruvarur, Trichy, Pudukkottai, Karur, Ariyalur and Cuddalore. Paddy is cultivated in 3 major seasons viz., Kar/Kuruvai /Sornavari (April to July), Samba/ Thaladi/Pishanam (August to November) and Navarai/ Kodai (December to March).

During 2017-18, Paddy is cultivated in an area of 18.29 lakh hectare with production of 66.38 Lakh Metric Tonne.

**Table 1.6: Paddy Area and Production  
(Top 10 districts)-2017-18**

S. No	Districts	Area (Lakh ha.)	S. No	Districts	Production (Lakh Metric Tonne)
1	Tiruvarur	1.810	1	Tiruvannamalai	7.043
2	Thanjavur	1.707	2	Villupuram	7.033
3	Nagapattinam	1.639	3	Tiruvarur	6.999
4	Villupuram	1.636	4	Thanjavur	6.685
5	Tiruvannamalai	1.617	5	Cuddalore	5.645
6	Cuddalore	1.312	6	Nagapattinam	4.475
7	Ramanathapuram	1.266	7	Tiruvallur	4.128
8	Tiruvallur	1.026	8	Kancheepuram	3.946
9	Kancheepuram	0.906	9	Tirunelveli	2.942
10	Pudukkottai	0.857	10	Vellore	2.552

The State Government has taken strenuous efforts to increase the productivity and production of Rice at farm level through various technologies such as promotion of high yielding Paddy varieties, SRI technology, Machine planting, Direct Sowing technology and alternate cropping programme for Ramanathapuram and Sivagangai.

### **1.3.1.1.High yielding Paddy varieties**

High yielding varieties for Paddy is one among the determinant factors for realizing potential productivity. Government is aiming to ensure availability of quality seeds to the farmers. The season wise Paddy varieties are:

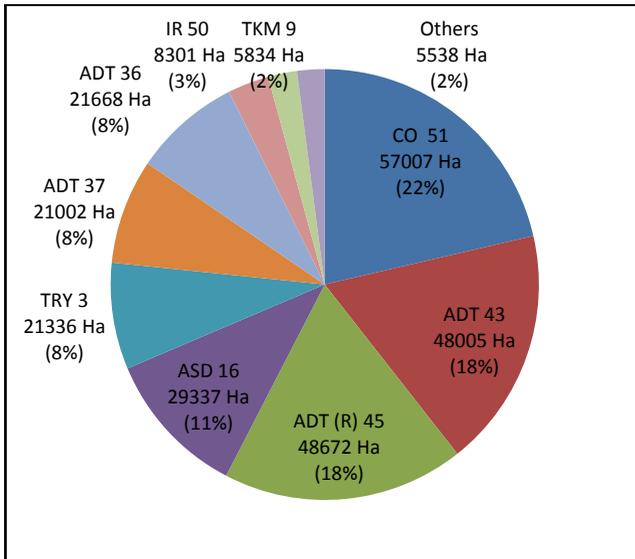
**Table 1.7: Season wise Paddy varieties**

<b>Season</b>	<b>Varieties</b>
Kar/Kuruvai/Sornavari	CO-51, ADT-43, ADT(R)-45, ASD-16, TRY-3, ADT-37, TKM-13, ADT-36, IR-50, TKM-9
Samba/Thaladi/Pishanam	CO-51, BPT-5204, CR -1009, NLR-34449, ADT(R)-45, ADT-38, ADT-39, TKM-13, JGL-1798, ASD-16, Improved White Ponni, CR-1009 (Sub1)
Navarai/Kodai	ADT -43, ADT(R)- 45, CO -51, ASD -16, ADT -37, IR -20, IR -50, TKM- 9

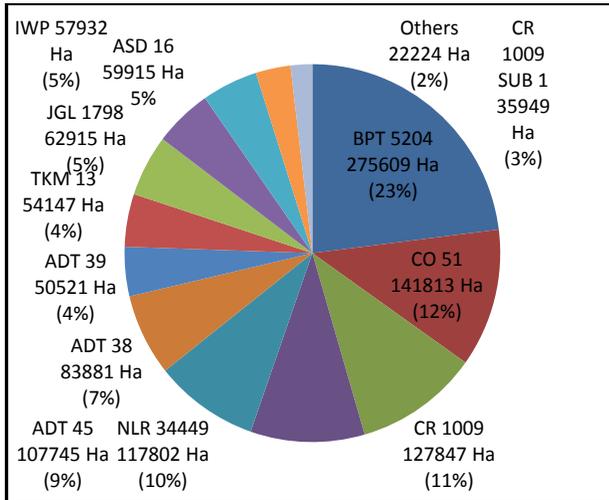
Among the above varieties, CO-51, a short duration high yielding paddy variety which is moderately resistant to blast, brown plant hopper and green leaf hopper, has occupied nearly 22% of area during Kar/Kuruvai/Sornavari, 12% during Samba/Thaladi/Pishanam and 16% during Navarai/Kodai in the year 2018-19.

The graphical representation of season wise and variety wise area coverage during 2018-19.

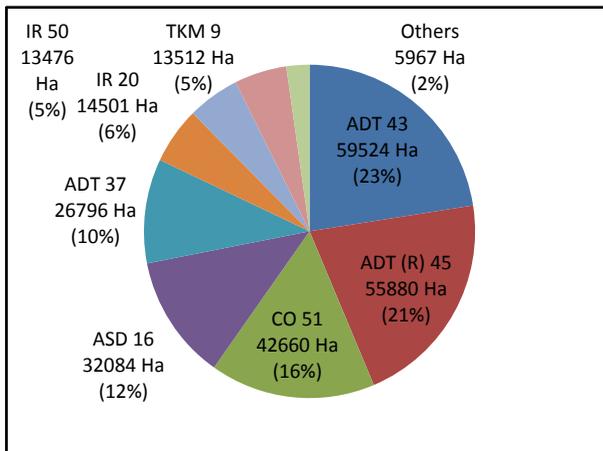
**Paddy Area coverage- Kar/Kuruvai/Sornavari Season**



## Paddy Area coverage- Samba/Thaladi/Pishanam Season



## Paddy Area coverage- Navarai/Kodai Season



**1.3.1.2. System of Rice Intensification (SRI):-** By considering the increase in the demand for food grains, vagaries of monsoon and deficient irrigation water, a suitable technology which requires minimum water to increase productivity and production of food grains is need of the hour. Hence, the Agriculture Department is promoting the System of Rice Intensification massively. This technology includes the critical steps of

- Use of quality certified / Hybrid / variety seed
- Seed rate : 3kg / acre.
- Raised bed nursery.
- 1 cent nursery area is required to plant 1 acre
- 14 days old seedlings are to be transplanted.
- The main field should be levelled perfectly.
- Square planting with 22.5 cm x 22.5 cm

- Single seedling should be planted in a hill
- Alternate wetting and drying to be ensured.
- Cono weeder should be used for weeding from 10<sup>th</sup> day onwards at 10 days interval for four times.
- Need based application of Nitrogenous fertilizer.

This technology was promoted in an area of 10.73 lakh Ha during 2018-19. It is programmed to popularise 11 Lakh Ha SRI method of Paddy cultivation during 2019-20 also.

**Table 1.8: SRI area coverage 2018-19**

<b>S. No.</b>	<b>District</b>	<b>Area covered (in lakh Ha.)</b>
1	Tiruvarur	1.493
2	Thanjavur	1.361
3	Villupuram	0.828
4	Cuddalore	0.818
5	Nagapattinam	0.791
6	Tiruvallur	0.719
7	Tiruvannamalai	0.681
8	Tirunelveli	0.612
9	Kancheepuram	0.595
10	Madurai	0.334

11	Tiruchirapalli	0.311
12	Pudukkottai	0.305
13	Vellore	0.293
14	Erode	0.254
15	Sivagangai	0.177
16	Ariyalur	0.157
17	Krishnagiri	0.154
18	Thoothukudi	0.107
19	Virudhunagar	0.107
20	Theni	0.095
21	Karur	0.088
22	Kanniyakumari	0.078
23	Tiruppur	0.071
24	Salem	0.070
25	Dindigul	0.066
26	Namakkal	0.059
27	Ramanathapuram	0.048
28	Dharmapuri	0.027
29	Perambalur	0.019
30	Coimbatore	0.011
	<b>Total</b>	<b>10.726</b>

**1.3.1.3. Direct Sowing Method of Paddy cultivation:-** This is a method of crop establishment which is having advantages of lesser water requirement and labour saving. It was promoted in an area of 3.86 lakh hectare during 2018-19. This scheme will be promoted in an area of 4.50 lakh hectare during 2019-20.

**Table 1.9: Direct sown area coverage (Top 10 districts)**

<b>S. No.</b>	<b>District</b>	<b>Area covered (in lakh Ha.)</b>
1	Ramanathapuram	1.268
2	Tiruvarur	0.697
3	Nagapattinam	0.637
4	Sivagangai	0.535
5	Pudukkottai	0.365
6	Cuddalore	0.206
7	Virudhunagar	0.066
8	Kancheepuram	0.020
9	Villupuram	0.019
10	Thanjavur	0.018

Government is providing assistance for direct sowing with seed drill to maintain optimum plant population with reduced seed rate. During 2018-19, 47,606 hectare was covered under seed drill sowing with an assistance of Rs.7.14 crore. This programme will be implemented during 2019-20 also.

**1.3.1.4. Assistance for Machine Transplanting of Paddy;** a technology to compensate the deficit labour and drudgery involved in transplantation and to maintain optimum plant population was promoted in 70,560 hectare with assistance of Rs.55.34 crore during 2018-19. This programme will be implemented during 2019-20 also.

**Table 1.10: Assistance for Machine Transplanting of Paddy 2018-19**

<b>S. No.</b>	<b>District</b>	<b>Area covered (in Ha.)</b>
1	Thanjavur	14,102
2	Tiruvarur	12,072
3	Nagapattinam	11,200
4	Villupuram	4,662
5	Tiruvannamalai	4,323
6	Tiruvallur	3,991
7	Kancheepuram	3,618
8	Tirunelveli	3,421
9	Cuddalore	2,171
10	Pudukkottai	1,818
11	Vellore	1,801
12	Madurai	1,470
13	Erode	716
14	Krishnagiri	680
15	Salem	640
16	Karur	610
17	Tiruchirapalli	400
18	Theni	400
19	Kanniyakumari	400

20	Dindigul	344
21	Thoothukudi	317
22	Perambalur	315
23	Virudhunagar	311
24	Namakkal	200
25	Ariyalur	199
26	Tiruppur	150
27	Dharmapuri	100
28	Sivagangai	99
29	Ramanathapuram	20
30	Coimbatore	10
	<b>TOTAL</b>	<b>70,560</b>

In Ramanathapuram and Sivaganga, paddy was sown to an extent of 2.15 lakh Ha in semidry condition under direct sowing. The success of the crop cultivation in these two districts depends mainly on the rainfall received during the North East Monsoon.

During the year 2016-17 to 2018-19, these two districts were severely affected by drought leading to very less remuneration to farmers, which in turn make the farmers to enrol in the crop insurance scheme. Hence, in order to reduce the risk factor of crop failures **diversification of Paddy to Millets in Ramanathapuram and Sivagangai district** has been programmed for the year 2019-20.

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

For increasing the area, production and productivity of Paddy, Government provides assistance through National Agricultural Development Programme (NADP) which was implemented with a budget outlay of Rs.47.04 crore during 2018-19. During 2019-20, it is programmed to implement with budget outlay of Rs.50 crore.

### **1.3.1.6. National Food Security Mission for Rice (NFSM)**

This programme is implemented in eight identified districts viz., Pudukkottai, Tiruvarur, Nagapattinam, Ramanathapuram, Sivagangai, Thanjavur, Tiruvannamalai and Cuddalore with an objective to increase the production of Paddy through area expansion and increasing productivity, restore the soil fertility and thereby enhancing the farm level economy. During 2018-19, this scheme was implemented with a budget outlay of Rs.12.85 crore. During 2019-20, it is programmed to implement the scheme with the budget outlay of Rs.12.58 crore.

### 1.3.2. Millets

Millets are a group of small-seeded species of cereal crops, widely grown for food and fodder. Millets are grown predominantly in rainfed areas. Millets hold enormous hope for food, fodder, health and nutritional security.

**Table 1.11: Millets Area, Production and Productivity at State level 2017-18**

S. No	Crop	Area (Lakh.Ha.)	Production (Lakh Metric Tonnes)	Productivity (Kg/Ha)
1	Maize	3.245	25.916	7,986
2	Sorghum	3.856	4.306	1,117
3	Cumbu	0.630	1.435	2,277
4	Ragi	0.865	3.213	3,714
5	Samai	0.157	0.186	1,189
6	Varagu	0.018	0.037	2,060
7	Tennai	0.012	0.005	470
8	Other millets	0.065	0.083	1,276
	<b>Total</b>	<b>8.849</b>	<b>35.185</b>	

*(Source: Department of Economics and Statistics)*

**Table 1.12: Area and Production of Total Millets (Top Ten Districts) 2017-18**

S. No	Name of the District	Area (Ha)	S. No	Name of the District	Production (Lakh MT)
1	Salem	94,883	1	Perambalur	4.453
2	Namakkal	89,264	2	Salem	4.188
3	Dindigul	78,498	3	Dindigul	3.137
4	Tiruppur	61,375	4	Villupuram	2.754
5	Thoothukudi	54,020	5	Tiruppur	2.180

6	Villupuram	53,031	6	Krishnagiri	1.987
7	Dharmapuri	51,264	7	Virudhunagar	1.983
8	Krishnagiri	50,196	8	Tiruchirapalli	1.925
9	Tiruchirapalli	46,818	9	Dharmapuri	1.630
10	Perambalur	40,458	10	Cuddalore	1.505

(Source: Department of Economics and Statistics)

**Table 1.13: Cultivated varieties in Tamil Nadu under Millets:**

Sl.No	Crop	Varieties
1.	Maize	CO(H)M-4, CO(H)M-5, CO(H)M-6, NK-6240, S-668, Ankur -3034, RIL-009
2.	Cholam	CO(S)-30, CO(S)-28, K-12, K-11, CSV-20
3.	Cumbu	CO-10,CO(Cu)-9,CO(H)Cu-8, CO(H)Cu-9 ,Dhansakthi, MPU-480
4.	Ragi	CO-13,CO(Ra)-14,CO-15, Paiyur(Ra)-2. GPU-67, GPU-28, ML-365
5.	Varagu	CO-3, APK-1,Vamban-1
6.	Samai	CO(Samai)-4, Paiyur- 2
7.	Tenai	CO-6, CO(Te)-7
8.	Kudiraivali	CO-1,K-1,K-2,CO(KV)-2

In Tamil Nadu, normal area and Production under Millets are 8.72 lakh Ha and 31.28 lakh Metric Tonnes, respectively. As per the fourth advance estimate of 2018-19, the millet area coverage is estimated at 9.12 lakh Ha. This shows an increased area coverage of 0.40 lakh Ha more, when compared to normal area under Millets.

#### **1.3.2.1. Nutri cereals:**

Cholam, Cumbu, Ragi, Varagu, Thinai, Samai and Kudhiraivali are classified as Nutri cereals. For increasing the production through area expansion and productivity of Nutricereals in Tamil Nadu, National Food Security Mission Scheme is implemented in Coimbatore, Tiruppur, Krishnagiri, Dharmapuri, Trichy, Dindigul, Thoothukudi, Erode, Karur, Madurai, Namakkal, Vellore, Salem, Villupuram and Virudhunagar Districts of Tamil Nadu.

During 2018-19, this programme was implemented at an outlay of Rs.6.61 crore. During 2019-20, this programme will be continued.

### **1.3.2.2. Coarse Cereals (Maize)**

#### **National Food Security Mission (NFSM)**

To increase the production and productivity of Maize in Tamil Nadu, National Food Security Mission-Coarse Cereals is implemented in Salem, Erode, Thiruppur, Perambalur, Dindigul, Thoothukudi, Villupuram, Virudhunagar and Cuddalore Districts

During the year 2019-20, this programme will be implemented with a allocation of Rs.3.25 crore.

### **1.3.2.3. National Agricultural Development Programme- Coarse Cereals**

To improve site specific initiatives for expanding area, increasing productivity, production of Coarse Cereals & Nutricereals along with the components such as, certified seed distribution, Incentives for certified seed production, Distribution of Micronutrient mixture, Distribution of Bio fertilizers in all District of Tamil Nadu except the Nilgiris and Chennai during 2019-20, the National Agricultural Development Programme will be implemented with a total allocation of Rs 1.13 crore.

### 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 8.39 lakh ha. and production of 5.72 Metric Tonnes.

**Table 1.14: Area, Production and Productivity of Pulses in Tamil Nadu (2017-18)**

S. No	Crop	Area (Lakh.ha)	Production (Lakh.Metric Tonne)	Productivity (Kg/Ha)
1	Red gram	0.492	0.538	1093
2	Black gram	4.263	3.016	707
3	Green gram	1.806	0.783	433
4	Horse gram	0.622	0.485	780
5	Bengal gram	0.052	0.048	926
6	Other Pulses	1.011	0.694	686
	<b>Total Pulses</b>	<b>8.247</b>	<b>5.564</b>	<b>675</b>

**Table 1.15: Production under Total pulses in Tamil Nadu.(Top 10 Districts) 2017-18**

S.No	District	Area (Ha)	S.No	District	Production (Metric Tonnes)
1	Tiruvarur	98,653	1	Villupuram	79,936
2	Villupuram	85,543	2	Cuddalore	51,092
3	Thoothukudi	82,393	3	Dharmapuri	39,191
4	Nagapattinam	71,103	4	Thoothukudi	36,764
5	Cuddalore	61,331	5	Krishnagiri	36,243
6	Salem	47,844	6	Salem	35,258
7	Krishnagiri	46,636	7	Nagapattinam	32,650
8	Dharmapuri	42,568	8	Thanjavur	31,830
9	Tirunelveli	35,754	9	Tiruvarur	31,340
10	Thanjavur	34,940	10	Vellore	22,632

**Table 1.16: High yielding Varieties of Pulses in Tamil Nadu.**

S.No	Crops	Variety Name
1	Redgram	BRG-1, BRG-2, CO-8, LRG-41, CO (Rg)-7
2	Blackgram	VBN-4, VBN-5, VBN-6, VBN-7, VBN-8, CO-6, ADT-3, MDU-1, KKM-1, ADT-6, ADT-5
3	Greengram	VBN-3, CO-8, Co(Gg)-7, ADT- 3
4	Bengal gram	JAKY-9218

5	Cow pea,	CO (CP)-7
6	Horse gram	PY-2

Pulses being of 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, introduction of new varieties, line sowing, foliar spray of 2% DAP are being taken by the Government of Tamil Nadu in a mission mode approach.

As a result, the area, Production and Productivity which was 6.37 Lakh Ha, 2.45 Lakh Metric Tonnes and 385 Kg/Ha in 2010-11 has increased to 8.25 Lakh ha, 5.56 Lakh Metric Tonnes & 675 Kg/ha in 2017-18 respectively.

This Scheme NFSM pulses will be continued during 2019-20 with a financial allocation of Rs.40.12 crore.

In order to ensure remunerative price to pulses, the Tamil Nadu Government has taken the initiative and started procurement of Pulses under **Price Support Scheme through NAFED from 2017 – 18.**

**Table 1.17: Procurement of Pulses made through Price Support Scheme during 2018-19**

S. No	Name of the Crop	Minimum Support Price (Rs. per kg)	Total Quantity Procured(MT)	Total Amount (in Crore)
1	Redgram	56.75	399.90	2.27
2	Blackgram	56.00	3,379.07	19.75
3	Greengram	69.75	5,317.57	38.76
<b>Total</b>			<b>9,096.53</b>	<b>60.78</b>

This Scheme will be continued during 2019-20.

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

#### **1.3.4.1. Oilseeds**

Oil seed crops such as Groundnut, Gingelly, Sunflower and Castor are largely cultivated in Tamil Nadu. Groundnut constitutes 84 percent of total area of Oilseeds. In Tamil Nadu, Oilseeds are grown with a normal area of 3.86 lakh Ha and a normal production of 9.04 lakh Metric Tonnes. Due to continuous efforts taken by the Government, Tamil Nadu has been able to sustain the first place at National level in Oilseed productivity.

Total Oilseeds production during 2013-14 was 9.6 Lakh Metric Tonnes which is increased to 10.38 Lakh Metric Tonnes during 2017-18 with 8% increase.

**Table 1.18: Area, Production and Productivity of Oilseeds in Tamil Nadu-2017-18.**

S. No	Crop	Area (Lakh Ha)	Production (Lakh Tonnes)	Productivity (Kg/Ha)
1.	Ground nut	3.274	10.075	3,078
2.	Gingelly	0.416	0.230	555
3.	Sunflower	0.068	0.060	887
4.	Castor	0.044	0.016	312
5.	Other Oilseeds	0.002	0.001	232
	<b>Total</b>	<b>3.804</b>	<b>10.382</b>	<b>2,731</b>

(Source: Department of Economics and Statistics)

**Table 1.19: Area and Production of Total Oilseeds in Major Districts of Tamil Nadu 2017-18.**

S. No	Districts	Area (Lakh Ha)	S. No	Districts	Production (Lakh Tonnes)
1	Tiruvannamalai	0.662	1	Tiruvannamalai	2.036
2	Villupuram	0.432	2	Villupuram	1.209
3	Vellore	0.302	3	Vellore	0.788
4	Namakkal	0.299	4	Cuddalore	0.761
5	Erode	0.244	5	Namakkal	0.673
6	Salem	0.203	6	Erode	0.495

7	Cuddalore	0.133	7	Salem	0.486
8	Tiruchirapalli	0.122	8	Kanchipuram	0.397
9	Krishnagiri	0.119	9	Ariyalur	0.390
10	Pudukkottai	0.118	10	Tiruvallur	0.345

Source: Department of Economics and Statistics-2017-18

**Table 1.20: Cultivated varieties in Tamil Nadu under Oilseeds**

S.No	Crop	Variety
1.	Groundnut	CO(Gn 6), CO- 7, VRI (Gn)- 6, VRI (Gn) -7, VRI 8, Dharani, TMV-2, TMV-7, TMV-13, ICGV-00350, ICGV,91114, GPBD-5, Kadiri 6, Kadiri 9, GJG-9
2.	Gingelly	TMV-7, TMV-3, TMV-5, VRI-1, VRI-2, SVPR-1
3.	Sunflower	CO-1, CO-3, CO-4, TNAU-SFH-2, CO(SFV)-5, KBSH-1, DRSF-108
4.	Castor	TMV-5, TMV-6, CO-1, YRCH-1, YRCH-2

The Government is taking various measures to attain self sufficiency in Oilseed production by implementing following schemes.

### **National Food Security Mission (NFSM)-Oilseeds**

Under **NFSM-Oilseeds** scheme, During 2018-19, the Scheme was implemented with a financial achievement of Rs.13.90 crore for increasing production of Oilseeds.

The activities will be continued in all Districts except Kanniyakumari, Nilgris and Chennai under NFSM – Oilseeds during 2019-20.

#### **1.3.4.2. Oil Palm**

##### **National Food Security Mission - Oil Palm**

In Tamil Nadu, **National Food Security Mission on Oil Palm** is being implemented in order to attain self sufficiency in edible oil production and also to reduce the foreign exchange.

During **2018-19**, subsidy for area under distribution of planting material, maintenance and intercropping was made for **Rs.250.50 lakh**. Machineries and tools like pumpset, borewell, motorised chisel, Oil Palm cutter and small tractor with trolley was distributed for Rs.68.17 lakh. Production incentive for Rs.23.21 lakh for 5226.62 Metric Tonne was given to 216 farmers who produced more than 8 Metric Tonne/Ha. of FFBs (Fresh Fruit Bunches).

It is planned to continue this scheme for 2019-20 also.

**Table 1.21: District wise area under Oil Palm in Tamil Nadu (Top 10 districts) and Fresh Fruit Bunches Production during 2018-19**

S. No	District	Area (Ha)	S. No	District	Fresh Fruit Bunches (Metric Tonnes)
1	Vellore	671	1	Thanjavur	2618.159
2	Villupuram	668	2	Villupuram	981.775
3	Cuddalore	636	3	Cuddalore	951.913
4	Thanjavur	516	4	Tiruvarur	361.657
5	Tiruvannamalai	285	5	Nagapattinam	99.511
6	Tiruvarur	189	6	Ariyalur	59.419
7	Erode	165	7	Perambalur	54.240
8	Nagapattinam	151	8	Theni	50.965
9	Tiruchirapalli	143	9	Vellore	40.385
10	Kancheepuram	126	10	Dindigul	8.594
	<b>Total</b>	<b>3,550</b>			<b>5226.618</b>

### **1.3.4.3. Tree Borne Oilseeds**

#### **National Food Security Mission - Tree Borne Oilseeds (TBOs)**

Tree Borne Oilseed crops viz., Neem and Pungam are implemented in Kancheepuram, Cuddalore, Villupuram, Vellore, Tiruvannamalai, Salem, Namakkal, Dharmapuri, Krishnagiri, Coimbatore, Tirupur, Erode, Karur, Pudukkottai, Madurai, Theni, Dindigul, Ramanathapuram,

Sivagangai, Virudhunagar, Tirunelveli and Thoothukudi districts. The mission focuses on promotion of nurseries of tree borne oilseeds and plantation of Neem and Pungam on waste lands and intercropping on already established plantations for four years. The scheme was implemented with a financial allocation of Rs.183.33 lakh in the year 2018-19.

It is planned to continue this scheme for 2019-20 also.

### **1.3.5. Coconut**

Coconut is cultivated in Tamil Nadu in an extent of 4.36 Lakh Hectare with an annual production of about 47,064 lakh nuts and productivity of 11,170 nuts per Hectare per year. In Tamil Nadu, action is being taken by the Government for the production of value added products, bring additional area and increase the production in coconut.

The details of major coconut cultivating districts with their area and production details are given below ( top 10 districts):

**Table 1.22: Major Coconut cultivating districts with their area and production 2017-18 (Top 10 Districts)**

S. No	District	Area (Ha)	S. No	District	Production (Lakh Nuts)
1	Coimbatore	85,832	1	Tiruppur	6,757
2	Tiruppur	60,148	2	Thanjavur	6,639
3	Thanjavur	36,136	3	Coimbatore	5,879
4	Dindigul	30,538	4	Theni	3,666
5	Kanniyakumari	23,988	5	Krishnagiri	2,952
6	Theni	20,931	6	Vellore	2,904
7	Vellore	20,470	7	Dindigul	2,416
8	Tirunelveli	16,249	8	Kanniyakumari	2,100
9	Krishnagiri	15,611	9	Tirunelveli	1,652
10	Erode	14,301	10	Erode	1,498

The Government of Tamil Nadu is implementing various Coconut Development Board assisted schemes. In 2018-19 under the scheme a sum of Rs.10.40 Crore subsidy is incurred as expenditure.

The Coconut Development Board assisted schemes will also be implemented in 2019-20.

### **Revival of Coconut plantation in Gaja affected area:**

In order to restore the area and to compensate the production loss due to Gaja cyclone, the department has planned to distribute 35 lakh Tall coconut seedlings at free of cost for replanting. For this, 43.26 lakh coconut seed nuts were procured and are being raised in Government Farms.

### **Gaja Cyclone - Livelihood Package for Coconut:**

Due to Gaja cyclone, around 35,268 Ha of coconut garden were affected causing damage to 51.67 lakh coconut trees. Hence, the Government has announced a special package to safe guard the livelihood of the coconut farmers. The components of the package are detailed below:

**Table 1.23: Components for Livelihood package**

<b>S.No</b>	<b>Component</b>	<b>Amount (Rs in lakhs)</b>
1	Production and distribution of coconut seedlings	1,750.00
2	Inter cropping with Millets, Pulses and Oilseeds	2,000.00
3	Drip Irrigation	4,351.50
	<b>Total</b>	<b>8,101.50</b>

- **Production and distribution of coconut seedlings:**

It is programmed to distribute 35 lakh Tall coconut seedlings free of cost to the affected coconut farmers at a total subsidy of Rs.1,750 lakh @ Rs.50/- per seedling. So far, 2.86 lakh Coconut seedlings were distributed to the affected coconut farmers. Coconut seedlings are being raised in Government farms. The distribution of coconut seedlings will be completed before December 2019 in phased manner.

- **Intercropping**

In order to protect the livelihood of the Gaja cyclone affected coconut farmers, it is programmed to promote intercropping of Millets such as Maize, Ragi and Kudhiraivali, Pulses and Oilseeds. The details of amount sanctioned for this scheme is given below:

**Table 1.24: Inter cropping Components**

<b>S.No</b>	<b>Crop</b>	<b>Area (Ha)</b>	<b>Finance (Rs in lakhs)</b>
1	Millets	5,250	270.00
2	Pulses	38,000	1,520.00
3	Oilseeds	7,000	210.00
	<b>Total</b>	<b>50,250</b>	<b>2,000.00</b>

- **Micro Irrigation:**

The scheme is dovetailed from Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). It is programmed to cover 15,000 Ha at a subsidy cost of Rs.43.52 crore and installation of micro irrigation units are in progress.

### 1.3.6. Sugarcane:

Sugarcane is a major cash crop with a normal area of 2.45 Lakh Ha. cultivated in all the districts of Tamil Nadu except Kanniyakumari, Chennai and Nilgris with a normal production of 296 Lakh MT and an average productivity of 100 MT per Ha.

**Table 1.25: Sugarcane area and Production (Top Ten Districts) – 2017-18**

S. No.	District	Area (Lakh Ha.)	S. No.	District	Production (in Lakh MT)
1.	Villupuram	0.496	1.	Villupuram	0.526
2.	Tiruvannamalai	0.200	2.	Cuddalore	0.210
3.	Cuddalore	0.187	3.	Tiruvannamalai	0.207
4.	Namakkal	0.102	4.	Erode	0.106
5.	Erode	0.087	5.	Namakkal	0.103
6.	Dharmapuri	0.081	6.	Dharmapuri	0.059
7.	Salem	0.057	7.	Salem	0.056
8.	Tiruvallur	0.057	8.	Tiruvallur	0.055
9.	Vellore	0.052	9.	Thanjavur	0.048
10.	Ariyalur	0.051	10.	Vellore	0.046

*(Source: Dept. of Economics and Statistics)*

The Government encourages production in Sugarcane through various schemes. During 2018-19, the NADP programme was implemented with the financial allocation of Rs.11.19 crore and covered 42,205 acres.

The NFSM scheme-Mission mode approach on Sugarcane is based on Improved Cropping System and during 2018-19, the activities such as Front line Demonstrations on intercropping with pulses and State level training were implemented in Cuddalore, Villupuram, Salem, Namakkal, Ariyalur, Erode, Thanjavur districts and Research Stations of Tamil Nadu Agricultural University at a cost of Rs. 56.34 Lakh.

During 2019-20, the activities under NADP will be continued through Sugar mills and NFSM through department.

### **1.3.7. Cotton:**

Cotton is one of the important commercial crops cultivated in Tamil Nadu and this crop plays a major role in promotion of textile industries and ensures stable income to the Cotton growers. Cotton crop is normally cultivated in an area of around 1.63 Lakh Ha with an average production of 3.47 Lakh bales. The Government of Tamil Nadu is taking earnest efforts to promote area and production of cotton in Tamil Nadu.

**Table 1.26: Cotton Area And Production  
(Top Ten Districts) 2017-18**

S. No	District	Area (Lakh Ha)	S. No	District	Production (in Lakh Bales)
1.	Perambalur	0.330	1.	Perambalur	0.87
2.	Virudhunagar	0.172	2.	Salem	0.47
3.	Salem	0.171	3.	Dharmapuri	0.40
4.	Tiruchirapalli	0.149	4.	Tiruchirapalli	0.31
5.	Dharmapuri	0.145	5.	Ariyalur	0.31
6.	Madurai	0.121	6.	Virudhunagar	0.28
7.	Cuddalore	0.110	7.	Madurai	0.25
8.	Ariyalur	0.109	8.	Villupuram	0.20
9.	Villupuram	0.084	9.	Vellore	0.18
10.	Thoothukudi	0.065	10.	Cuddalore	0.17

(Source: Department of Economics and Statistics)

### **1.3.7.1. Tamil Nadu Cotton Cultivation Mission**

Tamil Nadu Cotton Cultivation Mission was launched in 2014-2015 with the objective of bringing 2.40 Lakh Ha of cotton area in Tamil Nadu. During 2018-19, this scheme was implemented at a total cost of Rs.5.36 crore.

The climatic condition of Tamil Nadu is highly suitable for cultivation of Extra Long Staple cotton in India. The production of Extra Long Staple cotton did not keep pace with the requirements of the Textile industries. Hence, it is imperative to increase the production of Extra

Long Staple Cotton to meet the growing demand of the cotton spinning mills of the State.

Out of 1.6 Lakh hectares of cotton area in Tamil Nadu, Extra Long Staple cotton is cultivated in an area of around 4% of total cotton area. Extra Long Staple Cotton varieties produce cotton with highest fibre quality with staple length of 32.5 mm and above. Farmers are encouraged to grow Extra Long Staple Cotton varieties like MCU-5, MCU-5 VT, Suvin, Surabhi and Suraj to get better price for cotton.

In order to increase the area under Extra Long Staple Cotton to 30,000 Ha and to increase the Extra Long Staple Cotton production in Tamil Nadu, to give better remunerative price to farmers and to meet the growing demand of Cotton spinning mills, it is programmed to continue the Tamil Nadu Cotton Cultivation Mission during 2019-20 with State Government fund of Rs.11 crore.

The Government encourages Cotton cultivation through NFSM in Villupuram, Salem, Dharmapuri, Perambalur, Madurai, Dindigul, Tirunelveli, Virudhunagar, Thoothukudi and research stations of Tamil Nadu Agricultural University (TNAU). The interventions focused are Frontline Demonstration on Integrated Crop Management, Extra Long Staple Cotton production, Intercropping in cotton, Natural

colour Cotton and Trials on High Density Planting System for cotton crop were carried out during 2018-19 with an amount of Rs.52.86 lakh. This mission will be continued during 2019-20 also.

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

### **1.4.1. Mission on Sustainable Dry land Agriculture (MSDA)-an eye opener in Dry Land Farming.**

The Cluster based activity "Mission on Sustainable Dry land Agriculture (MSDA)" a flagship scheme which aims to benefit 10 lakh dry land farmers by improving the production and productivity of Millets, Pulses, Oilseeds and Cotton in 25 Lakh acres of dry lands has been under implementation in 1,000 clusters of 2,500 acre extent each, since 2016-17 at an outlay of Rs.802.90 crore.

Under this scheme, activities such as formation of village level Farmers Club, Capacity Building, Entry Point Activities, Summer ploughing, Agronomic interventions, Establishment of water harvesting structures, Creation of value addition units and Custom Hiring Centres, Animal Husbandry activities and

distribution of fruit seedlings are being implemented.

This comprehensive development of dry lands is being made possible due to the convergence of the Department of Agriculture, Agriculture Engineering, Horticulture and Plantation Crops, Animal husbandry, Agricultural Marketing and Agri Business, Tamil Nadu Agricultural University and Tamil Nadu University for Veterinary and Animal Sciences (TANUVAS) in one umbrella.

As a result, the area of cultivation of dry land crops which increase productivity and production besides providing opportunity for off-farm income. It is observed that the area of Millet was increased by 22%, Pulses by 17% and Oilseeds by 17% during 2017-18 compared to 2016-17.

Phase-I activities have been implemented during 2016-17 & 2017-18, with an expenditure of Rs.139.75 crore for 200 clusters in 5 lakh dryland area benefiting 2.15 lakh dry land farmers.

Phase II activities have been carried out in 10 Lakh acres of dry lands during 2017-18 & 2018-19 in 400 Clusters, with a total allocation of Rs.296.16 crore benefiting 3.59 lakh dry land farmers.

Further, another 400 new dry land clusters have been formed in Phase III in 24 districts and the initial activities are being carried out to the tune of Rs.29.16 crore.

**Table 1.27: Mission on Sustainable Dryland Agriculture-District wise dry land Clusters and Farmers benefitted**

S. No	Districts	Phase I Clusters (No)	Phase II Clusters (No)	Phase III Clusters (No)	Total Clusters (No)	Total Farmers benefitted
1	Tiruvallur	0	2	0	2	2,359
2	Cuddalore	10	15	10	35	28,398
3	Villupuram	15	32	32	79	76,865
4	Vellore	10	18	18	46	58,998
5	Tiruvannamalai	18	12	18	48	55,149
6	Salem	13	32	26	71	86,507
7	Namakkal	10	25	24	59	46,640
8	Dharmapuri	10	28	28	66	81,420
9	Krishnagiri	15	30	32	77	61,734
10	Coimbatore	6	12	10	28	25,946
11	Tiruppur	5	12	18	35	22,109
12	Erode	6	13	13	32	30,794
13	Tiruchirapalli	5	12	16	33	35,113
14	Perambalur	6	10	15	31	26,117
15	Ariyalur	4	12	9	25	37,980
16	Karur	4	8	12	24	17,650
17	Pudukkottai	4	8	16	28	24,574
18	Thanjavur	3	0	0	3	2,714
19	Tiruvarur	4	0	0	4	4,178
20	Madurai	5	15	13	33	24,101
21	Theni	0	0	5	5	5,044

S. No	Districts	Phase I Clusters (No)	Phase II Clusters (No)	Phase III Clusters (No)	Total Clusters (No)	Total Farmers benefited
22	Dindigul	10	24	14	48	42,903
23	Ramanathapuram	5	14	5	24	25,540
24	Sivaganga	4	10	5	19	18,297
25	Virudunagar	8	16	19	43	33,526
26	Tirunelveli	5	10	10	25	25,297
27	Thoothukudi	15	30	32	77	49,928
	<b>Total</b>	<b>200</b>	<b>400</b>	<b>400</b>	<b>1,000</b>	<b>9,49,881</b>

Note: 1 Cluster = 2500 acre

### **Component wise important activities implemented upto 2018-19**

- Rain water harvesting structures have been established under **Entry Point Activities (EPA)** component @ Rs.5 Lakh per Cluster. Utilizing the total outlay of Rs.30 crore, 846 water harvesting structures comprising of 592 checkdams, 15 village ponds, 60 community ponds and 177 deepening of Ooranies (Ramanathapuram district) were established during 2016-17 and 2017-18. phase III activities are under implementation with an outlay of Rs. 20 crore during 2019-20.
- **Land Development activities:** An assistance of Rs.500/- per Ha is given to

beneficiary farmer as back ended subsidy to take up summer ploughing, a sum total of Rs.75 crore have been utilized and covered 15 lakh acres benefiting 5.70 lakh dryland farmers during 2017, 2018 & 2019. Moreover, a sum of Rs.39.34 crore has been spent @ Rs.7.50 Lakh per cluster for the establishment of 1,09,893 acre of Field Bunds, 2,709 Farm ponds and 93 Deepening of Ooraries (Ramanathapuram District).

