AGRICULTURE DEPARTMENT

CITIZEN CHARTER

2016

Policy Note 2016-2017

INDEX

INTRODUCTION

Howe'er they roam, the world must follow still the plougher's team;

Though toilsome, culture of the ground as noblest toil esteem.

(Thirukural 1031)

"My Government accords the highest priority to the Primary Sector. The focus is on improving productivity by adopting scientific agronomic practices; popularizing better water use efficiency; farm mechanization and strengthening the post harvest infrastructure and agro based industries to give a fillip to the Agriculture Sector. The initiative taken by this Government in these areas will certainly ensure a Second Green Revolution."

-Honourable Chief Minister of Tamil Nadu

Agriculture sector is the basic entity in an economy on which the activities of other sectors are determined. Agriculture fosters economic growth & development, acts as a source of raw material to industries, ensures food & nutritional security, earns foreign exchange, increases the per capita income of the farmers, increases the employment opportunities & national income and alleviates poverty.

When agriculture grows, so does the economy in general, speeding up the reduction of rural and urban poverty. A strong and vibrant agricultural system forms the primary pillar in the strategy of overall economy. In this backdrop, agriculture is beleaguered by challenges like enigmatic weather, uncertainity in rainfall, slumping land area, plummeting water resources, deteriorating soil fertility, growing unrestrainable pests & diseases, increased costs of inputs, residual effects of chemicals, labour scarcity and vacillating market prices. Government of

Tamil Nadu is taking sincere efforts to overcome these challenges.

Government of Tamil Nadu which has resolved to usher in a Second Green Revolution has formulated multifarious policies and strategies to achieve equitable,competitive and sustainable inclusive growth in agriculture.These include an array of initiatives such as holistic approach for soil and water management, adoption of crop specific innovative technologies to promote Hi-Tech agriculture, Quality Input Supply Management System, farm mechanization, integrated infrastructure development, strengthening farmer – extension system interface, promotion of market led agriculture & value chain management, extensive use of ICT tools and capacity building for better acumen which are being implemented during the Twelfth Plan period with an objective to increase the crop productivity and farmers' income.

The efforts of Government of Tamil Nadu to overcome the constraints in agriculture sector helped to bring in Agriculture Renaissance which has accelerated the growth in agriculture production. The various break - throughs in agriculture have earned more laurels to the State besides serving as a model to other states.The initiatives introduced by the Government have set in a definite path to usher in Second Green Revolution in Tamil Nadu as the state has surpassed 100 L.MT of Food Grain production in 2011-2012, 2013-2014 and 2014-2015. Needless to say, the fourth advance estimates for the foodgrain production during 2015-2016 has also been pegged at 130.63 L.MT, which has never been achieved before.

Government of Tamil Nadu has been conferred with awards galore in recognition of its creditable performance in increasing food grain production through novel initiatives and

successful technologies. Government of Tamil Nadu has thus bagged “Krishi Karman award” thrice in a period of five years from Government of India, once for the highest food grain production (2011-2012), once for the highest pulses production (2013-2014) and once for the highest coarse cereals production (2014-2015). The State has also received the “State Agriculture Leadership Award 2013” and “Food Production Program Leadership Award-2015” from the leading magazine, “Agriculture Today” for many new good initiatives taken by the Government of Tamil Nadu. Goverment of Tamil Nadu was also conferred with the “Best Big Agriculture State Award” by the popular magazine “India Today”. Government of Tamil Nadu also received the “National Gold Award for e-Governance” from Government of India for the year 2014-2015. Tamil Nadu received the Best Practices Innovative Award under the scheme IWMP for

formulating parallel online MIS. The award was presented by Minister of Rural Development, GOI in a function held at New Delhi on 19.02.2015.

Genesis of the Department

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

Agriculture Scenario of Tamil Nadu

Tamil Nadu has a total geographical area of 130.33 L.Ha (4 per cent of the total land area of the country) with a coastal line of 922 km.

Tamil Nadu has about 6 percent of the nation's population (2011 Census) and is endowed with 3 per cent of water resources of the country. The land use pattern as per the latest statistical report (2014-2015) is given below:

Table 1.1: Land Use Pattern

S. No.	Details	Area (L.Ha)	% wrt to Geographical area
1	Forest	21.25	16.3
2	Net Cropped Area (*)	48.19	37.0
3	Area under Misc. Tree crops	2.36	1.8
4	Permanent Pastures	1.08	0.8
5	Current fallow	9.98	7.7
6	Other fallow	17.34	13.3
7	Culturable Waste	3.25	2.5
8	Land put to non agricultural use	21.99	16.9
9	Barren and unculturable land	4.89	3.7
	Total Geographical Area	130.33	100
	Cropping Intensity (%)	124	-

(*){Gross Cropped area Area (59.95 L.Ha)} -
{Area sown more than once (11.75 L.Ha)}

The vicissitude in pattern of monsoon and quantum of rainfall has a major say on Agriculture. Tamil Nadu received good amount of rainfall during North monsoon (48%). As most of the regions in the central parts lie in the rain shadow region of the westernghats, the Southern and Northern ends of the state receives rainfall only during South-West monsoon (35%). The rainfall distribution during North-East monsoon, South-West monsoon, summer and winter is 48%, 35%, 14% and 3% respectively.

Tamil Nadu is one of the most water stressed States. The average annual rainfall of the state is around 921 mm which is less than the National average of 1,200 mm.The per capita availability of water resources is 750 cubic meters per year as compared to the all India average of 2,200 cubic meters.

The State has gross irrigated area of 33.94 L.Ha out of which 79% is under food crops and

21% is under non-food crops.The details of net area irrigated using various sources of irrigation across the state are as follows:

Table 1.2: Water Source wise net area irrigated

Source	Availability (Nos)	Net Irrigated Area (L.Ha.)	% wrt to Net area irrigated
Canals	2,239	6.69	24.5
Tanks	41,127	3.68	13.5
Wells	18,62,055	16.85	61.8
Others		0.04	0.2
Total		27.26	100.0

The average size of the land holding in the State is 0.80 hectare which is 44% lesser than the average size of land holding of the country (1.15 hectare).

1. AGRICULTURE

1.1. Objectives and achievements of the Department.

Agriculture sector continues to be the power packed growth engine for livelihood security, robust economy and social transformation. The performance of the agriculture sector is viewed as an effective instrument for attainment of inclusive growth.The scientific and technological innovations have brought radical changes in agriculture resulting in a significant improvement in crop production and productivity.

Tamil Nadu, one of the pioneer states in the country is Farmer centric and has brought revolutionary initiatives in Agriculture to propel the productivity and production of major crops. The Government, which has already set in for a smoother transition from conventional to commercially oriented profitable agriculture, has drawn policies of pragmatic approaches with due

importance to effective environmental conservation for intensifying the crop productivity and increasing farmers' income.

Government of Tamil Nadu has introduced a plethora of sound policies and revolutionary strategies to give impetus to agriculture by bringing in various agrarian reforms in the last five years such as - bringing fallow lands back to cultivation, Organisation of Integrated farming system inclusive of rearing of Milch Cows / goats, consolidation of fragmented land holdings through area saturation approach, augmenting water resources, Integrated Input Supply Management System (Establishment of Tamil Nadu State Seed Development Agency (TANSEDA) to ensure timely availability of high quality seeds of various crops), Mission mode approach to increase the food grain area and production (Food grain mission, System of Rice Intensification, System of Pulses Intensification, Transplanted Redgram),

Sustainable Sugarcane Initiative, Precision Farming, Promotion of traditional agro-products, Environment friendly sustainable agricultural practices (Model organic villages, Model IPM villages, New Bio-fertilizer production units and organic fertilizer testing laboratories), Pluralistic Farmer Oriented Integrated Agricultural Extension System through Intensive Multi disciplinary village level campaign and system of scheduled village visits of extension functionaries to the grower clusters, Entrepreneurial Empowerment of women in the whole gamut of agricultural activities (Involving 770 Amma farm women groups in farming), revival packages to the farmers at the time of distress, ICT based extension deliverance, farm mechanization, integrated infrastructure development, promotion of market led agriculture & supply chain management.

Table 1.3: Position of Tamil Nadu at National Level

Crop	Position of Tamil Nadu at National Level	Yield in Tamil Nadu (Kg/ha)	All India Average Yield (Kg/ha)
Maize	1	5,450	2,583
Groundnut	1	2,812	1,750
Total Oilseeds	1	2,382	1,153
Sugarcane(MT)	2	97	70
Rice	3	3,100	2,424
Sunflower	3	1,506	791
Cumbu	4	1,780	1,164
Jowar	4	1,128	926
Coarse cereals	4	2,869	1,677
Cotton	4	612	532
Food grains	6	2,396	2,101
Total Pulses	14 *	500	764

* Has advanced from the previous 21st place. (Source: Agricultural statistics at a Glance, 2013-2014)

Government of Tamil Nadu which is assiduously working to break the impasse and stagnation in the Primary Sector that continues to be the principal source of livelihood for the majority of the people, has brought in various agrarian reforms which has resulted in overwhelming food grain production in the last 5

years except 2012-2013 which was exceptionally a drought year. The food grain production is as follows:

Table 1.4: Foodgrain production in the past 5 years

Crop	Food Grain production (L.MT.)				
	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016(*)
Rice	74.59	40.50	71.15	79.49	86.98
Millets	23.24	13.42	32.73	40.79	37.92
Pulses	3.69	2.13	6.14	7.67	5.73
Total Food Grains	101.52	56.05	110.02	127.95	130.63

(*)Fourth Advance Estimate

1.2. Season - Rainfall

Tamil Nadu witnessed a mixed response during 2015 as the state received deficit rainfall during winter (January – February); heavy rainfall during summer (March – May); less quantum of rainfall during South West Monsoon (June – September) inspite it was observed as Normal in IMD parlance. The rain in North East monsoon (October – December) season exclusively during the months of November and December was

classified as “Large Excess” which is unprecedented in the current century.

1.2.1. Crop Status

Agriculture in Tamil Nadu is largely influenced by timely onset of South West and North East Monsoons, Opening of Mettur reservoir and adequate storage in major reservoirs.

During 2015-2016, there was a slow progression of South West Monsoon besides delayed opening of Mettur dam (09.08.2015) which affected the prospects of Kharif crops. This had resulted in less coverage of paddy, millets, oilseeds and sugarcane. However, the excess rainfall received during summer gave a fillip to Kuruvai paddy especially in the filter point areas of delta districts where the ground water table had increased comfortably. Eventhough the initial spell during North East Monsoon season spurred the cultivation of samba paddy besides millets, pulses and cotton raised during Rabi season, the

transgression in terms of magnitude of rainfall during December, 2015 scuttled the prospects of the crops and acted as a major catastrophe to the crops raised during Aug-Dec as vast extent under major crops was completely marooned. But the timely technological interventions taken by the Government of Tamil Nadu not only mitigated the crop loss to a greater extent but also helped in sustaining the productivity resulting in increased production of major food grains and other crops.

1.2.2. Kuruvai paddy crop

During 2015-2016, Hon'ble Chief Minister to succour Delta farmers announced special scheme for Kuruvai cultivation at an outlay of Rs.40.98 Crore. The announcement included 12 hours 3 phase power supply, mechanical transplantation of Paddy, distribution of productivity enhancing inputs (MN Mixture & Bio-fertilizer), Gypsum, ploughing subsidy and distribution of seeds of green manure & pulses at

free of cost. As a result, 3.05 L.Ac was covered against the normal area of 1 L.Ac in the filter point areas benefitting 1,67,670 farmers.