- As part of **Agronomic Intervention**, a sum of Rs.113.67 crore has been extended to the farmers as 50% subsidy for Seeds, Bio-fertilisers and micronutrients for the cultivation of Millets, Pulses, Oil seeds and Cotton in 15 lakh acre benefiting 5,73,820 farmers.
- **Value addition Machineries** such as Mini dhal mill, Millet processing units and oil expellers are provided for the sustainability of Farmer Producer Organisations / Farmer Producers Groups formed under Collective Farming with the subsidy pattern of

Rs.10 Lakh / Cluster or 75 % of the machinery cost whichever is less. A sum of Rs.20 crore has been earmarked for the purpose. So far, 47 Value addition Units have been established and 150 value addition units are under establishment in FPO/FPGs of dry land.

- As a hand holding support in dry land, unemployed youth are encouraged to set up **Custom Hiring Centres**. Back ended subsidy of 80% of the cost to the maximum of Rs.8 Lakh per cluster has been extended to the Farmer Groups for purchasing Agricultural machinery. 577 such centres were established utilizing a sum of Rs.46.14 crore which generate off-farm income to the unemployed rural youth.
- A sum of Rs.10 Lakh per cluster has been allocated for maintaining **cattle health**. For phase I clusters 2,800 MT of Mineral mixtures, 30,000 packages each of reproductive health care and udder health care have been distributed to 2 Lakh cattle

owned by dry land farmers to the tune of Rs.20 crore. For Phase II clusters 3.8 lakh cattle have been benefitted at a total expenditure of Rs.36.68 crore during 2018-19.

- A total of 24,846 Pomegranate, 64,017 Amla, 3,000 Jamun and 3,348 Acid lime seedlings were distributed to dryland farmers at free of cost for Phase I Clusters. The programme will be continued for Phase II & Phase III Clusters also.

During 2019-20, core activities of Phase III 400 Clusters namely, assistance for Summer Ploughing, formation of Rain water Harvesting Structures, 50% subsidy to seeds and Biofertilisers, Value Addition Machineries, Custom Hiring Centres, Animal Husbandry Activities, distribution of Fruit seedlings, timber value tree seedlings and Palmyra seed nuts will be implemented at a total financial outlay of Rs.264.96 crore covering 10 lakh acres of dryland.

### 1.4.2. Integrated Farming System (IFS)

As a step towards doubling the farmers income during 2018-19, '**Integrated Farming System**' was implemented in five districts viz., Villupuram, Erode, Thanjavur, Tirunelveli and Madurai on a pilot basis selecting 1 block per district, 10 villages per block. In this scheme, agriculture activities were integrated with allied sector activities like Animal Husbandry, Horticulture, Agricultural Engineering, Agro-forestry & Fisheries and a subsidy of Rs.1 lakh per farm family was extended. Totally 2,490 IFS units were established at an expenditure of Rs.22.07 crore benefitting 2,490 farm families.

**Table 1.28: Component-wise achievement  
2018-19**

S.No	Components	Unit	Achievement
1	Crop cultivation	Acre	6,157
2	Milch Cows (2 Nos per farmer)	Nos	4,980
3	Goat / Sheep (5 +1 Nos.per farmer)	Nos	14,940
4	Desi poultry birds	Nos	47,270
5	Excavation of farm pond	Nos	204

<b>S.No</b>	<b>Components</b>	<b>Unit</b>	<b>Achievement</b>
6	Excavation of fish pond	Nos	229
7	Fodder Seeds	Kgs	2,588
8	Fodder slips	Nos	13,04,900
9	Community Nursery (Agathi, Subabul seedlings)	Nos	1,73,940
10	Vermi compost units	Nos	1,724
11	Kitchen Garden	Units	2,490
12	Horticultural fruit trees	Nos	3,26,319
13	Apiary units	Units	5,139
14	Bio gas Plant	Nos	1,057
15	Inputs ( Concentrate, Mineral Mixture, Fish Fingerlings)	Units	2,487

Since the Integrated Farming System aims at profitability and sustainability, it would be extended to other districts also in 2019-20.

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

National Mission for Sustainable Agriculture (NMSA) is being implemented since 2014-15. This scheme aims at making agriculture more

productive, sustainable by promoting location specific farming systems and comprehensive soil health management.

#### **1.4.3.1. Rainfed Area Development (RAD)**

Rainfed Area Development focuses on Integrated Farming System for enhancing productivity and minimizing risks associated with climatic variability to enable farmer maximising farm returns for sustained livelihood and mitigate the impacts of drought, flood and other extreme weather events with the income opportunity from allied activities. The scheme being implemented in 24 districts excluding Chennai, Nilgiris, Thanjavur, Tiruvarur, Nagapattinam, Kanniyakumari, Kancheepuram and Tiruvallur districts.

**Table 1.29: Component wise achievement  
2018 - 19**

<b>S.No</b>	<b>Components</b>	<b>Unit</b>	<b>Achmnt</b>
1	Cropping System along with Border Crop	Ha.	31,888
2	Tree sylvi-pastural system	Ha.	137
3	Permanent Vermicompost units	Nos	590
4	Apiary units	Units	4,736

In 2018-19, an expenditure of Rs.31.93 crore has been made benefiting 36,338 farmers.

The scheme will be continued during 2019-20.

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

To enable small and marginal farmers to have easy access to organic certification, a decentralized organic farming certification system called Participatory Guarantee System (PGS) is being promoted through Paramparagat Krishi Vikas Yojana under National Mission for Sustainable Agriculture.

Under this scheme, totally Rs.31,000 per ha for three years is provided as incentive to farmers for taking up organic farming. Further, for the clusters financial assistance is provided for the activities such as Capacity building, Exposure visit, certification charges, Pesticide Residue Analysis, packing, labelling and branding of organic produce, Value addition-infrastructure creation, Brand building, participation and conducting trade fairs and exhibitions.

In first phase implemented from 2015-16 to 2018-19, 50 clusters were formed in 11 districts and the activities have been implemented with a financial achievement of Rs.6.75 crore (Three years) benefitting 2,272 farmers covering 2,496 acres.

The second phase implemented from 2018-19 to 2020-21, the first year activities were implemented in 2018-19. 150 new clusters were formed in 8 districts covering 7,500 acres at an expenditure of Rs.4.91 crore benefitting 4,943 farmers. The second year activities is being implemented at a cost of Rs.5.1 crore.

#### **1.4.4. Collective Farming:**

Considering the livelihood of small and Marginal Farmers, Government of Tamil Nadu has announced in the Budget Speech 2017-18 an innovative programme by organizing Small and Marginal farmers into "Farmer Producer Groups"(FPG).

In this Scheme, 20 Small and Marginal farmers are integrated to form Farmer Interest Groups (FIG). 5 such FIGs are integrated to form Farmer Producer Groups (FPG) with each FPG comprising 100 farmers. 7-10 such FPGs within a District will be federated to form Farmer

Producer Company (FPC) to promote collective farming.

Each FPG is allotted a Corpus Fund of Rs.5 Lakh by the Tamil Nadu Government towards creating Common assets like infrastructure or for purchasing Farm Machinery to promote Collective Farming. Apart from this, grants and credits are channelized available to Farmer Producer Companies from Small Farmer Agri Business Consortium. So far, 75 Farmer Producer Companies have been formed.

Under this scheme, Collective purchase of inputs, Collective Cultivation and Collective Marketing of Agricultural produce are followed.

The outcome of Collectivisation has made FPGs actively engaged in other activities like Kudimaramathu works, implementing water harvesting structures and Value Addition units of MSDA, Input dealership licence of Seed, Fertilizer and Pesticides and sub dealership licence of Micro Irrigation Companies. Farm machineries purchased are leased out by the FPG and the amount is used as caution Deposit or working capital for various Agri Business Activities. These approaches have a positive impact on development of livelihood of the Small and Marginal Farmers on a sustainable basis which ultimately retains farmer's interest in farming.

During 2017-18, 2,000 FPGs purchased 8,920 Farm Machineries from the Corpus fund of Rs.100 crore. During 2018-19 this scheme was implemented at an outlay of Rs.100.42 crore under which 2,000 FPGs purchased 7,729 Farm Machineries. These machineries are being effectively utilised by the farmers.

**Table 1.30: Machineries Supplied during 2018-19**  
(Unit in numbers)

S. No	District	Tractor	Power Tiller	Power Weeder	Rotovator	Other Machineries	Total	Total Cost (Rs. in Lakh)
1	Ariyalur	14	85	66	49	17	231	359.93
2	Coimbatore	14	10	34	5	34	97	155.06
3	Cuddalore	21	137	31	85	26	300	512.84
4	Dharmapuri	37	32	266	24	50	409	533.06
5	Dindigul	34	30	193	43	69	369	451.27
6	Erode	14	42	31	61	64	212	269.99
7	Kancheepuram	4	84	46	14	76	224	306.95
8	Kanniyakumari	8	24	175	12	164	383	291.57
9	Karur	14	17	19	49	14	113	194.83
10	Krishnagiri	22	28	206	32	27	315	455
11	Madurai	24	71	132	58	28	313	454.66
12	Namakkal	8	18	54	195	80	355	375.02
13	Nagapattinam	32	78	2	0	0	112	349.28
14	Perambalur	11	39	77	40	8	175	241.38
15	Pudukkottai	36	74	20	17	34	181	432.79
16	Ramanathapuram	31	10	17	40	74	172	321.75
17	Salem	36	27	310	45	88	506	599.79
18	Sivagangai	24	76	43	9	35	187	373.42
19	Thanjavur	32	213	11	10	14	280	638.78
20	Theni	5	13	35	21	115	189	185.87

S. No	District	Tractor	Power Tiller	Power Weeder	Rotovator	Other Machines	Total	Total Cost (Rs. in Lakh)
21	Tirunelveli	16	50	68	95	108	337	392.46
22	Tiruvallur	36	22	5	35	23	121	332.67
23	Tiruvannamalai	39	175	69	15	40	338	622.87
24	Tiruvarur	13	76	0	0	0	89	231.29
25	Toothukudi	4	58	54	21	43	180	250.17
26	Tirupur	6	10	14	18	199	247	165.25
27	Tiruchirapalli	42	63	57	7	27	196	482.98
28	Vellore	37	64	114	32	104	351	587.04
29	Villupuram	40	119	155	90	122	526	855.43
30	Viruthunagar	9	22	65	37	38	171	219.92
31	The Nilgiris	1	15	9	5	20	50	96.29
	<b>Total</b>	<b>664</b>	<b>1782</b>	<b>2378</b>	<b>1164</b>	<b>1741</b>	<b>7729</b>	<b>11739.61</b>

During 2019-20, another 2,000 Farmer Producer Groups (FPG) will be formed by organizing 2 Lakh Small and Marginal farmers with the financial assistance of Rs.100.42 crore by State Government and eventually be upgraded into Farmer Producer Companies.

### **1.5. Climate Change Resilient Measures**

The Farmers rely on good production of Paddy, Millet and Pulses for their survival. Any disruption to the production would have calamitous consequences. Numerous weather- and climate-related natural disasters such as flood, drought, wind, diminishing water

resources, etc., further increase the risk in farming. We need collective action to attain a systemic change that will really make a difference. This is an important concept for farmers to proactively manage weather and climate risks related to agriculture and to protect their livelihoods.

Government of Tamil Nadu has taken choices of strategies and livelihood restoration measures that will help to reduce weather and climate risks and uncertainties, including site specific cropping pattern, ameliorative measures to revive the affected crops, diversifying crops and varieties, relief assistance, alternative sources of income and support to purchase crop insurance. Farmers can take efforts to manage the risks and uncertainties associated with these external pressures to agriculture. Such efforts are to protect the farmers from sudden loss and help to maintain a stable income by safeguarding the productivity of agricultural crops.

### **1.5.1. Crop Damages Due To “GAJA CYCLONE”**

The cyclone ‘GAJA’ which hit the North Eastern Coastal Districts of Tamil Nadu on 16.11.2018 with a wind speed of 100 to

120 Km resulted in heavy down pour in the districts of Thanjavur, Thiruvarur, Nagapattinam, Pudukkottai, Dindigul, Cuddalore, Madurai, Sivagangai, Theni, Tiruppur, Tiruchirapalli and Karur and caused heavy damages to agricultural crops including Coconut in a large extent.

As per the enumeration of Crop Damages, it was estimated that 19,720 Ha. of Agricultural Crops such as, Paddy, Millets, Pulses and 78,584 Ha. of Coconut crop were damaged. Regarding, Coconut crop it was estimated that 62,42,080 Coconut trees were fully damaged.

Government of Tamil Nadu, sanctioned a sum of Rs. 250 Crore towards input subsidy Relief Assistance for the Agricultural Crop damages caused due to Gaja Cyclone under State Disaster Response Fund (SDRF).

Even though the SDRF norms allows a sum of Rs.18,000/- per hectare as the eligible amount for providing input assistance for all perennial crops including Coconut, considering the plight of the affected Coconut farmers, the Tamil Nadu Government has come forward to sanction a sum of Rs.2,64,600/- per Hectare (Covering 175 Coconut trees/Hectare) which is Rs.2,46,600 more than the eligible Relief Assistance under SDRF.

The Government of Tamil Nadu sanctioned a sum of Rs.684.74 crore as input subsidy relief assistance for affected Coconut trees and Rs.22.71 crore for other Agricultural Crops.

### **1.5.2. CROP INSURANCE**

The uncertainty of crop yield due to Natural calamities will not only endanger a farmer's livelihood & income but also will undermine the viability of the agriculture sector. Farmers with limited resources are seldom able to face such risks, especially when there are disastrous losses. In these circumstances, **Crop Insurance scheme has been a "Certainty in Uncertainty"**.

Government of Tamil Nadu which is always oriented towards the welfare of farmers, implements the **Pradhan Mantri Fasal Bima Yojana tailored to the crops cultivated. In this way, Tamil Nadu has been a trend-setter to other States of the country in implementing the Crop Insurance Scheme viz., Pradhan Mantri Fasal Bima Yojana from Kharif 2016 onwards in all the districts of Tamil Nadu except Chennai.**

## **Pradhan Mantri Fasal Bima Yojana (PMFBY)**

Pradhan Mantri Fasal Bima Yojana is implemented with the following objectives:

- Providing financial support to farmers suffering crop loss / damage arising out of unforeseen events
- Stabilizing the income of the farmers.
- Encouraging farmers to adopt innovative and modern technologies
- Ensuring flow of credit to the agriculture sector.

The scheme has the benefit of covering risks like failed sowing/ prevented sowing/planting, post harvest losses, localized calamities (Cyclone, hail storm, landslide, unseasonal rains and inundation in isolated farm), early payment of compensation to farmers for their crop loss during mid season adversities, Uniform cut-off date for enrolment of loanee and non loanee farmers. Further, the farmers get more accurate compensation for crop loss in Paddy, Maize, Cholan, Cumbu, Ragi, Samai, Redgram,

Blackgram, Greengram, Cowpea, Horsegram, Bengal gram, Rice Fallow Black gram, Rice Fallow Green gram, Rice Fallow Cotton, Groundnut, Gingelly, Sunflower, Cotton & Sugarcane crops notified by the Government.

### **Milestones**

During 2018-2019, an area of about **35.37 lakh acres have been insured by 24.04 lakh farmers, out of which 20.56 lakh acres were covered under Paddy II season (Samba/ Thaladi / Pishanam).** About **75% of the Gross Cropped Area of Paddy II has been insured** against 50% target fixed by Government of India which is 25% more than the target fixed. The achievement made is the ever highest in the past 3 years. Out of 24.04 lakh farmers enrolled, **81% are non-loanee farmers. Tamil Nadu stands first in enrolling maximum number of non-loanee farmers due to the exemplary efforts taken by the State.**

The State Government has so far released a sum of **Rs.1,472.21 crore** to the Insurance Companies towards **State share of Premium subsidy** for the last 3 years (2016-17 to 2018-19) and a total compensation amount of **Rs.5,333 crore** has been sanctioned to **21,62,145 farmers. Tamil Nadu stands first among all other States / UTs in obtaining maximum claim amount for farmers.**

The Government of Tamil Nadu aims to cover 50% of the Gross cropped area under PMFBY during 2019-20. The State Government has **included cloud burst and natural fire due to lightning under localised calamities** in addition to Hail storm, landslide and inundation besides providing **add on coverage for crop loss due to attack by wild animals** after detailed protocol and procedures are issued by Government of India.

**The Districts of Tamil Nadu have been segregated into 6 clusters** from 2019-20 onwards distributing the risk Level equally **in all the 6 clusters. Agriculture Insurance Company of India Limited (AICIL) will**

**operate in 4 clusters comprising of 20 districts**

- **Cluster I** - Tiruvarur, Karur, Salem, Krishnagiri & Kanniyakumari
- **Cluster II**- Nagapattinam, Tirupur, Dindigul, Ariyalur & Kancheepuram
- **Cluster III**- Thoothukudi, Madurai, Thanjavur, Theni & Nilgiris
- **Cluster V**- Pudukkottai, Villupuram, Virudhunagar, Namakkal & Perambalur

**Oriental Insurance Company Limited (OICL) will operate in 2 clusters comprising 11 districts**

- Cluster IV-Ramanathapuram, Tiruchirapalli, Tiruvannamalai, Vellore & Dharmapuri
- Cluster VI-Sivagangai, Tirunelveli, Cuddalore, Tiruvallur, Erode & Coimbatore

Agricultural Crops such as Paddy, Maize, Redgram, Blackgram, Greengram, Rice Fallow Black gram, Rice Fallow Green gram, Rice Fallow Cotton, Groundnut, Cotton & Sugarcane are

notified at Revenue village level and Ragi, Cholan, Cumbu, Cowpea, Gingelly, Sunflower, Samai, Horsegram & Bengal gram are notified at Firka level.

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 Governments. The farmer's share of premium for the crops is as follows:

**Table: 1.31. Farmer's share of premium**

Crops	Season	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% of sum insured or actuarial rate whichever is less
Annual commercial crops / Annual Horticultural crops/ Perennial crops	For both Kharif & Rabi	5% of the sum insured or actuarial rate whichever is less

The scheme will be implemented with a proposed allocation of Rs.634.74 crore during 2019-20.

### **Coconut Palm Insurance Scheme (CPIS):**

Coconut, a perennial crop which earns more income for the growers is cultivated in all the districts of Tamil Nadu. The **Coconut Palm Insurance Scheme** is implemented by Agriculture Insurance Company of India Limited (AICIL) in all the districts except Chennai and Nilgiris with the objectives to provide insurance coverage against natural and other perils, provide relief against income loss, minimize risks and encourage replanting. During 2019-2020, the Government is taking efforts to bring maximum number of coconut growers under this scheme.

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

The premium subsidy of 50% will be borne by the Coconut Development Board and 25% by the State Government. The balance premium of 25% will be borne by the farmers.

**Table: 1.32. Coconut Palm Insurance  
Sum Insured and Premium**

Coconut Palm age in years	Sum Insured Per Palm (Rs)	Premium Per Palm Per Year (Rs)	Farmers' share of premium Per Palm Per year (Rs)
4 to 15	900	9	2.25
16 to 60	1,750	14	3.50

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

Seed is the critical input for production of crops. The production and distribution of quality seeds mainly lies with the Department of Agriculture. To centralize the various activities of seed production and distribution, **Tamil Nadu State Seed Development Agency (TANSEDA)** was established in 2015 and registered as a society under Tamil Nadu Societies Act 1975 on 30.04.2015.

Seed multiplication from the Breeder seed is undertaken mainly in Government owned State Seed Farms and in the fields of progressive farmers. The Seed farms for the Production of Certified Seeds (Foundation Class and Certified Class) are registered with the Department of Seed Certification by following the guidelines thereon. The seeds are processed in 126 Seed Processing Units (SPU). The processed seeds are tested in Seed testing laboratories for the germination, other designated varieties and genetic purity. The seed lots passed in seed testing are certified and made available in 880 Agricultural Extension Centres for distribution to the farmers.

During 2018-19, 27,022 Metric Tonnes of quality Certified seeds were procured and 27,782 Metric Tonnes of Certified seeds were distributed to Farmers including the opening balance of 2018-19. The crop wise details are furnished below:

**Table 1.33 : Seed Procurement and Distribution – 2018-19**

Crop	Seed Procurement (Metric Tonnes)		Seed distribution (Metric Tonnes)	
	Target	Achmt	Target	Achmt
Paddy	17,700	18,882	17,700	16,762
Millets	400	687	400	673
Pulses	4,940	4063	4,620	4541
Oilseeds	4,725	3368	4,700	5791
Cotton	20	20	20	15
<b>Total</b>	<b>27,785</b>	<b>27,020</b>	<b>27,440</b>	<b>27,782</b>
Coconut Seedlings production and distribution (Lakh Nos)	<b>9.17</b>	<b>8.92</b>	<b>9.17</b>	<b>8.59</b>

Production of Certified Seeds (Foundation Class and Certified Class) is undertaken by TANSEDA for the Agriculture crops cultivated by farmers in Tamil Nadu viz., Paddy, Millets – Sorghum, Cumbu, Ragi , Maize, Minor millets like Samai, Kudiraivali, Varagu and Tenai, Pulses – Redgram, Blackgram, Greengram, Horsegram, Cowpea and Bengalgram, Oilseeds – Groundnut, Gingelly, Sunflower, Castor and Cotton.

The Seed plan for the year 2019-20 is as follows:

**Table 1.34: Seed Procurement and Distribution Plan – 2019-20**

<b>Crop</b>	<b>Seed Procurement (Metric Tonnes)</b>	<b>Seed distribution (Metric Tonnes)</b>
Paddy	18,800	18,800
Millets	800	800
Pulses	4,967	4,967
Oilseeds	5,242	5,242
Cotton	20	20
Coconut Seedlings (Lakh Nos.) Regular	21	21

### **1.6.1. Coconut Seedlings Production and Distribution**

To ensure supply of quality Coconut seedlings at reasonable price to farmers, coconut seedlings are produced in 23 Government Coconut Nurseries. For the production of hybrid coconut Seednuts, 16 Coconut Crossing Centres are functioning under TANSEDA in the State.

During 2018-19, 8.59 lakh Coconut seedlings have been produced and distributed to farmers. Besides, a total of 43.26 lakh tall Coconut

Seed Nuts (16.67 lakh by the Department of Agriculture and 26.59 lakh by the Department of Horticulture) have been procured and the seedlings are being produced.

During 2019-20, the annual target for the production of Coconut seedlings has been increased from 9.50 to 21 lakh. The seedlings are being produced in the State Coconut Nurseries and State Seed Farms.

### **1.6.2. Seed Price Policy**

Since the inception of TANSEDA in 2015, a uniform Seed Price Policy is in adoption throughout the State for the seeds of Agricultural crops procured and distributed through TANSEDA.

During 2018-19, Rs.127.07 crore was released to meet the operational cost involved in seed production in SSF, wages to the labourers engaged in SSF, settlement of the seed cost to the seed farm registered farmers, certification charges, tagging and Transport Charges involved in transport of the certified seeds and Coconut Seedlings to Agricultural Extension Centres (AECs) for distribution to farmers.

### **1.6.3. Sub-Mission on Seeds and Planting Material (SMSP)**

The activities taken up under Sub-Mission on Seeds and Planting Material (SMSP) under National Mission on Agricultural Extension and Technology (NMAET) are, distribution of quality seeds to the farmers, infrastructure development for enhancing seed production and training the farmers on seed production technology. The scheme is implemented in all districts except, Nilgiris and Chennai.

The Certified Seeds of Paddy, Millets, Pulses and Oilseed crops are distributed to the farmers at subsidised cost to enable them to produce quality seeds by themselves and get high production. Moreover, training on new seed production techniques were also given to farmers, besides distribution of Foundation seeds of Pulses and Oilseeds crops at subsidised cost.

The scheme was implemented during 2018-19 with an allocation of Rs. 23.56 crore. It is proposed to continue the scheme during 2019-20 also.

## **1.7. Plant Protection**

Plant protection is a practice of managing pests, diseases and weeds that affect production of standing crops.

The Government of Tamil Nadu has introduced a variety of technologies to prevent the standing crops from pest and disease damage. Such practices are Crop rotation, Soil tillage, selection of Resistant varieties, Timely sowing, Companion planting etc., In addition to this creating awareness and providing skill based capacity building trainings on Plant Protection measures, promoting knowledge on local production of bio-control agents, conducting intensive Pest and Disease surveillance, advocating Integrated Plant Health Management, appraising and adoption of traditional methods in plant protection and implementing Integrated Pest Management (IPM) practices are carried out besides advocating the ill effects of indiscriminate usage of chemical pesticides.

During 2018-19, 48,227 Safety equipment kit containing Mask, Apron, Gloves, Helmet, Goggles, Gumboots and First aid materials were provided to the farmers and spray men with an expenditure of Rs.2.84 crore.

The quantity of plant protection chemicals distributed during 2018-19 is furnished below:

**Table 1.35 : Distribution of Plant Protection Chemicals during 2018-19**

Component	Quantity	Value (Rs in crore)
Dust(MT)	3,095	6.50
Liquid(Lit)	4,98,600	35.85

### **1.7.1. Fall Armyworm Menace in Maize crop and Measures for Managing the Pest**

Fall Army Worm is a new invasive, highly polyphagous migratory Lepidopteron exotic pest having a wide host range of more than 80 plant species, causing major damage to Maize crop. The incidences of FAW were reported in Maize crop cultivated in almost all parts of Southern India and the Pest incidence was noticed in Karnataka, Andhra Pradesh, Telangana and Tamil Nadu since July, 2018. During the year 2018-19 the infestation of the above pest had been noticed in Maize Crop cultivated in Perambalur, Ariyalur, Cuddalore, Vellore, Villupuram, Trichy, Dindigul, Madurai, Virudhunagar, Thoothukudi, Tirunelveli, Coimbatore, Tiruppur and Salem Districts. The Government has taken a swift action for

managing the pest and keep it under control. A special committee has been formed both at the State and District levels to regularly monitor and supervise the maize growing districts of the State and to create awareness among field level officials, farmers and input dealers about the pest.

In order to manage Fall Army Worm incidence during 2019-20 in Maize crop, the Government took earnest efforts and has formulated Integrated Pest Management strategies. A special workshop cum training was organized involving Scientists from Tamil Nadu Agricultural University, experts from Government of India, Krishi Vigyan Kendra and Officers from Department of Agriculture. Various strategies were elaborately discussed in the workshop and a comprehensive Integrated Pest Management practices to manage Fall Army Worm have been developed and trainings were given to district level officers. The IPM strategies developed are being implemented in the districts.

### **1.7.2. IPM technologies for Maize Fall Army Worm**

1. Deep summer ploughing and application of Neem cake at the rate of 250kg/ha during last ploughing.

2. Early Synchronised sowing.
3. Seed treatment with Entomopathogenic fungi *Beauveria bassiana*.
4. Spacing:  
For irrigated maize: 60 cm x 25 cm,  
For rainfed maize: 45 cm x 20 cm  
Leave rogue spacing of 75 cm for every 10 rows of maize.
5. Border Cropping and Inter Cropping with Cow pea, Red gram, Sunflower, Gingelly, Marigold, etc.,
6. Monitoring and mass trapping of FAW Using pheromone traps.
7. Using Bio Control agents and Chemicals as per requirement.

During 2019-20, 3.5 Lakh Ha. of Maize area cultivation is expected. Necessary steps have been taken to stock and distribute the inputs required for the Management of Fall Army worm such as *Beauveria bassiana*, *Metarhizium*

anisopliae and Pheromone Trap through Government and Private dealers.

## **1.8. Fertilizers**

Chemical fertilizers are one of the major critical inputs which play a vital role in enhancing production and productivity of Agricultural crops. Annually around 20-22 Lakh Metric Tonne of chemical fertilizers are used in the State. Apart from chemical fertilizers, organic fertilizers and bio- fertilisers are also used for agricultural purpose with the aim to reduce the dependence on chemical fertilizers and also to protect the environment.

To ensure adequate availability of fertilizer to farmers, Department of Agriculture is formulating fertilizer plan for Kharif and Rabi seasons based on cropping pattern, soil type, soil fertility and based on, soil health card recommendation. As per the fertilizer plan submitted by the Department, Government of India allocates fertilizer to the State based on which districtwise allocation of fertilizer is made to cater to the needs of the farmers in time.

Government of Tamil Nadu has ensured timely availability of quality fertilizers at reasonable price to farmers by sanctioning interest free loans to Tamilnadu Cooperative Marketing Federation (TANFED), a sum of

Rs.135 crore for procuring and prepositioning of fertilizers during 2019-20.

The year wise details of fertilizer consumption in the past five years are detailed below:

**Table 1.36: Details of fertilizer consumption in the past five years**

Fertilizer Grade	Consumption of Fertilizer Quantity in Lakh Metric Tonne				
	2014-15	2015-16	2016-17	2017-18	2018-19
UREA	9.90	11.18	7.93	8.18	9.07
DAP	2.38	3.03	2.56	2.27	2.41
MOP	2.93	2.98	2.81	2.74	2.75
NPK COMPLEX	5.16	7.84	5.63	4.77	5.16

Steps have been taken to stock sufficient quantities of Urea, DAP, MOP, Complex fertilizers and other fertilizers for 2019-20.

### **1.8.1. Fertiliser Transaction through Point of Sale (PoS) Machine**

The fertilizer transaction through ePoS devices has been commenced from 1st January 2018 at all fertilizer retail points in the State by following the Government of India guidelines. Under this unique Direct Benefit Transfer (DBT) scheme for fertilizers, the subsidy amount will

be released to the manufacturer / Importers 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 devices installed at each retailer shop and the beneficiaries will be identified through Aadhaar card or Kisan Credit Card (KCC) or Voter Identity card.

### **1.8.2. Action Taken Towards Ensuring Quality Supply of Fertiliser**

To ensure supply of all types of quality fertilizers, annually 19,600 fertiliser samples are taken. The fertiliser samples are analysed in 14 notified fertiliser control laboratories located across the State.

Stop sale orders are issued immediately for non-standard fertiliser stocks and fertiliser subsidy claims are not recommended for non standard fertilizer lot.

### **1.9. Soil Health Cards**

Mission Soil Health Card is being implemented with the objective of sustaining soil health and increasing the production and

productivity of the crops from the year 2015-16 in cycles of two years. During 2018-19 nearly 6.47 lakh soil samples were collected, analysed and 32.27 lakh soil health cards were distributed to farmers. In order to accomplish the objective of the scheme during 2018-19, fertilizer application based on soil health card was implemented in 100 villages of all 31 Districts except Chennai.

During 2019-20, it is proposed to collect, analyse soil samples and to distribute Soil health cards in one village in each block of all Districts and to conduct demonstrations for adopting Soil health card based fertilizer application in all these villages. In order to evaluate the Soil Health Card Scheme, it is programmed to collect and analyse 2.66 lakh soil samples from all revenue villages and to develop Village Soil Fertility Map.

#### **1.10. Capacity Building and Trainings to Farmers and Extension Officials.**

Capacity Building and Training programmes empower the farmer on decision making in the areas of crop production and diversification of their farm enterprises for the prospects of better returns to the farmers. Training to officials helps them to gain specific knowledge or skill to improve the latest technologies in agricultural

and allied activities which empowers them to impart technologies to farmers.

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

Support to State Extension Programmes for Extension Reforms Scheme (SSEPERs) programme is implemented 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 Veterinary and Animal Sciences University and Tamil Nadu Dr.J.Jayalalithaa Fisheries University in all districts except Chennai.

This programme includes cafeteria of activities such as Training, Demonstration, Exposure Visit, Awards, Information Dissemination activities, Farmer-Scientist Interactions, Joint Visits by Scientists and Extension Workers, Organisation of Kisan Gosthies, District level exhibitions, Kisan melas, Assessment, Refinement and Validation of short term researchable projects, Farm School, Innovative activities and Innovative Technology

Dissemination Components which are implemented within the District and at State level at a cost of Rs. 58.31 crore during 2018-19.

**Table 1.37: Activities covered under Support to State Extension Programmes for Extension Reforms Scheme during 2018-19**

S. No.	Activities	Physical Achievement (No)	Financial Achievement (Rs.in Crore)	No.of beneficiaries benefited
1	Training for Extension functionaries and Documentation of Success Stories	49	0.50	1,200
2	Exposure Visit of Extension functionaries to progressive States	40	0.20	400
3	Developing Strategic Research & Extension Plan	2	0.03	
4	Training to Farmers	9,618	16.46	3,80,840
5	Organizing Demonstrations (Agriculture and Allied department)	52,760	4.81	52,760
6	Exposure visit of farmers	204	0.92	8,370
7	District level Exhibition and Kisan Melas	32	0.32	32,000
8	Farm Information Dissemination through printed leaflets, local advertisements, IT network etc.,	665	0.87	
9	Farmer Scientist Interactions and Joint visits by Scientists & Extension Workers	476	0.13	775
10	Organization of Field days and Kisan Goshtis	320	0.48	16,000

S. No.	Activities	Physical Achievement (No)	Financial Achievement (Rs.in Crore)	No.of beneficiaries benefited
11	Assessment, refinement, validation and adoption of frontline technologies and researchable issues through KVKs and other local Research Centres.		0.10	
12	Conduct of Administrative and District /Block Farm Advisory Committee meeting		1.86	
13	Farm School	742	2.18	
14	PG Diploma in Agricultural Extension Management	31	0.05	31
15	Support for district level Training Institutions	5	0.25	
16	Farmer Friend	8,180	4.91	
17	Display Board, Kalajatha and Certified Farm Advisor	1,072	0.43	
18	Specialist and Functionary Support (Block Technology Manager, Assistant Technology Manager, Computer Programmer, Accountant)	1,322	23.83	
	<b>Total</b>		<b>58.31</b>	

The Scheme will be continued during 2019-20.

### 1.10.2. Farmers Training Centres

22 Farmers Training Centres (FTC) are functioning under the control of Department of Agriculture to impart training to 28,820 farmers, farm women and rural youth annually on farm management practices and latest technologies.

**Table 1.38: Farmers Training Centres in  
Tamil Nadu**

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

### **1.10.3. Strengthening of Infrastructure facilities at State Level Training Institute**

In Tamil Nadu, State Agricultural Extension Management Institute (STAMIN), State Agricultural Management and Extension Training Institute (SAMETI) and Water Management Training Centre (WMTC) are functioning as State level training Institutes.

State Agricultural Extension Management Institute (STAMIN), Kudumiyanmalai, Pudukkottai district provides capacity building on extension management technology, office administration and computer to Agricultural Department functionaries. In order to strengthen the existing infrastructure facilities of STAMIN, an amount of Rs.1.50 crore has been sanctioned under NADP during 2018-19 and the works are under progress.

SAMETI (State Agricultural Management and Extension Training Institute) was established in 2012-13 in the premises of State Agricultural Extension Management Institute (STAMIN) for providing consultancy services in the areas of project planning, project appraisal, etc.,

To impart training to the farmers on irrigation technologies, water use efficiency and water management practices, Water Management Training Centre (WMTC) is functioning at

Vinayagapuram, Madurai District. During 2018-19, new hostel building with dining hall is under construction with an allocation of Rs.75 lakh under NADP.

**Table 1.39: Details of Farmers and Extension officials benefitted under Training Institutes during 2018-19**

S.No.	Name of the Training Institute	No. of farmers /Officials benefitted	Finance (Rs. in lakh)
1	STAMIN	2,194	63
2	SAMETI	1,600	63
3	WMTC	616	12
4	FTC	13,270	15

#### **1.10.4. Farmers Oriented Integrated Agricultural Extension System**

The prime responsibility of the extension machineries functioning under the Department of Agriculture is dissemination of appropriate technology and ensuring successful adoption by the farmers in the field and increasing the yield.

Under Fixed Schedule of Visit system, 1,918 Assistant Agricultural Officers (AAO) will visit 12,620 village Panchayats in 385 blocks regularly and each AAO will visit 8 segments (villages) once in a fortnight to meet the farmers.

## **1.11. Laboratories for Quality Control and Soil Testing**

Government, with an aim to increase the analytical performance and quality control, ensuring quality of fertilizers and pesticides has set up 14 Fertilizer Control Laboratories, 12 Pesticide Testing Laboratories, 3 Pesticide Testing cum Coding centres and One Central Control Laboratory. Moreover, the quality of organic manures such as Vermi compost, City Compost, are ensured by two Organic Fertilizer Testing Laboratories at Tiruchirapalli and Coimbatore. The quality of Bio fertilizers are ensured at Bio Fertilizer quality control laboratory functioning at Thiruchirapalli. The Government strictly enforces the provisions of the Fertilizer (Control) Order, 1985, the Insecticide Act, 1968 and Insecticide Rules, 1971 respectively through fertilizer and pesticide inspectors.