Hon'ble Chief Minister announced a special scheme for Kuruvai cultivation during 2016-2017 also at an outlay of Rs.54.65 Crore for the welfare of Delta farmers. The announcement includes 12 hours 3 phase power supply; mechanical transplantation; distribution of Inputs like Micronutrient mixture, Zinc sulphate, HDPE pipes; ploughing subsidy and distribution of pulses & green manure seeds in Cauvery Basin at 100% subsidy. It is expected to bring an area of about 3.25 L.Ac against the normal area of 1 lakh acres under paddy cultivation in the filter point areas.

1.3. Revolutionary Initiatives – 2015-2016

Tamil Nadu which is one of the pioneer states in the country has brought revolutionary initiatives to propel the production and

productivity of major crops. Nevertheless to say, the following initiatives adduce Government's concern towards the farming community in increasing the productivity and income of the farmers.

1. Implementation of a pilot project comprising of Land & Water resource development activities to bring back an area of 12,628 acres of fallow lands to cultivation in Villupuram and Tiruvannamalai districts benefitting 9,133 farmers.

2. Adoption of SRI as a whole village concept in 3,000 villages covering an area of 6.50 L.Ac (2.60 L.Ha) besides organising 2,000 SPI villages covering an area of 3.13 L.Ac (1.25 L.Ha).

3. Machine transplantation of paddy, a forward step towards farm mechanization, helps to maintain proper spacing, uniform plant population, transplantation of young

seedlings and overcome labour shortage. Considering the drudgery involved in farm operations and to encourage machine transplantation the Government has decided to promote this by giving subsidy from 2014-2015 onwards. An area of 5.76 L.Ac (2.30L.Ha) was brought under mechanical transplantation during 2014-2015 and 2015-2016 at a total cost of Rs.65.94 Crore.

4. Promotion of improved technologies in agricultural crops to enhance the productivity of crops and farmers' income by organising demonstrations in an area of 3.32 L.Ac expending an amount of Rs.92.45 Crore.

5. Formulating an Integrated seed plan to produce and distribute adequate quantity of quality seeds in time for which an amount of Rs.50 Crore has been sanctioned to Tamil Nadu State Seed Development Agency (TANSEDA) besides extending production and

distribution subsidy for seeds of Paddy, Millets, Pulses and Oilseed crops with an allocation of Rs.29.67 Crore.

6. Upgradation of the infrastructure to gradually transform 41 Government State Seed farms into Model farms by improving the irrigation potential, promoting farm mechanization and providing essential basic facilities to increase the production of quality seeds / planting materials and demonstrate location specific technologies with a financial outlay of Rs.15 Crore.

7. Establishment of Hybrid Coconut Nursery at Vaduvur Thenpathi Village, Needamangalam Block, Tiruvarur District in an extent of 15 acres at a cost of Rs.86.32 Lakh is under progress for the production of DxT hybrid seedlings which is of high demand among the farmers.

8. Ensuring the quality of fertilizers and motivating soil test-based nutrient management in all the farm holdings by installing sophisticated analytical instruments and equipments for efficient sampling besides establishing new STLs and FCLs with a financial allocation of Rs.12.28 Crore.

9. Identification and reclamation of 12,500 acres of acidic soils in Dharmapuri, Pudukottai, Sivagangai, Kanniyakumari and Tirunelveli districts to increase the production at an outlay of Rs.1.50 Crore.

10. Promotion of Farm - pond allied integrated enterprises for sustainable livelihood, organic farming through intensification of bio-pesticide production, Bio-enrichment of sugarcane fields using bio-mineraliser and rice fields by intercropping with green manure crops under Tamil State Innovation Fund (TANII) with an allocation of Rs.1.39 Crore.

11. Enhancing pulses production by adoption of transplantion in Red gram, foliar spraying of DAP and pulse wonder, production of quality seeds and Bund cropping for which an amount of Rs.15.07 Crore was allotted.

12. Providing nutritional security by increasing the production and productivity of nutri-cereals like Sorghum, Cumbu, Ragi, Samai and Kudiraivali for which a sum of Rs.2.30 Crore was allotted.

13. Safeguarding the farmers from natural perils and increasing the income of farmers & the productivity of crops in rainfed areas through extensive Integrated farming system comprising of rearing of Milch Cows/ goats at a total financial outlay of Rs.48.50 Crore.

14. Engaging farm women in Group oriented activities to enable them to improve the economic status and uplift the farm families -

770 Amma Farm Women Groups (550 groups by the Department of Agriculture and 220 groups by the Department of Horticulture & Plantation crops) have been formed and involved in entrepreneurial activities such as popularization of innovative technologies such as Redgram transplantation, Precision Farming, SSI etc by organising Demonstrations, Production and distribution of Quality Seeds & other inputs by dovetailing the funds from various ongoing schemes to the tune of Rs.113.26 Crore.

15. Creating awareness on hi-tech scientific technologies adopted in other foreign countries viz., China, Philippines, Israel and Thailand by organising International exposure visit for Agriculture for 100 progressive farmers of Tamil Nadu with an outlay of Rs.3.23 Crore besides Interstate Exposure Visit for Agriculture for 10,000 farmers to Gujarat, Maharashtra, AndhraPradesh, Telangana, Karnataka Kerala, Odisha and UttarPradesh at an outlay of Rs.4.90 Crore.

16. Extending relief assistance to the tune of Rs.407.57 Crore to restore the livelihood of 7.62 lakh farmers whose crops in an area of 3.51 L.Ha were affected by the unprecedented heavy rains during Nov- Dec, 2015.

As a result of these policies and initiatives, the State is expected to achieve a commendable performance in food grain production during 2015-2016 also. The estimate of area, production and productivity for 2015-2016 have been pegged as follows:-

Table 1.5: Performance during 2015-2016

(Fourth Advance Estimate)

Crop	Area (L.Ha)	Production (L.MT)	Productivity (Kg/ha)
Rice	20.37	86.98	4,269
Millets	9.01	37.92	4,209
Pulses	9.27	5.73	618
Total food grains	38.65	130.63	
Oilseeds	4.12	9.19	2,231
Cotton(*)	1.43	3.69	439
Sugarcane(**)	2.57	264.97	103

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

1.4. Area, Production and Productivity Programme for 2016-2017

The area, production and productivity programme of various agricultural crops during 2016-2017 is as follows:

Table 1.6: Programme for 2016-2017

Crop	Area (L.Ha)	Production (L.MT)	Productivity (Kg/ha)
Rice	20.00	93.00	4,650
Millets	10.00	45.00	4,500
Pulses	11.00	9.80	891
Total food grains	41.00	147.80	
Oilseeds	6.20	15.76	2,542
Cotton (*)	1.80	6.09	575
Sugarcane (**)	3.25	350.00	108
Total	52.25		

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

1.5. Sowing seeds of prosperity

Diversified farm holdings, climate, soil, water and other local specific factors necessitate formulation of tailor made individual farm level plans for a profitable agriculture.

The proactive strategies delineated for 2016 - 2017 are as follows:

1. Revisit of Agricultural Extension system to integrate the activities of the Department, farmers, consumers and industry

2. Effective Transfer of Technology through Village level campaigns

3. Cultivable area expansion through identification and development of fallow lands

4. Ecologically based principles and farming practices to build a robust soil health system, manoeuvre pests & diseases and obtain high value produce for better economic returns

5. Creation of water resource management structures for judicious use and replenishment

6. Strategic Input Management System (SIMS) for planning, developing, distributing and ensuring quality of critical inputs such

as seeds, fertilizers, plant protection chemicals and organic products

7. Ensure food and nutritional security by attaining self sufficiency in food grains especially in pulses.

8. Extend cost-effective and productivity-enhancing practices such as System of Rice, Millets and Pulses Intensification, Sustainable Sugarcane Initiative(SSI), precision farming, micro-irrigation and bio-farming.

9. Promote Integrated Farming as divergent agriculture system especially in rainfed areas to hedge against vagaries of monsoon and economic pressures from increased input costs, commodity price declines & fluctuation in markets and increase the income of the farmers.

10. Encourage farm mechanisation to utilise the time and space effectively besides reducing the drudgery of the farmers.

11. Stimulate Group farming, to promote inter-personal relationships for collective purchase of inputs; access to advisory services, technology & credit; production, marketing besides empowering farmers especially farm women in the holistic activities of agriculture.

12. Changeover of agriculture as a business, encourage youth in agriculture, promote entrepreneurship and create employment.

13. Strengthen the agricultural infrastructure such as irrigation, storage, market & credit facilities by increasing the public-private investment.

14. Create effective space for well built marketing system including dynamic supply chain for smallholders.

15. Insulate income loss through crop insurance besides organizational resilience for risk-mitigation.

16. Build capacity of the extension functionaries and farming community to disseminate the technologies, plan and manage resources profitably.

1.6. Facilitation Centres of Agriculture Department

The services of facilitation centres are imperative for sustainable livelihoods, enhancing farmers' well-being through knowledge, innovation and transformative actions. These centres help in improving the production, productivity and input efficiency which will greatly enhance food security and income of small and marginal farmers. The Department, to tailor the needs of the farmers, has established facilitation centres such as soil testing laboratories, fertilzer control laboratories, seed processing units, seed godowns, state seed farms, bio-fertilizer production units, Bio-control laboratories, Parasite breeding centres, Organic fertilizer testing

laboratories, IPM centres, Micronutrient mixture manufacturing unit, Farmers' Hub, Farmers Training Centres, Water Management Training Centre, State Agricultural Extension Management Institute (STAMIN) and agricultural extension centres.

1.6.1. Quality Control

The prime mandate of the Department is to provide quality inputs especially fertiliser and plant protection chemicals to the farming community by strictly enforcing the provisions of the Fertilizer Control Order (FCO), 1985 enacted under The Essential Commodities Act, 1955 and the Insecticide Act 1968 respectively. Fourteen Fertilizer Control Laboratories are functioning in the State to test samples collected by Quality Control Inspectors. Government is in the process of establishing new buildings for 6 FCL by utilising the funds provided under NADP.

During the year 2015-2016, 17,500 samples were tested of which 608 samples were found

non-standard. Action has been taken against all the defaulters. During 2016-2017, it is programmed to analyze 17,500 fertilizer samples.

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

Table 1.7: Fertilizer Control Laboratories

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

Government have established two new Organic Fertilizer Testing Laboratories at Tiruchirapalli and Coimbatore at a total cost of Rs.2.84 Crore under NADP for analysis of organic fertilizers such as Vermicompost, City Compost and De-oiled cakes which have been recently included under FCO,1985.

Central Control Laboratory located at Kudumianmalai, Pudukottai district conducts training for laboratory personnel and help calibrating and maintaining accuracy of analysis of the laboratories.

Thirty Soil Testing Laboratories and 16 Mobile Soil Testing Laboratories with a capacity to analyse 11.26 lakh soil samples annually are functioning in the State. For analysing the Micro Nutrient status of the soil, Atomic Absorption Spectrophotometers have been provided to all the Soil Testing Laboratories.

The Soil Testing Laboratories (STL) and Mobile Soil Testing Laboratories (MSTL)

functioning in the State are listed below:

Table 1.8: STLs & MSTLs functioning in the State

S.No	District	STL (*)		MSTL(**)	
1	Kancheepuram	1	Kancheepuram		
2	Tiruvallur	2	Tiruvallur	1	Tiruvallur
3	Cuddalore	3	Cuddalore		
4	Villupuram	4	Villupuram	2	Villupuram
5	Vellore	5	Melalathur		
6	Tiruvannamalai	6	Tiruvannamalai	3	Tiruvannamalai
7	Salem	7	Salem		
8	Namakkal	8	Namakkal	4	Tiruchengode
9	Dharmapuri	9	Dharmapuri		
10	Krishnagiri	10	Krishnagiri	5	Krishnagiri
11	Coimbatore	11	Coimbatore		
12	Tirupur			6	Tirupur
13	Erode	12	Erode	7	Erode
14	Tiruchirapalli	13	Tiruchirappalli		
15	Perambalur	14	Perambalur	8	Perambalur
16	Ariyalur	15	Ariyalur		
17	Karur	16	Karur	9	Karur
18	Pudukkottai	17	Kudumiyanmalai		
19	Thanjavur	18	Aduthurai		
20	Nagapattinam	19	Nagapattinam	10	Nagapattinam
21	Tiruvarur	20	Tiruvarur	11	Tiruvarur
22	Madurai	21	Madurai	12	Madurai
23	Theni	22	Theni		
24	Dindigul	23	Dindigul		
25	Ramanathapuram	24	Paramakudi	13	Paramakudi
26	Sivagangai	25	Sivagangai		
27	Virudunagar	26	Virudhunagar	14	Aruppukkottai
28	Tirunelveli	27	Tirunelveli		
29	Thoothukudi	28	Kovilpatti	15	Kovilpatti
30	Kanniyakumari	29	Nagercoil	16	Nagercoil
31	The Nilgris	30	Ooty		

(*) - Soil Testing Laboratories

(**) - Mobile Soil Testing Laboratories

In order to ensure use of quality pesticides, the department runs 15 Pesticide Testing Laboratories(PTL). These laboratories check the quality of pesticides by testing samples drawn by the Quality Control inspectors from 147 Pesticide Manufacturing Units and 13,321 private sale outlets, in accordance to the Insecticide Act, 1968 and Insecticide Rules, 1971.

During 2015-2016, 21,575 samples have been analysed of which 215 samples were found misbranded and necessary action has been taken against the defaulters. It is programmed to analyze 21,850 pesticide samples during 2016-2017. Government is also taking special efforts to strengthen 2 State Pesticide Testing Laboratories for obtaining NABL accreditation.

Table 1.9: Pesticide Testing Laboratories functioning in the State

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

1.6.2. Production Units for Agricultural Inputs

Forty one Government owned State Seed Farms play a pivotal role in growing foundation seeds required to produce good quality certified seeds in the farmers' field. These seed farms also act as centres for demonstrating latest technologies to the farmers.

Table 1.10: Seed Production Units

Table 1.10(a): State Seed Farms

(Area in acres)

S. No	District	Name of the State Seed farm	Total area
1	Kancheepuram	Panjupettai	58.76
2	Thiruvallur	Kolandalur	50.72
3	Cuddalore	Miralur	46.98
4		Vandurayanpattu	50.99
5	Villupuram	Kakuppam	31.60
6		Iruvelpattu	50.72
7		Vadakanendal	47.06
8		Vanur	60.36
9	T.V.Malai	Athiyendal	14.11
10		Vazhavachanur	36.00

S. No	District	Name of the State Seed farm	Total area
11	Salem	Danishpet	96.40
12		Mettur	57.90
13	Erode	Bhavani	73.61
14		Sathyamangalam	41.89
15	Dharmapuri	Papparapatti	14.80
16	Thiruppur	Pappankulam	26.88
17		Pongalur	39.05
18	Pudukottai	Annapannai	601.95
19	Trichy	Pudurpalayam	75.97
20		Neikuppaipudur	38.57
21	Karur	Inungur	205.44
22	Thanjavur	Sakkottai	72.18
23	Nagapattinam	Nagamangalam	63.91
24		Thirukadaiyur	45.74
25	Thiruvarur	Keeranthi	55.70
26		Kanchikudikadu	53.02
27		Devambalpattinam	92.72
28		Nedumbalam	63.73
29		Moongilkudi	47.63
30	Madurai	Vinayagapuram	45.52
31	Theni	Keezhakudalur	47.86
32	Virudhunagar	Devadanam	52.07
33	Tirunelveli	Karaiyiruppu	83.59
34	Kanniyakumari	Thirupathisaram	37.20
	Total		2,480.63

Table 1.10(b): State Oilseeds Seed Farms

(Area in acres)

S. No	District	Name of the State Seed farm	Total area
35	Kancheepuram	Musaravakkam	154.95
36	Krishnagiri	Agasipalli	24.50
37	Pudukottai	Vellalaviduthi	657.35
38	Vellore	Navlock	66.16
39	Erode	Bhavanisagar	28.39
40	Cuddalore	Neyveli (TANCOF)	301.01
	Total		1,232.36

Table 1.10(c): State Pulses Multiplication Farm

(Area in acres)

S. No	District	Name of the State Seed farm	Total area
41	Pudukottai	Vamban	475.00
	Grand Total(41 SSF)		4,187.99

Seeds produced in the Government seed farms and in farmers fields are processed by Government owned 16 major, 37 medium and 63 mini Seed Processing Units with an annual capacity of 30,000 MT.

Table 1.11: Seed Processing Units

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

Sl. No	District	No. of Units			Total
		Major	Medium	Mini	
16	Ariyalur	-	2	1	3
17	Karur	1	1	-	2
18	Pudukkottai	1	1	1	3
19	Thanjavur	2	4	1	7
20	Nagapattinam	-	2	5	7
21	Tiruvarur	1	2	3	6
22	Madurai	1	1	1	3
23	Theni	-	-	2	2
24	Dindigul	1	-	-	1
25	Ramanathapuram	-	2	1	3
26	Sivagangai	-	1	2	3
27	Virudhunagar	-	1	4	5
28	Tirunelveli	-	1	4	5
29	Thoothukudi	1	1	1	3
30	Kanniyakumari	-	1	1	2
TOTAL		16	37	63	116

Further there are 22 Government coconut nurseries and 16 crossing centres for production and distribution of quality coconut seedlings.

Table 1.12: Government Coconut Nurseries and Crossing Centres

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

Micro nutrients are essential for plant growth and play an important role in balanced crop nutrition. The Department has a Micro Nutrient Mixture Production Centre at

Kudumianmalai, Pudukottai district with a capacity to produce 1,600 MT of 14 types of notified Micro Nutrient (MN) mixtures annually. During 2015-2016, 2,607 MT of MN mixture was produced and distributed to farmers through Amma Facilitation Centres. It has been programmed to produce 2,400 MT during 2016-2017.

Three strains of Bio-fertilizers viz., Azospirillum, Rhizobium and Phosphobacteria are produced in the department owned 15 Bio-Fertilizer Production Units(BFPUs). These units have an annual production capacity of 3,000 MT of carrier based biofertilizers. Biofertilizers are distributed at a cost of Rs.6/-per packet of 200 grams. Facilities to produce 2.50 L.litres of liquid biofertilizers per annum have been created in 5 BFPUs during the year 2014-2015. Further, 7 new Liquid Bio fertilizer laboratories have been established at a cost of Rs.8.93 Crore to increase the production capacity by 3.50 L.litres. Liquid Biofertilizers of 100 ml capacity are distributed at a cost of Rs.36/-, 250 ml @ Rs.85/-, 500 ml @ Rs.150/- and 1,000 ml @ Rs.280/-. During 2015-2016, 1,305 MT of carrier Bio-fertilizers and

1.82 L.litres of Liquid Bio-fertilizers were produced and distributed.

During 2016-2017, it is programmed to produce and distribute 3,000 MT of carrier Bio-fertilizers and 3.20 L.litres of Liquid Bio-fertilizers. The list of BFPUs producing carrier based biofertilizers and liquid biofertilizers are furnished below:

Table 1.13: Bio-Fertilizer Production Units (BFPUs) and liquid biofertilizers

S. No	District	BFPU		Liquid BFPU	
1	Kancheepuram	1	Chengalpattu		
2	Cuddalore	2	Cuddalore	1	Cuddalore
3	Tiruvannamalai	3	Polur		
4	Salem	4	Salem	2	Salem
5	Dharmapuri	5	Palacode		
6	Tiruppur	6	Avinashi		
7	Erode	7	Bhavani		
8	Tiruchirapalli	8	Tiruchirapalli		
9	Pudukkottai	9	Kudumianmalai	3	Kudumianmalai
10	Thanjavur	10	Sakkottai	4	Sakkottai
11	Thiruvarur	11	Needamangalam		
12	Theni	12	Uthamapalayam		
13	Ramanathapuram	13	Ramanathapuram	5	Ramanathapuram
14	Tirunelveli	14	Tenkasi		
15	Thoothukudi	15	Thoothukudi		

The Department also runs 10 Bio-control labs & 2 Integrated Pest Management (IPM) Centres for producing Bio-control agents.

Table 1.14: Biocontrol Laboratory, IPM centres and Parasite Breeding Centres

Sl. No	District	Bio Control Laboratory/ IPM Centre	Parasite Breeding Centre	
			Sugarcane	Coconut
1	Kancheepuram	Panjupettai (IPM)	Maduranthagam	Chengalpattu
2	Tiruvallur			Putlur
3	Cuddalore		Virudhachalam	Cuddalore
4	Villupuram	Villupuram	Villupuram	
5	Vellore		Ambur	Melalathur
			Gudiyatham	Vaniyambadi
			Tiruppathur	Natrampalli (Tiruppathur)
6	Salem	Seelanaickanpatti		Sukkampatti
7	Namakkal	Namakkal	Mohanur	Paramathivelur
8	Dharmapuri	Papparapatti	Papparapatti	Dharmapuri
9	Coimbatore	Coimbatore		Aliyar Nagar
10	Tirupur		Udumalaipettai	
11	Erode	Bhavani	Bhavani	Gobi
12	Tiruchirappalli	Tiruchirappalli	Lalgudi	Tiruchirappalli
13	Thanjavur	Kattuthottam	Thanjavur	Kattuthottam
14	Nagapattinam		Mayiladuthurai	
15	Madurai	Vinayagapuram	Melur	Melur
		Vinayagapuram (IPM)		

16	Ramanathapuram			Uchipuli
17	Sivagangai			Sathurvethi Mangalam
18	Virudhunagar			Devadhanam
19	Tirunelveli	Palayamkottai		Senkottai
20	Thoothukudi			Udankudi
21	Kanniyakumari			Bhoodhapandi

Following bio control agents are produced and distributed to the farmers at subsidized cost through Amma Facilitation Centres:-

Table 1.15: Biocontrol agents

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

1.6.3. Agriculture Information Dissemination Centres

Government of Tamil Nadu aims at disseminating innovative technologies through 880 Amma Facilitation Centres that serve as “One Stop Centre” for stocking & distributing critical inputs, agriculture implements, plant protection equipments, providing advisories on all “seed to seed” activities etc. Out of these, 146 centres are being upgraded as Integrated Agricultural Extension Centres (IAEC).