### **1.11.1. Fertilizer Control Laboratories**

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

**Table 1.40: Fertilizer Control Laboratories**

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

During 2018-19, 19,732 Fertilizer samples (including carryover samples) have been analyzed and 558 samples were found non-standard. As part of the quality control of organic manure and bio fertilizers, 1,318 Organic Fertilizer samples and 855 Biofertilizer samples have been analysed and 89 Organic

Fertilizer samples and 14 BioFertilizer samples were found non-standard. Action is being taken as per Fertilizer (Control) Order, 1985.

It is programmed to analyze 19,600 fertilizer samples, 1,440 Organic fertilizer samples and 1,045 Biofertilizer samples during 2019-20.

### 1.11.2.Pesticide Testing Laboratories

The Pesticide Testing Laboratories functioning in the State are listed below

**Table.1.41: 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

S. No.	District	Location
<b>Pesticide Testing Laboratories cum Coding centre</b>		
1	Cuddalore	Cuddalore
2	Erode	Erode
3	Theni	Vaigai Dam

Special efforts have been taken for obtain accreditation from National Accreditation Board for Testing and Calibration Laboratories (NABL) for Kancheepuram and Coimbatore Pesticide Testing Laboratories.

During 2018-19, 21,420 pesticide samples have been analysed of which 164 samples were found to be misbranded and necessary action has been taken. It is programmed to analyze 21,850 pesticide samples during 2019-20.

### **1.11.3. Soil Testing Laboratories (STL) and Mobile Soil Testing Laboratories (MSTL)**

Soil Nutrient analysis are performed in 31 Soil Testing Laboratories and 16 Mobile Soil Testing Laboratories established for the purpose of popularizing Soil test based nutrient management and need based fertilizer application for improving crop Production in Tamil Nadu. In addition to this necessary facilities have been provided to all the Soil

Testing and Mobile Soil Testing Laboratories for analysing Macro and Micro nutrient Status of the soils.

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

**Table 1.42 : STLs and MSTLs functioning in the State**

S. No.	District	Soil Testing Laboratories		Mobile soil Testing Laboratories	
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	Tirupur	12	Tiruppur	6	Tirupur
13	Erode	13	Erode	7	Erode
14	Tiruchirapalli	14	Tiruchirappalli		
15	Perambalur	15	Perambalur	8	Perambalur
16	Ariyalur	16	Ariyalur		
17	Karur	17	Karur	9	Karur
18	Pudukkottai	18	Kudumiyan-malai		

S. No.	District	Soil Testing Laboratories		Mobile soil Testing Laboratories	
19	Thanjavur	19	Aduthurai		
20	Nagapattinam	20	Nagapattinam	10	Nagapattinam
21	Tiruvarur	21	Tiruvarur	11	Tiruvarur
22	Madurai	22	Madurai	12	Madurai
23	Theni	23	Theni		
24	Dindigul	24	Dindigul		
25	Ramanathapuram	25	Paramakudi	13	Paramakudi
26	Sivagangai	26	Sivagangai		
27	Virudunagar	27	Virudhunagar	14	Aruppukkottai
28	Tirunelveli	28	Tirunelveli		
29	Thoothukudi	29	Kovilpatti	15	Kovilpatti
30	Kanniyakumari	30	Nagercoil	16	Nagercoil
31	Nilgris	31	Ooty		

Annual capacity of soil sample analysis of these laboratories is 6.5 lakh soil samples.

Further, Soil Survey and Land use Organization is functioning in four soil survey units at Coimbatore, Thanjavur, Vellore and Tirunelveli.

#### **1.11.4. Central Control Laboratory:**

Central Control Laboratory Kudumianmalai, Pudukkottai District is the Apex Laboratory which imparts capacity building trainings for all laboratory personnel, helps incalibrating and maintaining accuracy of analysis of the

laboratories besides providing widespread awareness on soil-test-based fertiliser recommendation.

## **1.12. Production Units for critical Inputs**

Tamilnadu has pioneered in the production of certified seeds of Agriculture Crops. To lead further in the role of seed, an agency by the name "**Tamil Nadu State Seed Development Agency (TANSEDA)**" was established and is functioning now.

The following infrastructure facilities are functioning to enable the Agency to execute the role of seed production.

### **1.12.1. State Seed Farms and Coconut Nurseries**

Improved seeds of Paddy, Millets, Pulses and Oilseeds are produced in State owned 40 seed farms situated throughout the State.

**Table 1.43 (a): State Seed Farms**

S. No.	District	Name of the State Seed farm	Area (acres)
1	Kancheepuram	Panjupettai	58.76
2	Tiruvallur	Kolandalur	50.72
3	Cuddalore	Miralur	43.98
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	14.87
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	83.00
22	Nagapattinam	Nagamangalam	63.91
23		Thirukadaiyur	45.74

S. No.	District	Name of the State Seed farm	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	Kanniyakumari	Thirupathisaram	37.20
	<b>Total</b>		<b>2,449.47</b>

**Table 1.43(b): State Oilseeds Seed Farms**

S. No.	District	Name of the State Seed farm	Area (acres)
34	Kancheepuram	Musaravakkam	154.95
35	Krishnagiri	Agasipalli	16.45
36	Pudukkottai	Vellalaviduthi	657.35
37	Vellore	Navlock	66.16
38	Erode	Bhavanisagar	28.39
39	Cuddalore	Neyveli (TANCOF)	301.01
	<b>Total</b>		<b>1,224.31</b>

**Table 1.43 (c): State Pulses Multiplication Farm**

S. No.	District	Name of the State Seed farm	Area (acres)
40	Pudukkottai	Vamban	475.00
	<b>Grand Total (40 SSF)</b>		<b>4,148.78</b>

Quality Tall, Dwarf and Hybrid Coconut seedlings are produced in 23 Government Coconut nurseries and 16 coconut crossing centres and distributed to the farmers.

**Table: 1.44: 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	Pudukkottai	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

S. No.	District	Coconut Nurseries		Crossing Centres	
		19	Tirunelveli	19	Senkottai
		20	Vadakarai		
20	Thoothukudi	21	Killikulam	15	Udangudi
21	Kanniyakumari	22	Puthalam	16	Agastheeswaram
22	Tiruvarur	23	Vaduvur		

### 1.12.2. Seed Processing Units

In order to supply quality seeds to the farmers and thereby enhancing crop productivity, 126 numbers of Seed Processing Units along with seed storage godowns to store processed seeds are established and functioning. The Seed Processing Units are functioning under the control of Assistant Directors of Agriculture of respective Blocks.

**Table 1.45: Seed Processing Units**

S. No.	District	No. of Units			
		Major	Medium	Mini	Total
1	Kancheepuram	2	0	4	6
2	Tiruvallur	3	0	4	7
3	Cuddalore	0	0	3	3
4	Villupuram	5	1	3	9
5	Vellore	1	0	3	4
6	Tiruvannamalai	3	0	6	9
7	Salem	2	1	0	3
8	Namakkal	1	0	2	3
9	Dharmapuri	1	0	2	3
10	Krishnagiri	1	0	2	3

S. No.	District	No. of Units			
		Major	Medium	Mini	Total
11	Coimbatore	1	0	1	2
12	Tiruppur	1	0	2	3
13	Erode	2	0	2	4
14	Tiruchirapalli	2	0	3	5
15	Perambalur	0	0	1	1
16	Ariyalur	2	0	1	3
17	Karur	2	0	0	2
18	Pudukkottai	2	0	3	5
19	Thanjavur	6	0	1	7
20	Nagapattinam	2	0	5	7
21	Tiruvarur	3	2	2	7
22	Madurai	4	2	0	6
23	Theni	0	0	2	2
24	Dindigul	1	0	0	1
25	Ramanathapuram	2	1	0	3
26	Sivagangai	1	0	2	3
27	Virudhunagar	1	0	4	5
28	Tirunelveli	1	0	4	5
29	Thoothukudi	2	0	1	3
30	Kanniyakumari	1	0	1	2
<b>TOTAL</b>		<b>55</b>	<b>7</b>	<b>64</b>	<b>126</b>

### 1.12.3. Micro Nutrient Mixture Production Centre

Micro nutrients are essentially required for increasing crop production and productivity and also to maintain the quality of the produce.

In order to ensure uninterrupted supply of Micro Nutrients, 14 grades of notified Micro Nutrient (MN) mixtures are produced in Government owned Micro Nutrient Mixture

Production Centre at Kudumianmalai, Pudukkottai District. During 2018-19, 2,583.18 Metric Tonnes of Micro Nutrient Mixtures have been produced against the annual target of 2,400 Metric Tonnes and distributed to farmers, which is 183.18 Metric Tonnes more as against the target.

It has been programmed to produce and distribute 2,400 Metric Tonnes of Micro Nutrient Mixtures during 2019-20 also.

#### **1.12.4. Bio-Fertilizer production Units (BFPU)**

In response to the need for enrichment of Soil fertility, the State produces five strains of Bio-fertilizers viz., Azospirillum others, Azospirillum – Paddy, Rhizobium-Pulses, Rhizobium-Groundnut and Phosphobacteria in 22 Bio-Fertilizer Production Units (BFPUs) of which 5 units are producing both carrier and liquid based Bio-fertilizers.

During 2018-19, 3122.17 Metric Tonnes of carrier based Bio-fertilizers and 5.01 lakh Litres of Liquid Bio-fertilizers were produced and distributed in the name of **“AMMA Bio-fertilizer”**.

It is proposed to produce and distribute 3,000 Metric Tonnes of carrier based Bio-fertilizers and 6 lakh Litres of Liquid Bio-fertilizers during 2019-20.

The list of Bio-Fertilizer Production Units producing carrier based and liquid Bio fertilizers is tabulated below:-

**Table 1.46: Bio-Fertilizer Production Units (BFPUs)**

S. No.	District	Carrier based BFPU		Carrier and Liquid based 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		<b>Liquid BFPU</b>
15	Thoothukudi	15	Thoothukudi		

S. No.	District	Carrier based BFPU	Carrier and Liquid based BFPU
16	Tiruvallur		1 Puzhal
17	Villupuram		2 Mugaiyur
18	Vellore		3 Gudiyatham
19	Ariyalur		4 Jeyamkondam
20	Madurai		5 Thirumangalam
21	Dindigul		6 Palani
22	Sivagangai		7 Manamadurai

### 1.12.5. Production of Bio-control agents

Increasing demand for organic produce made the farmers lean towards organic farming in which the usage of Bio-control agents are essential for Integrated Pest and Disease Management.

Government has established 10 Bio-control production laboratories and 2 Integrated Pest Management Centres for production and distribution of Bio-control agents to the farmers through Agricultural Extension Centres.

**Table 1.47: Biocontrol Laboratory and Integrated Pest Management (IPM) centres**

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

**Table 1.48: Production and Distribution of Bio Control Agents during 2018-19**

S.No.	Bio control agent	Distribution
1.	Trichoderma viridi (Kg)	2,14,041
2.	Pseudomonas fluorescens (kg)	87,878
3.	NPV Lt	250
4.	Trichogramma chilonis(cc)	4,345
5.	Metarhizium anisopliae (Green Muscardine fungus) (vial)	55,000

The production and distribution of Bio-control agents will be continued during 2019-20 with a special thrust to manage Fall Army Worm. It is programmed to produce 90,000 kgs of *Beauveria bassiana* and 1,10,000 kgs of *Metarhizium anisopliae*. Apart from this, 2,20,000 kgs of *Trichoderma viridi*, 60,000 Kgs of *Pseudomonas fluorescens*, 30,000 CC of *Trichogramma chilonis* and 62,000 CC of *Trichogramma pretiosum* are also to be produced and distributed to farmers.

### **1.13. Technology dissemination and Distribution of Critical inputs:-**

#### **Agricultural extension centres.**

To provide all Agriculture services to farmers under one roof, 880 numbers of Agricultural Extension Centres are functioning. Out of these 880 Agricultural Extension Centres, 383 centres are functioning at Block level, as the Main centres and 497 centres are functioning at village level as sub-centres.

The **Agricultural Extension centres** are serving as “**an Agriculture Hub**” for stocking of key inputs like seeds, Micro Nutreint mixtures, Biofertilizers, Biopesticides, implements for distribution to farmers, points of execution of various schemes operated in the Department, providing information on new technologies to

farmers and consultation services on key matters, providing advisories on all “seed to seed” activities. Out of 383 Main Agricultural extension centres, 155 were upgraded as **Integrated Agricultural Extension Centres (IAEC)** and 10 were upgraded as Uzhavar Maiyam. These 165 centers are able to house the Block offices for the Department of Agriculture, Horticulture, Agricultural Marketing and Agri Business, Seed Certification and Agricultural Engineering and are also provided with the facilities of Video Conference Hall, Computer Centre, etc.,

Out of 497 **Sub Agricultural Extension Centres**, 160 are being renovated since 2017-18, with improved infrastructure and additional facilities. The improvement in the infrastructure helps in efficient delivery of Agriculture service to farmers.

**Table 1.49: Agricultural Extension 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

District	Main AECs(*)	Sub AECs	Total
Namakkal	15	17	32
Dharmapuri	8	8	16
Krishnagiri	10	7	17
Coimbatore	12	14	26
Tirupur	13	13	26
Erode	14	21	35
Tiruchirappalli	14	10	24
Perambalur	4	3	7
Ariyalur	6	3	9
Karur	8	4	12
Pudukkottai	13	20	33
Thanjavur	14	47	61
Nagapattinam	11	33	44
Tiruvarur	10	32	42
Madurai	13	19	32
Theni	8	13	21
Dindigul	13	15	28
Ramanathapuram	11	6	17
Sivagangai	12	9	21
Virudhunagar	11	5	16
Tirunelveli	19	31	50
Thoothukudi	12	16	28
Kanniyakumari	10	11	21
Nilgiris	4	1	5
<b>Total</b>	<b>383</b>	<b>497</b>	<b>880</b>

(\*) Agricultural Extension Centres (AECs)

### **1.14. Tamil Nadu Irrigated Agriculture Modernization (TN-IAM) Project:**

With the assistance of the World Bank, the Tamil Nadu Irrigated Agriculture Modernization [TN- IAM] Project is implemented by Agriculture Department with the main objectives 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. An amount of Rs.86.55 crore has been allotted to the Department of Agriculture for the period of 7 years (i.e. from 2017-18) under TN-IAM Project. For first phase, 18 sub-basins have been selected to implement this project from the year 2017-18.

During the year 2018-19, an amount of Rs.8.55 crore was incurred as expenditure under the following components.

#### **1.14.1. Crop Demonstrations:**

In order to increase the soil fertility, crop productivity through high yielding varieties and to increase the farmers income, the following crop demonstrations were conducted in crop sequence of Green manure-System of Rice Intensification (SRI) - Rice Fallow Pulses (3,293 Ha.) and in Maize (613 Ha.),

Ragi (89 Ha.), Minor Millets (814 Ha.), Pulses (1,020 Ha.) and Groundnut (541 Ha.) crops in the sub-basins.

#### **1.14.2. Other Crop based Components:**

Farmers Field Schools (292 Nos.), Integrated Pest Management Villages (115 Nos.) through Establishment of Eco friendly IPM model villages; for Integrated Nutrient Management to enrich the soil fertility Vermi compost (Silpaulin) Units (575 Nos.), for the production of required seeds for the Farmers in the sub-basin through Farmers Interested Groups for Pulses (75 Nos.), Groundnut (70 Nos.) & Green manure (60 Nos.) crops were implemented.

#### **1.14.3. Mechanization Components:**

Back-ended subsidy of Rs.1,250/- ha was provided for carrying out the weeding operation through power cono weeder in System of Rice Intensification (SRI) field in an extent of 1,770 Ha.

#### **1.14.4. Information, Education and Communication Activities (IEC) and Capacity Building (CB) Components:**

Capacity building & change management Trainings (57 Nos.), were organized to farmers

to create awareness on water saving crop production technologies.

During the year 2019-20, the project is to be implemented with the above components at an outlay of Rs.6.18 crore.

## **1.15. Crop Yield Competitions and Special Awards for Farmers**

### **1.15.1. Crop Yield Competitions**

Government is advocating and promoting various scientific technological initiatives and ensuring its effective implementation by farmers at field level to increase the productivity of crops. To encourage and motivate farmers to adopt progressive farming practices, Crop Yield Competitions are conducted in Tamilnadu. Crop Yield Competitions are conducted for Maize (Irrigated), Cholam (Irrigated), Cumbu (Irrigated), Groundnut (Irrigated), Redgram, Blackgram (Irrigated), Greengram (Irrigated), Cotton and Sugarcane at **State Level** and Prizes are awarded every year. Similarly Crop Yield Competitions are conducted for crops like Paddy, Maize (Irrigated), Cholam (Irrigated), Cumbu (Irrigated), Groundnut (Irrigated), Groundnut (Rainfed), Redgram, Blackgram (Irrigated), Greengram (Irrigated), Cotton and Sugarcane at **District level** and prizes are awarded every year.

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

**Table 1.50: Cash Prizes at State and District Level:**

**(in Rupees)**

<b>S. No.</b>	<b>Particulars</b>	<b>First Prize Rs.</b>	<b>Second Prize Rs.</b>
<b>1.State Level</b>			
	Groundnut, Sugarcane and Cotton	25,000/-	15,000/-
	Cholam, Cumbu, Maize, Blackgram, Greengram & Redgram.	15,000/-	10,000/-
<b>2.District Level</b>			
	Paddy, Groundnut, Sugarcane & Cotton	15,000/-	10,000/-
	Cholam, Cumbu, Maize, Blackgram, Greengram & Redgram.	10,000/-	5,000/-

### **1.15.2. Paddy Special Award for System of Rice Intensification**

In Paddy cultivation, an award of Rs.5 lakh and a citation worth Rs.5,000/- are distributed to one best performing farmer who has obtained highest productivity by following System of Rice Intensification (SRI) technology. The award is

presented by Hon'ble Chief Minister during the Republic Day celebrations every year.

For the year 2017-18, SRI Special award was given during the Republic Day function held on 26.01.2019 by the Hon'ble Chief Minister to Thiru.S.Xavier of Therku Chettiyapatti Village, in Pudukkottai district who has obtained 17,950 kg/Ha.of paddy by adopting System of Rice Intensification technology.

### **1.15.3. Traditional variety conservator award**

To support the traditional paddy variety growing farmers and to conserve traditional varieties, "Bharat Ratna Dr.M.G.R. Traditional Rice variety conservator Award" would be conferred to the first three Farmers who are conserving and cultivating traditional rice varieties and getting higher yield in the State with cash prize of Rs 1 lakh, Rs.75,000 and Rs.50,000, respectively. The award will be given during 2019-20.

Late Nel Jeyaraman, Kattimedu Village, Thiruthuraiipoondi Block of Thiruvarur District had conserved and popularized 174 traditional Paddy varieties such as Mappillai Samba, Rajamannar, Kavuni, Milagu Samba, GunduKar, Salem Samba, Sigappu Kuruvi Kar, Kalli Madaiyan, Samba Mosanam, Vadan Samba,

Pichavari, Navara, Neelan Samba besides protecting indigenous agriculture technology through the organization called **“Namadhu Nellai Kappom”**. He distributed 2Kg of traditional Paddy varieties at free of cost to farmers during the function **“Parambariya Nel Thiruvizha”** being organized since, 2006. In order to recognize his exemplary service to the farming community, the Government of Tamil Nadu had honoured Late Nel Jeyaraman with an amount of Rs.5 lakh during 2018-19.

### **1.16. Information Technology in Agriculture**

The growth of e-agriculture has the potential to accelerate agriculture and rural development, promote food security and reduce rural poverty. Information, Communication Technology (ICT) plays a more significant role in improving sustainability, efficiency and returns of small scale farming; reduces time and labour, facilitates relationship with seeds and fertiliser suppliers besides providing seamless access to cultivation information and best practices.

Tamil Nadu is the frontier State in the entire country in delivering Agricultural Information services to farming community through various Information Technology initiatives.

**Uzhavan Mobile application** launched by the **Hon'ble Chief Minister on 05-04-2018** has already won the confidence of farmers. So far 4.50 lakh farmers have downloaded this App with the following fifteen vital services

1. Information on Agriculture and Sister Departments subsidy schemes
2. Farmers can register in advance to avail the high value input subsidy on priority basis.
3. Through Crop insurance service, farmers may get information on crop wise premium rate for the notified villages, Documents required for enrolment and Insurance policy status.
4. The Government and Private Fertilizer stock availability on real time basis
5. The Government and Private Seed stock availability on real time basis
6. Details about Government/Private custom hiring centres and enabling farmer to farmer, Farm Machineries Hiring.
7. Daily Market price of Agriculture and Horticulture produce.
8. Weather Forecast for next four days

9. Assistant Agricultural/Horticultural Officers place of contact and their next visit date to respective villages
10. Daily water level in Major reservoirs of Tamil Nadu and Karnataka
11. Agriculture News for latest information to Farmers from Department and
12. Feedback from users

### **The recent services added**

13. **“My Farm Guide”** service will provide information from sowing to Harvest for farmers besides instantaneous identification of Pest/Diseases and remedial measures using Artificial Intelligence (AI) technology.
14. Information about Organic crop cultivating farmers, Organic crop traders and Organic crops certifying agencies
15. Information on Farmer Producer organisation manufactured products available for sale.

### 1.17. Agriculture Staff Structure

The Department of Agriculture is functioning with 4,828 technical staff and 4,998 non-technical staff, totaling to 9,826 Staff.

**Table 1.51: Technical Establishment**

<b>Name of the Post</b>	<b>Sanctioned Strength</b>
Additional Director of Agriculture	4
Joint Director of Agriculture	31
Deputy Director of Agriculture	123
Assistant Director of Agriculture	420
Agricultural Officer	1,088
Deputy Agricultural Officer	337
Assistant Seed Officer	509
Assistant Agricultural Officer	2,316
<b>Total Technical Staff</b>	<b>4,828</b>

**Table 1.52: Non-Technical Establishment**

<b>Name of the Post</b>	<b>Sanctioned Strength</b>
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	143
Record Clerk	155
Office Assistant	584
Watchman	1,132
Telephone Operator	2
<b>Total Non-Technical Staff</b>	<b>4,998</b>

For the effective functioning of the department, the Government of Tamil Nadu has recruited and filled up 643 technical staff and 901 Non-Technical staff through Tamil Nadu Public Service Commission during 2018-19.

During 2019-20, it is proposed to recruit and fill up 779 technical staff and 181 Non-Technical staff through Tamil Nadu Public Service Commission.

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

Horticulture is an inevitable segment playing a major role in the economy of Agriculture. Horticulture has emerged as the best option for diversification to meet the requirement of food, nutrition and health care besides providing better returns on farm and employment. This sector ensures skilled employment for rural population there by addressing the issue of migration of rural labour force to urban areas.

The importance of Horticulture in improving the productivity of land, generating employment, improving economic condition of the farmers and entrepreneurs, enhancing exports and above all providing nutritional security to the people is widely acknowledged.

Tamil Nadu has all along been one of the States with a creditable performance in Horticulture production as the farmers are relatively more responsive and receptive to changing technologies and market forces.

Tamil Nadu with seven agro-climatic conditions and varied soil types is better suited for production of Fruits, Vegetables, Spices, Plantation crops, Flowers, Medicinal and Aromatic plants. Horticulture crops are relatively resilient to changes in weather conditions. Vegetables are mostly grown by Small and Marginal Farmers in augmenting the income of farmers. This sector enables the growing population at large to enjoy a diverse and balanced diet for healthy living. With increasing population, year by year, the Horticultural production has to be increased in a sustainable manner to meet the nutritional food requirement of growing population and also to meet the raw material needs of Horticulture crops based Industries.

## **2.1 National Level Ranking Of Tamil Nadu in Horticulture Crops**

As per the statistics at a glance 2018, Tamil Nadu stands first with respect to Area, Production and Productivity of Tapioca crop. Also, Tamil Nadu takes the third position in area

and Production with respect to Turmeric and Coconut.

Besides being the leading cultivator and producer of Spices, Tamil Nadu takes the first position in Area and Production of Tamarind. Tamil Nadu also retains its top position in terms of production of flowers and takes the third position in Area under cultivation of Loose Flowers. Above all these, Tamil Nadu is elevated at top, in terms of productivity of Amla, Sapota, Cabbage and Beans. Tamil Nadu ranks fourth in the area and Production of Banana.

**Table: 2.1 - Top Three Positions of Tamil Nadu Horticulture at All-India level 2017-18**

<b>Rank</b>	<b>Area (in Ha)</b>	<b>Production (in Lakh MT)</b>	<b>Productivity (in MT/Ha)</b>
<b>1</b>	Tapioca (89,610), Tamarind (15,260).	Tapioca (28.62), Tamarind (0.948), Loose Flowers (4.299)	Tapioca (31.94), Amla (20.55), Sapota (29.51), Cabbage (66.13), Beans (18.67).
<b>2</b>	-	-	Papaya (92.54), Grapes (27.28), Lemon (16.36), Carrot (28.69).

Rank	Area (in Ha)	Production (in Lakh MT)	Productivity (in MT/Ha)
3	Turmeric (25,500), Coconut (4,41,490) Loose Flowers (34,230).	Sapota (1.69), Papaya (1.41), Beans (1.61), Grapes (0.589), Turmeric (1.37), Coconut (41.52).	-

**Table: 2.2 -Area, Production and Productivity of Horticultural crops in Tamil Nadu (2018-19 and 2019-20)**

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

CROPS	2018-19 (Advance Estimates)*			2019-20 (Programmed)		
	Area	Produc-tion	Produc-tivity	Area	Produc-tion	Produc-tivity
Fruits	2.95	57.08	19.35	3.15	61.56	19.54
Vegetables	2.29	59.49	25.98	2.63	69.01	26.24
Spices and Condiments	1.09	3.85	3.53	1.22	4.35	3.57
Plantation crops	6.89	49.95	7.25	7.09	51.90	7.32
Medicinal & Aromatic plants	0.13	1.99	15.33	0.17	2.63	15.48
Flowers	0.37	4.67	12.62	0.42	5.33	12.68
<b>TOTAL</b>	<b>13.72</b>	<b>176.99</b>	<b>12.90</b>	<b>14.68</b>	<b>194.80</b>	<b>13.27</b>

\*2018-19 – Second Advance Estimate - (HAPIS - Horticulture Area Production Information System- Government of India).

**Doubling the production and tripling the income of farmers by addressing the Sustainable Development Goals “1-Zero Hunger’, 2-End Poverty and 12–Sustainable consumption and production pattern” is the prime policy of Tamil Nadu.** The Horticulture Department has taken up the challenge to fulfill the State’s policy by achieving higher growth rate in Horticulture by implementing several developmental schemes and also through propagation of relevant technologies to step up the production.

The strategies of Department of Horticulture and Plantation Crops are to encourage the use of quality certified varieties / hybrid seeds and quality planting material in area expansion of Horticulture crops, promotion of high value Horticultural crops under 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. Adoption of Integrated Nutrient Management and Integrated Pest and Disease Management technologies are given priority through various Schemes, besides crop diversification to fetch better return and value addition to Horticultural produce to improve the economic status of the farming community. **The State's focus is also on reduced usage of pesticides particularly in greens and vegetables.**

## **2.2: Scenario of Horticulture Crops in Tamil Nadu**

Implementation of various special schemes, technologies, Government approaches, policies placed Tamil Nadu at the forefront at National level in area, production and productivity of many of the horticultural crops.

### 2.2.1: Vegetables

Tapioca, Onion, Tomato, Brinjal & Ladies finger are the main vegetables grown in Tamil Nadu. These account for over 70% of the total area.

Hybrid vegetable cultivation is promoted by providing assistance for cultivation through the Horticulture Schemes. Onion cultivation is promoted through Onion development programmes implemented through schemes like National Horticulture Mission and National Agriculture Development Programme. The hybrid vegetable seedlings are raised in the protrays in the State Horticulture Farms and distributed to farmers at subsidized cost to increase the area under vegetable cultivation.

As announced in Budget speech during 2019-20, a new scheme called **“Chief Minister’s Scheme for Augmentation of Fruits and Vegetables”** has been planned to implement in the State to encourage the Cultivation of Fruits and Vegetables, in an area of 22,214 Ha. Cultivation of vegetables like Tomato, Onion, Brinjal, Bhendi, pandal

vegetables and other vegetables, etc will be taken up at an outlay of Rs.43.68 crore.

**Table: 2.3 Details of major vegetable growing Districts 2017-18**

S. No.	Name of the Crop	Total Cultivated Area ( Ha)	Major Vegetable Growing Districts (in Ha)
1	Tapioca	89,609	Villupuram(18,200), Namakkal(16,023), Dharmapuri(14,900), Salem (12,223) and Erode (6,728)
2	Tomato	29,078	Krishnagiri(8,336), Dharmapuri (7,557), Salem (3,177), Theni (2,221) and Coimbatore (1,501)
3	Onion	28,357	Perambalur(8,899), Thoothukudi(2,853), Namakkal(2,632), Tirunelveli(2,494) and Tiruchirapalli(2,108)
4	Brinjal	15,084	Dharmapuri(2,482), Salem(1,853), Krishnagiri(1,304), Tiruvannamalai(1,279) and Vellore (1,229)

<b>S. No.</b>	<b>Name of the Crop</b>	<b>Total Cultivated Area ( Ha)</b>	<b>Major Vegetable Growing Districts (in Ha)</b>
5	Ladies Finger (Bhendi)	11,824	Dharmapuri (2,344), Salem (2052), Villupuram (1,113) Tiruvannamalai(651) and Vellore (505)
6	Beans	8,672	Krishnagiri(3,019), Vellore (1,888), Dindigul (1,287) and Dharmapuri (802)
7	Carrot	3,743	The Nilgiris (2,035), Dindigul (1,166) and Krishnagiri (531)
8	Potato	3,506	Dindigul(2,140), , The Nilgiris(726), Erode (540) and Krishnagiri (99)
9	Bitter gourd	2,923	Dharmapuri (758), Coimbatore (275), Salem (264), Cuddalore (243) and Krishnagiri (216)
10	Leafy Vegetables	2,732	Salem(616), Dharmapuri(285), Vellore(265) and Tiruvallur(263)

### 2.2.2: Fruits

Mango (52%) and Banana (28%) are the leading fruit crops in Tamil Nadu contributing more than 80% towards total area under Fruits category. Off-season production of Mango and round the year production of Grapes is unique to Tamil Nadu.

A new scheme called “**Chief Minister’s Scheme for Augmentation of Fruits and Vegetables**” was announced in the Budget speech during 2019-20, through which an area of 4,082 Ha will be brought under cultivation of fruits at an outlay of Rs.7.03 Crore.

Geographical Indication tag has been obtained for “Sirumalai and Virupakshi Hill Banana”. A **Geographical Indication** (GI) is a name or sign used on certain products which corresponds to a specific geographical location or origin. The GI tag in India is governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999. Geographical Indication Tag provides similar rights and protection to holders. A Geographical Indication right enables those who have the

right to use the indication to prevent its use by a third party whose product does not conform to the applicable standards.

**Table.2.4: Details of major Fruit growing Districts (2017-18)**

S. No.	Name of the Crop	Area ( Ha.)	Major Fruit Growing Districts (in Ha.)
1	Mango	1,52,568	Krishinagiri(32,107), Dharmapuri(18,199), Dindigul(15,322), Theni(13,650) and Vellore(13,542)
2	Banana	82,632	Erode(11,244), Thoothukudi(7,558), Tirunelveli(6,762), Theni(5,966) and Kanniyakumari(5,629)
3	Guava	9,691	Dindigul(1,427), Madurai(1,274), Virudhunagar(980), Vellore(967) and Cuddalore(883)
4	Lemon	9,652	Tirunelveli(3,216), Dindigul(2,103), Theni(690), Tiruchirappalli(622) and Thoothukudi(595)

<b>S. No.</b>	<b>Name of the Crop</b>	<b>Area ( Ha.)</b>	<b>Major Fruit Growing Districts (in Ha.)</b>
5	Amla	7,435	Tirunelveli(2,868), Dindigul(965 Ha), Theni(420), Tiruppur (420) & Sivaganga (400)
6	Sapota	5,761	Dindigul(1,152), Vellore (505), Virudhunagar(473), Tirunelveli(457)& Theni(442)
7	Orange	3,418	Dindigul(3,094) , Theni (132), The Nilgiris( 61 ) and Dharmapuri(51)
8	Jack fruit	2,371	Cuddalore(709), Dindigul(443), Namakkal(227), Pudukkottai(182) and Kanniyakumari(126)
9	Grapes	2,161	Theni(1,810), Dindigul(198) and Coimbatore(103)
10	Papaya	1,525	Erode (272), Theni(225), Vellore(122), and Dharmapuri (102)

### **2.2.3: Flowers**

Tamil Nadu produces 17.46% of the loose flowers in the country and continuously stands to be the leading producer at all India level. Dharmapuri, Salem, Dindigul, Krishnagiri, and Tiruvannamalai Districts play a vital role in flower production.

Quality planting materials including TC plants are produced in State Horticulture Farms and distributed to farmers at subsidized cost to encourage flower cultivation.

There is a demand for Cut flowers in the State, in nearby States and other foreign countries. While exports remain a key motivator for Cut flower cultivators, the domestic demand for flowers is also increasing exponentially, especially in the Cities. Realizing this, Centre of excellence for Cut flowers, a joint venture by Government of India and Israel has been established by the Department of Horticulture and Plantation Crops, at Thally, Krishnagiri District at an outlay of Rs.8.80 crore. At the Centre of excellence, training is being imparted to farmers on cut

flower production in Poly green houses, Shadenet and Open field. Here, protected cultivation of Cut flowers like Chrysanthemum, Rose, Carnation and Gerbera is taken up in area of 7,200 Sq.m and open cultivation of Cut flowers like Bird of paradise, Heliconias, Tuberose, Chrysanthemum, etc are being taken up in area of 10 acre.

Geographical Indication tag has been obtained for Jasmine grown in Madurai.

During 2019-20, an area of 2,280 Ha will be brought under flower crops at an outlay of Rs.6.88 Crore under National Horticulture Mission.

**Table.2.5: Details of major Flower cultivating Districts (2017-18)**

S. No.	Name of the Crop	Area (Ha.)	Major Flower Growing Districts (in Ha.)
1	Jasmine	13,610	Madurai(1510), Erode(1,336), Thirunelveli(1,223), Dharmapuri(1,121), Tiruvallur(1,067) and Thiruvannamalai (1,027)

S. No.	Name of the Crop	Area (Ha.)	Major Flower Growing Districts (in Ha.)
2	Chrysanthemum	5,836	Dharmapuri(2,010), Salem(1,765), Krishnagiri(1,226), Tiruvannamalai(305) and Vellore(117)
3	Tube Rose	4,979	Dharmapuri(2,108), Tiruvannamalai(1,229), Erode(365), Tiruvallur(191) and Madurai (123)
4	Marigold	2,761	Krishnagiri(1,649), Dharmapuri(295), Tiruvannamalai(192), Cuddalore(150) and Theni(90)
5	Rose	2,088	Krishnagiri(688), Dharmapuri(684), Dindigul(111), Salem (82) and Tiruvannamalai(75)
6	Cut flowers		Krishnagiri, Nilgiris and Dindigul (Kodaikanal).

#### 2.2.4: Spices

In Tamil Nadu all kinds of spices like Chillies, Garlic, Ginger, Cardamom, Pepper, Cloves, Cinnamon, Curry leaves, Coriander seeds, Turmeric, Tamarind, Nutmeg etc. are grown. Red chillies and Turmeric are the leading Spice

crops in Tamil Nadu accounting for over 64% of the total Spice Area.

Erode District has won Geographical Indication (GI) tag for turmeric for the year 2019. “The GI tag is a stamp of approval for our Turmeric, and a potential means for farmers and traders to add value to the local variety”.

It has been planned to implement the area expansion of 6,535 Ha under Spice crops viz. Chillies, Pepper, Turmeric etc., at an outlay of Rs.8.43 crore through NHM and NADP Schemes.

**Table.2.6: Details of major Spices growing Districts (2017-18)**

S. No.	Name of the Crop	Area ( Ha.)	Major Growing Districts (in Ha.)
1	Red Chillies	44,097	Ramanathapuram(16,307), Thoothukudi(12,384), Sivaganga(3,900), Tiruvannamalai(1,296) and Dindigul(1,225)
2	Turmeric	25,500	Erode(9,248), Dharmapuri(4,497), Villuppuram(3,000), Salem(2,742) and Namakkal(1,820)

<b>S. No.</b>	<b>Name of the Crop</b>	<b>Area ( Ha.)</b>	<b>Major Growing Districts (in Ha.)</b>
3	Tamarind	15,264	Dindigul(3,300), Theni(1,950), Dharmapuri(1,333), Madurai(1,294) and Kanniyakumari (924)
4	Coriander	9,357	Thoothukudi(2,785) , Virudhunagar(1,900), Ramanathapuram(1,835), Krishnagiri(1,267) and Tiruppur (605)
5	Black Pepper	5, 466	Namakkal(1,537), Salem(1,114), Dindigul(999), Nilgiris(934) and Kanniyakumari(281)
6	Cardamom	3,774	Theni(1,403), Nilgiris(947), Coimbatore(808), Virudhunagar(327) and Dindigul(240).
7	Betel vine	1,195	Namakkal(280), Thanjavur(175), Karur(155), Dharmapuri(95) and Madurai(93)

### **2.2.5. Plantation Crops**

Cashew is promoted through area expansion and rejuvenation of senile gardens components of Horticulture Schemes.

In order to uplift the livelihood of Cashew farmers affected by Gaja cyclone and to increase area under Cashew in other Districts of Tamil Nadu, "**Cashewnut Area Expansion**" sub scheme under NADP is being implemented from 2018-19 at an outlay of Rs.5.05 crore. It has been proposed to continue this programme during 2019-20.

In addition to this an amount of Rs.1.10 crore will be spent towards the area expansion of Plantation crops like Cashew, Palmyrah and Date palm in 700 Ha through National Agricultural Development Programme during 2019-20.