Table 1.16: Amma Facilitation Centres

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

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
Total	383	497	880

(*) Agricultural Extension Centres (AECs)

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

Table 1.17: Farmers Training Centres

S. No	District	Location
1	Kancheepuram	Kancheepuram
2	Villupuram	Tindivanam
3	Vellore	Vellore
4	Tiruvannamalai	Tiruvannamalai
5	Salem	Salem
6	Namakkal	Namakkal
7	Dharmapuri	Dharmapuri
8	Krishnagiri	Krishnagiri
9	Erode	Erode
10	Tiruchirapalli	Tiruchirapalli
11	Perambalur	Perambalur
12	Karur	Karur
13	Pudukkottai	Kudumianmalai
14	Thanjavur	Sakkottai
15	Theni	Theni
16	Dindigul	Dindigul
17	Ramanathapuram	Paramakudi
18	Sivagangai	Sivagangai
19	Virudhunagar	Virudhunagar
20	Tirunelveli	Palayamkottai
21	Thoothukudi	Thoothukudi
22	Kanniyakumari	Nagercoil

Water Management Training Centre at Vinayagapuram, Madurai district is functioning from 1985 with a capacity to train 180 field

functionaries and 900 farmers annually on irrigation technologies and irrigation efficiency.

The State Agricultural Extension Management Institute (STAMIN) functioning at Kudumianmalai, Pudukkottai district is the main centre for training of Extension Officers of the department. Annually 1,100 field functionaries are trained.

A State Agricultural Management and Extension Training Institute (SAMETI) has been established in the year 2012-2013 in the premises of STAMIN, to provide consultancy services in areas of project planning, project appraisal, etc.,

1.7. Developmental Pathways in Agriculture

The Government of Tamil Nadu is a trend setter to other states in formulating and implementing several welfare schemes to uplift the farming community. The Government develops pro-farmer schemes by identifying,

assessing and evaluating the requirements of the farmers and putsforth growth oriented initiatives under State Sponsored Schemes, Centre-State Shared Schemes, Centrally Sponsored Schemes and Externally Aided Projects. The Government designs new schemes focussing on soil fertility, Bio-farming, frugal use of water resources, productivity enhancement components, suitable farm crop plan for better use of inputs, eco-friendly practices, innovative methods to increase the crop productivity, quality of produce, easy marketability, high returns besides creating awareness on all aspects of Agriculture.

1.7.1. Seeds

The use of good quality seeds of improved high yielding varieties and hybrids is the master key for productive agriculture. The Government established an exclusive agency viz.,Tamil Nadu State Seed Development Agency (TANSEDA) during 2015-2016 with a revolving fund of

Rs.50 Crore to take up seed / seedling production and distribution of seed / seedlings of all agricultural crops like Paddy, Millets, Pulses, Oilseeds, Cotton and Coconut for ensuring timely supply of good quality certified seeds/seedlings at an uniform rate throughout the state and encourage the use of certified seeds among the farmers so as to achieve the Seed Replacement Rate (SRR) of 33% for self pollinated crops such as paddy, ragi, pulses and groundnut, 50% for cross pollinated crops such as cholam, cumbu and cotton and 100% for hybrids of all crops.

The state level first seed price policy of TANSEDA for the procurement and sale of quality certified seeds of both Foundation and Certified class was fixed in 2015-2016 and 18,912 MT of quality certified seeds of agricultural crops were procured and totally 21,158 MT of seeds including 2,246 MT of seeds procured during the last season of the previous year were distributed to 4.73 lakh farmers through 880

Amma Facilitation Centers. Also 8.96 Lakh coconut seedlings were distributed.The cropwise details of seeds procured and distributed during 2015-2016 is furnished below:

Table 1.18: Seed Procurement and Distribution 2015-2016

Crop	Seed Procured (MT)	Seed Distributed (MT)
Paddy	15,472	15,598
Millets	87	268
Pulses	2,070	3,418
Oilseeds	1,281	1,871
Cotton	2	3
Total	18,912	21,158

During 2016-2017, it has been programmed to procure and distribute 32,282 MT of Seeds to about 8.39 lakh farmers. Further 12.01 Lakh coconut seedlings will be distributed.

Table 1.19: Seed Procurement and Distribution Plan– 2016-2017

Crop	Seed Procurement (MT)	Seed Distribution (MT)
Paddy	25,000	26,400
Millets	352	400
Pulses	4,250	4,315
Oilseeds	2,640	3,000
Cotton	40	40
Total	32,282	34,155

1.7.2. Macro Nutrients

The basic concept underlying integrated plant nutrient management system is the increase of soil fertility for sustaining enhanced crop productivity through optimal use of all nutrient resources including inorganic fertilizers in an integrated manner and as appropriate to each specific ecological, social and economic situation.

Tamil Nadu which is determined to restore the soil health of about 81.18 Lakh farm holdings launched the “Distribution of Farmers

Integrated Hand Book (FIHB)" during 2011-2012 and about 67.45 lakh FIHBs have been distributed from 2011-2012 to 2014-2015. As this initiative was the first of its kind in the entire country, this successful initiative has been emulated by Government of India and a new scheme viz., Mission Soil Health Card was launched during 2015-2016. Under this scheme, about 4.23 Lakh soil samples were analysed and 24.29 Lakh Soil health cards were distributed based on grid sampling.

During 2016-2017, it has been programmed to analyse 6.75 lakh samples and distribute 43.15 lakh Soil Health cards.

The state draws fertilizer plan every year based on the soil type, fertility index, current fertility status, soil-plant relationship, cropping pattern, crop plan for the year and climatic conditions focusing on needs of the farmer, economic viability, long-term sustainability of

fertility of the soil and environment. The Government makes necessary arrangements with Government of India to preposition the required quantity of fertilizers. Government of Tamil Nadu is also taking earnest efforts every year to ensure availability of adequate quantity of quality fertilizers in time at affordable prices for the welfare of the farmers by exempting 4% VAT on fertilizers & 5% VAT on Naphtha procured by MFL and SPIC to allow continuing of Naphtha based Urea production in the State besides sanctioning interest free loans to Tamil Nadu Cooperative Marketing Federation (TANFED). In the last five years (2011-2012 to 2015-2016) a sum of Rs.719.38 Crore was provided to TANFED. During 2016-2017, a sum of Rs.150 Crore has been allocated for procuring and prepositioning of fertilizers through TANFED.

The fertilizer distribution during 2015-2016 and requirement for 2016-2017 is furnished below:-

Table 1.20: Fertilizer distribution during 2015-2016 & Requirement for 2016-2017

(L.MT)

Fertilizer	Distribution 2015-2016	Requirement 2016-2017		
		Kharif	Rabi	Total
Urea	11.38	4.50	7.90	12.40
DAP	2.61	1.75	3.30	5.05
MOP	2.80	1.50	3.70	5.20
Complex	4.93	3.00	4.50	7.50

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

1.7.3. Plant Protection

The seasonal variability in weather patterns influenced by preceding and prevailing climatic conditions, change in cropping pattern, cropping intensity act as conducive factors for the incidence of pests and diseases which cause substantial reduction in crop production. Government of

Tamil Nadu which is unswerving in its commitment to achieve an ambitious production target in food and Non-Food crops is taking all out efforts to plug the deterrent factors and increase the production. As a part of this, the Government has set up automatic weather stations at block level to record weather parameters and issue pest forecast to farmers besides conducting intensive pest surveillance, advocating Integrated pest management, increasing the efficiency and capacity of the existing Government owned infrastructure to intensify the production of Bio-control agents, quality control of Plant protection chemicals and creating awareness among the farmers on plant protection measures.

The quantity of plant protection chemicals distributed during 2015-2016 is furnished below:

Table 1.21: Distribution of Plant Protection Chemicals during 2015-2016

Component	Quantity	Value (Rs in Crore)
Dust(MT)	3088	5.68
Liquid(Lit)	4,98,604	32.41

1.7.3.1. Pest & Disease Surveillance

Incidence of pest and diseases is intensively monitored by conducting fixed plot survey and roving survey at weekly intervals and on daily basis respectively besides forewarning on pest and diseases outbreak. Location specific, crop specific forewarnings are given and farmers are advised to take appropriate control measures through SMS & Voice advisories, radio, television, pamphlets, and campaigns, etc.

1.7.3.2. Integrated Plant Health Management

In order to address the adverse impacts of chemical pesticides on agro-ecosystems, Agro-Ecosystem Analysis (AESA) based Integrated Plant Health Management (IPM), a holistic approach of crop protection integrating multiple strategies viz., plant health at different stages, built-in compensation abilities of plants, pest – defender population dynamics, soil conditions, climatic factors & farmer's past experience has been evolved over Economic Threshold Level (ETL) based approach.This approach is likely to smother the adverse effects on agro-ecosystems and decrease the escalated cost of agricultural production caused due to problems of pest resurgence, insecticide resistance and sustainability.

Government of Tamil Nadu which is keen on promoting environment friendly and farmer friendly sustainable agricultural practices has established 150 model "Eco-Friendly Integrated Pest Management Villages" to transfer Elite, Novel and Low cost pest management technologies.Ecological Engineering based Plant Health Management (PHM), Agro Eco-System Analysis (AESA) based IPM villages and "On Farm Production" techniques of Bio-control agents are also promoted. The mission was implemented to promote the usage of Bio-control agents in Agriculture, discourage the use of harmful chemical pesticides, reduce the cost of cultivation and increase the income of farmers by production of toxin free food production.The details of biocontrol agents produced and distributed by

the Farmer Interest Groups(FIG) in 150 IPM villages is furnished below:

Table 1.22 : Biocontrol Agents Produced and distributed in 150 model IPM villages

S. No	District	No. of FIGs (*)	Quantity produced & Distributed		
			Trichoderma viridi (MT)	Tricho-gramma chilonis (cc)	Reduvid bugs (No)
1	Ariyalur	10	7	0	0
2	Trichy	5	3	150	10,200
3	Namakkal	5	3	0	0
4	Dharmapuri	13	7	0	0
5	Dindigul	5	3	0	0
6	Karur	8	5	1,600	0
7	Krishnagiri	17	14	0	0
8	Pudukottai	8	7	1,600	0
9	Salem	7	4	1,400	1,40,000
10	Ramanathapuram	14	8	2,710	28,000
11	Sivagangai	14	8	0	0
12	Thoothukudi	16	10	3,200	16,000
13	Perambalur	6	4	0	0
14	Vellore	7	5	0	0
15	Tirunelveli	5	0	0	180
16	Virudhunagar	10	6	0	0
Total		150	94	10,660	1,94,380

(*)-Farmer Interest Groups

The various eco-sustainable practices promoted by Government of Tamil Nadu have helped to reduce the consumption of pesticides from 10,926 MT of technical grade in 1984-1985 to 2,050 MT in 2015-2016.

1.8. Schemes

The Government which is steadfast in achieving the target set for 2016-2017 has come out with unassailable schemes which mainly focus to improve the yield per unit of land / water. Apart from that, considerable importance has been accorded to crop-specific strategies for attaining higher level of production. Further new strategies are being evolved to break yield barriers, increase Input Use Efficiency and diversify to more sustainable and high value crops.

1.8.1.National Agricultural Development Programme

National Agricultural Development Programme, a special Central Assistance Scheme, implemented as a comprehensive agriculture development plan based on the agro-climatic conditions, natural resources and technologies to spur more inclusive and integrated development in Agriculture and allied sectors is being implemented in the state from 2015-2016 onwards with the sharing pattern of 60:40 between the Centre and State. During 2011-2012 to 2015-2016, extensive activities have been taken up at a total cost of Rs.862.52 Crore.

Table 1.23 : Performance under NADP

(Rs in Crore)

Year	Expenditure
2011-2012	134.87
2012-2013	306.97
2013-2014	150.93
2014-2015	87.46
2015-2016	182.29
Total	862.52

During 2016-2017, activities viz., Food grain production Improvement Programme - Paddy, millets & pulses, Integrated Production Improvement Programme for Oilseeds,Cotton & Sugarcane(SSI), enrichment of soil fertility through sugarcane trash mulching & application of green manure seeds, production incentive and distribution subsidy for quality seed, distribution of coconut seedlings, control of red palm weevil and upgradation of infrastructure facilities are taken up at a total outlay of Rs.237.47 Crore.

1.8.2. National Food Security Mission

The National Food Security Mission , a 100% central assistance scheme was introduced with an objective to increase the productivity of food grain crops especially rice and pulses. Later, it was extended for coarse cereals and commercial crops (cotton and Sugarcane) from 2014-2015; and the sharing pattern being revised as 60:40 between centre and state from 2015-2016 onwards.The mission focuses on cultivation of food grain crops in rainfed areas; increasing pulses area and production through intercropping, bund cropping & cultivation in rice fallows; besides implementation of improved agronomic practices and cropping system centric interventions.

The details of amount spent for various crops from 2011-2012 to 2015 -2016 are furnished below:

Table 1.24 : Performance under NFSM

(Rs in Crore)

Crop	Expenditure
Rice	117.27
Coarse cereals	12.80
Pulses	138.23
Cotton	0.86
Sugarcane	0.84
Total	270.00

During 2016-2017, the programme will be implemented with a total allocation of Rs.84.69 Crore under various crops.

1.8.2.1. National Food Security Mission (NFSM) for Rice

National Food Security Mission for Rice is implemented in 8 districts viz., Pudukottai, Tiruvarur, Nagapattinam, Ramanathapuram, Sivagangai, Thanjavur, Tiruvannamalai and Cuddalore. During 2011-2012 to 2015-2016, a sum of Rs.117.27 Crore was spent for implementation of the scheme.

The various interventions introduced in the last five years in the NFSM implemented districts had a significant impact on area, production and productivity of rice.

Table 1.25: Impact of NFSM in Rice

Details	2007-08 (Inception)	2014-15	% increase
Area (L.Ha)	5.95	10.07	69
Production(L.MT)	8.69	41.37	376
Productivity(kg/Ha)	1460	4109	181

During 2016-2017, activities such as Cluster demonstrations on direct seeded Rice / Line transplanting/ Swarna Sub-1 Rice Technology & cropping system based demonstrations, green manure planting with paddy, distribution of quality seeds of High Yielding varieties & hybrids, micro nutrients, plant protection chemicals, bioagents, sprayers, seed drill, rotavators, pumpsets, assistance for custom hiring paddy transplanters & combine harvesters besides cropping system based trainings are taken up at an outlay of Rs.20.64 Crore.

1.8.2.2. National Food Security Mission (NFSM) for Pulses

National Food Security Mission for Pulses is implemented in all districts except Chennai and the Nilgiris. An amount of Rs.138.23 Crore was extended as subsidy for promotion of the scheme during 2011-2012 to 2015-2016.There was a significant impact on area, production and productivity of pulses due to introduction of various innovative components in the districts where NFSM was implemented.

Table 1.26: Impact of NFSM in Pulses

Details	2007-08 (Inception)	2014-15	% increase
Area (L.Ha)	4.15	8.84	113
Production(L.MT)	1.18	7.67	550
Productivity(kg/Ha)	285	868	205

Government of Tamil Nadu to commemorate the year 2016 been declared as International Year of Pulses by United Nations Organisation, is implementing activities

such as cluster demonstrations on improved package of practices in Red gram, Black gram and green gram, demonstrations on intercropping with maize, groundnut, cotton and cropping system based demonstrations, distribution of certified seeds of high yielding varieties, assistance for production of pulses seeds, Integrated Nutrient & Pest Management and distribution of resource conservation technology tools viz., tractors, sprayers and rotavators. Efficient water application tools like sprinkler, mobile raingun, pumpsets, pipes for carrying water are distributed to expand the irrigated area under pulses. Further marketing support is extended to Farmer Producer Organisations for activities like establishment of mini dhal mill, support for branding and setting up procurement centres to grade and process pulses. All the above said activities are taken up with an annual allocation of Rs.54.38 Crore during 2016-2017.

1.8.2.3. National Food Security Mission (NFSM) for Coarse Cereals

As millets are of high nutritive value, National Food Security Mission was exclusively launched for coarse cereals during 2014-2015 in 10 districts viz., Salem, Coimbatore, Dharmapuri, Krishnagiri, Tiruchirapalli, Perambalur, Tirupur, Dindugul, Theni and Thoothukudi. So far, an amount of Rs. 12.80 Crore has been spent towards the promotional activities of millet cultivation.

The location–specific technologies implemented have contributed to the increase in the productivity and production of millets in the NFSM districts.

Table 1.27: Impact of NFSM in Coarse cereals

Details	Before Inception 2013-14	After inception 2014-15	% increase
Production(L.MT)	19.20	23.55	23
Productivity(kg/Ha)	3544	4368	23

During 2016-2017, potential millet growing blocks have been identified and demonstrations on production technologies and intercropping with pulses are taken up in a cluster approach besides quality seed production & distribution of high yielding varieties and hybrids with a total financial allocation of Rs.8.66 Crore.

1.8.2.4. National Food Security Mission (NFSM) for Commercial crops

National Food Security Mission for Commercial crops mainly emphasizing on a cluster based cropping system approach for the

major commercial crops viz., Cotton and Sugarcane is being implemented since 2014-2015.

NFSM for cotton based cropping system is implemented in districts viz., Salem, Dharmapuri, Madurai, Virudunagar, Tirunelveli, Theni, Dindugul, Villupuram, Perambalur, Thoothukudi and Coimbatore. An amount of Rs.86 Lakh has been spent during 2014-2015 & 2015-2016 towards frontline Demonstrations on integrated crop management, seed production in desi and extra long staple cotton and trials on high density planting system. During 2016-2017, the project is implemented with a budget allocation of Rs.51.00 Lakh.

NFSM for sugarcane based cropping system is implemented in Cuddalore, Villupuram, Salem, Namakkal, Erode, Ariyalur and Thanjavur districts. During 2014-2015 and 2015-2016, a total sum of Rs.84 Lakh was extended as subsidy

towards activities such as Front line Demonstrations on intercropping and State level training. This scheme will be continued during 2016-2017.

1.8.3. National Mission for Sustainable Agriculture (NMSA)

National Mission for Sustainable Agriculture is implemented by Government of Tamil Nadu from 2014-2015 to cater to key dimensions of 'Water use efficiency', 'Nutrient Management' and 'Livelihood diversification' particularly in rainfed areas, through adoption of sustainable development pathway by progressively shifting to environmental friendly technologies, adoption of energy efficient equipments, conservation of natural resources, integrated farming in rainfed areas, etc. Besides, NMSA aims at promoting location specific improved agronomic practices through soil health management, augmentation of water resources, judicious use of chemicals, crop diversification, progressive adoption of

crop-livestock farming systems and integrated approaches like crop-sericulture, agro-forestry, fish farming,etc.

The scheme was implemented with 100% Central assistance during 2014-2015 and subsequently revised to 60:40 sharing pattern between the Centre and the State in 2015-2016. The scheme was implemented at a total cost of Rs.61.21 Crore in the last two years towards activities such as integrated farming system comprising of cropping systems and milch animals / small ruminants, reclamation of problematic soils besides establishing vermicompost units under Rainfed Area Development (RAD); strengthening of analytical laboratories & establishment of organic villages under Soil Health Management(SHM); promotion of organic farming through cluster approach under Participatory Guarantee System (PGS) of certification under Paramparagat Krishi Vikas Yojana (PKVY) and distribution of soil health cards

under Mission Soil Health Card. The activities taken up during 2015-2016 under NMSA are detailed below:

Table 1.28: Significant activities taken up under NMSA during 2015-2016

Activities	Achievement
1. Rainfed Area Development (RAD)	
a. Integrated Farming System	
Cropping system Demonstrations (Ha)	13,212
Distribution of Milch animals (Nos)	6,875
Distribution of Small Ruminants (9+1 Unit)	6,337
b.Value addition and Resource Conservation	
Establishment of Vermicompost units(Nos)	1,322
2.Parambaragat Krishi Vikas Yojana(PKVY)	
Mobilization of Farmers to form clusters and registration as regional council (Nos)	42
3.Mission Soil Health card	
Soil sample collection (L.Nos)	4.23
Soil sample analysis(L.Nos)	4.23
Distribution of Soil Health Card (L.Nos)	24.29

During 2016-2017, the scheme is proposed to be implemented with an allocation of Rs.40.19 Crore.

1.8.4. National Mission on Oilseeds & Oilpalm (NMOOP)

Integrated scheme on Oilseeds, Pulses, Oil palm and Maize (ISOPOM) restructured as National Mission on Oilseeds and Oil Palm (NMOOP) was launched during 2014-2015 envisaging increase in production of vegetable oils sourced from oilseeds, oil palm and Tree Borne Oilseeds (TBOs). The Mission comprises of three Mini Missions one each for oilseeds, oilpalm and TBOs with Centre and State Government financial assistance on 60:40 basis.

During 2011-2012 to 2015-2016, an amount of Rs.66.14 Crore was spent towards the productivity improvement of oilseeds, oilpalm & TBOs (2014-2015 onwards).

During 2016-2017, this mission will be implemented with a total allocation of Rs.15.01 Crore.

The details of total amount allocated under the three mini-missions from 2011-2012 to 2015 -2016 are furnished below:

Table 1.29 : Allocation under NMOOP

(Rs in Crore)

Crop	Allocation
Oilseeds	64.99
Oilpalm	12.75
Tree borne Oilseeds	1.17
Total	78.91

1.8.4.1. Mini Mission-I on Oil Seeds

Mini Mission–I implemented in all the districts except Kanniyakumari, Chennai & the Nilgiris focuses on components such as quality seed production and distribution, varietal diversification, seed infrastructure development, plant protection, distribution of improved farm implements besides transfer of technology.

An amount of Rs.58.55 Crore has been spent during 2011-2012 to 2015-2016 for implementation of components for increasing oilseed production.

During 2016-2017, components such as purchase of breeder seeds, production and distribution of foundation and certified seeds, transfer of latest technologies through Block demonstrations (Groundnut) and distribution of Rotavator will be implemented with a financial allocation of Rs.9.12 Crore.

1.8.4.2. Mini Mission-II on Oil Palm

Mini Mission-II is implemented with an aim to expand the area by supplying quality planting materials besides maintaining the already established plantations by providing production inputs for intercropping & establishment of vermicompost units, diesel pumpsets, machinery and tools besides transfer of technology.

The scheme was implemented at a cost of Rs.6.65 Crore during 2011-2012 to 2015-2016.

The scheme will be implemented during 2016-2017 with a financial allocation of Rs.4.02 Crore in all the districts except Kanniyakumari, Chennai, Nilgiris, Thoothukudi and Madurai.

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

Mini Mission-III for tree crops viz., Neem and Pungam is implemented in Sivagangai, Virudhunagar, Ramanathapuram, Thoothukudi, Madurai, Tirupur, Dindugul, Villupuram, Pudukottai, Tiruvannamalai and Tirunelveli. The mission focuses on promotion of nurseries of tree borne oilseeds and plantation of Neem and Pungam on waste lands, intercropping and training of farmers on improved practices. The scheme was implemented at a total cost of Rs.94 Lakh in 2014-2015 and 2015-2016.