Further, under National Horticulture Mission, it has been programmed to bring 2,000 Ha under Cashew at an outlay of Rs.2.40 crore during 2019-20.

Tamil Nadu is the only State extending subsidy for installation of Micro Irrigation system in Tea plantations.

**Table.2.7: Details of major Plantation Crops growing Districts (2017-18)**

S. No.	Name of the Crop	Area ( Ha)	Major Growing Districts (in Ha)
1	Cashew nut	91,058	Ariyalur (30,370), Cuddalore (29,325), Villupuram (6,365), Pudukkottai (6,365) and Theni (4,761)
2	Tea	69,624	Niligiris(55,592), Coimbatore(11,160), Theni(1,810), Tirunelveli(804) and Kanniyakumari(255).
3	Coffee	33,355	Dindigul (10,816), Nilgiris(8,218), Salem(6,962), Theni(3,413) and Coimbatore(2,253).
4	Arecanut	6,735	Salem(1,882), Coimbatore(1,827), Namakkal (747), Erode (557) and Dharmapuri(459)
5	Cocoa	3,152	Coimbatore (840), Dharmapuri (658), Salem (363), Thanjavur (197) and Kanniyakumari(173).

## **2.3. Horticulture and Plantation Crops Department Activities**

ISO 9001:2015 has been obtained for Directorate of Horticulture and Plantation Crops, Tamil Nadu Horticulture Development Agency, Chennai and Tamil Nadu Horticulture Management Institute, Madhavaram for its excellence in Horticulture activities through farmers participation, Technology infusion and Consumer satisfaction.

### **2.3.1: Micro Irrigation scheme under Per Drop More Drop Component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**

#### **MI Implementation in Tamil Nadu:**

The Micro Irrigation Scheme is under implementation in Tamil Nadu since 2007-08. This scheme has been brought under Pradhan Mantri Krishi Sinchayee Yojana (**PMKSY**) "Per Drop More Crop" component, a flagship scheme of Government of India, from the year 2015-16 onwards.

Tamil Nadu is the only State extending 100% subsidy to Small and Marginal Farmers and 75% subsidy to Other Farmers. This encourages more Small and Marginal Farmers to install drip and sprinkler irrigation. In order to reduce the financial burden of farmers, 12% GST levied on MI components has been absorbed by the State Government. In addition to the Implementing Departments viz., Horticulture, Agriculture and Agricultural Engineering, Department of Sugars has also been involved to bring more area under MI in Sugar cane.

#### **Coverage under MI :**

In Tamil Nadu, out of 48.19 lakh Ha. of net area sown, the net area irrigated is 28.33 lakh Ha (58%). In the net area irrigated, the area irrigated through open wells and bore wells accounts for 60% (17.2 lakh Ha). Only this area can be brought under micro irrigation and out of this, so far, an area of 4 Lakh Ha (23%) has been brought under Micro Irrigation.

**Table: 2.8. Year wise area covered under Micro-Irrigation**

S. No.	Financial Year	Achievement	
		Physical (Area in Ha.)	Finance (Rs. In lakh)
1	2007- 08 till 2017-18	2,59,013	1,33,343
2	2018-19	1,41,627	70,069
	<b>Total</b>	<b>4,00,640</b>	<b>2,03,412</b>

An area of 59,669 Ha in Horticulture and 81,958 Ha in Agriculture totaling of 1.42 lakh Ha was brought under Micro Irrigation with an expenditure of Rs.700.69 crore during 2018-19. **This has been the highest achievement made ever since under MI.**

A new website namely **“Micro Irrigation Management Information System” (MIMIS)** has been developed during the year 2017-18 and the entire process of implementation right from registration of beneficiaries to final fund release has been made online. **This online process has simplified the implementation procedure and aids in quicker processing of the applications.** It also brings more

**transparency in the implementation of the scheme.** All these concerted efforts during 2018-19, have enabled to bring more area under MI coverage.

The State has planned to bring the entire well and tube well irrigated area under MI in a phased manner before 2025. During 2019-20, it has been programmed to bring all villages under Micro Irrigation and to enhance the income and productivity of the farmers, for which an area of about 2.28 lakh Ha is targeted at an outlay of Rs.1,245 crore.

**Table: 2.9. Crop-wise Norms under Micro-Irrigation**

S. No.	Crop	System Recommended	Spacing	Cost Norms (Rs./Ha.)
<b>I.Horticulture crops</b>				
1	Flowers & Plantation Crops	Sprinkler		18,630
		Rain Gun		27,230

S. No.	Crop	System Recommended	Spacing	Cost Norms (Rs./Ha.)
2	Mango, Tamarind	Drip	10X10m	22,426
3	Jack		8x8 m	24,795
4	Cashew		7m X 7m	27,185
5	Guava, Lime, Orange, Mosambi		6m X 6m	29,257
6	Guava, Custard Apple, Lemon, Amla, Mango		5m X 5m	33,074
7	Arecanut, Grapes		Drip	3m X 3m
8	Pomegranate, DrumStick	2.5m X 2.5m		53,183
9	Papaya, Banana	2m X 2m		64,828
10	Banana	1.5m X 1.5m		75,755
		1.8m X 0.6m		72,442
11	Ginger, Vegetables, Rose, Gloriosa, Coleus, Coriander	1.2m X 0.6m		1,01,012

S. No.	Crop	System Recommended	Spacing	Cost Norms (Rs./Ha.)
<b>II. Agriculture Crops</b>				
1	Pulses (Black& Green gram), Oil seeds, (Ground Nut)	Sprinkler-63mm	30 cm x 10cm	18,630
		Sprinkler-75mm		20,780
		Rain Gun-63mm		27,230
		Rain Gun-75mm		32,300
2	Maize, Cotton, Red gram	Drip	1.2 m x 0.6 m	1,01,012
3	Coconut		8m x 8m	24,795
4	Oil palm		9m x 9m	23,464
5	Sugarcane		1.2m x 0.6m	1,01,012
			1.5m X 0.6m	86,727

\*75% Subsidy is given to the other farmers.

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

National Horticulture Mission is a sub scheme under the Mission for Integrated Development of Horticulture. The scheme encourages crop diversification and promotion of hi-tech practices to ensure holistic growth of Horticulture. It is a centrally sponsored scheme with the assistance of 60% from Government of India and 40% by the State Government.

The scheme is implemented for 22 Districts of Tamil Nadu viz., Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kanniyakumari, Krishnagiri, Madurai, Perambalur, Pudukkottai, Ramanathapuram, Salem, Sivaganga, Thanjavur, Nilgiris, Theni, Tirunelveli, Tiruppur, Tiruchirapalli, Vellore and Villupuram.

During the year 2018-19, the scheme was implemented at an outlay of Rs.131.67 crore with a coverage of 39,000 acres under New Area expansion, 5,456 acres under protected cultivation including Poly Green House, Shade Net House & mulching and post harvest facilities like 260 Pack houses, 500 Low cost Onion storage structures, 50 Primary Processing units, 1 Integrated cold chain and a Centre of Excellence (CoE) for Traditional flowers at Madurai.

For the year 2019-20, the scheme will be implemented at an outlay of Rs.163.33 crore.

A special package to revive the livelihood of farmers affected by Gaja cyclone is being implemented at an outlay of Rs. 83.33 crore.

### **2.3.2.1. Creation of Centres of Excellence (CoE)**

Centre of Excellence is established to display the improved technologies to achieve higher productivity. Under National Horticulture Mission, Two Centres of Excellence namely, **Centre of Excellence for Cut flowers at Thally**, Krishnagiri district and **Centre of Excellence for Vegetables at Reddiyarchatram**, Dindigul district have been established in collaboration with Israeli technical experts at a project cost of Rs.8.80 crore and Rs.10.18 crore respectively.

Under MIDH-NHM, **Centre of Excellence for Hill Vegetables in Nanjanadu**, Nilgiris, **Centre of Excellence for Tropical fruits in Kanjnayakkanpatti**, Tiruchirapalli district and **Centre of Excellence for Bee Keeping** at SHF, Kanniyakumari and **Centre of Excellence for Traditional Flower crops at Madurai** at an outlay of Rs.14.50 crore are being established.

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

The main objective of National Agriculture Development Programme is to make farming a remunerative economic activity by strengthening the farmer's efforts through creation of required infrastructure that increases easy access to quality inputs, storage, etc., and to strengthen the farmer's efforts.

During 2018-19, an amount of Rs.17.88 crore has been spent on area expansion of 6,797 acre of Horticultural Crops, establishment of Poly green houses and Shadenet in an area of 18.5 acre, cultivation through Permanent pandal system in an area of 750 acre, establishment of 3408 Metric Tonnes of Onion storage structures, distribution of 2 lakh number of vegetable seed kits and infrastructure development at Horticulture Research and Training Centre, Thally-Krishnagiri District.

During 2018-19, an amount of Rs.8.88 lakh has been spent to encourage tobacco farmer to cultivate Horticultural Crops through implementation of Crop diversification programme, a sub-scheme under National Agriculture Development Programme. This scheme will be implemented in 2019-20 at an outlay of Rs.8.88 lakh.

In order to uplift the Gaja cyclone affected Cashew farmers and to increase Cashew area in other Districts of Tamil Nadu, Cashew-nut area expansion, a sub-scheme under National Agriculture Development Programme is being implemented from the year 2018-19 at an outlay of Rs.5.05 crore. It has been proposed to implement this programme in the year 2019-20 also.

During the year 2019-20, Area expansion of Horticultural crops, cultivation through Permanent Pandal system, Protected cultivation including Poly green house, Shade net and Rain nets, Distribution of Vegetable seed kits, Onion area expansion and Onion storage structures will be implemented at an outlay of Rs.20.05 crore.

#### **2.3.4: National Mission on Sustainable Agriculture (NMSA)**

NMSA aims at promoting location specific improved cultivation practices through soil health management, enhanced water use efficiency, judicious use of chemicals, crop diversification, progressive adoption of integrated farming systems, etc. Rainfed Area Development and Paramparagat Krishi Vikas Yojana are the components implemented under this scheme.

### **2.3.4.1: Rainfed Area Development (RAD)**

With the objective to promote Integrated Farming System (IFS), RAD is being implemented with emphasis on multi-tier 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.

During the year 2018-19, an amount of Rs.18.46 crore has been spent on Horticulture Based farming in an area of 10,276 acre, establishment of 20 Nos of Post harvest structures, establishment of Poly green house and Shadenet in an area of 36 acre, 350 nos of Vermi compost units, 897 Nos of Vermi beds, conducting 418 Training and Demonstrations.

During the year 2019-20, Integrated Farming System, Protected cultivation, Vermi beds, Post harvest storage units and Farmers training and Demonstrations will be taken up under this scheme.

### **2.3.4.2: Paramparagat Krishi Vikas Yojana (PKVY)**

Under PKVY, Organic farming is promoted through adoption of organic villages by cluster approach and Participatory Guarantee System (PGS) of certification. This is a three year continuous programme. The scheme is implemented in 29 Districts of Tamil Nadu.

The implementation of this scheme started in the year 2015-16 and till 2018-19, 112 clusters (5,600 acre) have been formed under this scheme and an amount of Rs.9.05 crore has been spent for the same.

During the year 2019-20, it has been proposed to implement this programme in the already formed 61 clusters (3,050 acre) at an outlay of Rs.2.57 crore and also to adopt organic farming in newly formed 50 clusters (2,500 acre) at an outlay of Rs.1.65 crore.

### **2.4: Integrated Horticulture Development Scheme (IHDS)**

The scheme is being implemented in 9 Districts: Karur, Kancheepuram, Namakkal, Nagapattinam, Tiruvarur, Tiruvannamalai, Tiruvallur, Thoothukudi and Virudhunagar with the objective to increase more area under Horticulture crop cultivation. 40-50% subsidy is

extended in the total cost of cultivation of Hybrid vegetable seeds and quality planting materials.

During the year 2018-19, an amount of Rs.4.12 crore has been spent to cover an area of 12,265 acre with Horticultural crops.

During the year 2019-20, this scheme is proposed to be implemented at an outlay of Rs.31.37 crore.

## **2.5: National AYUSH Mission - Medicinal Plants (NAM-MP)**

The scheme, **National AYUSH Mission for Medicinal Plants** 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.

In the year 2017-18, this scheme was implemented at an outlay of Rs.2.23 crore to cover an area of 1,662 acre under medicinal plants. In Amla (*Phyllanthus emblica*) for second year maintenance, Rs.5.30 lakh was utilized for an area of 185 acre in the Districts of Coimbatore, Sivaganga, Tirunelveli and Theni.

During 2018-19, the Government of India has sanctioned an amount of Rs.1.73 crore for the cultivation of medicinal plants in 1,250 acre.

In the year 2019-20, Government of India has approved an amount of Rs.8.40 crore for the implementation of the scheme.

## **2.6: 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 less water requiring with highly remunerative horticultural crops, through promotion of hi-tech cultivation technologies and water conservation technologies in the proposed sub basins.

It is programmed to implement the scheme at an outlay Rs.210 crore in 66 sub basins of 30 Districts in the next 6 years from 2018-19 to 2023-24. During the first year (2018-19), crop demonstrations were carried out in 6,404 acre at an outlay of Rs.17.91 crore in 18 sub basins of 22 Districts. The proposed innovative interventions are Promotion of Micro Irrigation, Climate resilience technology of protected cultivation and Mulching in TNIAMP.

During 2019-20, In phase I, this scheme is proposed to be implemented in already selected 18 sub basins covering 22 Districts at an outlay of Rs.12.22 crore along with crop demonstration in 5,379 acre as a second year programme. In addition to that, in phase II, as a 1<sup>st</sup> year programme this scheme is proposed to be implemented in newly selected 17 sub basins and 18 Districts at an outlay of Rs.25.12 crore.

## **2.7: Pradhan Mantri Fasal Bima Yojana (PMFBY) for Horticultural crops**

Government of Tamil Nadu is implementing PMFBY from kharif 2016 onwards in all Districts except Chennai. Under this scheme, farmers can insure the notified Horticulture crops in notified revenue villages.

Under PMFBY, so far, an amount of Rs.84.98 crore has been disbursed as compensation claim to 40,104 farmers for Horticulture crops and 2,15,592 farmers have been enrolled covering an area of 1,12,689 Ha in notified Horticulture crops.

**During 2019-20**, in addition to the already notified six crops viz Banana, Tapioca, Turmeric, Potato, Onion and Red Chillies, **8 annual crops viz Bhendi, Brinjal, Cabbage, Carrot, Garlic,**

**Ginger, Coriander, Tomato and 3 perennial crops viz Guava, Grapes and Mango** have been notified in order to bring in more Horticulture farmers under Crop Insurance.

For the current year 2019-20, it has been planned to enroll 50% Gross Cropped area under notified Horticulture crops.

**Table: 2.10 Compensation given under PMFBY for Horticulture**

Year	Compensation claim (Rs.in Crore)						Total
	Onion	Chillies	Potato	Banana	Tapioca	Turmeric	
2016-17	8.61	46.25	4.03	10.14	1.06	3.26	<b>73.35</b>
2017-18	0.343	7.370	1.287	2.101	0.004	0.223	<b>11.42</b>
2018-19	0.21	(Under process)					<b>0.21</b>
<b>Total</b>							<b>84.98</b>

## **2.8: 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.

Under this Scheme, so far, Corpus Fund to the tune of Rs.50.61 crore was utilized for the purchase of Machineries which are collectively used for the cultivation purpose of 1010 FPGs.

During the year 2019-20, 505 FPGs will be formed by the Department of Horticulture. An amount of Rs.25.39 crore has been allocated for Horticulture FPGs.

## **2.9: Special Package for Cyclone Gaja**

Cyclone "Gaja" caused damages to Horticulture crops in Pudukkottai, Nagapattinam, Thanjavur, Tiruvarur, Cuddalore, Tiruchirapalli, Dindigul, Theni, Karur, Sivagangai Madurai and Ariyalur Districts in an area of 23,645 Ha. affecting 63,097 farmers. Banana, Cashew, Mango, Vegetables, Jack, Acidlime, Garlic, Tamarind and Flowers are the worst affected Horticulture crops.

For all affected Horticulture Crops, Input Subsidy was extended under State Disaster Response Fund (SDRF) @ Rs. 13,500/-Ha. for irrigated crop, Rs. 18,000/-Ha for perennial crops and Rs. 7,410/-Ha. for Rainfed crops. Accordingly, a sum of Rs.37.47 crore was allocated and Rs.30.508 crore was disbursed to affected farmers.

In addition to Rs. 18,000/-Ha. extended under State Disaster Response Fund (SDRF), Rs.500 per Cashew tree was also extended as cut and removal charges for fallen and uprooted Cashew trees due to Cyclone Gaja. Based on that, an amount of Rs.10.84 crore was allocated of which, Rs.3.773 crore has been disbursed to the affected farmers.

Further, in order to safe guard the livelihood of the affected farmers, an amount of Rs.149.07 crore was allocated under livelihood package. Out of this, Rs. 53.87 crore was allocated by combining various schemes, for recultivation of Horticulture crops through interventions such as supply of planting materials, integrated nutrient and pest management and recultivation taken

up in an area of 7,372 Ha. From Micro irrigation scheme, Rs.95.20 crore was allocated. Work orders were issued to cover 4,929 Ha. and installation of Micro irrigation system in the recultivated Horticulture crops was completed in an area of 3,005 Ha. Recultivation of Horticulture Crops along with Micro irrigation system is under progress.

## **2.10: State Horticulture Farms (SHFs)**

The main objective of the **State Horticulture Farms** is timely production and distribution of quality pedigree planting materials of Horticulture crops at a reasonable price to the farmers. Further, these farms also serve as “**Model Demonstration Farms**” on the latest technology, farm mechanization and modern irrigation technologies etc., to the farmers, besides providing employment opportunities to the landless labourers. There are 63 State Horticulture farms functioning in 31 Districts of Tamil Nadu.

ISO 14001:2015 Certificate has been obtained for State Horticulture Farm, Madhavaram, Horticulture Park, Madhavaram

and Semmozhi Poonga for its quality management system.

During the year 2018-19, 14.36 crore numbers of planting materials were produced in State Horticulture Farms and Parks and Gardens and distributed to the farmers. This includes, 13.12 crore numbers of protrait vegetable and flower seedlings. It has been programmed to produce 14.75 crore numbers of planting materials in the year 2019-20 and production and distribution of planting materials is under progress.

### **2.10.1: Vegetable seed Production in SHFs:**

Seed production of Tamil Nadu Agriculture University notified high yielding varieties of vegetable crops was taken up during 2018-19 in addition to the planting material production in State Horticulture Farms. As a first phase, 450 kgs of vegetable seeds were distributed as 2 lakh seed kit packets under NADP Home stead Garden Component. During 2019-20, it has been programmed to produce 2000 kg. of certified vegetable seeds to distribute to the farmers and homestead gardens through various schemes.

### **2.10.2: Plants as Return Gifts in Public and Private Functions:**

In Tamil Nadu, during functions like Birthday celebration, wedding anniversary, marriage, engagement, house warming ceremony, opening ceremony of new shops, etc., return gifts are given to the guests. In an eco-friendly way, people like to present tree saplings as environment friendly return gifts, as the plants live longer than the materialistic gifts.

As announced by the Hon'ble Minister of Agriculture, during 2018-19, this programme has been launched for distribution of quality fruit plants and planting materials of other Horticultural crops from State Horticulture Farms for public and private functions at a nominal cost. This programme brings happiness to both the giver and taker of the plants and promotes the culture of giving return gifts.

Totally 3,06,209 number of plants were distributed in functions, under this programme during 2018-19. This programme is being continued during the current year also.

### **2.10.3: Farm Tourism:**

To impart knowledge on latest Horticultural technologies to students and farmers, Farm tourism was initiated in all the State Horticulture Farms, Parks and Gardens throughout the State as announced by the Hon'ble Minister for Agriculture during 2018-19. This will help the students and people in urban areas to practically experience farming. This concept has many interesting parts in which the visitors can directly involve themselves in farm activities. They are also provided with natural refreshment and one plant as a memento in remembrance of the farm visit. During 2018-19, 12,326 students visited the farms under farm tourism. This programme is being continued during the current year also.

### **2.10.4: Coconut seedling production in State Horticulture Farms:**

During the Gaja Cyclone, about 60 lakh numbers of coconut trees were uprooted in 12 Districts. Hence, a special programme on production of 20 lakh numbers of Coconut seedlings has been taken up in 40 State

Horticulture Farms for distribution to the farmers of Gaja Cyclone affected areas.

#### **2.10.5: Bean to bar Chocolate Production Demo Unit:**

A new integrated bean to bar unit for production of chocolates has been commenced in State Horticulture Farm, Madhavaram at Chennai. In this unit, various types of Chocolates like Milk Chocolate, Dark Chocolate, Milk Chocolate with nuts are being produced from Cocoa beans and being sold in the outlets. This unit acts as a demonstration centre for public and students, to motivate the farmers to start the enterprise on their own and to impart training on the production aspects which helps in increasing their income.

#### **2.10.6: Works in Progress:**

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 outlay of Rs.5.83 crore.

To bring the unutilized land to cultivation in 5 State Horticulture Farms viz, Poovani (Virudhunagar District), Mudalaipatti (Karur District), Vallathirakottai (Pudukkottai District), Kudumiyanmalai (Pudukkottai District) and Jeenur (Krishnagiri District), works are being carried out for an amount of Rs.2.67 crore.

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.

### **2.11: List of State Horticulture Farms**

<b>S. No</b>	<b>District</b>	<b>Name of the SHF</b>	<b>Year of Establishment</b>	<b>Area (Ha.)</b>
1	Ariyalur	Keelapaluvur	2018	7.58
2	Chennai	Madhavaram	1980	4.38
3	Coimbatore	Anaikatty	1986	12.00
4		Kannampalayam	2001	11.20

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

S. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
21	Krishnagiri	Thimmapuram	1952	9.51
22		Jeenur	1980	121.96
23	Madurai	Poonjuthi	2012	5.76
24	Nagapattinam	Vanduvancherry	2018	6.54
25	Namakkal	Semmedu	1974	11.60
26		Padasolai	1989	22.67
27	Perambalur	Vengalam	2018	4.72
28	Pudukkottai	Kudumianmalai	1974	118.68
29		Vallathirakottai	1977	521.20
30		Nattumangalam	1985	53.02
31	Ramanathapuram	Oriyur	2013	14.77
32	Salem	G.O. Karumandurai	1981	419.77
33		Maniyarkundram	1982	100.00
34		SHF , Karumandurai	1981	39.35
35		Mulluvadi	1985	48.40
36		Sirumalai	1987	8.00

<b>S. No</b>	<b>District</b>	<b>Name of the SHF</b>	<b>Year of Establishment</b>	<b>Area (Ha.)</b>
37	Sivagangai	Devakottai	1985	81.19
38		Nemam	1979	38.77
39	Thanjavur	Aduthurai	1988	8.90
40		Marungulam	1966	10.70
41	Nilgiris	Burliar	1871	6.25
42		Kallar	1900	8.92
43		FPU Coonoor	1965	4.05
44		PS Coonoor	1948	10.46
45		Kattery	1974	16.96
46		Doddabetta	1969	2.52
47		Thummanatty	1956	9.80
48		Nanjanad	1917	64.00
49		Devala	1978	80.00
50		Colgraine	1989	20.40
51		Theni	Periyakulam	1950
52	Thoothukudi	Keelavalanadu	2018	3.82

S. No	District	Name of the SHF	Year of Establishment	Area (Ha.)
53	Tiruvarur	Moovanallur	2018	8.87
54	Tirupur	Sankaramanallur	2018	10.12
55	Tirunelveli	Vannikonenthal	2018	10.86
56	Tiruvannamalai	Pudur chekkadi	2018	12.76
57	Tiruchirapalli	Thorakudi	2013	4.05
58	Vellore	Thagarakuppam	1985	34.40
59		Kudapattu	1961	10.08
60		Navlock	1981	84.42
61	Villupuram	A.Sathanur	2018	10.00
62	Virudhunagar	Poovani	1967	9.46
63		Srivilliputhur	1982	46.27
<b>TOTAL</b>				<b>2611.89</b>

## 2.11: Parks and Gardens

The Horticulture Department maintains 19 Parks in 7 Districts of the State. Parks act as recreation centers for the visitors and tourists. It also serves as an educational center for students and Botanists.

The main attraction of Nilgiris is Government Botanical Garden. It is one of the world famous public gardens and attracts millions of visitors from all over India and abroad. This garden is being face lifted to International standards through construction of glass house, fern house, flower galleries and modernization of existing infrastructure facilities at an outlay of Rs.8.492 crore to attract more numbers of tourists throughout the year.

Pomological Station, Coonoor from wild animals is functioning since 1949 and serves as a centre to study different varieties of pedigree fruit plants and their adaptability in hilly region. Steps are being taken to protect the Pomological Station from wild animals by construction of Chain link fencing with gabion walls at an expenditure of Rs.1.164 crore. Similarly, compound wall construction works are in progress in Government Botanical Garden, Ooty and Sims Park, Coonoor at an outlay of Rs.5.55 crore. Chain link fencing with gabion walls work is in progress in Government Rose Garden, Ooty at a cost of Rs.2.52 crore.

As announced by the Hon'ble Chief Minister of Tamil Nadu, Multi-level Parking facility is being created in Government Rose Garden, Ooty to avoid traffic congestion and also to provide parking space for the visitors at the cost of Rs.3 crore.

The Bryant Park, Kodaikanal was established during 1908 and attracts around 5.5 lakh visitors every year. Face-lifting of Bryant Park Kodaikanal is being carried out at an outlay of Rs.6.80 crore to attract more number of visitors.

Rose garden and Cut flower demo garden at Kodaikanal was established at an outlay of Rs.11.05 crore.

ECO Park at State Horticulture Farm, Kanniyakumari was established in an area of 15 acre at a cost of Rs.4 crore.

A new Horticulture Park at Madhavaram, Chennai was established with special features like rain water harvesting ponds, fountain, Palmyrah huts, Children play area, open gym equipments, different gardens like formal, informal, herbal, topiary, lily, hibiscus, star,

cactus, rock, etc., arboretum, meadow area and indoor plants and this park provides recreation to the visitors and walkers in that area.

### **2.11.1: TANHODA Outlet:**

A new TANHODA outlet was established in Semmozhi Poonga in which products like Jam, Jelly, Squash, Marmalade, Pickles, etc, Fruit Preservation Unit, Coonoor and FPO products like Neera, Neera sugar, Biscuits, etc., and garden inputs like Biofertilizers, Biopesticides, nutrients are being sold to the public.

### **2.11.2: Tissue Culture Unit:**

Tissue Culture Laboratory in the premises of Government Botanical Garden, Ooty was renovated at a cost of Rs.30 Lakh and production of tissue culture plants of fruit crops like Strawberry and flowering plants has been commenced in this unit.

Another Tissue Culture Laboratory was established in the premises of State Horticulture Farm, Madhavaram at a cost of Rs. 1.25 crore.

In this unit, production of tissue culture plants of fruit crops like Banana, Ornamental plants and flowering plants has been commenced.

### 2.11.3: Cold storage facility:

Cold storage facility of 500 MT capacity was established by Agricultural Marketing Department through Supply Chain Management programme in Government Rose Garden, Ooty and it is being utilized by the Horticulture Department for storing Horticultural produce like Seed potatoes and other produce.

### 2.12: Details of Parks & Gardens

S. No.	District	Name of the Park / Garden	Year of Establishment	Area (Ha.)	Total No. of visitors during 2018-19
1.	Chennai	Semmozhi Poonga, Chennai	2010	3.17	4,62,536
2.		Horticulture Park Madhavaram	2018	8.50	44,126
3.	Dindigul	Bryant Park and Anna Park, Kodaikanal	1908 2010	7.93	4,36,877
4.		Chettiyar Park, Kodaikanal	1980	2.02	99,783
5.		Rose Garden cum Cut Flower Demonstration Model Unit, kodaikanal	2018	4.00	15,729

S. No.	District	Name of the Park / Garden	Year of Establishment	Area (Ha.)	Total No. of visitors during 2018-19
6.	Kanniyakumari	Eco Park, Kanniyakumari	2018	6.00	1,91,462
7.	Ramanathapuram	Palai genetic Garden, Achadi prambu	2015	4.00	67,435
8.	Salem	Rose Garden at SHF, Yercaud.	1975	15.14	85,461
9.		Lake View Park, Yercaud	1999	1.27	47,972
10.		Kurinji Genetic Garden, Yercaud.	2012	10.00	74,686
11.		Government Botanical Garden, Yercaud-1	2010	8.10	7,875
12.		Government Botanical Garden, Yercaud-2	2010	8.10	5,832
13.		Anna Park, Yercaud	1999	1.87	2,40,336
14.	Nilgiris	Government Botanical Garden, Ooty	1848	22.00	28,91,417
15.		Government Rose Garden, Ooty	1995	14.40	10,92,373
16.		Sim's Park, Coonoor	1969	12.14	6,39,019
17.		Kattery Park	2011	2.00	95,266
18.		Tea Park at Doddabetta	2015	1.70	87,877
19.	Tirunelveli	ECO Park, Courtallam	1958	14.89	25,294
	<b>Total</b>			<b>147.23</b>	<b>66,11,356</b>

## **2.12: Flower and Fruit Shows:**

Fruit and Flower Shows are being conducted during summer season in Parks and Gardens that attract tourists from various corners of the world every year.

### **2.12.1: Shows in Nilgiris:**

The summer festival in Nilgiris District is one of the most prominent festivals and consists of fairs, carnivals, flower shows, vegetable and spice shows and several cultural activities that catches the eyes of the visitors.

#### **2.12.1.1: Flower show, Ooty:**

In Government Botanical Garden Ooty, flower show is being conducted from the year 1894. During the current year, 123<sup>rd</sup> flower show was conducted for 5 days in which floral structures made with various flowers from different countries were displayed to attract the people. 1,60,298 visitors enjoyed this show.

#### **2.12.1.2: Rose show, Ooty:**

The Rose Show is being conducted from the year 2001 by the Horticulture Department at Government Rose Garden, Ooty. In this show, popular and attractive structures made out of roses of different colours are being displayed.

During 2018, 41,861 visitors visited the 16<sup>th</sup> Rose show.

### **2.12.1.3: Fruit show, Coonoor:**

During May-2019, 61<sup>st</sup> Fruit show was conducted at Sim's Park, Coonoor. In this show, mega structures made of various fruits were displayed. 30,647 visitors have visited this show.

In addition, Vegetable show and Spices show is being conducted in Kotagiri and Gudalur respectively.

### **2.12.2: Shows in Kodaikanal:**

The Flower show is conducted since 1962 at Bryant Park Kodaikanal. During the current year, 58<sup>th</sup> Flower show was conducted in which floral structures made of various flowers and Vegetable carvings were displayed. 39,794 visitors enjoyed this show.

### **2.12.3: Shows in Yercaud:**

The Yercaud flower show is being conducted from the year 1975 by Horticulture Society. Since 1991, Department of Horticulture had started organizing this show. During May-2019, 44<sup>th</sup> Flower show was visited by 56,889 visitors.

#### **2.12.4: Shows in Courtallam:**

Flower show as a part of 'Saral Vizha' is being conducted at ECO Park, Courtallam in Tirunelveli District since 2013. The 6<sup>th</sup> Saral vizha flower show which was held during 2018, attracted 7,959 visitors.

#### **2.13: Horticulture Training Centres (HTC)**

Four training centres at Madhavaram in Tiruvallur District, Kudumianmalai in Pudukkottai District, Thally in Krishnagiri District and Ooty in The Nilgiris District are functioning under the Department of Horticulture and Plantation Crops. The prime objective is to impart training to farmers in Hi tech Horticulture crop cultivation technologies.

From the year 2011-12 to 2018-19, training in Hi-tech Cultivation of Horticulture crops was imparted to 29,800 farmers at an outlay of Rs.71.1 lakh.

During the year 2019-20, Hi-tech crop cultivation training will be imparted to 3000 farmers at an outlay of Rs.7.5 lakh.

### **2.13.1. Horticulture Diplomo Course.**

Apart from farmers training, 2 years Diploma in Horticulture is being offered at Horticulture Training Centre, Madhavaram, Horticulture Research and Training Centre, Thally, Krishnagiri District and Centre of Excellence for Vegetables-Rediyarchathiram in Dindigul District with the intake of 50 students in each centre. In total 150 students are currently studying in these 3 centres.

### **2.13.2. Short term Skill training.**

Also, 25 days short term skill training to work as Gardener, Micro Irrigation technician and Florist to 5,340 youth at an outlay of Rs.6.21 crore and 66 days training on Horticulture Technician to 500 youth at an outlay of Rs.1.14 crore are being imparted under the skill fund of Tamil Nadu Skill Development Corporation.

## **2.14: Tamil Nadu Horticulture Development Agency (TANHODA)**

Tamil Nadu Horticulture Development Agency is a "Special Purpose Vehicle" functioning since 2004 for implementing various Horticulture

Schemes funded by Government of India and Government of Tamil Nadu. It is a registered society under Tamil Nadu Societies Registration Act, 1975.

The schemes operated through TANHODA are

1. Mission for Integrated Development of Horticulture -National Horticulture Mission.
2. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)
3. National AYUSH Mission - Medicinal Plants,
4. National Agroforestry and Bamboo Mission,
5. TNIAMP - Tamil Nadu Irrigated Agriculture Modernization Project.
6. 63 State Horticulture Farms and 19 Parks and gardens under the control of Department of Horticulture and Plantation crops.

## **2.15: Staff Strength**

To provide Horticultural Technologies and Government schemes to farmers and to coordinate departmental activities, staff are

working in Block, District and State levels under the Horticulture department.

As per the announcement made by Hon'ble Minister during 2017-18 and 2018-19, 886 posts (620 Assistant Horticulture Officers, 195 Horticulture Officers and 71 Assistant Director of Horticulture) were filled through TNPSC for the upliftment of Horticulture Department.

**Table 2.13: Sanctioned Strength**

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

**Table 2.14: Cadre detail**

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

## **3. AGRICULTURAL ENGINEERING**

### **3.1. Introduction**

Agricultural Engineering Department which was created as a separate organization in 1981 continues to provide the engineering services for the welfare of farming community. Agricultural Engineering Department serves the farmers for increasing their farm production and productivity through farm mechanization, soil and water conservation measures, improved irrigation management activities, green energy, post harvest technology and management in Agriculture.

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

- a) Agricultural Mechanization
- b) Soil and Water Conservation
- c) Water Management
- d) Green Energy Initiatives
- e) Post Harvest Technology and Management
- f) Development of Farm Infrastructure and Extension Centres.

### **3.3. Agricultural Mechanization**

Mechanization plays a key role in improving the farm power availability at farm level. It increases agricultural production and productivity by efficiently and effectively utilizing the available resources and costly farm inputs results in savings of labour and time. Increase in net income of the farmer is possible through agricultural mechanization by optimum application of seeds, manures, fertilizers, weedicides and pesticides at right time, besides eliminating the hazards and drudgery of different farming operations.

#### **3.3.1. Hiring of Agricultural Engineering Department owned machinery**

Agricultural Engineering Department has Land Development and Minor Irrigation Machinery for hiring to the needy farmers at subsidised hire charges fixed by the Government.

##### **3.3.1.1. Land Development Machinery**

Agricultural Engineering Department has 77 Bull Dozers for land levelling and land shaping, 163 Tractors for ploughing and other farming operations, 63 Laser Levellers for perfect land levelling and 46 Paddy Combine harvesters. These machinery are hired out to the

needy farmers at subsidised hire charges fixed by the Government.

The District wise details of Land Development Machinery available for farmers at subsidised hire charges are furnished in Table.3.1(a) and 3.1(b).

**Table 3.1(a).District wise availability of Land Development Machinery**

S. No	District	Bull dozer	Tractor
1	Kancheepuram	5	9
2	Tiruvallur	4	5
3	Cuddalore	4	10
4	Villupuram	4	9
5	Vellore	2	6
6	Tiruvannamalai	2	3
7	Dharmapuri	2	3
8	Krishnagiri	3	3
9	Salem	2	5
10	Namakkal	3	4
11	Coimbatore	3	3
12	Erode	2	6
13	Tiruppur	4	2
14	Tiruchirapalli	3	5
15	Ariyalur	2	4
16	Perambalur	1	2
17	Karur	2	3
18	Pudukkottai	2	4
19	Tiruvarur	2	16
20	Thanjavur	3	13

<b>S. No</b>	<b>District</b>	<b>Bull dozer</b>	<b>Tractor</b>
21	Nagapattinam		14
22	Dindigul	4	4
23	Madurai	3	4
24	Theni	2	4
25	Sivagangai	2	2
26	Ramanathapuram	2	3
27	Virudhunagar	2	4
28	Thoothukudi	3	5
29	Tirunelveli	3	7
30	Nilgiris	1	1
<b>Total</b>		<b>77</b>	<b>163</b>

**Table 3.1(b): District wise availability of Paddy Combine Harvesters**

<b>S.No</b>	<b>District</b>	<b>Paddy Combine Harvesters</b>
1	Kancheepuram	3
2	Tiruvarur	9
3	Thanjavur	10
4	Nagapattinam	9
5	Madurai	5
6	Tirunelveli	10
<b>Total</b>		<b>46</b>

### **3.3.1.2. Demonstration of Tractor operated Ridge Moulder in the farmers' field**

As per the announcement of the Government of Tamil Nadu during the Assembly 2018-19, to reduce the cost of paddy cultivation and to increase the net income of farmers,

demonstration of tractor operated ridge moulder in 2,500 farmer's field at a cost of Rs.8.50 lakh has been conducted under Sub Mission on Agriculture Mechanization using the 20 ridge moulders in the Agricultural Engineering Department.