During 2016-2017, the scheme will be continued with a total allocation of Rs.1.87 Crore.

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

NMAET was envisaged to restructure and strengthen agricultural extension by judicious mix of extensive physical outreach & interactive methods of information dissemination, use of ICT, popularisation of modern & appropriate technologies, capacity building and institution strengthening to promote mechanisation, availability of quality seeds, plant protection etc and encourage the aggregation of farmers into Interest groups to form Farmer Producer Organisations (FPOs). The Mission consists of 4 Sub Missions viz., Sub-Mission on Agricultural Extension (SMAE), Sub-Mission on Seed and Planting Material (SMSP), Sub-Mission on Agricultural Mechanization (SMAM) & Sub-Mission on Plant Protection and Plant Quarantine (SMPP).

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

Support to State Extension Programmes for Extension Reforms Scheme (SSEPERS) under Sub-Mission on Agricultural Extension (SMAE) is implemented with Centre - State pattern of assistance of 60:40 for all extension activities, Innovative Technology Dissemination (ITD) components and functionary support and Centre - State pattern of assistance of 50:50 for farmer friend in all the districts of Tamil Nadu except Chennai in coordination with Agriculture, Horticulture and Plantation Crops, Animal Husbandry, Sericulture, Fisheries, Forestry, Agricultural Engineering, Agricultural Marketing and Agri Business, Seed Certification and Organic certification department and Tamil Nadu Agricultural University, Tamil Nadu Veterinary and Animal Sciences University and Tamil Nadu Fisheries University.

The Cafeteria of activities such as training, demonstration, exposure visit, awards, farmer - scientist interactions, joint visits by scientists and extension workers, organising kisan gosthies and farm school, innovative technology dissemination components were taken up within the district, state and at inter- state level from 2011-2012 to 2015-2016 at a cost of Rs.145.43 Crore.

The scheme is proposed to be implemented with a financial allocation of Rs.56.96 Crore during 2016-2017.

1.8.5.2. Sub-Mission on Seed and Planting Material (SMSP)

Sub-Mission on Seed and Planting Material (SMSP) has been conceptualised to cover the entire gamut of seed chain from nucleus seed to certified seeds and also provide support for infrastructure for development of seed sector with a sharing pattern of 60:40 between Centre and State. Every year, activities such as distribution of Foundation/Certified seeds of

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

The scheme was implemented at a cost of Rs.100.37 Crore from 2011-2012 to 2015-2016.

The scheme is proposed to be continued during 2016-2017 with an allocation of Rs.14.28 Crore.

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

The growth of e-agriculture has the potential to accelerate agriculture and rural development, promote food security and reduce rural poverty. ICT plays a more significant role in improving sustainability, efficiency and returns of small scale farming; speedy implementation of activities; facilitates relationship with seeds and

fertilizer suppliers besides seamless access to cultivation information and best practices.

Government of Tamil Nadu will develop new software applications for effective and speedy delivery of Extension service to farmers.

1.8.6. Agriculture Insurance Schemes

Agriculture has become a risky venture due to catastrophe resulting in heavy loss to crops. Government of Tamil Nadu which is very much concerned with the welfare of the farming community implements crop insurance schemes which are best suited to the climatic conditions of the State, needs of farmers and that have wide options for risk coverage.

Government of Tamil Nadu has implemented various crop insurance schemes viz., National Agricultural Insurance Scheme, Modified National Agricultural Insurance Scheme, Weather Based Crop Insurance Scheme and Coconut Palm Insurance Scheme under which a sum of

Rs.217.44 Crore was extended as premium subsidy to about 41.88 Lakh famers who were enrolled from the year 2011-2012 to 2015-2016. A state share of Rs.655.07 Crore has also been extended as compensation to about 10.12 lakh farmers during the same period.

Government of Tamil Nadu will implement a new scheme “Pradhan Mantri Fasal Bima Yojana” (PMFBY) from 2016 - 2017 onwards in 31 Districts of Tamil Nadu except Chennai. Hitherto, the Crop Insurance Scheme which was implemented at firka level will now be implemented at revenue village level which would facilitate to estimate the crop loss precisely and ensure accurate compensation to the farmers. Uniform seasonality discipline has been fixed for both loanee and non-loanee farmers to enroll under the scheme. Further, this new scheme covers more risks like failed prevented planting and mid season adversities from sowing till harvest caused due to natural calamities in lieu of

estimation based on yield loss. Likewise crop loss at farm level and post harvest losses in the fields are also covered under this new scheme.

Government of Tamil Nadu has extended an amount of Rs.160 Crore annually as its share towards premium subsidy and compensation to crop loss under the Crop Insurance Schemes implemented in the previous years. However, on implementation of this new scheme, the state's annual expenditure is expected to be Rs.487 Crore. Besides PMFBY, Coconut Palm Insurance Scheme (CPIS) which is already under implementation will be continued during 2016-2017 in all the districts.

Another scheme "Unified Package Insurance Scheme" (UPIS) introduced by GOI to cater to all insurance needs (machinery, life, accident, house, student safety etc) of the farmer including crop insurance is proposed to be

implemented on a pilot basis in Cuddalore and Nagapattinam districts of Tamil Nadu.

1.8.7. Coconut Development Board Assisted Schemes

Coconut, a perennial crop is cultivated in Tamil Nadu in an extent of 4.28 L.Ha with an annual production of about 498.65 crore nuts and productivity of 11,655 nuts per Hectare. As there are better prospects in Tamil Nadu to bring more area and increase the production besides value addition in coconut, the Government of Tamil Nadu is implementing various schemes with the assistance of Coconut Development Board for increasing the production and distribution of quality planting material of Tall, 'Tall x Dwarf' and 'Dwarf x Tall' coconut seedlings, creating production potential by bringing more area under coconut and improving the production & productivity of existing coconut trees through an integrated approach by popularizing scientific

management techniques. Annually, around 9 Lakh coconut seedlings are produced. Of this, 4.80 lakh seedlings are distributed at subsidized rate under NADP while the balance seedlings are distributed at full cost. During 2011-2012 to 2015-2016, a sum of Rs.12.53 Crore was spent for all these activities.

The scheme will be continued during 2016-2017 with an allocation Rs.1.88 Crore.

1.8.8. Integrated Soil Fertility Management (ISFM)

Integrated Soil Fertility Management (ISFM) is the key aspect in an agricultural production system that works on the principle of “feed the soil to feed the plant.” ISFM strategies centre on the combined use of mineral fertilizers, locally available soil amendments (such as lime and Gypsum) and organic matter (crop residues, compost and green manure) to replenish lost soil nutrients. This improves both soil quality and the efficiency of fertilizers & other agro-inputs.

Government of Tamil Nadu to restore the soil health is exercising successful farmer-to-farmer promotion of sustainable soil management practices such as soil specific nutrient management through soil sampling and analysis & distribution of Soil Health card, Bio-organic fertilization, reclamation of Acid and Alkali soils, detailed soil survey through four soil survey and land use organization units at Coimbatore, Thanjavur,Vellore and Tirunelveli as per the Internationally recognised system of United States Department of Agriculture (USDA).

1.8.8.1. Integrated Agro-Ecological Approaches for Soil Fertility Management

The sustained functioning and resilience of ecosystems depend on conserving the diverse interacting species in the soil that can improve the capacity of the crops to withstand stressful environmental conditions. Bio-Organic Fertilization is an affordable, appropriate and adaptable tool for small farm holdings to conserve soil

microfauna.The major components of this technological package include:

1. 5000 Kits each containing 1 Kg of Pleurotus and 5 Kg of Urea are distributed every year to the farmers free of cost to produce compost from the farm waste using Pleurotus.

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

3. Annually, 250 MT of Green Manure Seeds are procured and distributed to the farmers at a subsidy of 50% for in-situ ploughing in order to increase organic content in soil.

    a) Bio-enrichment of soil by intercropping Green Manure Crops in Rice agro ecosystem to increase the fertilizer use efficiency and productivity of rice was implemented under Tamil Nadu

Innovation Initiatives scheme during the year 2015-2016 at a cost of Rs.30 Lakh.

b) This scheme will be taken up during 2016-2017 in an extent of 1,000 Ha at a cost of Rs.4.00 Lakh under National Food Security Mission.

The quantity of bioproducts produced and distributed during 2015-2016 and the programme for 2016-2017 are furnished below:

Table 1.30 : Bioproducts – Distribution during 2015-2016 & Programme for 2016-2017

Bioproducts	Quantity distributed in 2015 -2016	Programme 2016-2017
Blue green algae(MT)	519	525
Green Manure Seeds(MT)	203	250
Pluerotus Kits(Nos)	3500	5000
Azolla(MT)	447	500

4. On-farm soil fertility enrichment in sugarcane fields by producing bio-compost using Bio-mineraliser was taken up during

the year 2015-2016 at a total cost of Rs.50 Lakh.

5. Sugarcane crop residue management through trash mulching was taken up in an area of 29,641 Ha from 2013-2014 to 2015-2016 at a total cost of Rs.7.11 Crore. The scheme will be continued during 2016-2017.

6. Promotion of organic farming through Intensification of Bio-pesticide production and awareness on usage of bioproducts was taken up during the year 2015-2016 with a total allocation of Rs.44.15 Lakh.

1.8.9. Tamil Nadu Cotton Cultivation Mission

Tamil Nadu Cotton Cultivation Mission was launched in the State during 2014-2015, with an objective to increase the productivity and production of cotton by expansion of cotton area over a period of five years. The scheme

was implemented in all districts except Chennai, The Nilgiris, Kancheepuram, Tiruvallur, Karur, Pudukottai, Sivagangai and Kanniyakumari during 2014-2015 and 2015-2016.

Interventions such as Production and distribution of quality varietal seeds, precision farming, farm mechanization, improved agronomic practices, integrated irrigation, nutrient, weed, pest and disease management approaches were executed at a cost of Rs.39.03 Crore since the inception of the scheme.

An additional area of about 35,737 Ha was brought during 2014-2015 through adoption of water saving techniques in irrigated & rainfed conditions and cultivation in current fallows & rice fallows of delta districts.

It is programmed to continue the mission with a budget allocation of Rs.4.175 Crore during 2016-2017.

1.8.10. TN 'Irrigated Agriculture Modernization and Water-Bodies Restoration and Management' (TN-IAMWARM)

TN-IAMWARM project-I implemented at a cost of Rs.101.60 Crore till June 2015, in 61 selected sub basins, resulted in increased adoption of System of Rice Intensification (SRI), crop diversification and technologies leading to 39 per cent increase in average productivity of paddy, 42 per cent in maize and 57 per cent in pulses. The Government of Tamil Nadu with all the fervour of developing the balance 66 sub basins and increasing the irrigated area has conceptualized TN- IAMWARM Project-II and the project in principle has been agreed by the World Bank. This project will be implemented in 18 selected sub-basins in Phase I.

1.8.11. Crop Yield Competition

Government is advocating various scientific approaches and ensuring effective adoption at

field level to increase the productivity of crops. Crop Yield Competitions are conducted to motivate and encourage farmers to produce the best through innovation and dedication. Every year, competitions are conducted for irrigated paddy, maize, cholam, cumbu, groundnut, redgram, blackgram, greengram, cotton & sugarcane and rainfed groundnut at District and State level.

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

productivity at State and District level are indicated hereunder.