### **3.3.1.3. Minor Irrigation Machinery**

Agricultural Engineering Department has 25 Rotary drills in Tiruvallur, Cuddalore, Pudukkottai, Tiruvarur and Thanjavur Districts for sinking of tube wells in alluvial soil areas, 4 Percussion drills in Tiruvallur District to work in selected alluvial areas and hard rock areas and 25 Mini Drills in Tiruvarur, Thanjavur and Nagapattinam Districts.

Agricultural Engineering Department also has 28 Hand Boring Sets for sinking of shallow tube wells, 15 Rock Blasting Units for deepening of open wells as well as for blasting and removing rock out crops in farm lands, 21 Resistivity Meters for divining ground water availability for drilling tube wells and bore wells and 2 Electrical Loggers for assessing the lithology.

### 3.3.1.4. Disaster Management Machinery

Agricultural Engineering Department has 16 tractor operated pumps for draining flood water. During the year 2018-19, a total of 805 Heavy Duty Chain Saws and 107 Tractor PTO operated Shredder cum Pulverisers have been purchased for Agricultural Engineering Department under National Agriculture Development Programme (NADP) to help the GAJA Cyclone affected farmers for cutting of fallen trees at subsidized hire charges. These machinery are hired to the farmers in addition to Bulldozers and Tractors for relief works during natural calamities.

The details of Disaster Management Machinery available with the Department are furnished in Table.3.2.

**Table 3.2. District wise availability of Disaster Management Machinery**

S. No.	District	Heavy Duty Chain Saw	Tractor PTO operated Shredder cum Pulverisers	Tractor Operated Pumps
1	Kancheepuram		10	4
2	Tiruvallur		5	3
3	Cuddalore		11	1

S. No.	District	Heavy Duty Chain Saw	Tractor PTO operated Shredder cum Pulverisers	Tractor Operated Pumps
4	Villupuram		9	1
5	Namakkal		4	
6	Tiruchirapalli		6	
7	Ariyalur		4	
8	Pudukkottai	150	4	
9	Tiruvarur	150	16	3
10	Thanjavur	300	13	
11	Nagapattinam	205	14	4
12	Sivagangai		3	
13	Ramanathapuram		3	
14	Thoothukudi		5	
<b>Total</b>		<b>805</b>	<b>107</b>	<b>16</b>

### **3.3.2. Promotion of Agricultural Mechanization**

Agricultural Mechanization is promoted in a big way by giving subsidy assistance under Sub Mission on Agricultural Mechanization (SMAM) scheme to the individual farmers for procurement of agricultural machinery, implements, equipments and for establishment of Custom Hiring Centres (CHC) at both block and village level.

From the year 2018-19, Direct Benefit Transfer (DBT) – a web based application software is adopted for the distribution of agricultural machinery to the individual farmers. The registration of manufacturers, farmers and dealers, uploading the joint photographs of machinery, dealer and farmer, joint verification photos with department engineers, etc., are done through online by the Government of India DBT portal [www.agrimachinery.nic.in](http://www.agrimachinery.nic.in).

Agricultural Engineering Department empanels and approves “agricultural machinery and implements manufacturing firms” for their different types and models as per the test report given by Farm Machinery Training and Testing Institutes and Government of India approved institutions through DBT portal. The beneficiaries are free to choose any type of empanelled and approved agricultural machinery and implements for individual machinery distribution and for the establishment of custom hiring centres.

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

Agricultural Machinery and Implements like Tractor, Power Tiller, Rotavator, Paddy Transplanter, Tractor and Power Tiller driven implements, Power Weeder, Chaff Cutter, Brush Cutter, Multi Crop Thresher, Baler, Shredder and Combine Harvester etc., are distributed under Sub Mission on Agricultural Mechanization (SMAM) to the individual farmers. The subsidy assistance of 50% to SC, ST, Small, Marginal and Women farmers and 40% to other farmers or the maximum permissible subsidy amount fixed by Government of India whichever is less is given for the distribution of agricultural machinery.

During 2018-19, an amount of Rs.55.32 Crore has been released as subsidy to the farmers towards the distribution of 5,075 agricultural machinery and implements under this scheme.

During the year 2019-20, it is proposed to implement the scheme with the financial assistance of Rs.176.28 crore for the distribution

of 9,148 agricultural machinery and implements to the farmers.

**Table 3.3. Cost norms and Pattern of Assistance under Sub Mission on Agricultural Mechanisation (SMAM) for the distribution of Agricultural Machinery and Implements**

(Rs. in lakh)

S. No.	Name of the Agricultural Machinery and Implements	For SC, ST, Small, Marginal and Women farmers		For Other farmers	
		Maximum Permissible subsidy per machine/equipment per farmer	Pattern of Assistance	Maximum Permissible subsidy per machine/equipment per farmer	Pattern of Assistance
1	Tractor 2 Wheel Drive (8-20 PTO HP)	2.00	50%	1.60	40%
2	Tractor 4 Wheel Drive (8-20 PTO HP)	2.25	50%	1.80	40%
3	Tractor 2 Wheel Drive (above 20-40 PTO HP)	2.50	50%	2.00	40%
4	Tractor 4 Wheel Drive (above 20-40 PTO HP)	3.00	50%	2.40	40%

S. No.	Name of the Agricultural Machinery and Implements	For SC, ST, Small, Marginal and Women farmers		For Other farmers	
		Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance	Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance
5	Tractor 2 Wheel Drive (above 40-70 PTO HP)	4.25	50%	3.40	40%
6	Tractor 4 Wheel Drive (above 40-70 PTO HP)	5.00	50%	4.00	40%
7	Power tiller (8 BHP and above)	0.85	50%	0.70	40%
8	Self Propelled Rice Transplanter (4 rows)	1.50	50%	1.20	40%
9	Self Propelled Rice Transplanter (above 4-8 rows)	5.00	50%	4.00	40%
10	Post Hole Digger / Augur(Self Propelled)	0.75	50%	0.60	40%
11	Power Weeder (engine operated below 2 BHP)	0.25	50%	0.20	40%
12	Brush Cutter (Operated by engine/electric motor below 3 HP )	0.30	50%	0.25	40%

S. No.	Name of the Agricultural Machinery and Implements	For SC, ST, Small, Marginal and Women farmers		For Other farmers	
		Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance	Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance
13	Chaff Cutter (Operated by engine / electric motor below 3 hp and by power tiller and tractor of below 20 BHP tractor)	0.20	50%	0.16	40%
14	Power Weeder (engine operated above 2 BHP)	0.35	50%	0.30	40%
15	Trailer / Trolley (upto 3 Ton capacity)	0.60	50%	0.50	40%
16	Chaff Cutter (Operated by engine / electric motor above 3-5 hp and by power tiller and tractor of below 35 BHP tractor)	0.28	50%	0.22	40%
<b>Tractor (above 35 BHP) driven equipments</b>					
17	Mould Board Plough	0.50	50%	0.40	40%
18	Disc Plough	0.50	50%	0.40	40%
19	Cultivator	0.50	50%	0.40	40%
20	Harrow	0.50	50%	0.40	40%

S. No.	Name of the Agricultural Machinery and Implements	For SC, ST, Small, Marginal and Women farmers		For Other farmers	
		Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance	Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance
21	Reversible Mechanical plough (2 bottom)	0.40	50%	0.32	40%
22	Reversible Mechanical plough (3 bottom)	0.50	50%	0.40	40%
23	Laser Land Leveller	2.00	50%	1.60	40%
24	Rotavator 5 feet	0.42	50%	0.34	40%
25	Rotavator 6 feet	0.448	50%	0.358	40%
26	Reversible Hydraulic plough (2 bottom)	0.70	50%	0.56	40%
27	Reversible Hydraulic plough (3 bottom)	0.895	50%	0.716	40%
28	Ridge Moulder / Bund former (PTO operated)	1.50	50%	1.20	40%
29	Seed cum fertilizer drill/ Zero till seed cum fertilizer drill -9 tynes	0.213	50%	0.170	40%
30	Seed cum fertilizer drill/ Zero till seed cum fertilizer drill -11 tynes	0.241	50%	0.193	40%

S. No.	Name of the Agricultural Machinery and Implements	For SC, ST, Small, Marginal and Women farmers		For Other farmers	
		Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance	Maximum Permissible subsidy per machine/ equipment per farmer	Pattern of Assistance
31	Tractor drawn crop reaper	0.75	50%	0.60	40%
32	Post Hole digger	0.75	50%	0.60	40%
33	Groundnut Digger	0.75	50%	0.60	40%
34	Thresher/Multi Crop threshers upto 4 ton/ hr capacity	1.00	50%	0.80	40%
35	Infielder	0.63	50%	0.50	40%
36	Combine Harvester (self propelled, upto 14 feet cutter bar )	8.00	50%	6.40	40%
37	Combine Harvester (track , 6 - 8 feet cutter bar )	11.00	50%	8.80	40%
38	Combine Harvester (track , below 6 feet cutter bar )	7.00	50%	5.60	40%
39	Thresher / Multi Crop threshers (above 4 ton/ hr capacity)	2.50	50%	2.00	40%

S. No.	Name of the Agricultural Machinery and Implements	For SC, ST, Small, Marginal and Women farmers		For Other farmers	
		Maximum Permissible subsidy per machine/equipment per farmer	Pattern of Assistance	Maximum Permissible subsidy per machine/equipment per farmer	Pattern of Assistance
40	Sugarcane thrash Cutter	1.25	50%	1.00	40%
41	Coconut Frond chopper	0.63	50%	0.50	40%
42	Hay Rake	1.50	50%	1.20	40%
43	Baler (Round) (14-16 kg per bale)	2.00	50%	1.60	40%
44	Baler (Round) (above 16-25 kg per bale)	5.50	50%	4.40	40%
45	Baler (Rectangular) (18-20 kg per bale)	6.00	50%	4.80	40%
46	Sugarcane Stubble shaver	0.80	50%	0.64	40%

### **3.3.3. Distribution of Post Harvest Technology and Management Machinery**

In order to minimise losses, to increase the shelf life of harvested agricultural products and to add value to the products, Post Harvest Management Machinery distributed to the individual farmers, farmer groups, Farmer Producer Organisations (FPOs), Farmer Producer Groups (FPGs), Self Help Groups (SHG), User Groups (UG) of farmers, Co-operative societies of farmers and Entrepreneurs.

During the year 2018-19, 26 Post Harvest Technology and Management Machinery were distributed under National Agriculture Development Programme (NADP) to the beneficiaries with the total subsidy assistance of Rs.31.94 Lakh following the Sub Mission on Agricultural Mechanization (SMAM) guidelines issued by Government of India.

Under Mission on Sustainable Dryland Agriculture Programme, Value Addition machinery units are established at the dryland clusters to enable the farmers to value add their produce like Pulses, Millets and Oilseeds and fetch more income.

In this component, a package of machinery to carry out various operations for value addition from cleaning of raw materials to packing the

value added produce for marketing is given with subsidy assistance to the Farmer Producer Organisation/ Farmer Producer Group (FPO/FPG) for setting up of Value Addition Unit.

The machinery such as groundnut decorticator cum grader, oil expellers (wood/mild steel), oil filter press, bottling unit, destoner cum grade cum aspirator, millet dehuller, grain polisher, pulverizer, roaster, dhal mill, colour sorter, animal food preparation machine, automatic form fill machine for packing, gunny bag closer, polythene bag sealing etc. are given to the value addition machinery unit to be established based on the dryland crops in the cluster and the level of value addition to be taken up by the Farmer Producer Organisation / Farmer Producer Group (FPO/FPG).

During the year 2018-19, Government of India (GOI) have approved a testing centre for the benefit of the manufacturers to get the test report for all their machinery for the Post harvest and value addition of agricultural produce from the Testing Centre of Post Harvest Technology Equipments and Machinery, **ICAR-Central Institute of Agricultural Engineering – Regional Centre, Sugarcane Breeding Institute Post, Veerakeralam Road, Coimbatore** as requested by

Government of Tamil Nadu. As a result of which the above machinery manufacturers in Tamil Nadu are able to get the test certificate in Tamil Nadu itself.

#### **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, block based and village based custom hiring centres are established by progressive farmers, farmer self help groups, entrepreneurs and Farmer Producer Organisations (FPOs) with the subsidy assistance for hiring out the agricultural machinery, implements and equipments to the needy farmers on nominal hire charges.

Hon'ble Chief Minister has launched a programme of "Integrated Custom Hiring Centre" of J-Farm services of M/s TAFE Ltd., with 'Uzhavan App' on 04.02.2019 and this helps the farmers to rent their tractors and farm equipments to other farmers seeking to hire them.

### **3.3.4.1. Block based Custom Hiring Centres**

The block based custom hiring centres are established with a set of agricultural machinery, implements and equipments intended for custom hiring to the needy farmers at nominal hire charges. The unit cost for forming a custom hiring centre is Rs.25 lakh. The subsidy assistance for forming custom hiring centre is 40% of the total cost or a maximum amount of Rs.10 Lakh per centre and the balance 60% is the beneficiary contribution.

**Out of the total subsidy amount released to the CHC owners, an amount of Rs.5 lakh will be kept in the "Subsidy Reserve Fund Account" operated in the Nationalised Banks for general category beneficiary and Rs.3 lakh for SC/ST category beneficiary with a lock in period of 4 years as per agreement.**

After completion of 4 years lock in period, subsidy amount kept in "Subsidy Reserve Fund Account" will be released to the CHC owners after verifying all the machinery by the concerned department officials.

From the year 2014-15 to 2018-19, totally 1,510 block level custom hiring centres have been established as detailed below.

**Table.3.4. Details of Block level CHCs**

S. No.	Year	Block level CHCs	
		Phy. in Nos	Fin. (Rs. in Lakh)
1	2014-15	22	214.71
2	2015-16	190	1,884.17
3	2016-17	420	4,191.46
4	2017-18	427	4,267.81
5	2018-19	451	4,505.36
<b>Total</b>		<b>1,510</b>	<b>15,063.51</b>

During the year 2019-20, it is proposed to establish 619 custom hiring centres under Sub Mission on Agricultural Mechanisation (SMAM) with the subsidy assistance of Rs.61.90 crore.

#### **3.3.4.2. Establishment of Sugarcane based Custom Hiring Centres**

The farm machinery, implements and equipments required for mechanised sugarcane cultivation in Tamil Nadu are proposed through Progressive farmers and Entrepreneurs with 40% subsidy assistance to a maximum limit of Rs.60 Lakh at a project cost of Rs.150 lakh per sugarcane based custom hiring centre for hiring out the sugarcane cultivation machinery to the needy farmers at a nominal hire charges.

Under National Agriculture Development Programme (NADP), 11 sugarcane cultivation based custom hiring centres have been established from the year 2015-16 with a total subsidy assistance of Rs.5.76 crore as detailed below.

**Table.3.5. Details of Sugarcane cultivation based CHCs**

S. No.	Year	Sugarcane cultivation based CHCs	
		Phy in Nos.	Fin (Rs. in lakh)
1	2015-16	4	205.07
2	2016-17	1	71.93
3	2017-18	4	195.52
4	2018-19	2	103.46
	<b>Total</b>	<b>11</b>	<b>575.98</b>

### **3.3.4.3. Village based Custom Hiring Centres (CHCs) in low farm power available Districts**

A group of farmers with minimum eight members are encouraged to establish village based custom hiring centre in low farm power availability Districts so that they can take up their farming operations in time and increase their net income. Priority is given to the cluster

villages under the scheme of “Mission on Sustainable Dry Land Agriculture”

The unit cost for forming a village based custom hiring centre is Rs.10 lakh. The subsidy assistance for a custom hiring centre is 80% of the total cost subject to a maximum of Rs.8 lakh per centre.

During 2017-18 and 2018-19, totally 738 village level custom hiring centres have been established under National Agriculture Development Programme (NADP) and Sub Mission on Agricultural Mechanisation (SMAM) as detailed below

**Table.3.6. Details of Village level CHCs**

S. No.	Year	Village level CHCs	
		Phy in Nos.	Fin (Rs. in lakh)
1	2017-18	307	2,454.98
2	2018-19	431	3,446.95
<b>Total</b>		<b>738</b>	<b>5,901.93</b>

#### **3.3.4.4. Village level training to Rural Youth on Operation and Maintenance of Agricultural Machinery and implements, Solar powered pumping system and Micro Irrigation System**

As per the Announcement made in the Assembly during 2018-19, for conducting 820 training programmes to Rural Youth, an amount of Rs.1.39 crore was allocated under ATMA fund. In this, 22 training programmes on operation of agricultural machinery, implements and solar powered pumping system have been conducted to the rural youths in 7 places of the Agricultural Engineering workshops at Vellore, Coimbatore, Trichy, Tirunelveli, Madurai, Tiruvarur, Agricultural Engineering Training Centre, Tiruchirapalli and 791 training programmes on operation and maintenance of Micro Irrigation System were conducted.

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

Soil and water are the most precious natural resources which are to be conserved effectively for improving the productivity of lands for sustainable agriculture and also for enhancing the livelihood of the farming community.

### **3.4.1. River Valley Project (RVP)**

The Centrally Sponsored Scheme of River Valley Project is implemented under the National Agriculture Development Programme (NADP) with the objectives of prevention of soil loss, reducing siltation of multipurpose reservoirs, prevention of land degradation, improvement of land capability, improvement of soil moisture regime and promotion of land use to match land capability in interstate catchments. In Tamil Nadu, the River Valley Project is being implemented in South Pennaiyar and Mettur catchments under the National Agriculture Development Programme (NADP) from 2013-14 onwards.

The soil and water conservation measures are taken up with 100% assistance in common lands and works to individual farmers such as blasting rock outcrops for constructing stone wall bunds at farmer's field are executed with 50% farmer's contribution. From the year 2013-14, the catchment area of 22,714 Ha. in South Pennaiyar and Mettur in Dharmapuri, Krishnagiri and Erode Districts has been covered with 2,675 structures like stone wall, gabion checks, water harvesting structures etc., with a total expenditure of Rs.34.52 crore.

During the year 2018-19, under this scheme, 127 structures and 36.75 Ha. of land development works were executed to a value of Rs.2.87 crore.

During the year 2019-20, it is programmed to continue the scheme in South Pennaiyar and Mettur catchments of Krishnagiri and Erode Districts to treat an area of 28.60 Ha. and to construct 122 structures at an outlay of Rs.3 crore under National Agriculture Development Programme (NADP).

### **3.4.2. Dam Rehabilitation and Improvement Project (DRIP)**

To prevent 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, Dam Rehabilitation and Improvement Project (DRIP) is being implemented in the selected dams of Water Resource Department and Tamil Nadu Electricity Board with the assistance of World Bank.

Agricultural Engineering Department has implemented soil conservation activities in the past 3 years from 2015-16 to 2017-18 with

809 structures and 21,132 Meter of soil and water conservation works to a value of Rs.14.97 crore.

Proposal has been recommended to World Bank to extend the scheme in the catchment areas of Vaigai project in Theni District and Parapalar, Nanganchiar and Kudaganar Reservoir Projects in Dindigul District for a period of 5 years (From 2019-20 to 2023-24) with a total outlay of Rs.21.90 crore.

### **3.4.3. Special Area Development Programme (SADP)**

The main objective of the programme is ecological restoration and conservation by adopting integrated watershed approach in a holistic manner for sustainable livelihood and enhancing agricultural productivity in hilly terrains and forest fringe villages of western ghats areas.

The soil and water conservation measures are taken up for individual based works with 90% subsidy for ST category and 80% subsidy for SC category and 50% subsidy for other category farmers. Community based works are carried out with 100% subsidy.

It is programmed to take up soil and water conservation measures and land development works at a cost of Rs.18.92 crore during 2019-20 in Nilgiris, Coimbatore, Erode, Theni, Madurai, Virudhunagar, Tirunelveli and Kanniyakumari Districts.

#### **3.4.4. Farm ponds for supplementary irrigation**

Tamil Nadu is heavily dependent on monsoon rains and thereby prone to droughts when the monsoon fails. Farm Ponds are constructed in the lower portion of the farmer's field to store the excess surface runoff for harvesting the rain water and to provide life-saving irrigation in the water scarce period to the crops.

##### **3.4.4.1. Creation of Farm ponds with NABARD Assistance**

Creation of farm pond is one of the solutions for the sustainable agriculture in the Cauvery delta, coastal and drought prone Districts of Tamil Nadu. The Government has sanctioned 10,000 farm ponds with 100% subsidy assistance as a two years project from 2018-19 to 2019-20 to the farmers of Thanjavur, Tiruvarur, Nagapattinam, Cuddalore, Pudukkottai, Ramanathapuram, Sivagangai, Virudhunagar and Thoothukudi Districts at a cost of Rs.100 crore with NABARD assistance. During

the year 2018-19, a total of 1,938 farm ponds have been completed for an amount of Rs.17.98 crore.

For the year 2019-20, the construction of 8,202 farm ponds for an amount of Rs.82.02 crore is under progress.

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

The Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP) is being implemented with the World Bank assistance with an objective of increasing agriculture productivity in irrigated areas of Tamil Nadu over a period of seven years from 2017-18 to 2023-24 with integrated approach involving various departments. The project outlay of Rs.15.12 crore is earmarked for Agricultural Engineering Department for taking up the construction of farm ponds in the 66 sub basins as a supplementary source of irrigation at critical stages of crop development. Agricultural Engineering Department is implementing Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP) in 14 sub basins in phase I and 16 sub basins in phase II.

During the year 2017-18 and 2018-19, a total 521 farm ponds for an amount of Rs.2.98 Crore in the phase I sub basin areas have been completed. During the year 2019-20, it is proposed to take up 367 farm ponds at an outlay of Rs.2.75 crore in phase II sub basin areas.

### **3.4.5. Mission on Sustainable Dryland Agriculture (MSDA) in TamilNadu**

The scheme was launched by the Government in the year 2016-17, for the benefit of dryland farmers in 1,000 dryland clusters of 1,000 Ha. each. The main focus of the scheme is to improve the production and productivity of dryland crops viz., pulses, millets, and oilseeds. Under this scheme, development activities in the 200 clusters for phase I and 400 clusters each of phase II and III are taken up by Agricultural Engineering Department.

#### **3.4.5.1. Entry Point Activities (EPA)**

Community water harvesting structure at a unit cost of Rs.5 lakh per cluster is created in each cluster in consultation with the Farmers Club and the Cluster Development Team (CDT).

For the year 2017-18 (phase I), 312 Water Harvesting Structures comprising 212 Check dams, 33 Community ponds,

12 Village ponds and 55 Deepening of Ooranies were executed at a total cost of Rs.10 crore in 200 clusters.

For the year 2018-19 (phase II), 534 Water Harvesting Structures comprising 380 Check dams, 28 Community ponds, 5 Village ponds and 121 Deepening of Ooranies were executed at a total cost of Rs.19.69 crore in 400 clusters.

Entry point activities are being taken up in the 400 clusters (phase III) during 2019-20 at a total cost of Rs.20 crore.

#### **3.4.5.2. Formation of Village based Custom Hiring Centres (CHCs)**

During the year 2017-18 (phase I), 200 village level custom hiring centres were established at a cost of Rs.16 crore. During the year 2018-19 (phase II), 377 custom hiring centres were established at a total subsidy of Rs.30.15 crore. The scheme is to be continued during the year 2019-20.

#### **3.4.5.3. Assistance for setting up of Value Addition Machinery Unit**

In order to ensure that the dryland farmers cultivating pulses, millets and oilseeds, get good value addition of the produce at cluster

level itself and realise better remuneration, assistance is being given to the Farmer Producers Organisation (FPO) and Farmer Producers Group (FPG) for setting up of Value Addition Machinery (VAM) unit at the dryland clusters.

A subsidy assistance of 75% of project cost subject to a maximum of Rs.10 lakh per unit for setting up of value addition machinery unit is to be provided for active Farmer Producers Organization (FPO) and Farmer Producers Group (FPG) in a cluster. During the year 2017-18 (phase I – pilot project), 47 value addition machinery units have been set up and a subsidy of Rs.4.73 crore released. During the year 2018-19 (Phase II), sanction was accorded for the establishment of 150 value addition units at a cost of Rs.15 crore. Work orders have been issued for 120 units and the works are under progress.

The scheme is to be continued during 2019-20 under phase III programme.

#### **3.4.5.4. Summer Ploughing**

To help the dryland farmers in the cluster area for carrying out summer ploughing operation, a subsidy assistance of Rs.1,250/- per Ha is being provided to the farmers

(50% assistance under NADP and 50% under State fund) as back ended subsidy.

During the year 2017-18 (phase I), in the 200 clusters, an area of 2 Lakh Ha has been covered with a subsidy assistance of Rs.25 Crore. During the year 2018-19 (phase II) an area of 3.99 Lakh Ha has been covered with a subsidy assistance of Rs.49.89 Crore.

During the year 2019-20 (phase III), Rs.50 crore subsidy assistance is being given to the farmers for taking up summer ploughing in an area of 4 lakh Ha.

#### **3.4.5.5. Establishment of Water Harvesting Structures**

Under water harvesting structures, field bunding and farm ponds are established at an unit cost of Rs.7.5 lakh per cluster.

During the year 2017-18, in (phase I) 200 clusters, field bunding covering an area of 21,073 Ha. 873 farm ponds and deepening of 30 Ooranies were established at a total cost of Rs.14.02 crore. During the year 2018-19, in (phase II) 400 clusters, field bunding covering an area of 23,494 Ha. 1,854 farm ponds and deepening of 49 Ooranies were established at a total cost of Rs.21.79 crore.

During the year 2019-20, it is programmed to establish water harvesting structures under phase III programme for Rs.20 crore.

### **3.5. Water Management**

Tamil Nadu is a State with limited water resources and the rainfall in the State is seasonal. In Tamil Nadu, 95% of the surface water and 80% of the ground water have already been put into use. The irrigated agriculture is supported by canals, tanks and wells. The Agricultural Engineering Department is engaged in On Farm Water Management Works in canal, tanks and well irrigated areas in order to maximize the water use efficiency through an integrated approach.

#### **3.5.1. Interventions in Micro Irrigation under PMKSY-Per Drop More Crop**

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

The task of carrying out the joint inspection of micro irrigation system installed fields along with Agriculture / Horticulture / Sugar department officials and recording measurements are entrusted with Agricultural Engineering Department under this scheme for effective implementation. During the year 2018-19, an area of 1,19,178 Ha of joint verification and measurement for the works completed has been carried out at a cost of Rs.560.75 crore.

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

Chittar sub-basin area has dry and backward blocks which needs extensive rain water harvesting, recharging of ground water to support well irrigation and creating necessary irrigation infrastructure.

NABARD has sanctioned a three year project (2017-18 to 2019-20), 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.

From the year 2017-18, a total of 315 water harvesting structures in an area of 3,539 Ha at an outlay of Rs.13.59 crore have been completed. During the year 2019-20, it is

proposed to cover an area of 2,492 Ha and to construct 93 water harvesting structures for an amount of Rs.9.06 crore.

### **3.5.3. Reclamation of Problem soils**

Due to over exploitation of land and water resources, the problem soils such as alkali or saline soils are formed. Hence, with the view to harness the potential of such problem soils, a Centrally Sponsored Scheme of "Reclamation of Problem Soils" (RPS) has been approved by the Government of India for implementation on pilot basis as a sub-scheme of National Agriculture Development Programme from the year 2016-17. Due to the sea water intrusion in Cuddalore District, the cultivable lands become saline making them unfit for cultivation. Hence, in Cuddalore District, location specific interventions suitable for reclaiming the problem soils to increase the soil fertility and productivity were implemented in an area of 1,103 Ha. with 157 structures, 96,471 metre peripheral bund formation, deep ploughing and supply of inputs for an amount of Rs.6.67 crore.

During the year 2018-19, the scheme is sanctioned by the Government of India to implement in Ramanathapuram and Tirunelveli Districts for the reclamation of 850 Ha of area affected by alkaline problems with an outlay of

Rs.5.06 crore. Out of which, an area of 326 Ha has been reclaimed for an amount of Rs.95.41 Lakh. The balance works will be taken up during 2019-20 for an amount of Rs.1.58 crore.

### **3.6. Promotion of Green Energy in Agriculture**

In order to achieve the twin objectives of mitigating the climate change and to ensure sustainable agriculture, Government is promoting the schemes for utilization of solar energy in agriculture by providing subsidy assistance to the farmers for the installation of solar powered pumping systems and solar driers. Solar based solutions can provide reliable, cost effective and environmentally sustainable energy for agriculture.

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

Tamil Nadu is water stressed State and depends heavily on ground water for irrigation. In a bid to ensure energy security to the farmers for pumping of water to irrigate their crop, to get sustained agricultural production and to promote the utilization of renewable energy in agriculture, the State Government took the initiative of promotion of solar powered pumping

systems with subsidy assistance in the year 2013-14.

Totally, 3,826 solar powered pumping systems have been installed successfully to the farmers under the subsidy programme from 2013-14 to 2017-18 at a total subsidy of Rs.143.18 crore. The total capacity of the installed solar powered pumping systems is 20.83 MW and the savings in electrical energy obtained is about 2.56 crore units per year.

Further, to promote the solar powered pumping systems, the Honourable Chief Minister on the floor of assembly announced a provision of 1,000 solar powered pumpsets at 90% subsidy at a total subsidy amount of Rs.45 crore for the year 2018-19. Out of which, 542 installations have been completed at a subsidy amount of Rs.21.56 crore. The balance solar powered pumpsets are being installed with the subsidy assistance of Rs.17.69 crore in the year 2019-20.

For the year 2019-20, the State Government has announced to provide 2,000 solar powered pumping systems upto a capacity of 10 hp to the farmers with the subsidy assistance of Rs.84 crore.

### **3.6.2. Promotion of Solar Drying Units**

In order to promote better drying option in an eco friendly and sustainable way to increase the shelf life of agricultural produce and to reduce the post harvest losses, solar drying units are being provided to the farmers with subsidy assistance. Solar driers can protect grains, fruits, reduce losses, dry faster, more uniformly and produce a better quality product than open air drying methods. It helps the farmers to move to the next chain of value addition. Such value added produce would fetch higher prices.

From the year 2014-15 to 2018-19, totally 249 solar drying units with floor area ranging from 400 to 1000 sq.ft. have been installed with subsidy assistance to the farmers under NADP amounting to Rs.5.24 crore for primary processing and value addition of agricultural produce.

### **3.7. Development of Farm Infrastructure and Extension Centres**

Agricultural Engineering Department being the technical Nodal Department of the State Agriculture Ministry, implements the infrastructure and farm developmental works for Agriculture, Horticulture and Agricultural Marketing and Agri Business Departments.

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

Agricultural Engineering Extension Centres are established to promote the Agricultural Engineering techniques and to popularize the innovative agricultural machinery among the farmers.

During the year 2017-18, Government sanctioned 29 Agricultural Engineering Extension Centres (AEEC) with a unit cost of Rs.75 lakh at Revenue Division level with a total fund allocation of Rs.21.75 crore under NABARD-RIDF-XXIII assistance. Out of which, 27 works have been completed and 2 works are under progress.

### **3.7.2. Agriculture Infrastructure Development**

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

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

Agricultural Engineering Department was entrusted with construction of 105 IAECs under NADP and NABARD assistance. Construction of 95 IAECs have been completed, of which 50 works under NABARD-RIDF XXIII and 45 works under NADP during 2017-18. The balance 10 works are under progress.

### **3.7.2.2. Sub Agricultural Extension Centre (SAEC)**

The Sub-Agricultural Extension Centres (SAECs) are being established in the Firka / Village level for the distribution of quality inputs to the farmers and to conduct trainings and demonstrations.

Out of 17 Sub-Agricultural Extension Centres (SAECs) sanctioned, 14 works have been completed and 3 works are under progress.

### **3.7.2.3. Storage Godown for Liquid Bio Fertiliser Laboratory**

Agricultural Engineering Department was entrusted with the construction of 4 storage godown for Liquid Bio Fertiliser Laboratory during 2017-18 under National Agriculture Development Programme (NADP) for Agriculture Department. Out of which, 3 works have been completed and 1 work is in progress.

#### **3.7.2.4. Farm Infrastructure Development in Agriculture Department**

Agricultural Engineering Department is implementing strengthening of seed production activities by creation of infrastructure for farm development in all the 40 State Seed Farms (SSF) and 21 Coconut Nursery Farms with NABARD RIDF XXIII assistance for Agriculture Department with an outlay of Rs.30 crore. Out of 445 works, 341 works have been completed and 104 works are under progress.

#### **3.7.3. Storage Infrastructure Development**

Agricultural Engineering Department has constructed 41 infrastructures like Open Transaction Sheds, Godowns, Cold Storage Units in different Districts for Agricultural Marketing and Agri Business Department from the year 2015-16. During 2017-18, Agricultural Engineering Department has been entrusted with the construction of 27 storage godowns for an amount of Rs.32.76 crore under NABARD-WIF and the works are under progress.

### **3.7.4. Infrastructure Development in Horticulture Department**

Agricultural Engineering Department has been entrusted with creation and maintenance of State Horticulture Farms, Parks and Gardens under National Agriculture Development Programme (NADP), Farm Receipt Account (FRA), National Horticulture Mission (NHM) and NABARD assistance. Agricultural Engineering Department has created Botanical Garden at Kanniyakumari District, Rose Garden at Kodaikanal and has taken up face lifting of Government Botanical Garden at Udthagamandalam and Bryant Park at Kodaikanal, Modernisation of Eco Park at Courtallam, Semmozhi Poonga at Chennai and Horticulture Park at Madhavaram in Tiruvallur District.

### **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 at Headquarters level to monitor various farmer welfare schemes being implemented in Agricultural Engineering Department.

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, special schemes and 3,836 other staff in the department.

The Superintending Engineers are incharge of the administrative and technical control of the departmental activities in the region, the Executive Engineers are incharge of all the departmental activities of the respective Districts and the Assistant Executive Engineers are responsible for the implementation of departmental activities at the revenue division level.

During the year 2018-19, 136 Assistant Engineers were recruited to Agricultural Engineering Department through Tamil Nadu Public Service Commission (TNPSC). During the year 2019-20, action has been initiated to recruit 94 Assistant Engineers through TNPSC.

**Table 3.7: Staff Details of Agricultural Engineering Department**

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

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

### **4.1. Introduction**

The prime focus of Tamil Nadu Agricultural University is to develop human resource for the upliftment of agriculture through quality agricultural education, enhancing the production and productivity of crops by meticulously planned agricultural research to educate and to enlighten farmers and extension officials through intensified extension education programmes.

To fructify the Vision 2023 document, innumerable efforts are taken to strengthen linkages with farmers and other stake holders by facilitating Agri-business Development juxtaposed 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. Infrastructure**

Creation of infrastructure facilities at various colleges and research stations under Tamil Nadu Agricultural University, Rs.58.7 crore has been sanctioned in 2018-19 with the funding assistance from NABARD as given below:

1. Students Study Centre for Sericulture girl students at Forest College and Research Institute, Mettupalayam (Rs.6.56 crore).
2. Students Study Centre for boys at Agricultural College and Research Institute, Pudukkottai, Institute of Horticulture, Pechipparai, Kanniyakumari (Rs.6.08 crore)
3. Physical Education course building at Forest College and Research Institute, Mettupalayam; Agricultural Engineering College and Research Institute, Kumulur and Agricultural College and Research

Institute, Madurai, Tiruchirappalli and Killikulam; Horticulture College and Research Institute, Periyakulam (Rs.25.27 crore for 6 locations).

4. Postgraduate Students Study Centre at Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli (Rs.4.96 crore).
5. Lecture halls, Examination halls in First Floor at the Institute of Horticulture, Pechipparai, Kanniyakumari district (Rs.1.14 crore).
6. Construction of Compound wall at Agriculture College and Research Institute, Madurai, Thanjavur, Pudukkottai, Thiruvannamalai and at Horticulture College & Research Institute, Periyakulam (Rs.6.91 crore).
7. Administrative building at National Pulses Research Centre, Vamban, Pudukkottai district (Rs.2.65 crore).

8. Trainee's hostel and Guest house at Horticulture Research Station, Ooty, Nilgris district (Rs.4.30 crore).

### **4.3. Agricultural Education**

Tamil Nadu Agricultural University presently offers 10 Under-Graduate, 33 Master and 29 Doctoral degree programmes through its constituent colleges. Three constituent Diploma institutes are functioning under Tamil Nadu Agricultural University offering Diploma in Agriculture / Horticulture.

During the year 2018-19, in Diploma programme, 321 students passed out and 616 students have been admitted. In the Undergraduate programme, 2,176 passed out successfully and 2,857 students (1,347 in Constituent colleges and 1,510 in affiliated colleges) have been admitted. In the Post-Graduate degree programme, 423 students passed out successfully and 461 students got admitted. In Doctoral degree programme, 142 students passed out successfully and 211 students got admitted and were bestowed with top notch teaching.

The number of applications received for the admittance to various Under-Graduate programmes have increased manifold from 9,652 during 2011-12 to 32,621 during 2018-19.

**Table: 4.1 District wise constituent colleges**

S.No.	District	Name of the College
1	Coimbatore	Agricultural College and Research Institute, Coimbatore
2		Horticultural College and Research Institute, Coimbatore
3		Agricultural Engineering College and Research Institute, Coimbatore
4		Forest College and Research Institute, Mettupalayam
5	Madurai	Agricultural College and Research Institute, Madurai
6		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

<b>S.No.</b>	<b>District</b>	<b>Name of the College</b>
9		Agricultural Engineering College and Research Institute, Kumulur, Tiruchirapalli
10	Thanjavur	Agricultural College and Research Institute, Eachangkottai, Thanjavur
11	Pudukkottai	Agricultural College and Research Institute, Kudumiyamalai, Pudukkottai
12	Tiruvannamalai	Agricultural College and Research Institute, Vazhavachanur, Tiruvannamalai
13	Theni	Horticultural College and Research Institute, Periyakulam, Theni
14	Thoothukudi	Agricultural College and Research Institute, Killikulam, Thoothukudi

**Table: 4.2. District wise constituent  
Diploma Institutes**

<b>S. No.</b>	<b>District</b>	<b>Name of the College</b>
1	Tiruchirapalli	Institute of Agriculture (English Medium),  Agricultural Engineering College & Research Institute, Kumulur, Tiruchirapalli.
2	Pudukkottai	Institute of Agriculture (Tamil Medium),  National Pulses Research Centre, Vamban, Pudukkottai.
3	Kanniyakumari	Institute of Horticulture (English Medium),  Horticultural Research Station, Pechiparai, Kanniyakumari.

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

Tamil Nadu Agricultural University also offers correspondence courses at the Directorate of Open and Distance Learning (ODL). Currently, 21 certificate courses are being offered for the

benefit of farming community, rural youths and Self Help Groups (SHG) etc. The University also offers Diploma programme for Input dealers.

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

During 2018-19, through the Directorate of Students Welfare, 178 students were placed in various industries namely; Agro Industry (66), Food Industry (9), NGO / Government (28), Banking (8), Finance (45) and other institutions (22). A state-of-the-art 'Communication Laboratory' is available to sharpen the soft skills and communication skills of the students. The centre also organizes motivational lectures, coaching classes, mock group discussions and interviews and trainings to improve the soft skill for the winning streak of the upcoming potential candidates to snatch jobs in India/abroad.

#### **4.4. Agricultural Research**

The research temper has been proliferated in 14 colleges and 39 research stations across the State, purely on location specific and crop specific problems. It is the premiered research institution mobilizing funds through collaborative, networking and innovative projects from Government, Indian Council of Agricultural Research (ICAR) and through International funding.

##### **4.4.1. Newly released crop varieties**

Tamil Nadu Agricultural University has so far released 841 new crop varieties, 170 Farm machinaries and implements and 1,528 new management technologies. During the year 2018-19, 14 new crop varieties were released as given below:

**Table 4.3. Newly released Crop Varieties**

<b>S. No.</b>	<b>Crop &amp; Variety</b>	<b>Particulars</b>
1.	Rice ADT 53	Short duration variety (105-110 days) suitable for cultivation as transplanted rice during <i>Kuruvai / Kodai / Navarai</i> seasons of Tamil Nadu. The maximum grain yield recorded was 9,875 kg/ha. and average grain yield obtained was 6,340 kg/ha. Non lodging, compact plant type, medium slender rice with high milling outturn, cooked rice is white with intermediate amylose, moderately resistant to blast, sheath rot, stem borer and leaf folder.
2.	Rice VGD 1	Rice VGD 1 is a Semi-dwarf variety with 130 days duration, high tillering, non lodging plant. Cooking and tasting quality is similar to Jeeraga samba. It is soft, mildly scented and suitable for making biryani and khuska dishes. Mean grain yield recorded was 5,850 kg/ha. Moderately resistant to leaf folder, blast and brown spot.

<b>S. No.</b>	<b>Crop &amp; Variety</b>	<b>Particulars</b>
3.	Little Millet ATL 1	Samai variety ATL 1 is recommended for rainfed cultivation in Dharmapuri, Tiruvannamalai, Vellore, Salem and Krishnagiri Districts. The mean yield was 1,590 kg/Ha. Drought tolerant, more number of tillers and suitable for mechanical harvesting, Nutrient rich grains with high milling recovery. Palatable and nutritious straw.
4.	Greengram VBN 4	Greengram VBN 4 with 65 to 75 days duration is suitable for cultivation throughout Tamil Nadu except Nilgiris and Kanniyakumari Districts with a mean yield of 1,025 kg/Ha. Moderately resistant to Mungbean Yellow Mosaic Virus (MYMV) and powdery mildew diseases and resistant to leaf crinkle virus disease.
5.	Groundnut BSR 2	Groundnut BSR 2 with a duration of 110 days is suitable for cultivation under rainfed and irrigated condition in major groundnut growing Districts of Tamil Nadu in both rainfed 2,220 Kg/ha and irrigated 2,360 kg/Ha conditions. With high Oil content of 46.51%. The new variety is having 70.2% high shelling outturn and moderately resistant to late leaf spot and rust diseases.

<b>S. No.</b>	<b>Crop &amp; Variety</b>	<b>Particulars</b>
6.	Castor YTP 1	Castor YTP 1 suitable for annual and perennial cultivation, throughout Tamil Nadu. It recorded a mean yield of 1,460 kg/Ha/year. Profuse branching, bold seeded type. Resistant to wilt and tolerant to capsule borer.
7.	Bottlegourd PLR 2	Bottlegourd PLR 2 variety has round fruit shape and short neck. Fruits are light green in colour. It matures in 50-55 days. It does not require pandal support/training system. It is moderately resistant to fruit fly, powdery and downey mildews. Average yield is 42 Tonnes/Ha.
8.	Garlic Ooty 2	Garlic Ooty 2 with 120-125 days duration is suitable for both rainfed and irrigated conditions in Nilgiri District, Kodaikanal area of Dindigul and Thalavadi area of Erode Districts. The mean bulb yield was 17 Tonnes/Ha. Cloves are of good quality with high Allicin content of 3.87 Microgram/Gram. Pinkish tinged, oval shape bulbs. Moderately resistant to purple blotch disease and thrips.

<b>S. No.</b>	<b>Crop &amp; Variety</b>	<b>Particulars</b>
9.	Star Jasmine CO 1	Year-round flowering star Jasmine CO 1 variety is recommended for cultivation in all jasmine growing regions of Tamil Nadu and recorded the highest yield of 7.40 Tonnes/Ha. Flowers will be available during lean season/off-season (November-February). Good keeping quality, mild fragrance, easy to pluck and highly suitable for string-making.
10.	Kadam MTP 1	A fast growing, short duration multipurpose Kadam MTP 1 tree is recommended for cultivation in all over Tamil Nadu. Mean yield ranges from 135-175 tonnes/Ha. Highly suitable for pulp wood (3 years), plywood and splints (5 years). Fodder quality is also high.
11.	Potato Kufri Sahyadri	Kufri Sahyadri a high yielding medium maturing potato variety. Suitable for cultivation in Nilgiri Hills during Summer, Autumn and Spring. The average yield ranged from 28-35 tonnes/ha. The tubers showed good storage capacity with combined resistance to Potato Cyst Nematode and late blight.

S. No.	Crop & Variety	Particulars
12.	Banana Kaveri Kalki	Banana Kaveri Kalki is a dwarf short duration variety with an annual yield of 52 – 60 Tonnes/Ha. Fruit quality is on par with Karpuravalli with higher Total Soluble Salts (TSS). Suitable for high density planting without propping.
13.	Banana Kaveri Saba	Banana Kaveri Saba is a drought tolerant, dual purpose (both culinary and dessert). In Tamil Nadu, Madurai, Thoothukudi, Tirunelveli, Tiruchirapalli, Tiruvannamalai and Villupuram Districts suitable for cultivation. It can also be grown in saline sodic soils. High keeping quality with a green life of 7-8 days, and yield potential of 58-60 tonnes/ha.
14.	Banana Kaveri Sugantham	Banana Kaveri Sugantham is highly suitable for Eastern ghats region specially in Kolli hills of Namakkal District. The yield recorded was 50 Tonnes/Ha. Pseudostem is green in colour, fruits are dark green at maturity and yellowish green at ripening, fragrant fruits, 58-60% increased yield than normal Manoranjitham and resistant to <i>Fusarium</i> wilt.

#### **4.4.2. Newly released Farm implements and Technologies**

Turmeric washer, Turmeric boiler, Turmeric dryer, Dust free turmeric polisher were the four turmeric processing equipments recommended for farmers adoption.

#### **4.4.3. Research Schemes**

Tamil Nadu Agricultural University pursues its multifarious research interventions with focused projects sanctioned by different funding agencies:

##### **4.4.3.1. Tamil Nadu Innovation Initiatives programmes (2018-19)**

1. Ensuring supply of uniform and quality planting material in Coconut through micro propagation. (Rs.6.63 crore).
2. Skill development and employment generation in Palmyrah based ventures for rural youth. (Rs.1.36 crore).
3. Optimizing farm mechanization practices for different soil types and crops of Madurai District (Rs.1.66 crore).

#### **4.4.3.2. National Agricultural Development Programme (NADP) (2018-19)**

1. Farmers' participatory demonstration of MGR 100 Rice in Tamil Nadu (Rs.1.18 crore).
2. Flower processing and training Institute at Thovalai, Kanniyakumari District (Rs.1.70 crore).
3. Demonstration of quality seed production and arresting seed deterioration during storage in Groundnut (Rs. 80 lakh).
4. Restoration of agriculture in Prosopis cleared farm lands through Agri-Silvi-Pasture system for rainfed farmers of Ramanathapuram District (Rs. 60 lakh)

#### **4.5. Agricultural Extension Education**

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

Under Tamil Nadu Agricultural University, 13 Krishi Vigyan Kendras (KVK) are functioning. During 2018-19, 107 On-Farm Testing (OFTs)

and 189 Front Line Demonstrations (FLDs) were conducted by the KVK, besides organizing training programmes for farmers to equip the technical skills and capacity building.

**Table: 4.4. Krishi Vigyan Kendra under TNAU**

<b>S. No.</b>	<b>District</b>	<b>Location</b>
1	Cuddalore	Virudhachalam
2	Dharmapuri	Papparapatty
3	Kanniyakumari	Thirupathisaram
4	Madurai	Madurai
5	Pudukkottai	Vamban
6	Ramanathapuram	Ramanathapuram
7	Salem	Sandhiyur
8	Tiruvallur	Tirur
9	Tiruvarur	Needamangalam
10	Tiruchirappalli	Sirugamani
11	Vellore	Virinjipuram
12	Villupuram	Tindivanam
13	Virudhunagar	Aruppukottai

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

The Educational Media Centre of TNAU produced 95 video programmes and conducted 60 video shows; to infuse the concept of seeing is believing for farmers/public during the year 2018-19.

#### **4.5.3. TNAU Agritech Portal**

(<http://agritech.tnau.ac.in>)

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

#### **4.5.4. Android Apps on Expert System**

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

#### **4.5.5. Agricultural Technology Information Centre (ATIC)**

Agricultural Technology Information Centre (ATIC) acts as a single window delivery system of technology and inputs. The centre sells inputs like seeds, planting material, bio-fertilisers, crop boosters and technical books for the benefit of farmers.

#### **4.5.6. Uzhavarin Valarum Velanmai**

'Uzhavarin Valarum Velanmai', a monthly Tamil magazine of Tamil Nadu Agricultural University, Coimbatore is published since 1975. During 2018-19, totally, 15,566 subscribers were on rolls.

#### **4.5.7. Farmers Mela / Exhibitions**

Tamil Nadu Agricultural University Krishi Vigyan Kendras organized the World Soil Health Day campaign wherein, 2,212 farmers participated. Also, 1,201 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 – 2018. Over 34,000 visitors including farmers got benefitted. State Level Farmers day was conducted at the Tamil Nadu Agricultural University, Coimbatore on 09.02.2018 & 10.02.2018 and more than 4,000 farmers from various districts participated and witnessed the achievements on display.

#### **4.5.8. Kisan Call Centre (KCC)**

It provides yeoman service to the farmers through a toll-free number 1551 or 1800-180-1551. The caller can interact in their local language with the experts. This Centre functions on all working days between 7.00 am and 10.00 pm. During the year 2018-19, totally, 2,14,762 calls were attended and technical advice rendered.

#### **4.6. TNAU – Information and Training Centre, Chennai**

During the year 2018-19, totally 90 training programmes were conducted on 21 varied topics such as; roof gardening, kitchen gardening,

landscape gardening, indoor plants care and maintenance, bonsai making, nursery technology, flower arrangement and bouquet making, vermicomposting, organic farming, water quality standards, urban solid waste and compost technology, mushroom cultivation, herbal cookery, preparation of bakery products, millets products, milk products, masala products, instant foods, sweets and savories, soups and salads, traditional cookery and fireless cookery in which 2,645 participants got benefitted.

#### **4.7. Quality Seed Production and Distribution Programme**

During 2018-19, a total quantity of 1,407 quintals of breeder seeds, 3,174 quintals of foundation seeds, 2,687 quintals of certified seeds and 5,825 quintals of Truthful Labelled Seeds (TFL) seeds in 175 varieties of principal crops and 11.26 Lakh seedlings of various crops were produced and distributed. Apart from these, 2.62 lakh seed packets of flower and vegetable seeds were sold through the

Automatic Seed Vending Machines installed at 11 strategic locations across Tamil Nadu.

During 2019-20, it is targeted to produce approximately 1,878 quintals of breeder seeds, 3,658 quintals of foundation seeds, 6,196 quintals of certified seeds and 4,199 quintals of TFL seeds of principal agricultural and horticultural crops. Besides, 20 lakh seedlings of various horticultural crops are to be produced and distributed.

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

In order to make crop decisions based on the weather 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 2018-19, totally 102 bulletins with four advisories for each District and 102 important advisories as Short Message Service (SMS) were sent to 11 lakh farmers, at a 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 to districts affected by Gaja Cyclone.

#### **4.9. Price Forecast and Market Intelligence**

In the World Bank Funded scheme Tamil Nadu – Irrigated Agriculture Modernization Project (TN - IAMP) was implemented during 2018-19. The check price forecasts for 13 major agricultural and horticultural crops of Tamil Nadu namely; Maize, Blackgram, Greengram, Groundnut, Gingelly, Coconut, Copra, Cotton, Tomato, Bhendi, Brinjal, Onion, Chillies and Banana (Nendran, Poovan and Karpooravalli) were given impetus for market advisories prior to sowing and harvest to take appropriate decisions by the farmers.

#### **4.10. Agri-Business Development**

During the year 2018-19, the technologies viz., Solar tunnel drier and insect egg removal device were commercialized. Technology transfer agreements were signed for two bio-pesticides with Hindustan Insecticides

Limited and research collaboration with EID Parry Pvt. Ltd for developing two bio-pesticides. Also, 33 incubatees have freshly enrolled as a member in Technology Business Incubator at Directorate of Agri-Business Development (DABD). Madurai Agri-Business Incubation Forum was established at Agricultural College and Research Institute, Madurai with a total budget of Rs.12.24 crore sponsored by NABARD as grant-in-aid. Entrepreneurship Development and Innovation Institute, Chennai sponsored the establishment of four Incubation forums viz., Periyakulam Horticulture business incubation Forum (Rs.2.14 crore), Killikulam Agri-Business Incubation Forum (Rs.2.13 crore), Tiruchirappalli Agri Business Incubation Forum (Rs.2.39 crore) and Mettupalayam Agroforestry Business Incubation forum (Rs.2.42 crore).

In TNAU private seed sector consortium, two companies have enrolled as members viz., Proline Seeds Company (India) Private Ltd., New Delhi and DCM Shriram - Bioseed Research India, Hyderabad. Ministry of Micro, Small and Medium Enterprises (MSME), Government of India grant-in-aid of Rs.22.54 lakh was obtained

for five incubatees of Technology Business Incubator for their innovative projects.

#### **4.11. Intellectual Property Rights**

Tamil Nadu Agricultural University, has so far obtained 10 patents and 63 findings have been filed for obtaining patent. Also, registered 64 crop varieties under Protection of Plant Varieties and Farmers' Rights (PPV&FR) as extant varieties.

## **5. SUGAR**

Sugarcane is the second most important industrial crop in Tamil Nadu and is the sole raw material for the Sugar Industry. The Sugar Industry contributes substantially to the rural economy as the Sugar Mills are located in rural areas and provide large scale employment to rural population. The various by-products of Sugar Industry also contribute to the economic growth by promoting a number of subsidiary industries.

The average Sugarcane productivity in Tamil Nadu continues to be 100 MT per Ha. 16 cooperative sugar mills, 2 Public sector sugar mills and 25 private sector sugar mills functioning in our State are estimated to crush 95.36 lakh Metric Tonnes of Sugarcane and produce 8.60 lakh Metric tonnes of sugar during 2018-19 crushing season.

The Sugarcane crop is cultivated in Tamil Nadu during the year 2018-19 in 1.65 lakh Ha. of area.

In major Sugarcane growing Districts, in spite of prevailing severe drought and low ground water levels, the Government has taken several efforts through Micro Irrigation, trash mulching and intercropping to increase the Sugarcane area and production. For the 2019-20, crushing season the Sugar Mills in Tamil Nadu have estimated to register maximum of one lakh Ha. of Sugarcane.

Sugarcane varieties which are predominantly cultivated in Tamil Nadu are, Co86032, CoV 09356, CoV 94101, CoV 92102, PI 1110 and Co 0212.

To make sugarcane cultivation remunerative to the farmers, several steps are being taken by the Government. The strategy adopted by the Government is two fold: one to improve the cane productivity and the second, to reduce the cost of cultivation.

## **5.1. Improving the Sugarcane Productivity**

### **5.1.1. Sustainable Sugarcane Initiative**

#### **5.1.1.1 Promoting Bud chip Seedlings for planting**

For conventional sugarcane setts planting 10 MTs of seed cane per Ha is required. The cost of sugarcane setts will be Rs.27,500 per Ha. The cost of 12,500 bud chip seedlings is Rs.18,750 per Ha. By planting bud chip seedlings farmers can save Rs.8,750 per Ha. Besides the Government is providing subsidy at Rs.9,375 per Ha. for planting of bud chip seedlings. Hence, the farmers can save Rs.18,125 per Ha. by opting for bud chip seedlings planting. In addition, plant population is maintained more than 90% and also yield increases. During 2018-19 planting season 10,018 Ha. area has been covered under bud chip seedling which are produced in 1,600 shade nets in the State. During 2019-20 the subsidy assistance for bud chip seedlings will be continued.

### **5.1.1.2. Micro Irrigation and Fertigation**

Sugarcane is a water intensive crop. However, due to various reasons water is rapidly becoming a precious and scarce commodity. Moderating the water use for sugarcane cultivation is the need of the hour. It could be achieved only through drip irrigation. Considering the high cost involved in laying drip system in sugarcane field, the Government have extended 100 % subsidy for Small and Marginal Farmers and 75% subsidy for Other Farmers under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). The drip fertigation technology offers a good scope for conserving the water and ensures more than 90% of the fertilizer usage efficiency through drip fertigation by using the water soluble fertilizers. During 2018-19 planting season 7,190 Ha. area has been covered under Micro Irrigation in Sugarcane. During 2019-20, an area of 16,000 Ha will be brought under Micro Irrigation in Sugarcane through PMKSY scheme.

### **5.1.1.3. Inter cropping**

Inter cropping in between the rows of sugarcane crops improves the soil fertility and also suppresses the weed growth. In addition the farmers will get additional income from the inter crops cultivated in the sugarcane field. Subsidy assistance at Rs.400 per Ha is extended to farmers under NADP scheme to motivate the farmers to opt for intercropping. During 2018-19 planting season 10,018 Ha. area has been covered under inter cropping in Sugarcane. During 2019-20 the scheme will be continued.

### **5.1.1.4. Trash shredding**

At present due to increased wages and non availability of agricultural labourers, more than 80% of the sugarcane farmers are following the practice of burning the sugarcane trashes after the cane harvest which spoils the soil health and the population of micro organisms in the soil. It also affects the germination of buds in the ratoon crop which in turn reduces the yield. The shredding of trashes and mulching in the field increases the soil fertility, germination in ratoon crop, drought tolerance, reduces the incident of

pest and diseases which in turn increases the average yield of the sugarcane. Hence, it is programmed to promote trash shredding by using trash shredders and rotary mulchers among the sugarcane farmers of all the Cooperative, Public and Private Sector Sugar Mills under NADP scheme during the year 2019-20 with subsidy assistance of Rs.1,500 per Ha.

#### **5.1.1.5. Bio control measures to control early shoot borers and inter node borers**

Early shoot borers and inter node borers are the main pests which affects the sugarcane yield considerably. At present, the farmers are using chemical pesticides for the control of the above pests, which affects the soil health. Recently, pheromone traps and bio control measures viz., usage of *Bacillus Thuringiensis*, Granulosis Virus, parasites (*Trichogramma*) are effective for the control of the above pests over chemical pesticides. This bio pesticides and pheromone traps are eco-friendly and easy to use by the farmers. Hence, it is programmed to promote the usage of bio control agents for the control of

above pests in all the Co-operative, Public and Private Sector Sugar Mills area, by providing subsidy assistance at the rate of Rs.1,080/- per Ha. during the year 2019-20.

#### **5.1.1.6. Wider Row Planting:**

Facilitating end to end mechanization in Sugarcane cultivation is the only way to reduce the cost of cultivation for which wider row planting with more than 4 feet spacing is being advocated. Wider row planting increases the yield besides facilitating for inter cultural operations by using the farm implements. During 2018-19 planting season, 12,000 Ha. area has been covered under wider row spacing suitable for mechanization. During 2019-20, it is programmed to cover an area of 16,000 Ha. under wider row planting.

## **5.1.2. Introducing New High Sugarcane Varieties**

### **5.1.2.1. Rejuvenated Co-86032 variety through breeder seed**

At present more than 70% of the cane area cultivated is occupied by Co 86032, a variety notified during 2000 is now found to be degenerated in purity and vigour. To increase the sugar recovery and production, the existing Co 86032 variety is being rejuvenated with breeder seed material purchased from Sugarcane Breeding Institute (SBI), Coimbatore and multiplied mainly in farmer's fields. For this purpose, the Government has proposed to extend 50% subsidy assistance of Rs.12,500 per Ha under NADP scheme in the 2019-20 financial year. This scheme will cover 250 Ha. of three tier nursery in the first phase.

### **5.1.2.2. New Varieties**

Sugarcane Breeding Institute, Coimbatore and Tamil Nadu Agricultural University have developed new sugarcane varieties / clones that are superior (or) comparable to the existing

ruling Co 86032 variety. It is the need of the hour to find out the better sugarcane varieties in order to sustain the Sugarcane production and Sugar recovery. Drought tolerant new variety Co 0212 and high sugar recovery and high yielding new variety Co 09004 were distributed to the Sugar mills and Sugarcane farmers through Sugarcane Breeding Institute and Tamil Nadu Agricultural University. From the varietal trials conducted by the Sugarcane Breeding Institute, Coimbatore, Co-11015 variety seems to be superior to the prevailing Co-86032 variety both in Sugar recovery and yield right from 8 months to 12 months. The State variety release committee in principle agreed for the release of Co 11015. During 2018-19 planting season 189 Ha. area has been covered under new varieties for seed multiplication. To motivate the farmers and to cover more area under new varieties, the Government has proposed to extend the 50% subsidy assistance for seed multiplication @ Rs.12,500 per Ha under NADP scheme. During the year 2019-20 year, it is programmed to cover 200 Ha. area under seed multiplication.

Apart from this to identify the suitable varieties for each sugar mill's area sugarcane varietal trials are being laid out in various locations of the Co-operative and Public sector sugar mills in the State in co-ordination with Sugarcane Breeding Institute/Tamil Nadu Agricultural University, Coimbatore.

#### **5.1.2.3. Distribution of Tissue culture seedlings**

Micro propagation of seed cane through Tissue Culture technology is useful in developing large scale production of true to type and disease free sugarcane plantlets using apical meristem culture technique and faster multiplication of a Sugarcane variety can be done. A seed multiplication ratio of 1:10 will be maintained i.e. one hectare seed nursery planted with tissue culture plantlets can be used for planting of 10 ha of land. The well hardened developed plantlets can give more than 98 % survival under field condition. During 2018-19 planting season 43 Ha. area has been covered under tissue culture seedlings planting.

## **5.2. Reducing the cost of cultivation**

Sugarcane is an annual crop and ratooned subsequently after harvesting the main crop. Being a labour intensive crop, the sugarcane farmers have to incur lot of expenditure for carrying out various field operations. The availability of labour for agricultural operations is in decreasing trend. Hence, mechanization of the entire field operations viz., land preparation to harvest of sugarcane crop is the need of the hour.

### **5.2.1. Mechanization of Inter Cultural Operations**

Reversible hydraulic plough and Mould board ploughs are used for the land preparation and formation of ridges and furrows. Farm implements viz., power tillers/power weeders, are used for the inter cultural operations such as weeding and earthing up. To enrich the soil fertility and to overcome the drought situation rotary mulchers/trash shredders are utilized. The above farm implements are distributed to the sugarcane farmers under different schemes.

### **5.2.2. Sugarcane Harvestors and Tippler**

Due to scarcity of agricultural labourers, harvesting the sugarcane has become laborious which resulted in short supply of sugarcane to the sugar mills. Hence to facilitate the harvesting operation, sugarcane harvesters has been distributed to the entrepreneurs under NADP scheme. To ease the unloading of mechanically harvested billet cane in the mills, the Hydraulic Rotating Tipplers are proposed to be installed (rotating type of truck cum trolley tippler system) in selected Co-operative & Public Sector Sugar Mill premises during the 2019-20 season.

### **5.3. Transitional Production Incentive**

To ensure timely disbursement of Sugarcane price to the farmers, the State Government has decided to switch over to the Revenue Sharing based price fixation model from 2017-18 crushing season under which Sugarcane farmers are assured of Fair and Remunerative Price (FRP) fixed by Government of India and will also receive a share in the revenue over and above the FRP. For this, the Government has enacted

the Tamil Nadu Sugarcane (Regulation of Purchase Price) Act, 2018 and the Rules are being framed. Further, to facilitate this transition and to protect the interest of the farmers, the Government in the Budget 2018-19, announced that the difference of Rs.200 between the State Advised Price (SAP) of Rs.2,750 announced by Government in 2016-17 and the FRP of Rs.2,550 notified by the Central Government to be paid as Transitional Production Incentive directly to the farmers bank account. Accordingly, the Government has disbursed a sum of Rs.134.53 crore as Transitional Production Incentive at the rate of Rs.200 per MT to the eligible cane farmers directly in their bank accounts for the crushing season 2017-18. For 2018-19 crushing season, the Government of India have announced Fair and Remunerative Price (FRP) for mills having recovery of 9.5% or less at Rs.2,612.50 per MT. The average sugar recovery of Tamil Nadu is below 9.5% only. The difference between State Advised Price (SAP) for 2016-17 crushing season (Rs.2,750 per MT) and the Fair and Remunerative Price (Rs.2,612.50 per MT)

for 2018-19 crushing season is Rs.137.50 per MT. To extend the Transitional Production Incentive for 2018-19 crushing season, the Government have allocated Rs.200 crore in the budget 2019-20. This will encourage the farmers to bring more area under Sugarcane in the ensuing seasons.

## **6. SEED CERTIFICATION AND ORGANIC CERTIFICATION**

The agriculture sector needs utmost attention and priority in order to meet the growing demand for food grains. Hence, use of quality inputs in agriculture is essential to increase the food production and to attain self sufficiency. Among the inputs "Seed" is the basic and most vital input that determines the crop yield, quality and uniformity of the produce which ultimately increases the production and decides the market value for doubling the income of the farmer. Hence, it is essential to take utmost care in selection of appropriate seed source and variety.

The Department of Seed certification and Organic Certification is implementing the following programs to increase the certified seed production to ensure quality seed supply for the benefit of the farmers and to encourage for organic certification.

1. Seed Certification
2. Seed Quality Control
3. Seed Testing

4. Training

5. Organic Certification

### **6.1. Seed Certification:**

The Seed Certification wing of this Directorate is involved in regulation and certification of notified crop varieties in accordance with the provisions of The Seeds Act, 1966 and The Seeds Rules, 1968 to secure and make seeds, available with standard qualities of germination, physical purity, genetic purity and seed health as prescribed under the Indian Minimum Seed Certification Standards (IMSCS).

In Tamil Nadu out of the total quantity of seeds certified, the quantity certified under Paddy and Millets has reached 100%. There is a need to increase the certified seed production in Pulses, Oil seeds and Vegetables. Concerted efforts are being taken up by this Department for production of Certified seeds in Pulses, Oilseeds and Vegetables through Seed Certification program.

During the year 2018-19 an area of 54,603 Hectares seed farms have been registered under seed certification program for Certified seed production and a total quantity of 1,00,274 Metric Tonnes of seeds have been certified under various crops.

**Table 6.1. Area Registered and Quantity Certified under Seed Certification 2018-2019**

S.No	Headquarters	Area registered In Hectares	Quantity Certified in Metric
1	Kancheepuram	1,006	2,362
2	Tiruvallur	963	1,066
3	Cuddalore	2,070	1,930
4	Villupuram	3,152	6,936
5	Vellore	953	816
6	Tiruvannamalai	1,317	1,380
7	Salem	1,491	1,177
8	Namakkal	803	3,180
9	Dharmapuri	660	444
10	Krishnagiri	1,005	757
11	Coimbatore	3,141	2,967
12	Erode	8,012	45,021
13	Trichy	1,303	1,144
14	Perambalur	750	1,672
15	Karur	451	276
16	Pudukkottai	896	1,191
17	Thanjavur	7,229	2,626

S.No	Headquarters	Area registered In Hectares	Quantity Certified in Metric
18	Nagapattinam	2,861	2,184
19	Thiruvavarur	5,861	3,131
20	Madurai	2,163	6,503
21	Theni	839	2,353
22	Dindugal	1,606	2,647
23	Ramanathapuram	591	519
24	Sivagangai	477	597
25	Virudhunagar	1,196	788
26	Tirunelveli	2,359	5,076
27	Thoothukudi	1,312	1,338
28	Kanniyakumari	135	193
	<b>Total</b>	<b>54,603</b>	<b>1,00,274</b>

It is proposed to register an area of 57,000 Ha and to Certify 1,10,000 metric tonnes of seeds during the year 2019-20.

## **6.2. Seed Quality Control:**

To monitor and to regulate the distribution of quality seeds in the State, Seed Inspection wing of the department of Seed Certification and Organic Certification is involved in enforcement of Seed Quality Control activities, adhering 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. Seed selling points are issued with license to monitor the

distribution of quality seeds under The Seeds (Control) Order, 1983.

There are 10,040 licensed seed selling points in Tamil Nadu at present. These seed selling points are inspected by the seed Inspectors once in two months mandatorily 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. Based on the results obtained, actions are initiated against the sub standard seed lots. Contraventions of seed legislations detected by the Seed Quality Control wing are dealt with legal actions.

During the year, 2018-19, a total number of 68,118 seed selling points have been inspected and 69,170 seed samples have been drawn for quality check. Sub standard seeds from 2,047 seed lots weighing 1,402 Metric Tonnes have been stopped from sale to the farmers.

It is proposed to inspect 68,500 seed selling points and to draw 69,500 seed samples for quality check during the year 2019-20.

### **6.3. Seed Testing:**

Seed testing is an essential tool to evaluate the potential of seed in a seed lot and provides vital information on quality aspects of seeds to the farmers. Seed Testing activities are carried

out by notified Seed Testing Laboratories to ensure seed qualities.

Based on the results declared by the notified Seed Testing Laboratories, the seed certification and seed quality control programs are implemented. Seed Testing Labs ascertain the various seed standards such as germination, physical purity, genetic purity, moisture, seed health and other distinguishable varieties as per the Indian Minimum Seed Certification Standards (IMSCS).

There are 33 notified seed testing laboratories functioning in our State. Certified seed samples of the seed certification wing, Official samples of the seed quality control wing, and service samples of the farmers, seed dealers and seed producers are received and tested in the notified seed testing laboratories.

Grow out tests are conducted to ascertain the genetic purity of a seed lot. At present Genetic purity tests are conducted at the grow out test farm functioning at Kannampalayam (Coimbatore). Genetic Purity test is conducted for the seed samples received from the seed certification and seed inspection wing. A Bt seed testing Laboratory is attached to the Directorate of Seed certification and Organic certification is analyzing the Bt toxin of cotton seeds sent by the Seed Inspectors.

A total number of 89,018 seed samples were analyzed for quality check during 2018-19 and it is proposed to analyze 95,500 seed samples for the year 2019-20.

### **6.3.1. ISTA accredited seed testing laboratory:**

The seed testing laboratory functioning in Coimbatore has the facilities and technical capabilities to analyse seed samples to International standards was awarded with **“The Best Performing Laboratory in India”** by the Government of India, Ministry of Agriculture & Farmers welfare. This lab has got the accreditation from **‘International Seed Testing Association’ (ISTA) in the year of 2014. This is the only public sector laboratory in India having accreditation for ISTA.**

This laboratory is accredited for the scope of germination, Other Crop Species (OCS) and physical purity test for crops like cereals, pulses and vegetable and also sampling of seed lots. Being an ISTA accredited laboratory it is authorized to issue Orange International Seed lot certificates (OIC) and Blue International seed sample certificates (BIC) to the seed exporters which ensures seed quality to International standards. Till date, 56 Blue International seed

sample certificates have been issued and the Seed exporters were benefited by this lab.

There is a growing demand in the International Seed Market for vegetable seeds. The ISTA accredited Seed Testing Laboratory of Coimbatore is the gateway, even for small entrepreneurs to become exporters.

### **6.3.2. Grow out test Farm:**

Genetic purity and germination are the very important Seed quality parameters. A technique test 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 periodically send seed samples to the Grow out Test farm for assessing its 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 distinguished morphological characters and screened for genetic purity.

### **6.3.3. DNA Finger Print Laboratory:**

The currently followed Grow Out Test will take 2-3 months to complete the genetic purity test. Therefore, Detection of genetic purity of a variety within a short span of 3-4 days is done by using DNA Finger Print technique that facilitates distribution of quality seeds to the farmers quickly. Hence, a modernized DNA Finger Print Laboratory was established in the Directorate of Seed Certification & Organic Certification for a quick detection and conformation of genetic purity of the seed lots received. This DNA Finger Print Laboratory is first of its kind in the country and has been **notified during 2014 as “State DNA Finger Printing Laboratory” by Tamil Nadu Government.** This laboratory has a potential to ensure the genetic purity of 15 Notified paddy varieties which are prominently cultivated in the State.

### **6.4. Training:**

To perform different functions of certification, Inspection and Testing such as field inspections, seed processing, seed sampling, seed testing, and in seed legislations, the field level functionaries and officials from the department are duly trained. To promote quality seed production and distribution, the following

training programs are organized by the training wing of this Department.

**Orientation Training:** The newly positioned technical officers of this Department are imparted with training on seed certification procedures, field inspections, identification of crop varieties, processing, sampling, tagging, and procedures involved in seed testing and seed quality control.

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

**Training to Seed Producers:** To increase the quality seed availability and to improve quality seed production, the seed producers are imparted with training on various field and unit standards.

**Training to Seed Dealers:** To ensure the quality seed availability to the farmers, training is given to the seed dealers on sale of quality seeds, seed storage and on the regulatory aspects of seed legislation.

**Inter-state training:** A total number of 18 officials from this department were sent to other States for obtaining technical know-how on Seed Certification Procedures, out of which,

13 were sent to NSRTC, Varanasi, Uttar Pradesh for obtaining various skills on Seed Certification, Seed Law enforcement and Seed Testing, 2 officials were sent to MANAGE, Hyderabad, Telangana for training on "Writing and Documentation Skills", 1 official was sent for UAS, Bangalore, Karnataka for training on "Quality Seed Production in Vegetables" and 2 officials were sent to PAJANCOA, Karaikal, Puducherry for "Quality Seed production in Oilseeds and Pulses".

During the year 2018-19 a total number of 47,320 farmers and producers have been trained. It is proposed to train 47,320 persons during the year 2019-20.

#### **6.5. Organic Certification:**

For the inspection and certification of the organic crop production in compliance with the NPOP (National Programme on Organic Production) norms, the Tamil Nadu Organic Certification Department (TNOCD), accredited by APEDA (Agricultural and processed Food Products Export Development Authority, New Delhi) is functioning in the State.

The procedures and the quality system followed in the Organic certification 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 NPOP and TNOCD standards.

The Tamil Nadu Organic Certification Department has issued Scope Certificates for 4,761 farmers under the National Programme on Organic Certification (NPOP) standards. Moreover, Transaction Certificates for exports for a production quantity of 150 metric tonnes with a value of Rs.93 lakh has been issued by Tamil Nadu Organic Certification Department for exports. Also, Organic products fetch an increase in the sale price of around 20% – 30% in the domestic market.

During the year 2018-19 an area of 31,687 acres of land has been inspected under Organic certification. A total area of 34,000 acres is proposed for organic farm inspection during 2019-20 for the issue of scope certificate.

**Table.6.2. Details on Area Registered under Organic Certification 2018-19**

<b>S. No.</b>	<b>Headquarters of Organic Certification Inspector</b>	<b>Jurisdiction (Districts)</b>	<b>Area Registered (Acres)</b>
<b>1</b>	Coimbatore	Coimbatore, Tiruppur, Nilgiris, Erode, Salem, Namakkal, Dharmapuri and Krishnagiri	<b>7,235.07</b>
<b>2</b>	Trichy	Trichy, Karur, Perambalur, Ariyalur, Pudukkottai, Thanjavur, Tiruvarur and Nagapattinam	<b>5,274.68</b>
<b>3</b>	Madurai	Madurai, Virudhunagar, Tirunelveli, Sivagangai, Ramanathapuram, Theni, Dindugal, Thoothukudi and Kanniyakumari	<b>8,143.43</b>
<b>4</b>	Vellore	Vellore, Tiruvannamalai, Villupuram, Kancheepuram, Tiruvallur and Cuddalore	<b>11,034.06</b>
		<b>Total</b>	<b>31,687.24</b>

**Table 6.3. Area under Organic Farming****(area in acres)**

S.No	District	2018-19		
		PGS* (Agri.)	PGS* (Horti- culture)	TNOCD**
1	Chennai	50	0	0.00
2	Erode	150	50	1170.17
3	Coimbatore	150	200	1526.21
4	Tirupur	100	100	1692.56
5	Thiruvavarur	150	0	245.34
6	Krishnagiri	850	2650	1101.50
7	Tiruvannamalai	300	100	2248.01
8	Thanjavur	50	100	531.30
9	Namakkal	100	150	132.52
10	Madurai	298	150	750.54
11	Tirunelveli	150	150	722.94
12	Virudhunagar	3598	50	1292.93
13	Thoothukudi	150	150	124.76
14	Kancheepuram	100	50	2063.81
15	Sivagangai	0	50	428.42
16	Pudukkottai	1500	100	104.02
17	Dharmapuri	900	150	1468
18	Villupuram	450	150	2517.28
19	Salem	1600	150	117.25

S.No	District	2018-19		
		PGS* (Agri.)	PGS* (Horti- culture)	TNOCD**
20	Dindigul	50	150	1209.97
21	Theni	1500	150	221.14
22	Cuddalore	500	100	2739.86
23	Nilgiris	50	100	26.85
24	Trichy	100	100	127.09
25	Tiruvallur	150	100	287.03
26	Nagapatinam	1400	50	2650.32
27	Vellore	300	100	1178.07
28	Perambalur	0	50	61.35
29	Ariyalur	100	100	51.49
30	Kanniyakumari	150	50	10.48
31	Karur	100	50	1503.77
32	Ramanathapuram	550	0	3382.25
	<b>Total</b>	<b>15596</b>	<b>5600</b>	<b>31687.23</b>

\* PGS : Participatory Guarantee System

\*\* TNOCD : Tamil Nadu Organic certification Department

## **6.6. Bringing the activities of Seed Certification Department online through Seed Production, Enforcement and Certification System (SPECS):**

The IT wing of the Directorate of Agriculture has developed exclusive software “SPECS” to make all the technical activities of the Department of Seed Certification online to quicken the process of certification activities and to link all the activities of the certification department to bring better monitoring and more transparency in the system. It is pertinent to note that this kind of **online monitoring is the first of its kind among Indian Certification Agencies.**

All certification activities have been made real time usage from 22.10.2018. The “SPECS” online module has been working successfully in all Districts and now all stakeholders has acquainted with this electronic system and getting benefited on its quickness, transparency and accuracy.