Table 1.31 : Cash prizes at State and District level

Crop	State Level		District Level	
	1st Place (Rs.)	2nd Place (Rs.)	1st Place (Rs.)	2nd Place (Rs.)
Paddy, Groundnut, Cotton & sugarcane	25,000	15,000	15,000	10,000
Other Crops	15,000	10,000	10,000	5,000

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

1.9. Human Resource Management

To provide extension and advisory services round the clock to the ultimate users – the farmers - for optimizing their productivity and income and to provide networking of agriculture

sector, the Department of Agriculture functions with a total strength of 4,838 technical staff (Commissionerate of Agriculture) and 8,275 non-technical staff (including all sister Departments).

Table 1.32:Technical Establishment

(Commissionerate of Agriculture)

Name of the Post	Sanctioned Strength
Additional Director of Agriculture	5
Joint Director of Agriculture	31
Deputy Director of Agriculture	122
Assistant Director of Agriculture	418
Agricultural Officer	1,096
Deputy Agricultural Officer	337
Total Technical officers	2,009
Assistant Seed Officer	509
Assistant Agricultural Officer	2,320
Total field functionaries	2,829
Total Technical Staff	4,838

Table 1.33: Non-Technical Establishment (including all sister Departments)

Name of the Post	Sanctioned Strength
Deputy Director of Agriculture (Administration)	4
Administrative Officer	44
Superintendent	515
Assistant	1,521
Junior Assistant	914
Typist	689
Depot Manager(Gr-I)	143
Depot Manager (Gr-II)	281
DepotManager(Gr-III)	589
Steno-Typist (Gr-I)	6
Steno-Typist (Gr-II)	57
Steno-Typist (Gr-III)	146
Driver	560
Lab Assistant	135
Record Clerk	205
Office Assistant / Watchman	2,466
Total Non-Technical Staff	8,275

2. HORTICULTURE AND PLANTATION CROPS

The Department of Horticulture was bifurcated from the Department of Agriculture in the year 1979 and it is functioning with separate service rules from 27.11.2015 onwards.

Horticulture sector is a key driver for economic development of our country by providing higher income, rural employment opportunities and enable better livelihood to the farmers. Horticulture impacts our lives on a daily basis by providing nutritious fruits, vegetables and flowers, also paving way for nutritional security.

The demand for fruits and vegetables is highly increased due to high awareness on nutrition. Hence, there is considerable increase of area and production of Horticultural Crops over the years.

2.1. Tamil Nadu Position in Horticultural crops at National Level

Tamil Nadu is in the forefront at the National level in area, production and productivity of Horticultural crops due to implementation of various special schemes. Tamil Nadu occupies first place in area under cultivation of Banana (1.18 Lakh Ha), Tapioca (1.21 Lakh Ha), Cocoa(24,000 Ha) and flowers (55,000 Ha). Also it stands first in the production of Banana (56.50 Lakh MT), Tapioca (49.76 Lakh MT), Plantation crops (48.42 Lakh MT) and Loose flowers (3.44 Lakh MT).

Among all the states, Tamil Nadu stands first in the productivity of Papaya (98.7 MT/Ha), Pomegranate (32.7 T/Ha), Sapota (32.80 MT/Ha), Vegetables (30.00 MT/Ha) and Tapioca (41.30 MT/Ha).

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

Tamil Nadu ranks third in the area under cultivation of Grapes (3,000 Ha), Plantation crops (6.35 Lakh Ha) and Pepper (4,000 Ha) at National level.

Table.2.1: Tamil Nadu – Position of Horticultural Crops at National Level

Sl. No.	Crops	Area (Lakh Ha)	Production (Lakh MT)	Productivity (MT/Ha)
	First Place			
I	Fruits			
1.	Banana	1.18	56.50	-
2.	Papaya	-	-	98.7
3.	Pomegranate	-	-	32.7
4.	Sapota	-	-	32.8
II	Vegetables	-	-	30.0
	Tapioca	1.21	49.76	41.3
III	Plantation		48.42	-
	Cocoa	0.24	-	-
IV	Flowers	0.55	-	-
	Loose flowers	-	3.44	-
	Second Place			
I.	Aromatic crops	-	1.62	-
	Third Place			
I	Fruits - Grapes	0.03	-	-
II	Plantation Crops	6.35	-	-
III	Spices - Pepper	0.04	-	-

Table-2.2: Area, Production and Productivity of Horticultural crops (2015-2016 and 2016-2017)

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

CROPS	2015-2016 (Estimate)			2016-2017 (Target)		
	Area	Production	Productivity	Area	Production	Productivity
Fruits	2.94	62.61	21.30	3.03	67.62	22.32
Vegetables	2.93	78.92	26.94	3.02	85.26	28.23
Spices And Condiments	1.16	8.21	7.08	1.20	8.86	7.38
Plantation Crops	7.06	13.48	1.91	7.26	14.55	2.00
Aromatic Plants	0.14	2.31	16.50	0.15	2.49	16.60
Flowers	0.26	3.52	13.54	0.27	3.81	14.11
TOTAL	14.49	169.05	11.67	14.93	182.59	12.23

Doubling the production and tripling the income of the farmers as envisaged by the Hon'ble Chief Minister of Tamil Nadu through adoption of Hi-Tech Horticulture technologies, improved Post Harvest Management is the prime policy of the Department of Horticulture.

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

2.2. Activities of Horticulture Department

2.2.1. National Horticulture Mission (NHM)

National Horticulture Mission is being implemented from 2005-2006 onwards with the main objective of bringing holistic growth of horticulture in Tami Nadu. From the year 2014-2015 onwards, this scheme was implemented as a sub scheme under Mission for Integrated Development of Horticulture (MIDH). This centrally sponsored scheme is being

implemented with fund sharing pattern of 60:40 between the Centre and State from 2015-2016.

National Horticulture Mission is being implemented in 22 districts of Tamil Nadu viz., Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kanniyakumari, Krishnagiri, Madurai, Perambalur, Pudukottai, Ramanathapuram, Salem, Sivagangai, Thanjavur, The Nilgiris, Theni, Tirunelveli, Tirupur, Trichy, Vellore and Villupuram.

The main focus of National Horticulture Mission is to increase the production and productivity of horticultural crops through adoption of afore said technologies.

During the year 2015-2016, National Horticulture Mission was implemented with an outlay of Rs.97.66 crore. Area expansion of Horticulture crops had been taken up in an area of 12,228 ha. Also, an area of 1,500 ha of senile and old orchards was rejuvenated, Pollination was

supported in Horticulture crops by distribution of 10,885 number of bee hives with bee colonies. Under protected cultivation, poly green houses were erected in 6.87 lakh Sq.m area and high value horticulture crops such as Capsicum, Cucumber, Gerbera, Rose and Carnation are being cultivated.

Establishment of Centre of Excellence for hilly vegetables at Ooty and Centre of Excellence for tropical fruit crops at Trichy is being established with an allocation of Rs.11 crore.

During this financial year 2016-2017, establishment of new gardens, rejuvenation of senile orchards, protected cultivation, pollination support through bee keeping, mechanization in horticulture, creation of water resources, vermicompost production, Human Resource Development, integrated nutrient management, pack house, pre cooling units and cold storage unit under integrated post harvest management,

marketing infrastructure facilities and special intervention will be taken up with an allocation of Rs. 91.72 crore.

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

Micro Irrigation is a method for utilising every drop of irrigation water in an economic and efficient way. Irrigation is the critical deciding factor for increasing the production and the productivity of crop. Tamil Nadu has only 3 percent water resources compare to the National level. Hence, it is necessary to use water more economically and efficiently. Micro irrigation improves water use efficiency by 40% – 60%. Since, the fertilizers are directly applied to the root zone through irrigation water, besides saving the fertilizer leads to increase in production also.

From the year 2015-2016, Government of India have changed subsidy pattern and given separate subsidy for DPAP and non DPAP block. The 60% subsidy given to all small and marginal farmers was maintained as 60% only in DPAP block and reduced to 45% in non DPAP block. Similarly for other category of farmers the already existed subsidy of 50% was reduced to 45 % in DPAP block and to 35% in non DPAP block. Further Government of India have revised the subsidy sharing pattern as 60:40 between Central and State Government. But, Tamil Nadu is the only State in the country, extending 100% subsidy to Small and Marginal farmers and 75% subsidy to other category farmers irrespective of DPAP and Non DPAP blocks.

Table-2.3: Pattern of Assistance of centre and state

GOI / GOTN subsidy	DPAP area		Non DPAP area	
	SF/MF	Others	SF/ MF	Others
As per Government of India Guideline				
Government of India	36%	27%	27%	21%
Government of Tamil Nadu mandatory subsidy	24%	18%	18%	14%
Additional Subsidy given by the State Government				
Government of Tamil Nadu additional subsidy	40%	30%	55%	40%
Total Government of Tamil Nadu share(2+3)	64%	48%	73%	54%
Total Subsidy	100%	75%	100 %	75%

(SF – Small Farmer, MF – Marginal Farmer)

Table-2.4: Details of achievement from 2011-2012 to 2015-2016 in Micro Irrigation scheme

S.No	Year	Total		No of Beneficiaries		
		Physical (Ha)	Financial (Rs. In Crore)	SF/MF	Others	Total
1	2011-2012	27,550	87.44	13,997	10,559	24,556
2	2012-2013	26,538	135.34	23,316	12,036	35,352
3	2013-2014	39,780	288.25	32,634	10,553	43,187
4	2014-2015	12,518	119.76	8,557	2,155	10,712
5	2015-2016	32,288	242.23	24,838	6,631	31,469
Total		1,38,674	873.02	1,03,342	41,934	1,45,276

(SF – Small Farmer, MF – Marginal Farmer)

Installation of micro irrigation system of the financial year 2015-2016 is being carried out in an extent of 32,288 Ha, with a financial outlay of Rs.242.23 crore benefiting 31,469 numbers of farmers.

During the year 2016-2017, it is programmed to cover an area of 46,099 Ha (Horticultural crops - 34,684 Ha, Agricultural crops – 11,415 Ha) with a financial outlay of Rs.319.58 Crore.

2.2.3. National Agricultural Development Programme (NADP)

National Agricultural Development Programme (NADP) is a Government of India and the State government shared scheme with a sharing pattern of 60:40. During 2015-2016, major thrust was given for the implementation of protected cultivation, establishment of new State Horticulture Farms and perimetro vegetable cluster development programme at an outlay of Rs.26.62 crore.

During the year 2016-2017, it is proposed to implement productivity enhancement programme of Horticulture Crops, Onion development programme, Agro Ecosystem Analysis (AESA) based insect pest management on fruits and vegetables, enhancing production through bee keeping, mission for promoting potager gardens and demonstration for establishment of protray turmeric seedlings in shade net nursery at farmer's field at an outlay of Rs.80.77 crore.

2.2.4. Perimetro Vegetable Cluster Development Programme

The objective of the scheme is to encourage cultivation of vegetables in districts adjacent to cities to meet the demand for vegetables of Metropolitan cities. This scheme is being implemented in 6 clusters namely, Chennai, Coimbatore, Trichy, Madurai, Salem and East coastal districts.

Cultivation of vegetables, formation of Farmer clusters / Farmer federation, construction of vegetable collection centres, establishment of mobile / permanent vegetable outlets, etc., are supported under this programme.