Further, all essential functionalities of Seed Inspection activities have been developed in this software. This has also been made to real time usage from 1<sup>st</sup> April, 2019.

### **6.7. Infrastructure Development:**

Under National Agricultural Development Programme (NADP), Rs.155.42 lakh was sanctioned for construction of conference hall /meeting hall with infrastructure facilities at the premises of Directorate of Seed Certification and Organic Certification, Coimbatore. The work is in completion state.

Rs.50 lakh sanctioned under National Agricultural Development Programme (NADP) has been initialized for providing 114 Laptops to Seed Certification Officers. This facilitates strengthening of Seed Certification wing for implementation of "SPECS" software programme.

Under National Mission on Agriculture and Technology (NMAET), an amount of Rs.170.70 lakh was sanctioned so for upgradation of various wings of the department

and for strengthening of seed Testing Laboratories.

Under ATMA scheme, an amount of Rs.5 lakh was sanctioned during 2018–19, for renovation and upgradation of Training Centre and Training Hostel in the premises of Directorate of Seed Certification and Organic Certification, Coimbatore. The work is under completion stage.

### **6.8. Establishment:**

The Department of Seed Certification and Organic Certification is functioning distinctly with the staff strength of 345 technical and 500 ministerial staff.

**Table 6.4: Details of Staff Strength**

<b>Name of the post</b>	<b>Sanctioned Strength</b>
<b>A. Details of Technical Staff</b>	<b>345</b>
Director of Seed Certification & Organic Certification	1
Joint Director of Seed Certification	1

Name of the post	Sanctioned Strength
Joint Director of Seed Inspection	1
Deputy Director of Seed Inspection	15
Quality Manager	1
Assistant Director Seed Certification	30
Evaluator (Organic Certification)	1
Seed Testing Officer	7
Seed Certification Officer	149
Agricultural Officer	63
Seed Inspector	70
Organic Certification Officer	6
<b>B. Ministerial Staff</b>	<b>500</b>
<b>Total Staff Strength</b>	<b>845</b>

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

Agricultural Marketing and Agri Business Department plays an important role in accelerating the pace of economic development of our Country. Agricultural Marketing and Agri business activities emphasizes on value addition, post harvest management besides empowering farmers groups in agri-business entrepreneurial skills. Considering the emerging challenges of increasing demand in agriculture sector, the State focus is on Market Led Agriculture, which will help to improve the standard of living of farming community to achieve sustainable agricultural development.

Many of the small and marginal farmers are selling their produce in the farm itself due to lack of access to credit, primary processing facility, market intelligence and quality parameters.

Agricultural marketing adds value to the produce in terms of time, place and farm utilities as it encompasses all the steps involved from the producer to the consumer including various post harvest operations such as assembling, grading, storage, transportation and distribution. A vibrant marketing system is being developed in the State by promoting supply chain/ value

chain of farm produce, Farmer Producer Organizations, Food Processing sector, price support to farmers, dissemination of market informations, e-trading and steps to link markets with National markets etc.

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 major activities of the Department:

1. Strengthening and augmenting infrastructure facilities for marketing & Post harvest management of Agricultural produce.
2. Facilitating platform for marketing the Agricultural produce through Regulated Markets, Farmers Market, Specialized Market Complexes, etc. and creation of e-trading facilities for transparent transactions in the Regulated Markets.

3. Market reforms and policies such as Agricultural Produce Marketing Committee Act, Contract Farming Act, Tamil Nadu Food Processing Policy are framed for stakeholders to improve transaction and also to get remunerative price.
4. Promoting Farmer Producer Organizations (FPOs) to benefit small, marginal farmers and ensure better price for the produce.
5. Encouraging Agri entrepreneurs for value addition and food processing.
6. Disseminating market price and price forecast to the registered farmers through SMS, print and web media for getting better price.
7. Establishment of Supply Chain activities for perishable Commodities to the farming community to reduce the post harvest loss.
8. Promoting Price Support Scheme through NAFED for procurement of pulses, Copra etc., to protect farmers from price fall.

9. AGMARK Certification to ensure quality produce to the consumers.
10. Capacity Building programme for farmers/Officials on post harvest management, processing, value addition, grading, etc for updating their skills.

## **7.1. AGRICULTURAL MARKETING ACTIVITIES**

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

Regulated Markets are established for better regulation of buying and selling of Agricultural produce. Every market committee is established in the notified area for transaction of the notified agricultural produce. In Tamil Nadu, 26 Market Committees have been established under which 282 Regulated Markets are functioning as per the provisions of Tamil Nadu Agricultural Produce Marketing (Regulation) Act, 1987 and Rules, 1991.

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 2018-19, about 28 Lakh MT of agricultural produce were sold by farmers and Rs.125.50 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 immediate money requirement of farmers and to protect farmers from distress sale during glut seasons, pledge loan facility is extended to the maximum of Rs.3 lakh. During 2018-19, about 1,942 farmers availed pledge loans to the tune of Rs.32.49 crore.

Traders can also avail pledge loan upto the maximum of Rs.2 Lakh to meet out their short term requirements. During the year 2018-19, pledge loan was issued to the tune of Rs.5.88 Crore to 366 traders.

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 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	Name of the Market
1	Kancheepuram	1.Kancheepuram	7	Kancheepuram, Madurantagam, Uthiramerur, Thirukkalukundram, Sunguvarchatram, Acharapakkam, Chengalpet

S. No	District	Market Committee	No. of Regulated Market	Name of the Market
2	Tiruvallur		8	Thiruthani, Tiruvallur, Redhills, Ponneri, Pallipattu, Uthukottai, Gummidipoondi, Nasarethpettai
3	Cuddalore	2.Cuddalore	10	Virudhachalam, Cuddalore, Panruti, Thittakudi, Kattumannarkoil, Chidambaram, Kurinjipadi, Sethiyathope, Srimushnam, Bhuvanagiri
4	Villupuram	3.Villupuram	18	Tindivanam, Thirukoilur, Ulundurpet, Villupuram, Chinnasalem, Kallakkurichi, Gingee, Thiyagadurgam, Sankarapuram, Thiruvannainallur, Manalurpet, Avalurpet, Marakkanam, Vikravandi, Ananthapuram, Valathi, Moongilthuraipattu, Thirunavalur.
5	Vellore	4.Vellore	12	Vellore, Thirupattur, Arcot, Arakkonam, Vaniyambadi, Kaveripakkam, Gudiyatham, Kalavai, Ammoor, Katpadi, Ambur, Thimiri
6	Tiruvannamalai	5.Tiruvannamalai	18	Tiruvannamalai, Arani, Vandavasi, Chetpet, Cheyyar, Polur, Chengam, Pudupalayam, Vanapuram, Vettavalam, Thellar, Mangalamamandoor, Desur, Peranamallur, Dhusi, Kilpennathur, Adamangalampudur, Naidumangalam

S. No	District	Market Committee	No. of Regulated Market	Name of the Market
7	Salem	6.Salem	14	Salem, Athur, Sankagiri, Konganapuram, Kolathur, Mecheri, Vazhapadi, Thammampatti, Thalaivasal, Omalur, Kadayampatti, Gangavalli, Karumanthurai, Edapadi
8	Namakkal	7.Namakkal	6	Namakkal, Rasipuram, Tiruchengode, Paramathivelur, Namagiripettai, Cholakkadu
9	Dharmapuri	8.Dharmapuri	7	Dharmapuri, Palacode, Pennagaram, Harur, Pappireddipatti, Kambainallur, Papparpatti
10	Krishnagiri		9	Krishnagiri, Hosur, Kelamangalam, Pochampalli, Uthangarai, Kaveripattinam, Bargoor, Rayakottai, Denkanikkottai.
11	Coimbatore	9.Coimbatore	10	Annur, Karamadai, Coimbatore, Sulur, Anaimalai, Pollachi, Malayadipalayam, Negamam, Kinathukkadavu, Thondamuthur
12	Tiruppur	10.Tiruppur	15	Kunnathur, Kangayam, Vellankoil, Dharapuram, Moolanur, Alangiam, Muthur, Tiruppur, Avinashi, Sevur, Palladam, Udumalpet, Madathukkulam, Pethappampatti, Pongalur

S. No	District	Market Committee	No. of Regulated Market	Name of the Market
13	Erode	11.Erode	18	Erode, Avalpoonthurai, Kodumudi, Sivagiri, Chithode, Bhavani, Boothapadi, Anthiyur, Mylampadi, Kavundhampadi, Gobichettipalayam, Nambiyur, Vellakkoil, Sathyamangalam, PunjaiPulliyampatti, Thalavadi, Perundurai, Elumathur
14	Tiruchirapalli	12.Tiruchirapalli	10	Manapparai, Thuraiyur, Lalgudi, Tiruchirapalli, Thottiyam, Manachanallur, Thuvarekurichi, Pullambadi, Thathaiyanganpet, Kattuputhur
15	Karur		4	Kulithalai, Karur, Irumputhipatti, Chinnadharapuram
16	Perambalur	13.Perambalur	2	Perambalur, Poolambadi
17	Ariyalur		4	Ariyalur, Jayankondam, Andimadam, Melanikuzhi
18	Pudukkottai	14.Pudukkottai	10	Alangudi, Aranthangi, Pudukkottai, Gandarvakkottai, Avudayarkoil, Keeranur, Keeramangalam, Ponnamaravathi, Illuppur, Karambakkudi
19	Thanjavur	15.Thanjavur	13	Athiramapattinam, Ammapettai, Budalur, Kumbakonam, Madukkur, Orathanadu, Pattukottai, Papanasam, Peravoorani, Thanjavur, Vallam, Thirupananthal, Pappanadu

S. No	District	Market Committee	No. of Regulated Market	Name of the Market
20	Tiruvarur	16.Tiruvarur	8	Koradacheri, Kudavasal, Valangaiman, Thiruthuraipoondi, Poonthottam, Mannarkudi, Tiruvarur, Vaduvur.
21	Nagapattinam	17.Nagapattinam	8	Keevalur, Kuttalam, Mayiladuthurai, Nagapattinam, Sembanarkoil, Sirkazhi, Vedaranayam, Thirupoondi
22	Madurai	18.Madurai	6	Thirumangalam, Usilampatti, Melur, Madurai, T.Kallupatti, Vadipatti
23	Theni	19.Theni	7	Theni, Cumbum, Bodinayakanur, Chinnamanur, Andipatti, Uthamapalayam, Periyakulam
24	Dindigul	20.Dindigul	8	Dindigul, Ottanchatram, Palani, Vedasendur, Vadamadurai, Gopalpatti, Natham, Batlagundu
25	Ramanathapuram	21.Ramanathapuram	6	Ramanathapuram, Paramakudi, Kamuthi, Thiruvadanai, Rajasingamangalam, Mudukulathur
26	Virudhunagar	22.Virudhunagar	7	Virudhunagar, Rajapalayam, Sathur, Aruppukottai, Srivilliputhur, Watrap, Vembakkottai
27	Sivagangai	23.Sivagangai	7	Sivagangai, Thiruppuvanam, Manamadurai, Singampuneri, Karaikudi, Ilayankudi, Devakkottai

S. No	District	Market Committee	No. of Regulated Market	Name of the Market
28	Tirunelveli	24.Tirunelveli	11	Sankarankovil, Thenkasi, Ambasamudram, Valliyur, Tirunelveli, Kadayanallur, Thisayanvilai, Pavoorchatram, Thiruvankadam, Sivagiri, Alangulam
29	Thoothukudi		9	Kovilpatti, Thoothukudi, Pudur, Kadambur, Kalugumalai, Srivaikundam, Vilathikulam, Ettayapuram, Sathankulam
30	Nilgiris	25. Nilgiris	4	Udagamandalam, Kothagiri, Coonoor, Gudalur
31	Kanniyakumari	26.Kanniyakumari	6	Eathamozhi, Vadaseri, Kaliyakkavilai, MondayMarket, Kulasekaram, Thoduvatti
	<b>Total</b>		<b>282</b>	

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

S. No	Market Committee	No. of Regulated Markets	Regulated Markets in Own Land	Godown	Transaction Shed	Drying Yard	Specialised Market Complex	Rural Business Hub	Trader Shops
1	Kancheepuram	15	8	11	8	16	-	-	-
2	Vellore	12	8	26	15	11	-	1	-
3	Tiruvannamalai	18	14	26	45	12	-	-	10
4	Cuddalore	10	7	11	23	15	-	1	10
5	Villupuram	18	14	31	55	18	-	1	-
6	Salem	14	10	14	16	16	1	1	-
7	Dharmapuri	16	8	16	8	20	2	1	10
8	Coimbatore	10	10	30	19	30	3	1	10
9	Erode	18	15	38	33	34	2	1	10
10	Tiruchirappalli	14	10	16	16	20	4	-	-
11	Thanjavur	13	7	21	20	5	2	-	-
12	Pudukkottai	10	2	4	2	4	1	-	-
13	Madurai	6	4	9	4	7	1	-	-
14	Ramanathapuram	6	6	9	3	9	1		25
15	Tirunelveli	20	16	28	17	15	2	1	10
16	Kanniyakumari	6	5	11	3	4	2	-	-

S. No	Market Committee	No. of Regulated Markets	Regulated Markets in Own Land	Godown	Transaction Shed	Drying Yard	Specialised Market Complex	Rural Business Hub	Trader Shops
17	Theni	7	5	12	4	7	3	-	-
18	Dindigul	8	6	9	6	8	1	1	-
19	Tiruvarur	8	7	13	9	8	-	-	-
20	Nagapattinam	8	5	16	6	5	-	-	-
21	Nilgiris	4	-	0	1	-	-	-	-
22	Tiruppur	15	13	54	29	45	1	-	-
23	Perambalur	6	4	7	15	8	-	-	-
24	Namakkal	6	4	8	4	5	-	-	-
25	Virudhunagar	7	4	12	4	5	-	-	-
26	Sivagangai	7	5	9	2	7	-	-	-
	<b>Total</b>	<b>282</b>	<b>197</b>	<b>441</b>	<b>367</b>	<b>334</b>	<b>26</b>	<b>9</b>	<b>85</b>

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

Government of India launched e-NAM (National Agriculture Market), a pan India electronic trading platform, to facilitate farmers, traders, buyers, exporters and processors with a common e-platform for trading commodities at

the National Level. e-NAM is implemented by Government of India in 585 Mandis in 16 States, 2 Union Territories since April 2016 in three phases.

Accordingly, amendments have been made in the existing Tamil Nadu Agricultural produce Marketing (Regulation) Act 1987 on e-Trading, single point levy and unified single license. e-NAM is implemented in Tamil Nadu in the 3<sup>rd</sup> Phase since October 2017.

#### **(a) Benefits of e-NAM**

1. Transparency in trade and better price discovery to farmers.
2. Farmers and Traders have access to large National markets.
3. Bulk buyers, processors, exporters have direct participation in local Markets.
4. Single license for trader valid for all markets within the State.
5. Quick auction process, prices commensurate with the quality of produce and online payment.

6. Establishing quality assaying systems for quality assurance to promote inter State trade.

### **(b) Present Scenario of e-NAM in Tamil Nadu**

In Tamil Nadu 23 Markets are integrated under e-NAM. In the Phase I, e-NAM has been successfully launched in 15 Regulated Markets viz., Ammoor Regulated Market, Vellore District on 24.10.2017 followed by Annur, Anthiyur, Dindigul, Gobichettipalayam, Paramakudi, Sathyamangalam, Thirukovilur, Ulundurpet, Cumbum, Gingee, Tiruppur, Udumalpet, Pethappampatti and Kalavai.

In the Phase II, e-NAM was introduced in March 2018 in 8 Regulated Markets viz., Virudhachalam, Kallakurichi, Anaimalai, Perundurai, Lalgudi, Vellakoil, Paramathivelur and Madurai and for the remaining 7 markets, permission for integration with e-NAM is awaited from Government of India.

### **(c) Funding Pattern of e-NAM Markets**

#### **1. Government of India (GoI) Funds**

GoI had approved 15 regulated Markets in Phase I and 8 regulated Markets in Phase II and

released a total amount of Rs. 16.10 crore @ Rs.70 Lakh per Regulated Market.

## **2. NABARD Funds**

- To upgrade the infrastructure in 15 e-trading Regulated Markets and 8 Agricultural Producer Co-operative Marketing Societies (APCMS) Rs. 98.35 crore has been sanctioned.
- To strengthen e-trading infrastructure facilities in 15 e-NAM Regulated Markets, an amount of Rs.49.65 crore was sanctioned.

### **(d) Performance of 23 e-NAM Markets**

In these 23 e-NAM markets, so far **15.65 Lakh Quintals** of agricultural produce valued at **Rs.277.24 crore** were transacted through e-NAM platform and e-payment through e-NAM portal to a tune of Rs.48.50 crore has been made to 12,511 farmers.

## **(e) NABARD – Warehouse Infrastructure Fund**

During 2019-20, it is programmed to strengthen the infrastructure facilities in the Farmer Markets and Regulated Markets at a cost of Rs.268.62 crore utilising NABARD- Warehouse Infrastructure Fund.

### **7.1.3 Unified Single License**

At present, the traders who obtain licence in a particular Market Committee cannot trade in the Regulated Markets of other Market Committees which ties the hands of the traders beyond their markets which, in turn, hampers the opportunity of the farmers in getting better price. To overcome this and to provide expanded market access to the traders and farmers, Unified Single Licence is introduced.

A trader who obtained Unified Single License is allowed to trade in all the notified markets of the State which provide expanded market access. This License is valid for three years.

#### **7.1.4. Infrastructure facilities created under NABARD-Warehouse Infrastructure Fund (WIF)**

Marketing infrastructure in Regulated Markets were augmented by the creation of 100 infrastructures such as transaction sheds, storage godowns, Coconut Market complex, cold storages, office buildings, weigh bridges and processing centres at a total cost of Rs.83.35 crore.

Further, 44 Regulated Markets are being strengthened by construction of 46 godowns with storage capacity of 79,000 MT at a total cost of Rs.99.51 crore.

### **7.2 AGRI BUSINESS ACTIVITIES**

Scope for Agri-Business activities such as value addition, packaging, retailing and exports of agricultural products, etc., have been increased. Department of Agricultural Marketing and Agri Business promotes backward and forward linkages related to production, processing, marketing and distribution of raw

and processed agricultural products and implementing various schemes.

### **7.2.1 Supply Chain Management for Fruits, Vegetables and other perishables in 10 Districts of Tamil Nadu.**

For integrating and strengthening the supply chain of fruits, vegetables and other perishables in Tamil Nadu, the Supply Chain Management Project is implemented in 10 Districts viz., Krishnagiri, Dharmapuri, Coimbatore, The Nilgiris, Tiruchirapalli, Dindigul, Theni, Ramanathapuram, Thoothukudi and Tirunelveli at a total cost of Rs.482.36 crore. **The project is the first of its kind in Tamil Nadu.**

#### **Project Objectives :**

1. To provide support services for perishable fruits and vegetables to reduce post-harvest losses,
2. To educate the farmers on best management practices to increase production,

3. To ensure remunerative prices to the farmers,
4. To integrate the farmer producers with major market centers, processors and consumers,
5. To provide integrated and complete supply chain management infrastructure,
6. To convert surplus production into value added products,

The project will facilitate processing at 62 Primary Processing Centres, providing logistics support including transport and storage. Post Harvest Infrastructure like Pack house, Cold storage, Grading and packing facilities, machineries for primary processing, Storage Godowns, Farmers Service Center etc., and special infrastructures like Irradiation plant, Individually Quick Freezing (IQF), Hot water / Vapour Heat Treatment plant, etc., are created in the Primary Processing Centers in specific locations.

**Table 7.3 Location of Primary Processing Centers (PPC)**

S. No.	District	Nos.	Locations of Primary Processing Centers	Cost (Rs. in Crore)
1	Krishnagiri	10	Krishnagiri, Hosur, Kamanthotti, Denkanikottai, Thattiganapalli, Royakottai, Alapatti, Kundarapalli, Kaveripattinam, Pochampalli.	143.63
2	Dharmapuri	5	Dharmapuri, Palacode, Pennagaram Agricultural Producers Co-Operative Marketing Society Ltd., Harur, Papparapatti.	52.12
3	Coimbatore	7	Chikkadasampalayam, Sulur, Vadakkipalayam, Pooluvapatti, Pichanur, Anaimalai, Pollachi.	47.07
4	Nilgiris	9	Hosahatty, Anikorai, Dhavanai, Uthagai - Rose Garden, Nilgiris Co-Operative Marketing Society Ltd., @ Kothagiri, New Allanjai, Sullikoodu, Uppatti, Ayyankolli.	56.74
5	Tiruchirapalli	11	Kallikudi, Lalgudi, Mannachanallur, Thiruchendurai, P.K.Agaram, M.Puthur, Arasalur, Pidaramangalam, Thuraiyur Taluk Agricultural Producers Co-Operative Marketing Society Ltd., Uppiliapuram (South), Thathaiyangarpettai.	36.07

S. No.	District	Nos.	Locations of Primary Processing Centers	Cost (Rs. in Crore)
6	Dindigul	5	Palani, Palani Agricultural Producers Co-Operative Marketing Society Ltd., Gopalpatti, Kavunji, Vedasandhur.	48.42
7	Theni	4	Theni, Chinnamanur, Cumbum, Periyakulam.	22.08
8	Ramanathapuram	3	Paramakudi, Mudhukulathur, Kamuthi Agricultural Producers Co-operative Marketing Society Ltd.	11.84
9	Thoothukudi	3	Srivaikundam, Pudur, Vilathikulam.	12.09
10	Tirunelveli	5	Ramaiyanpatti, Valliyoor, Pavoorchatram, Sankarankovil, Kadayanallur.	28.16

Specific Horticultural crops will be promoted in the villages covered in the area of operation of the PPCs for which schemes of the Department of Horticulture and Plantation Crops are dovetailed from the components of Area Expansion, Micro Irrigation and Adoption of new technologies for the benefit of farmers. These Primary Processing Centres are proposed to be operated by the Farmer Producer Organisations.

### **7.2.2 AGMARK Grading**

To provide unadulterated food products to the consumers and to ensure quality, 30 State Agmark Grading Laboratories and 1 Principal Laboratory are functioning in Tamil Nadu. Agmark is a quality certification mark on agricultural products in India. Agmark is legally enforced by the Agricultural Produce (Grading and Marking) Act of 1937 (and amended in 1986) by Directorate of Marketing and Inspection, Government of India. Presently Agmark standards cover quality specifications for 223 commodities. This scheme is a voluntary scheme.

In Agmark Grading Laboratories, products graded are rice, pulses, ghee, honey, ground spices, whole spices, sago, vegetable oils, gram flour, compounded asafoetida etc., During 2018-19 agricultural commodities to the tune of 23.58 lakh quintals were graded and grading charges of Rs.79.78 lakh has been collected as State revenue.

**Table 7.4 District-wise AGMARK Grading Laboratories**

S. No.	District	Location of AGMARK Grading Laboratory		
1	Chennai	1	Principal laboratory	Commissionerate of Agricultural Marketing and Agri Business
2	Kancheepuram	2	Chennai (North)	
		3	Chennai (South)	
3	Vellore	4	Vellore	
4	Cuddalore	5	Panruti	
5	Thanjavur	6	Thanjavur	
6	Tiruchirapalli	7	Tiruchirapalli - 1	
		8	Tiruchirapalli - 2	
7	Karur	9	Karur	
8	Madurai	10	Madurai (North)	
		11	Madurai (South)	
9	Theni	12	Theni	
10	Dindigul	13	Dindigul	
11	Virudhunagar	14	Virudhunagar	
12	Tirunelveli	15	Tirunelveli	
		16	Thenkasi	
13	Thoothukudi	17	Thoothukudi	
14	Kanniyakumari	18	Nagerkoil	
		19	Marthandam	
15	Salem	20	Salem	

16	Dharmapuri	21	Dharmapuri
17	Coimbatore	22	Coimbatore
18	Erode	23	Perundurai
		24	Erode - 1
		25	Erode - 2
		26	Chithode
19	Tiruppur	27	Thiruppur
		28	Palladam
		29	Kangayam - 1
		30	Kangayam - 2
		31	Vellakovil

### 7.2.3 Farmer Markets

To facilitate direct marketing between farmers and consumers without any interference of middlemen, 179 Uzhavar Sandhais (Farmers Market) are functioning in Tamil Nadu to enable remunerative price to farmers producing vegetables and fruits and to provide fresh fruits and vegetables to consumers at a price less than retail prices. 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 2018-19, on an average, 2153 M.T of fruits and vegetables worth Rs.6.60 crore were sold per day in Farmers Markets and 8,208 farmers and 4.11 lakh consumers benefitted.

#### **7.2.4. Commodity based Specialized Market Complexes**

To fetch better price for the produce like Paddy, Turmeric, Onion, Lemon, Coconut, Tender Coconut, Hilly vegetables, Tomato, Flowers, Chillies, Mango, Grapes, Banana and Spices, 27 commodity specific Market Complexes were constructed at a cost of Rs.83.50 crore with godown, cold storage, grading and sorting hall, drying yard, etc.,

#### **7.2.5 e-Learning centres**

The e-learning centres shall provide single window information on post-harvest and marketing aspects and facilitate direct access to the farmers to the institutional resources. 20 e-learning centres were established with a project cost of Rs.14.34 crore during 2016-17 and 2017-18.

**Table 7.5 District-wise e-Learning centres**

<b>S.No.</b>	<b>2016-17</b>	<b>S.No.</b>	<b>2017-18</b>
1	Erode	1	Krishnagiri
2	Tiruvarur	2	Madurai
3	Virudhunagar	3	Theni
4	Thanjavur	4	Kanniyakumari
5	Sivagangai	5	Karur
6	Tiruvannamalai	6	Tiruchirapalli
7	Tiruvallur	7	Pudukkottai
8	Dharmapuri	8	Dindigul
9	Villupuram	9	The Nilgiris
10	Cuddalore	10	Coimbatore.

### **7.2.6 Value addition machineries/equipments**

For the benefit of Tomato growing farmers in Krishnagiri, Coimbatore and Dharmapuri Districts, Five Mobile Tomato Puree Vending Machines @ Rs. 2 crore will be provided to reduce the post harvest loss and value addition in Tomato.

In 2018-19, for the benefit of Maize growing farmers in Cuddalore and Permbalur Districts, a Maize Market Promotion Centre at a cost of Rs.3.78 crore is being established at Cuddalore.

### **7.2.7 Cold Storage units**

Cold Storage units were created to enhance the shelf-life and minimise the post harvest losses of perishables without reducing the

quality. So far, 111 cold storage units were created all over Tamil Nadu with a total capacity of 13,565 MT and in use.

**Table 7.6 Capacity-wise Cold Storages**

S.No.	Capacity (MT)	No	Total Capacity(MT)
1	5	7	35
2	15	2	30
3	25	74	1,850
4	50	7	350
5	100	9	900
6	200	2	400
7	500	4	2,000
8	1,000	4	4,000
9	2,000	2	4,000
	<b>Total</b>	<b>111</b>	<b>13,565</b>

In addition, 27 cold storage units with 2 MT capacity each were established at Uzhavar Sandhais.

## **7.2.8 Food Processing**

### **7.2.8.1 Tamil Nadu Food Processing Policy:**

To reduce the post harvest losses in Tamil Nadu, various initiatives are taken by the Department of Agricultural Marketing and Agri Business for increasing the percentage of processed food, especially Fruits and Vegetables from the current level of 2% to 10%.

As a part of the overall reforms in the sector to give impetus to achieve objectives such as increasing farmers' income, reducing wastage of food products, value addition to farm products, etc., an exclusive Tamil Nadu Food Processing Policy has been unveiled by Hon'ble Chief Minister on 12.12.2018, as announced in the Budget Speech 2018-19.

#### **7.2.8.2 Mega and Ultra Mega Food Parks**

The Government of Tamil Nadu is taking steps to establish Mega and Ultra Mega food parks in 10 locations of Tamil Nadu as per the Budget Speech announcement of 2018-19 in a phased manner. Land sites have been identified in all the locations and action is being pursued for land possession.

NABCONS (NABARD Consultancy Services) has been entrusted to undertake pre feasibility study and Detailed Project Reports preparation for establishment of Mega and Ultra Mega Food Parks. Detailed Project Reports are under preparation for establishment of food parks in **Tirunelveli, Dindigul, Krishnagiri and Tiruvannamalai Districts.**

Small and Mega food parks having area of less than 50 acres will be promoted by Department of Agricultural Marketing & Agri-Business. Ultra Mega Food Park at Gangaikondan, Tirunelveli with an area of more than 50 acres will also be promoted by Department of Agricultural Marketing & Agri. Business. Ultra Mega Food Park at Tindivanam, Villupuram district will be promoted by SIPCOT, Department of Industries, wherein common infrastructural facilities will be developed by Department of Agricultural Marketing and Agri Business.

#### **7.2.8.3 Neera**

Neera is a delicious and highly nutritive juice drawn from unopened inflorescence of a Coconut tree. Many value added products such as Coconut palm jaggery, Coconut palm syrup, Coconut palm sugar, Coconut neera chocolates, Neera squash, Neera cake etc., can be produced from Neera which gives additional scope for product diversification.

The Government took policy decision to permit tapping of neera from Coconut and

issued Tamil Nadu Neera Rules 2017 which provide opportunity for Coconut Producer Companies to produce Neera. Department of Agricultural Marketing and Agri. Business at District level has been entrusted with the task of forwarding eligible applications from Coconut Producer Companies to get license from District Collectors for tapping Neera.

A Steering Committee has been formed with eminent members from Institutions, Farmer Producers Organizations and Departments to finalise the technology for Neera tapping, solve emerging issues and to take forward Neera tapping in a sustainable manner.

During the year 2018-19, Neera license has been issued to 12 Coconut Producer Companies for tapping Neera. All the Coconut Farmer Producer Companies which have got Neera license are producing and marketing Neera and its value added products.

**Table 7.7. Sale details of Neera and its value added products**

S. No	Name of the Coconut Producer Company	Production started from	Neera		Value added products		Total turn over (Rs. in Lakh)
			Quantity produced (in litre)	Value (Rs. in Lakh)	Quantity produced (Kg)	Value (Rs. in Lakh)	
1	Anamalai CPC, Coimbatore	23.6.18	96,500	125.50	4863	24.20	149.65
2	Coimbatore CPC, Coimbatore	1.06.18	90,580	113.22	3443	20.66	133.88
3	Vinayaga CPC, Coimbatore	1.06.18	1,71,520	214.40	3964	20.28	234.68
4	Pudukkottai Aranthangi CPC, Pudukkottai	27.06.18	11,629	18.53	733	4.57	23.10
5	Erode Gopi Velan Vanigar CPC, Erode	11.08.18	43,340	64.79	514	4.11	68.89
6	Madathu kulam CPC, Tiruppur	9.12.18	14,310	21.47	0	0	21.47
7	Udumalpet CPC, Tiruppur	12.11.18	15,865	19.83	406	1.06	20.89
8	Dindigul CPC, Dindigul	1.2.19	14,471	21.71	3	0.01	21.72
9	Theni CPC, Theni	24.1.19	7,960	11.94	0	0	11.94
10	Kanniyaku mari CPC, Kanniyaku mari	29.1.19	1075	1.61	0	0	1.612
11	Peravurani CPC, Thanjavur	9.11.18	3,060	4.60	245	1.72	6.31
12	Karpaga Viruksha CPC, Coimbatore	Yet to commence the production					
	<b>TOTAL</b>		<b>4,70,310</b>	<b>617.53</b>	<b>14171</b>	<b>76.60</b>	<b>694.13</b>

## **7.2.9 Tamil Nadu Small Farmers Agri-business Consortium (TNSFAC)**

Promoting Farmer Producer Organisations and empowering farmers helps to improve the socio economic status of farmers. The Tamil Nadu Small Farmers' Agribusiness Consortium [TNSFAC] is functioning with this aim to promote FPOs. TNSFAC is a society linking farmers to technologies as well as to markets by providing both forward and backward linkages.

### **7.2.9.1 Farmer Producers Organisation (FPO):**

Farmer Producer Organizations (FPOs) have emerged as one of the most effective means to collectivize farmers and carry out various agriculture related activities ranging from production to marketing in a more co-operative and aggregative manner, thereby giving farmers better strength for negotiation *vis-a-vis* with other stakeholders in Tamil Nadu.

#### **Project objectives**

1. Mobilising farmers into groups at village level and building up their associations to Farmer Producer Organisations (FPOs).

2. Federating the Farmer Producer Groups already formed by Agriculture/Horticulture Department into FPOs and empowering the groups.
3. Strengthening of farmers' capacity by sensitizing best agricultural practices for enhanced productivity.
4. Facilitating access to fair and remunerative markets including linking of producer groups for marketing opportunities through market aggregators.
5. Ensuring access to usage of quality inputs and services for market driven production and enhancing cluster competitiveness.
6. Ensuring value addition of agricultural produce and motivating FPOs into Agri Business Enterprising entity.

The Tamil Nadu Government has been supporting FPCs since 2014-15. So far, 130 FPOs have been promoted through TNSFAC under various schemes like National Agricultural Development Programme(NADP), National Mission on Sustainable Agriculture (NMSA),

based on the process guidelines of Small Farmers Agri Business Consortium (SFAC), Government of India.

Self Promoted and other agencies promoted Farmers Producer Companies are also functioning. Currently, there are around 500 FPCs registered from the State of Tamil Nadu.

<b>Supporting Agency</b>	<b>No. of FPOs</b>
Tamil Nadu Small Farmers Agri Business Consortium	130
National Bank for Agriculture Rural Development (NABARD)	170
Small Farmers Agri Business Consortium, New Delhi	11
Dept of Horticulture and Plantation Crops, Tamil Nadu	15
Self Promoted	174
<b>Total</b>	<b>500</b>

The Government of Tamil Nadu will continue to support and promote FPCs in the future through various schemes.

## **Facilities extended to FPOs**

1. Under National Food Security Mission, Ten (10) Pulses FPCs are provided with Dhal mills.
2. Under National Agriculture Development Programme, Three (3) millet FPCs are provided with millet processing units.
3. Under "Sub-Mission on Seeds and Planting Materials (SMSP) scheme, thirty (30) FPCs have been sanctioned with Seed Processing Unit cum 500 MT Seed Storage godown and this scheme is under implementation.

The Government of Tamil Nadu has been taking initiatives to strengthen the FPOs by federating them at State and zonal levels. A Tamil Nadu **Farmer Producer Organisation Policy** is being formulated to promote Farmer Producer Organisations.

### **7.2.10 Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP)**

TNIAMP aims to promote traditional markets/alternate markets for farmers and to link them to emerging Agricultural Marketing opportunities by organizing them into producer

group and federating them into FPCs, develop their capacity for marketing in order to access wider markets and investment support to these FPCs for establishment of Farmers Common Service Centers. The project envisages, management strengthening, innovations for improved service delivery, supporting studies etc., by engaging consultancy services namely Agri Business Promotion Facility (ABPF).

Tamil Nadu Irrigated Agriculture Modernization Project (TNIAMP) is being implemented for six years from 2017-18 in 66 sub-basins with a project outlay of Rs.125 crore.

The interventions under TNIAMP by the Department of Agricultural Marketing and Agri Business include,

- |   |                           |
|---|---------------------------|
| • Improving farmer access to market                 | -Rs. 96.06 Crore          |
| • Promoting agri enterprises                        | -Rs. 26.18 Crore          |
| • Institutional strengthening and capacity building | -Rs. 2.76 Crore           |
| <b>Total</b>  | <b>- Rs. 125.00 Crore</b> |

During 2019-20, it is programmed to implement the interventions in 18 Sub Basins under Phase I- covering 22 Districts with a project cost of Rs.20.39 crore and in 16 Sub Basins under Phase II- covering 18 Districts with a project cost of Rs.7.73 crore totaling to an outlay of Rs 28.12 crore.

#### **7.2.10.1 Improving Farmer Access to Markets**

It is proposed to form new Farmer Producer Companies and provide productive investment support, business expansion support to existing Farmer Producer Companies, modernization of Regulated Markets and e-negotiable warehouse receipt model in Phase I and II sub basins.

### **7.3. Human Resource Management**

This Department promotes Agricultural Marketing and Agri Business activities, implements various schemes, disseminate Agricultural Technologies and Market Informations to farmers through field functionaries and thereby enhances their

income and Socio-economic condition. In this Department, 1,308 Department staff and 1,672 Market Committee staff are functioning in the State.

**Table 7.8 Details of Department Staff**

<b>S. No</b>	<b>Name of the Post</b>	<b>Sanctioned Post</b>
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	Agricultural 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	418
	<b>Total</b>	<b>1,308</b>

**Table 7.9 Details of Market Committee Staff**

<b>S. No</b>	<b>Name of the Post</b>	<b>Sanctioned Post</b>
1	Senior Secretary / Dy. Director of Agriculture	2
2	Senior Secretary / Deputy Director	2
3	Secretary / Asst. Director of Agriculture	11
4	Secretary / Assistant Director	11
5	Superintendent	200
6	Engg. Supervisor	9
7	Supervisor	345
8	Other non-technical staff	1,090
	<b>Total</b>	<b>1,672</b>

#### **7.4 Tamil Nadu State Agricultural Marketing Board**

The State Agricultural Marketing Board was established in accordance with "The Tamil Nadu Agricultural Produce Marketing (Regulation) Act, 1987".

## **7.4.1 Functions of Tamil Nadu State Agricultural Marketing Board**

### **7.4.1.1. Awareness and Capacity Building Training**

The Publicity and Propaganda wing of the Board functioning at Chennai, Coimbatore, Trichy 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.

In addition, the State Level Training Centre functioning at Salem is organizing capacity building training programmes for the staff of Agricultural Marketing & Agri Business Department.

During 2019-20, it is programmed to conduct 270 training programmes benefitting 5,000 farmers and 400 staff.

### **7.4.1.2. Construction Works**

The Engineering wing of Agricultural Marketing Board executes infrastructure creation such as Modern Storage Godowns, Transaction Sheds, Rural Business Hubs and Market Complex with cold storage facilities, Drying Yards etc.,

under various schemes apart from the regular market development works. During the year 2018-19, 77 works with a financial outlay of Rs.319.14 Crore were executed and this will be continued in 2019-20 also.

#### **7.4.2 Price Support Scheme (PSS)**

##### **Procurement of Pulses at Minimum Support Price**

To ensure minimum support to the produce of the farmers and to stabilise the market price, the Price Support Scheme is in operation in Tamil Nadu since 2017-18.

The Tamil Nadu State Agricultural Marketing Board (TNSAMB) has been identified as the **State Level Supporter** by the Government. Regulated Markets in the project Districts are the **Primary Procurement Centre (PPC)** which directly involve in the procurement of Pulses from the farmers. NAFED is the **Central Nodal Agency** designated for the project.

Fair Average Quality (FAQ) produce are procured from farmers is ensured. The value of the produce is immediately settled through online to the farmer's account from Board fund initially and later gets reimbursed from Central Nodal Agency.

## **Rabi 2017-18**

**During this season, 1,548 MT of Blackgram** was procured through 13 Regulated Markets and 2 FPOs in Districts viz., Villupuram, Cuddalore, Tiruvannamalai, Thoothukudi, Thanjavur and Nagapattinam. Farmers were paid Rs.52/- and Rs.2/- as bonus for each Kg. Accordingly, an amount of Rs.8.36 Crore was paid to the farmer's bank accounts.

## **Kharif 2018**

**Greengram was procured** from major growing Districts viz., Salem, Namakkal, Dharmapuri, Vellore and Madurai Districts. During this season, 365 MT of Greengram @ Rs.69.75 per kg was procured and **Rs.2.55 crore** was paid to the farmer's bank account.

In addition, nearly 400 MT of Redgram @ Rs. 56.75 per kg was procured in Salem, Krishnagiri, Dharmapuri, Erode, Vellore, Madurai and Theni Districts and paid an amount of Rs.2.27 Crore to the farmer's bank account.

## **Rabi 2018-19**

In Cuddalore, Villupuram, Trichy, Tiruppur, Thanjavur, Nagapattinam, Tiruvarur, Dindigul, Tirunelveli, Thoothukudi, Tiruvannamalai,

Perambalur and Pudukkottai Districts, 3154 Metric Tonnes of Blackgram was procured. In addition, 5,295 Metric Tonnes of Greengram was procured in Tiruvallur, Thoothukudi, Virudhunagar, Thanjavur, Tiruvarur, Nagapattinam and Cuddalore Districts. An amount of Rs.54.59 crore was paid to the farmer's bank account.

Since implementation, so far 9,780 farmers were benefitted under this scheme and it will be continued during 2019-20 also.

#### **7.4.3. Procurement of Copra at Minimum Support Price**

In Tamil Nadu, procurement of Copra was so far done through National Agricultural Cooperative Marketing Federation (NAFED). For the first time, it is programmed to procure through Tamil Nadu State Agricultural Marketing Board during 2019-20.

In 16 major coconut growing Districts viz., Erode, Salem, Coimbatore, Tiruppur, Vellore, Dindigul, Thanjavur, Pudukkottai, Sivaganga, Krishnagiri, Ramanathapuram, Namakkal, Madurai, Theni, Dharmapuri and Kanniyakumari, it is programmed to procure 50,000 MT of Copra @ Rs. 95.21 per kg during the month of June to November, 2019.

The main objective of the programme is to get MSP to the farmers and to stabilize the market price during the peak harvest season which is being achieved through procurement of Pulses and Copra, when the market price falls below MSP.

## Annexures

**Table 7.10. District-wise Farmers Markets**

S. No.	District	Nos.	Farmers' Markets
1	Ariyalur	2	Ariyalur, Jeyankondam
2	Coimbatore	9	R.S.Puram, Singanallur, Pollachi, Mettupalayam, Kurichi, Sulur, Vadavalli, Sundarapuram, Palladam
3	Cuddalore	5	Cuddalore, Chidambaram, Virudhachalam, Panruti, Vadalur
4	Dharmapuri	5	Dharmapuri, Pennagaram, Palacode, Harur, A.Jattihalli
5	Dindigul	5	Dindigul, Palani, Chinnalapatti, Kodaikkanal, Batlagundu
6	Erode	5	Sampath Nagar, Gobichettipalayam, Sathiyamagalam, Periyar Nagar, Perundurai

S. No.	District	Nos.	Farmers' Markets
7	Kancheepuram	14	Kancheepuram, Pallavaram, Chengalpet, Medavakkam, Nanganallur, Madhuranthagam, Keelkattalai, Jameenrayapettai, Guduvancheri, Padappai, Sunguvarchatram, Kundrathur, Thirukalukundram, Kannaginagar
8	Kanniyakumari	2	Vadaseri, Myladi
9	Karur	5	Karur, Kulithalai, Velayuthampalayam, Pallapatti., Vengamedu
10	Krishnagiri	5	Hosur, Krishnagiri, Kaveripattinam, Denkanikottai, Avallapalli
11	Madurai	7	Annanagar, Chokkikulam, Palanganatham, Usilampatti, Thirumangalam, Melur, Anaiyur
12	Nagapattinam	3	Mayiladuthurai, Nagapattinam, Sirkali
13	Namakkal	6	Namakkal, Tiruchengode, Rasipuram, Kumarapalayam, Paramathivelur, Mohanur
14	Nilgiris	4	Udhagamandalam, Coonoor, Kothagiri, Gudalur
15	Perambalur	2	Perambalur, Veppanthattai
16	Pudukkottai	6	Pudukkottai, Aranthangi, Alangudi, Gandarvakottai, Karambakkudi, Viralimalai

S. No.	District	Nos.	Farmers' Markets
17	Ramanathapuram	3	Ramanathapuram, Paramakudi, Kamuthi
18	Salem	11	Sooramangalam, Ammapet, Athur, Thathakapatti, Mettur, Attayampatti, Hasthampatti, Elampillai, Thammampatti, Jalagandapuram, Edapadi
19	Sivagangai	4	Sivagangai, Devakottai, Karaikudi, Tirupattur
20	Thanjavur	5	Thanjavur, Kumbakonam, Pattukottai, Tirukattupalli, Papanasam
21	Theni	7	Theni, Cumbum, Bodinayakanur, Periyakulam, Devaram, Andipatti, Chinnamanur
22	Tirunelveli	6	Sankarankoil, Palayamkottai, Tenkasi, Kandiyaperi, Melapalayam, Ambasamudram
23	Tiruppur	5	Udumalpet, Tiruppur (North), Tiruppur (South), Dharapuram, Kangeyam
24	Tiruvallur	6	Tiruthani, Tiruvallur, Ambattur, Paruthipattu, Naravarikuppam, Perambakkam
25	Tiruvannamalai	8	Tiruvannamalai, Polur, Arani, Cheyyar, Chengam, Vandavasi, Keelpennathur, Tamarainagar

S. No.	District	Nos.	Farmers' Markets
26	Tiruvarur	7	Tiruthuraipoondi, Mannargudi -1, Tiruvarur, Needamangalam, Muthupettai, Mannargudi -2, Valangaiman
27	Tiruchirapalli	7	Anna Nagar, K.K.Nagar, Thuraiyur, Manapparai, Musiri, Thuvakudi, Lalgudi
28	Thoothukudi	2	Tuticorin, Kovilpatti
29	Vellore	9	Vellore, Katpadi, Vaniyampadi, Gudiyatham, Kagithapattarai, Ranipet, Arcot, Tirupathur, Natrampalli
30	Villupuram	6	Tindivanam, Villupuram, Kallakurichi, Ulundurpet, Gingee, Sankarapuram
31	Virudhunagar	8	Aruppukottai, Rajapalayam, Srivilliputhur, Virudhunagar, Sivakasi, Sathur, Kariyapatti, Thalavaipuram

**Table 7.11 District wise Cold Storages**

S. No	District	Place of cold storage	Capacity (MT)
1	Coimbatore (10 Nos.)	Pollachi	25
2		Senjeri	25
3		Annaimalai	25
4		Thondamuthur	25
5		Annur	25

<b>S. No</b>	<b>District</b>	<b>Place of cold storage</b>	<b>Capacity (MT)</b>
6		Karamadai	50
7		Sikkadasampalayam	500
8		Kinathukadavu	500
9		Vadakipalayam	25
10		Singanallur US	15
11	Cuddalore (3 Nos.)	Cuddalore	25
12		Panruti	25
13		Virudhachalam	25
14	Dharmapuri (4 Nos.)	Dharmapuri	1,000
15		Harur	25
16		Pennagaram	25
17		Palakode	50
18	Dindigul (7 Nos.)	Dindigul	25
19		Ottanchathram	25
20		Ottanchathram	5
21		Palani	25
22		Palani	5
23		Batlagundu	5
24		Gopalpatti	25
25	Erode (7 Nos.)	Avapoondurai	25
26		Kodumudi	25
27		Anthiyur	25
28		Sathyamangalam	25
29		Punjai puliyampatti	25

<b>S. No</b>	<b>District</b>	<b>Place of cold storage</b>	<b>Capacity (MT)</b>
30		Sathyamangalam	100
31		Gopichettipalayam	1,000
32	Kanniyakumari (1 No.)	Thingal Sandhai	25
33	Karur (1 No.)_	Karur(Rayanur)	25
34	Krishnagiri (6 Nos.)	Krishangiri	50
35		Krishangiri	25
36		Pochampalli	25
37		Uthangarai	25
38		Hosur	25
39		Hosur	50
40	Madurai (1 No.)	Tirumangalam	25
41	Namakkal (4 Nos.)	Namagiripettai	25
42		Paramathivellur	25
43		Thiruchengodu	25
44		Mohanur	5
45	Perambalur ( 2 Nos.)	Chettikulam	50
46		Perambalur	25
47	Ariyalur (1 No.)	Ariyalur	25
48	Pudukkottai (2 Nos.)	Illupur	100
49		Alangudi	25
50	Ramanathapuram (3 Nos.)	Paramakudi	100
51		Kamudhi	25
52		Ettivayal	2,000
53	Salem (7 Nos.)	Salem	25

<b>S. No</b>	<b>District</b>	<b>Place of cold storage</b>	<b>Capacity (MT)</b>
54		Athur	25
55		Vazhapadi 1	25
56		Vazhapadi 2	25
57		Gengavalli	25
58		Mecheri 1	25
59		Mecheri 2	100
60		Sivagangai (1 No.)	Singampunari
61	Thanjavur (2 Nos.)	Valapakudi	100
62		Thanjavur	25
63	Theni (5 Nos.)	Cumbum	25
64		Theni	25
65		Odaipatti	50
66		Chinnamanur	5
67		Cumbum	500
68	Thoothukudi ( 8 Nos.)	Kovilpatti	25
69		Thoothukudi	25
70		Pudur	25
71		Kazhugumalai	25
72		Sri Vaigundam	5
73		Vilathikulam	100
74		Ettaiyapuram	25
75		Sathankulam	25
76	Tirunelveli (8 Nos.)	Sankarankoil	500
77		Thenkasi	25

<b>S. No</b>	<b>District</b>	<b>Place of cold storage</b>	<b>Capacity (MT)</b>
78		Ambasmudram	25
79		Ambasmudram	200
80		Valliyur	25
81		Tirunelveli	25
82		Pavoorchathiram	1,000
83		Kadayanallur	200
84		Tiruvannamalai (7 Nos.)	Thiruvannamalai
85	Vettavalam		25
86	Chengam		25
87	Chethupattu		25
88	Polur		25
89	Vandavasi		25
90	Cheygar		25
91	Trichy (5 Nos.)	Thiruchendurai	1,000
92		Thuvarankurichi	100
93		Thuraiyur	100
94		Annanagar	5
95		Kallikudi	2,000
96	Tiruppur (5 Nos.)	Vellakoil	25
97		Palladam	25
98		Avinashi	25
99		Udumalpet	25
100		Pongalur	50
101	Vellore (4 Nos.)	Vellore	25
102		Thirupathur	25

<b>S. No</b>	<b>District</b>	<b>Place of cold storage</b>	<b>Capacity (MT)</b>
103		Vaniyampadi	25
104		Jolarpet	25
105	Villupuram (4 Nos.)	Kallakurichi	25
106		Ulundurpet	25
107		Villupuram	25
108		Thindivanam	15
109	Virudhunagar (3 Nos.)	Virudhunagar	100
110		Rajapalayam	25
111		Arupukottai	25
			<b>13,565</b>
<b>Uzhavar Santhai (27 No x 2MT)</b>			<b>54</b>
<b>Grand Total</b>			<b>13,619</b>

## **8. TAMIL NADU WATERSHED DEVELOPMENT AGENCY (TAWDEVA)**

### **8.1. Introduction:**

Tamil Nadu Watershed Development Agency's prime objective is restoring ecological balance by harnessing, conserving and developing natural resources such as soil, Water and vegetative cover through effective management of runoff water, improved soil moisture conservation activities, rain water harvesting, recharging ground water table, thereby increasing the productivity of crops and promoting sustainable livelihoods through a participatory approach.

Two Watershed Development Programmes are implemented by Tamil Nadu Watershed Development Agency viz.

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.

Furthermore, Tamil Nadu Watershed Development Agency has been designated as the Nodal Agency for the following schemes to co-ordinate with the implementing department, Government of India and State Government.

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 has launched the Pradhan Mantri Krishi Sinchayee Yojana during 2015-16 with the vision to ensure access to protective irrigation to all agricultural farms, to produce more crop per drop, thus bringing much desired rural prosperity through the following four major components. Viz.

- i. Accelerated Irrigation Benefit Programme (AIBP)
- ii. PMKSY (Har Khet Ko Pani)

- iii. PMKSY (Per Drop - More Crop)
  - a. Micro - Irrigation
  - b. Other Interventions- SWMA - Supplementary Water Management Activities
- iv. PMKSY (Watershed Development)
  - i. **PMKSY - Accelerated Irrigation Benefit Programme (AIBP)** - concentrates on major and medium irrigations projects.
  - ii. **PMKSY - Har Khat Ko Pani (HKKP)** aims at enhancing the physical access to water on the farm and expand cultivable area under assured irrigation.
  - iii. a) **PMKSY - Per Drop More Crop (PDMC)** is an integral component of Micro Irrigation with the objective of enhancing adoption of precision irrigation and water saving technologies like drip system, sprinklers, pivots and rain gun in the farm.

## **b) PMKSY-PDMC - Supplementary Water Management Activities**

The Prime objective is propagating Micro Irrigation technology among the farming community by filling the gaps for creation of Micro Irrigation source at farm or near farm gate level through Supplementary Water Management Activities like Sinking of Shallow Tubewell/Borewell, Installation of Diesel Pumpset/Electric Motors, Laying of Conveyance Pipes & Construction of Ground Level Storage Structure.

## **iv. Pradhan Mantri Krishi Sinchayee Yojana - PMKSY Watershed Development (PMKSY - WD) (The erstwhile Integrated Watershed Management Programme) PMKSY**

Integrated Watershed Management Programme (IWMP) has been renamed as PMKSY-Watershed Development and all the existing watershed development activities like Entry Point Activities (EPA), Institution & Capacity Building (ICB), Natural Resources Management (NRM), Farm Production System and Micro-Enterprises (FPS) and Livelihood

Support System (LSS) are carried out. This scheme is being implemented through 24 District Watershed Development Agencies in 26 Districts covering 2770 watersheds. Watershed Development Activities taken up under PMKSY - WD component are detailed below.

**Table 8.1 Watershed Activities & Components**

S.No.	Components	Activities
i.	Water Resources Development ( <b>Natural Resource Management</b> )	Formation of New Tanks/Ooranies, Farm ponds, Desilting of existing Tanks and Supply Channels.
ii.	Common Property Development ( <b>Natural Resource Management</b> )	Construction of Check dams, Cattle ponds, Supply Channels, Desilting Of Ooranies, Desilting of Tanks and Ponds.
iii.	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.
iv.	Plantation	Plantations relating to Horticulture, Socio- Agro Forestry, Fodder Development, Crop Demonstration and Homestead Garden.
v.	SHG and Livelihood Support System Activities for Landless farmers	Revolving fund of Rs.24,000 is provided to Self Help Groups and landless Farm Labourers and user groups of Watershed.

During the year 2018-19, Rs.115.16 crore has been sanctioned toward Central and State share on 60:40 basis for implementation of watershed Development component of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) in the State and the funds have been released to the District Watershed Development Agencies and the details of fund allocation are given below.

**Table 8.2 PMKSY - (Watershed Development)  
Financial Allocation (2018-19)  
(Rs. in Crore)**

S.No	Districts	Allocation
1	Coimbatore	6.69
2	Cuddalore	6.58
3	Dharmapuri	3.73
4	Dindigul	0.38
5	Erode	3.59
6	Kancheepuram	2.52
7	Karur	2.07
8	Krishnagiri	4.01
9	Madurai	10.46
10	Namakkal	8.49
11	Perambalur and Ariyalur	7.25

<b>S.No</b>	<b>Districts</b>	<b>Allocation</b>
12	Pudukkottai	10.63
13	Ramanathapuram	5.32
14	Salem	4.96
15	Sivagangai	1.50
16	Theni	1.92
17	Thoothukudi	5.79
18	Tirunelveli	2.19
19	Tiruvallur	1.72
20	Tiruvannamalai	0.68
21	Tiruchirapalli	12.29
22	Vellore	2.69
23	Villupuram	4.46
24	Virudhunagar	5.24
<b>Total</b>		<b>115.16</b>

The District wise physical achievement details for the financial outlay of Rs.115.16 Crore under PMKSY - Watershed Development Activities are as below.

**Table 8.3 Natural Resource Management Activities (2018-19)**

**(in Nos)**

S. No	District	Physical (NRM Activities)			
		Farm Pond	Check Dam	Others(*)	Total
1	Coimbatore	1	47	36	84
2	Dharmapuri	1	22	7	30
3	Erode	1	5	7	13
4	Karur	11	15	5	31
5	Krishnagiri	5	5	20	30
6	Madurai	1	148	31	180
7	Namakkal	9	59	137	205
8	Perambalur and Ariyalur	-	68	31	99
9	Pudukkottai	19	18	32	69
10	Ramanathapuram	19	-	104	123
11	Salem	28	23	38	89
12	Sivaganga	-	-	-	-
13	Theni	-	-	-	-
14	Thoothukudi	-	-	-	-
15	Tiruchirapalli	5	159	121	285
16	Villupuram	-	-	-	-
17	Virudhunagar	5	13	73	91
	<b>Total</b>	<b>105</b>	<b>582</b>	<b>642</b>	<b>1,329</b>

**(\*) Recharge Shaft, Renovation of Pond, Percolation Pond, New Pond etc.**

**Table 8.4 Farm Production System and Livelihood Support System Activities achievement details (2018-19) (in Nos.)**

S.No	District	Sprayers	Agriculture Implements	LSS Activities (Revolving fund to SHG's and individual beneficiaries)	Others(*)	Total
1	Coimbatore	56	126	200	-	382
2	Cuddalore	10	16	589	-	615
3	Dharmapuri	68	181	655	-	904
4	Dindigul	4	17	-	-	21
5	Erode	55	57	714	-	826
6	Kancheepuram	-	35	467	-	502
7	Karur	15	41	553	-	609
8	Krishnagiri	56	147	982	-	1,185
9	Madurai	62	207	525	-	794
10	Namakkal	53	143	464	-	660
11	Perambalur and Ariyalur	92	78	726	44	940
12	Pudukkottai	117	304	473	45	939
13	Ramanathapuram	16	202	946	-	1,164
14	Salem	11	65	621	-	697
15	Sivagangai	40	30	552	-	622
16	Theni	3	55	170	-	228
17	Thoothukudi	73	243	564	-	880
18	Tiruchirappalli	126	208	566	-	900
19	Tirunelveli	83	51	604	-	738
20	Tiruvallur	70	97	92	-	259
21	Tiruvannamalai	30	94	123	-	247
22	Vellore	59	173	-	-	232
23	Villupuram	106	101	472	-	679
24	Virudhunagar	99	165	874	20	1,158
<b>Total</b>		<b>1,304</b>	<b>2,836</b>	<b>11,932</b>	<b>109</b>	<b>16,181</b>

**(\*) Horticulture Plantation, Fodder cultivation, Vermicompost etc.**

During the year 2018-19, an amount of Rs.90.98 crore has been sanctioned as Central and State share on 60:40 basis for the implementation of Watershed Development Component of PMKSY in the State.

During the year 2019-20, it is planned to take up consolidation phase with Central and State share under PMKSY Watershed Development Component.

### **8.3 PMKSY - PDMC - Other Interventions - Supplementary Water Management Activities (SWMA)**

SWMA is being implemented with the prime objective of propagating Micro Irrigation technology among the farming community by filling the gaps for creation of Micro Irrigation source at farm or near farm gate level through supplementary water management activities with 50% back ended subsidy wherein the subsidy is released to farmers after the installation of Micro Irrigation System as detailed below.

**Table 8.5 Details of eligible Back -ended subsidies under SWMA**

<b>S. No</b>	<b>Name of the Activities</b>	<b>Eligible Back ended subsidy</b>
(A)	Sinking of shallow tube well/ Shallow/ Medium Borewell in safe Firkas	<b>50%</b> of the total cost of installation (sinking of shallow tube well/shallow/medium bore well in safe firkas and construction of open wells in hill stations/hilly areas in safe blocks limited to <b>Rs.25,000/-</b> per unit.
(b)	Installation of Diesel pumpset/ Electric Motors Pumpset in all firkas.	<b>50%</b> of the cost of electric/diesel pumpset including GST or <b>Rs.15,000/-</b> per electric/diesel pumpset whichever is less.
(c)	Laying of Conveyance Pipes.	<b>50%</b> of the cost of system limited to <b>Rs.10,000/- per Ha.</b> (includes purchase of conveyance pipes, accessories with GST besides laying).
(d)	Construction of Ground Level storage structure. (Concrete masonry)	<b>50%</b> of cost <b>limited to Rs.350</b> per cubic meter of storage capacity including protective fencing. Maximum permissible assistance will be restricted to <b>Rs.40,000/-</b> per beneficiary.

The scheme has been introduced in the State during the year 2018-19 and it is being implemented through the District Watershed Development Agency in 26 Districts and in the

remaining 5 Districts viz. Thanjavur, Tiruvarur, Nagapattinam, Kanniyakumari and Nilgris, it is implemented through the Executive Engineer (Agricultural Engineering). Government has sanctioned an amount of Rs.45.72 crore as 1st installment with the sharing pattern of 60:40 between Central and State Governments and the fund release details are given below.

**Table 8.6 PMKSY - PDMC - Supplementary Water Management Activities (SWMA) financial Allocation (2018-19)**

(Rs. in Crore)

S.No	Name of the District	Fund Allocation
1	Coimbatore	2.66
2	Cuddalore	0.83
3	Dharmapuri	0.92
4	Dindigul	0.68
5	Erode	4.23
6	Tiruppur	2.56
7	Kancheepuram	0.61
8	Karur	1.11
9	Krishnagiri	1.30

10	Madurai	1.01
11	Namakkal	3.17
12	Ariyalur	0.45
13	Perambalur	0.35
14	Pudukkottai	2.70
15	Ramanathapuram	0.82
16	Salem	0.95
17	Sivaganga	0.48
18	Theni	0.84
19	Thoothukudi	3.31
20	Tiruchirapalli	1.53
21	Tirunelveli	2.05
22	Tiruvallur	3.21
23	Tiruvannamalai	2.63
24	Vellore	1.00
25	Villupuram	1.43
26	Virudhunagar	1.48
27	Thanjavur	0.86
28	Tiruvarur	1.22
29	Nagapattinam	0.87
30	Kanniyakumari	0.33
31	The Nilgiris	0.12
<b>Total</b>		<b>45.72</b>

The District-wise physical achievement details for the financial outlay of Rs.45.72 crore under Supplementary Water Management Activities is as follows:-

**Table 8.7 SWMA - Component Wise Physical Target Details (2018-19)**

**(in Nos.)**

S.No	Name of the District	Target				TOTAL
		Sinking of Shallow/ Medium tube well/Bore well	Installation of Diesel/ Pumpset/ Electric Motors	Laying of Conveyance Pipes	Construction of Storage Structure	
1	Coimbatore	-	420	444	336	<b>1,200</b>
2	Cuddalore	20	326	139	18	<b>503</b>
3	Dharmapuri	-	180	157	103	<b>440</b>
4	Dindigul	-	103	103	90	<b>296</b>
5	Erode	185	633	683	438	<b>1,939</b>
6	Tiruppur	132	385	435	246	<b>1,198</b>
7	Kancheepuram	-	217	197	7	<b>421</b>
8	Karur	62	182	182	99	<b>525</b>
9	Krishnagiri	-	223	269	145	<b>637</b>
10	Madurai	124	124	131	73	<b>452</b>
11	Namakkal	127	550	660	270	<b>1,607</b>
12	Ariyalur	19	159	102	6	<b>286</b>
13	Perambalur	22	95	102	5	<b>224</b>
14	Pudukkottai	264	380	360	217	<b>1,221</b>
15	Ramanathapuram	74	135	134	55	<b>398</b>
16	Salem	38	133	341	58	<b>570</b>
17	Sivaganga	50	127	121	-	<b>298</b>
18	Theni	5	115	170	103	<b>393</b>
19	Thoothukudi	337	337	341	330	<b>1,345</b>

S.No	Name of the District	Target					TOTAL
		Sinking of Shallow/ Medium tube well/Bore well	Installation of Diesel/ Pumpset/ Electric Motors	Laying of Conveyance Pipes	Construction of Storage Structure		
20	Tiruchirapalli	60	287	252	139	<b>738</b>	
21	Tirunelveli	140	264	274	212	<b>890</b>	
22	Tiruvallur	80	441	498	389	<b>1,408</b>	
23	Tiruvannamalai	150	556	606	144	<b>1,456</b>	
24	Vellore	106	174	197	46	<b>523</b>	
25	Villupuram	81	330	412	48	<b>871</b>	
26	Virudhunagar	235	298	211	26	<b>770</b>	
27	Thanjavur	-	500	20	3	<b>523</b>	
28	Tiruvarur	25	665	29	5	<b>724</b>	
29	Nagapattinam	-	525	2	-	<b>527</b>	
30	Kanniyakumari	25	46	35	34	<b>140</b>	
31	The Nilgiris	-	44	40	-	<b>84</b>	
<b>Total</b>		<b>2,361</b>	<b>8,954</b>	<b>7,647</b>	<b>3,645</b>	<b>22,607</b>	

During the year 2018-19, Government has sanctioned an amount of Rs.45.96 crore with a sharing pattern of 60:40 between Central and State Governments for the implementation of 25,456 Supplementary Water Management Activities in the State.

During the year 2019-20, it is planned to continue implementation PMKSY - PDMC - Supplementary Water Management Activities.

#### **8.4 Watershed Development Fund (WDF) assisted by NABARD:**

The Watershed Development Fund scheme assisted by National Bank for Agriculture and Rural Development (NABARD) is being implemented through Tamil Nadu Watershed Development Agency since the year 2004. It is funded by State Government (with 50% loan) and NABARD (50% grant assistance)

Out of 147 projects being implemented by NABARD under the 50:50 sharing pattern with State Government, 102 Projects have been handed over by National Bank for Agriculture and Rural Development to Tamil Nadu Watershed Development Agency for the Full Implementation Phase. Out of 91 projects have been handed over from Tamil Nadu Watershed Development Agency after completion of the first part of the Full Implementation phase and the remaining 11 projects of Full Implementation Phase are under progress in Tamil Nadu Watershed Development Agency. WDF is implemented through Non Governmental Organizations (NGOs).

**Table 8.8 Major Components of WDF**

(i)	<b>Physical Area Treatment</b>	Activities like Stone Filled 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)	<b>Drainage line treatment</b>	Activities like Stone gully plugs, Renovation of water harvesting structures, Desilting of ponds, tanks, repair of supply channels.
(iii)	<b>Livelihood Support for landless women</b>	Income generating activities for Self Help Groups and landless Women.
(iv)	<b>Training</b>	Training to Watershed Association Communities and beneficiaries in the Watershed - through Participatory Rural Appraisal and help them to develop a need based watershed specific plan.

During the year 2018-19, State Government has sanctioned a budgetary provision of Rs.2.748 crore for 6 new watershed projects which has been released to 5 Districts and the details are as below.

**Table 8.9 Details of Funds Sanctioned under WDF (2018-19)**

**(Rs. in Crore)**

<b>S. No</b>	<b>District</b>	<b>Funds Released to DWDA</b>
1	Madurai	0.438
2	Tiruchirapalli	0.449
3	Tiruvallur	0.464
4	Pudukkottai (Odukkur)	0.366
5	Pudukkottai (Mambatti)	0.493
6	Cuddalore	0.538
<b>Total</b>		<b>2.748</b>

## 9. DEMAND NO.5 AGRICULTURE BUDGET ESTIMATE 2019-20

(Rupees in Thousands)

	Revenue	Capital	Loan	Total
<b>DEMAND FOR GRANT – Voted</b>	10,001,41,49	418,68,03	130,75,00	10,550,84,52
<b>Appropriation Charged</b>	3	...	...	3

## Net Expenditure

(Rupees in Thousands)

Head of Account		2017-18	2018-19	2018-19	2019-20
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
2059	PUBLIC WORKS	2,03,85	2,56,00	2,54,20	2,66,75
2401	CROP HUSBANDRY	6,203,77,95	7,091,97,69	8,070,64,01	8,695,74,64
2402	SOIL AND WATER CONSERVATION	117,86,50	135,20,44	147,02,78	91,96,37
2408	FOOD STORAGE AND WAREHOUSING	....	100,00,00	1	100,00,00
2415	AGRICULTURAL RESEARCH AND EDUCATION	495,41,63	554,59,31	453,85,82	594,87,51
2435	OTHER AGRICULTURAL PROGRAMMES	152,97,29	208,52,78	187,05,53	300,04,29
2501	SPECIAL PROGRAMMES FOR RURAL DEVELOPMENT	330,46,20	192,79,00	202,13,60	183,87,60
2551	HILL AREAS	57,13	91,46	81,96	93,24
2702	MINOR IRRIGATION	7,65,70	10,36,21	8,03,55	8,39,86
2705	COMMAND AREA DEVELOPMENT	....	34	34	34
2810	NEW AND RENEWABLE ENERGY	23,98	8,50,00	16,27,00	8,50,00
3451	SECRETARIAT – ECONOMIC SERVICES	11,38,51	13,32,25	12,71,98	13,58,88

Head of Account		2017-18	2018-19	2018-19	2019-20
		Accounts	Budget Estimate	Revised Estimate	Budget Estimate
4401	CAPITAL OUTLAY ON CROP HUSBANDRY	43,20,40	81,88,60	99,57,77	83,13,02
4402	CAPITAL OUTLAY ON SOIL AND WATER CONSERVATION	18,66,06	123,36,02	44,67,24	134,06,04
4435	CAPITAL OUTLAY ON OTHER AGRICULTURAL PROGRAMMES	131,72,52	256,63,26	136,91,72	201,48,89
4705	CAPITAL OUTLAY ON COMMAND AREA DEVELOPMENT	....	8	8	8
6401	LOANS FOR CROP HUSBANDRY	....	130,00,00	130,00,00	130,00,00
7610	LOANS TO GOVERNMENT SERVERNTS ETC.	47,50	50,00	58,50	75,00

## DEMAND NO.5 AGRICULTURE BUDGET ESTIMATE 2019-20

[Rupees in Thousands (Gross)]

S. No	Head of Department			Revenue	Capital	Loan	Total
1	05 01	Secretariat	Voted	13,58,88	...	75,00	14,33,88
2	05 02	Directorate of Agriculture	Charged	1	...	...	1
			Voted	6,788,61,59	33,12,96	130,00,00	6,951,74,55
3	05 03	Directorate of Agricultural Marketing and Agri. Business	Voted	344,96,66	201,48,89	...	546,45,55
4	05 04	Directorate of Seed Certification	Voted	54,59,42	1	...	54,59,43
5	05 05	Directorate of Horticulture and Plantation Crops	Charged	1	...	...	1
			Voted	1,798,21,81	50,00,04	...	1,848,21,85
6	05 06	Agricultural Engineering Department	Charged	1	...	...	1
			Voted	418,73,43	134,06,13	...	552,79,56
7	05 07	Agro Engineering Services	Voted	48,62	...	...	48,62
8	05 08	Tamil Nadu Agricultural University, Coimbatore	Voted	581,59,41	...	...	581,59,41
9	05 09	Directorate of Organic Certification	Voted	61,67	...	...	61,67
Total			Charged	3	...	...	3
			Voted	10,001,41,49	418,68,03	130,75,00	10,550,84,52

## **CONCLUSION**

Growth of the economy can be stepped up provided agriculture sector fares well on a sustained basis. A good performance of the agriculture sector is viewed as an effective mechanism for attainment of inclusive economic growth and poverty alleviation. Government of Tamil Nadu which is striving hard to give boost to the agricultural sector has conceptualised and is implementing many farmer-oriented policies and initiatives and is disseminating crop oriented front end technologies which have resulted in significant increase in production and Productivity of major crops.

The state-of-the-art of Agricultural technologies evolved by the State premier Academic and Research institutions viz., Tamil Nadu Agricultural University (TNAU) and other Central, State agricultural institutions and innovative traditional methods are being disseminated for adoption by the farming community through Agriculture and allied Departments.

The strenuous efforts of the Government under the dynamic leadership of Hon'ble Chief Minister of Tamil Nadu have resulted in formulation of Proactive policies, New Initiatives and Novel technological innovations in Agriculture and Food grain production besides increasing income of the farmers.

The Government has infused to bring high growth trajectory in Agriculture and Horticulture sector and introduced and implemented certified seed production and distribution to farmers, modernization of State owned farms, Hightech Horticulture cultivation viz., shadenet, poly house, high density planting etc., creation of farm ponds, subsidized micro irrigation structures for judicious use of irrigation water, promotion of farm mechanization, establishment of custom hiring centre, agro processing and marketing, establishing godowns and cold storages, other farm level primary processing activities and disseminating technological information through Uzhavan Mobile application in a massive way for the increase in farmers' income.

In addition to the regular schemes, Crop Insurance and State Disaster Response Fund as well as various special schemes announced by the Hon'ble Chief Minister of Tamil Nadu have safeguarded the farmers from impact of natural hazards and have paved way for sustained production. Thus, Tamil Nadu has stood as a frontier State in Food Grain Production, besides vegetables and fruit production.

The Government is committed to augment area, production and productivity of major crops, promoting balanced use of fertilizers, reduced use of pesticide particularly in greens and vegetables and increased use of eco-friendly Bio-Pesticides and Bio-control agents, ultimately with an aim to reduce the cost of cultivation.

Government of Tamil Nadu has been facilitating the farmers to adopt Modern Agricultural technologies, undertake collective cultivation and value addition through Farmer Producer Organizations, so as to increase the farmers' income. Because of these efforts, the State of Tamil Nadu continues to be one amongst the foremost States in Agriculture.

The State has also provided marketing facilities to farmers to get good price for their produce through Regulated Markets. Tamil Nadu also focuses on Supply Chain Management to vegetables, fruits and the perishables through primary processing centres which will be prioritized to be run by Farmer Producer Organisations. In addition, Food Parks are being established to provide employment opportunities to the rural poor and to reduce post harvest wastage of food. Introduction of Price Support Scheme in pulses has also helped farmers to get good price.

All these concerted efforts and initiatives of the Government will put Agriculture in a high growth trajectory in 2019-20 and ensuing years.

In continuation of the efforts taken by the United Nations at Global level, the Government of Tamil Nadu has actively involved in taking necessary steps for achieving 17 Sustainable Development Goals, in 2030. With respect to Agriculture, sincere efforts are being taken by Agriculture and its sister departments in the direction to reach the Goals

*viz., To end hunger, achieve food security and promote sustainable agriculture, Sustainable Management of Water and Sanitation, to take urgent action to combat climate change and its impacts and sustainable consumption and production patterns.*

**R.DORAIKKANNU**  
**Minister for Agriculture**