Table-2.5: Details of cluster wise fund allotment

S. No	Region	Districts	Fund Allocated (Rs. In Crore)
1	Chennai	Kancheepuram, Vellore, Tiruvallur, Villupuram and Thiruvannamalai	17.00
2	Coimbatore	Coimbatore, Erode, Nilgiris and Tiruppur	17.00
3	Trichy	Trichy, Ariyalur, Perambalur, Kaur, Pudukottai and Dindigul	12.00
4	Madurai	Madurai, Theni, Sivagangai, Virudhunagar and Ramanathapuram	2.55
5	Salem	Salem, krishnagiri, Dharmapuri and Namakkal	2.45
6	East Coastal Districts	Cuddalore, Tirunelveli, Thuthookudi and kanniyakumari	5.02
		Total	56.02

During the year 2015-2016, Rs.5.02 Crore was allocated for implementing this scheme in East Coastal districts like Cuddalore, Tirunelveli, Thoothukudi and Kanniyakumari and the scheme is in implementation.

This scheme implementation will be continued in 2016-2017 in all clusters.

2.2.5. National Mission on Sustainable Agriculture (NMSA)

This scheme is a centre and state shared scheme with a sharing pattern of 60:40. Rainfed Area Development (RAD) and Paramparagat Krishi Vikas Yojana (PKVY) are the sub-schemes implemented under this scheme.

2.2.5.1. Rainfed area development (RAD)

During the last financial year 2015-2016, Horticultural based farming and protected cultivation components were implemented in 30 districts at an outlay of Rs.10 Crore.

During current year 2016-2017, it is proposed to implement Horticulture based farming in an area of 3,200 Ha in 16 districts of Tamil Nadu viz., Ariyalur, Coimbatore, Cuddalore, Dindigul, Erode, Karur, Krishnagiri, Namakkal, Perambalur, Pudukkottai, Salem, Sivagangai, Tiruvannamalai, Trichy, Vellore and Villupuram at an outlay of Rs.8 Crore.

2.2.5.2. Paramparagat Krishi Vikas Yojana (PKVY)

Paramparagat Krishi Vikas Yojana encourages organic farming and certification by following simple method called Participatory Guarantee system (PGS) and marketing them in the local market by cluster approach. This is a three year programme which was started implementing from 2015-2016. During the last year 2015-2016, this scheme is being implemented in 27 districts namely, Ariyalur, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kancheepuram, Kanniyakumari, Karur,

Krishnagiri, Madurai, Namakkal, Pudukkottai, Salem, Sivagangai, Tiruvannamalai, Thanjavur, The Nilgiris, Theni, Tiruppur, Tirunelveli, Tiruvallur, Trichy, Tuiticorin, Vellore, Villupuram and Virudhunagar districts by forming 51 clusters, covering 2,550 acres at an outlay of Rs.3.60 Crore.

During this year 2016-2017, the second year programme of this scheme will be implemented in the same 51 clusters at an outlay of Rs.2.54 Crore.

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

This scheme is being implemented with a sharing pattern of 60:40 between Centre and State through Ministry of AYUSH, Government of India. The objective of the scheme is to encourage cultivation of medicinal plants. The cultivation of medicinal plants such as Coleus, Gloriosa, Senna, Catharanthus roseus, Amla,

Solanum nigrum, Thippili and Tulsi are encouraged in Tamil Nadu.

During the last financial year 2015-2016, the scheme was implemented in an area of 395 ha with an outlay of Rs.25 Lakh.

It is planned to continue the scheme in this financial year 2016-2017 also.

2.2.7. National Agro forestry and Bamboo Mission (NABM)

National Agro forestry and Bamboo Mission is being implemented to encourage bamboo cultivation in non–forest areas. This scheme is being implemented with a sharing pattern of 60:40 between Centre and State. In this scheme, 35% of the cost of cultivation at the maximum of Rs.10,500/ha is given as subsidy.

During the last financial year 2015-2016, Bamboo cultivation was carried out in an area of 125 Ha with a financial outlay of Rs.45 Lakh.

It is programmed to continue the scheme in this financial year 2016-2017 also.

2.2.8. Integrated Horticulture Development Scheme (IHDS)

Area Expansion of Horticultural crops is the main objective of this scheme. High yielding and hybrid vegetable seeds and quality planting materials are distributed at 40% subsidy through this scheme. This scheme is being implemented in 9 districts namely, Karur, Kancheepuram, Namakkal, Nagapattinam, Tiruvarur, Tiruvannamalai, Tiruvallur, Tuticorin and Virudhunagar.

During the last financial year 2015-2016, this scheme was implemented at a financial outlay of Rs.3.33 Crore with the area expansion of 4,604 ha in Horticultural crops.

This scheme will be continued in the year 2016-2017 also.

2.2.9. Cocoa Area Expansion Programme

This scheme is implemented with the fund sharing pattern of 60:40 between Centre and State government. During 2015-2016, Cocoa area expansion was done in 1,000 ha of Tamil Nadu with an amount of Rs.1.2 Crore. This scheme was implemented in 14 districts viz., Coimbatore, Dindigul, Erode, Kanniyakumari, Karur, Madurai, Namakkal, Salem, Tirunelveli, Thanjavur, Theni, The Nilgiris, Tirupur and Tiruvannamalai.

As announced in the budget speech for the current year 2016-2017, Cocoa cultivation will be encouraged in Tamil Nadu.

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

a) IAMWARM is a Multidisciplinary Project funded by World Bank and implemented by the Government of Tamil Nadu.

b) The main objective of the programme is to accelerate crop diversification from crops requiring more water to high remunerative and less water requiring horticultural crops especially cultivation of vegetables, using water saving technologies to increase the productivity.

c) In phase-I of IAMWARM project, which was implemented till June, 2015, area expansion of Horticultural crops was carried out in an area of 49,580 ha in 61 sub basins at an outlay of Rs.77.47 Crore.

d) In Tamil Nadu, it is programmed to implement the second phase of this scheme from 2016 -2017.

e) The proposed project activities are area expansion, promotion of residue free vegetables cultivation, pandal vegetable cultivation, post harvest management, microirrigation, protected cultivation and mulching.

2.2.11. Horticulture Training Centres (HTC)

In Tamil Nadu 4 Horticulture Training centers are functioning at Madhavaram in Tiruvallur district, Ooty in The Nilgris district, Kudumiyanmalai in Pudukottai district and Thally in Krishnagiri district. Through these training centres, training in Hi-tech cultivation of Horticulture crops is being imparted to farmers.

In the current year 2016-2017, these trainings to farmers will be continued.

Two years Diploma Course in Horticulture is being offered at Horticulture Management Institute, Madhavaram, Tiruvallur district for 40 students every year.

2.2.12.Creation of Infrastructure facilities

District Horticulture Information and Training Centres are being established in 10 districts namely, Tiruvallur, Kancheepuram, Krishnagiri, Pudukottai, Ramanathapuram,

Virudhunagar, Ariyalur, Tirunelveli, Cuddalore and Villupuram at an outlay of Rs.6 Crore under National Agriculture Development Programme.

Also, District Horticulture Information and Resource Centres are being established in 5 districts namely, Salem, Namakkal, Theni, Sivagangai and Thiruvannamalai at an outlay of Rs.3.25 Crore.

Under Part-II scheme, District Horticulture Extension and Information Centres were established in Dharmapuri, Erode and Trichy with an outlay of Rs.1.7 Crore and infrastructure facilities were created in Horticulture Training Centre at Kudumiyanmalai, Pudukottai district with an outlay of Rs.45 Lakh.

2.3. State Horticulture Farms

The objective of the Farms is to produce and distribute pedigree and quality planting materials of horticulture crops to the farmers. There are 56 State Horticulture Farms functioning in

22 districts of Tamil Nadu. The farms also serve as demonstration centres on the latest technology, farm mechanization, modern irrigation methodologies etc., to the farmers.

The following modern technologies are being demonstrated in the State Horticulture Farms.

1. High density planting of Mango and Cashew.
2. Canopy Management in Mango orchards.
3. Raising vegetable seedlings in protrays.
4. Soft wood grafting in Mango.
5. Introduction of new varieties of Mango, Pomegranate, Guava and pepper
6. Drip irrigation with fertigation to field crops
7. Cultivation of high yielding hybrid Varieties

The National Horticulture Board of Government of India has given accreditation to 34 State Horticulture Farms for production of quality planting materials.

Considering the welfare of farmers of the state, steps are being taken to establish State Horticulture Farms in all the districts. Accordingly, farms are being established in Vengalam village in Perambalur district, Thozhappan pannai in Tuticorin district and Paguthampalam village in Erode district.

During the current year 2016-2017, it is programmed to produce 498 lakh numbers of planting materials.

Table 2.6: State Horticulture Farms (SHF) list

Sl. No.	District	Name of the SHF	Year of Establishment	Area (Ha.)
1	Coimbatore	Anaikatty	1986	12.00
2		Kannampalayam	2001	11.20
3	Cuddalore	Neyveli	1985	39.53
4		Vridhachalam	1975	10.43
5	Dharmapuri	Polayampalli	2013	2.73
6	Dindigul	Sandhaiyur	2013	15.20

Sl. No.	District	Name of the SHF	Year of Establishment	Area (Ha.)
7		Kodaikanal	1961	3.25
8		Thandikudi	1985	5.45
9		Reddiarchatram	1994	5.33
10		Sirumalai	1980	200.04
11	Kancheepuram	Athur	1961	12.24
12		Vichanthangal	1982	23.25
13		Melkadirpur	1982	42.63
14		Melottivakkam	1982	20.60
15		Pitchivakkam	1982	34.00
16	Kanniyakumari	Kanniyakumari	1922	12.64
17		Pechiparai	1967	6.00
18	Karur	Mudalaipatti	1978	23.96
19	Krishnagiri	Thimmapuram	1952	9.51
20		Jeenur	1980	121.96
21	Madurai	Poonjuthi	2012	5.76
22	Namakkal	Semmedu	1974	11.60
23		Padasolai	1989	22.67
24	Pudukottai	Kudumianmalai	1974	118.68
25		Vallathirakottai	1977	521.20

Sl. No.	District	Name of the SHF	Year of Establishment	Area (Ha.)
26		Nattumangalam	1985	53.02
27	Salem	Yercaud	1975	6.04
28		G.O Karumandurai	1981	419.77
29		SHF Karumandurai	1981	39.35
30		Maniyarkundram	1982	100.00
31		Gene Bank (Karumadurai)	2014	4.000
32		Mulluvadi	1985	48.40
33		Sirumalai	1987	8.00
34	Sivagangai	Devakottai	1985	81.19
35		Nemam	1979	38.77
36	Thanjavur	Aduthurai	1988	8.90
37		Marungulam	1966	10.70
38	The Nilgiris	Burliar	1871	6.25
39		Kallar	1900	8.92
40		FPU Coonoor	1965	4.05
41		PS Coonoor	1948	10.46
42		Doddabetta	1969	4.08
43		Thummanatty	1956	9.80
44		Nanjanad	1917	64.00
45		Devala	1978	80.00

Sl. No.	District	Name of the SHF	Year of Establishment	Area (Ha.)
46		Colgrian	1989	20.40
47	Theni	Periyakulam	1950	9.32
48	Tiruvallur	Madhavaram	1980	4.38
49	Trichy	Thorakudi	2013	4.05
50	Vellore	Thagarakuppam	1985	34.40
51		Kudapattu	1961	10.08
52		Navlock	1981	84.42
53	Virudhunagar	Poovani	1967	9.46
54		Srivilliputhur	1982	46.27
55	Ramnad	Oriyur	2013	14.77
56	Thiruvannamalai	Thombaretti	2014	3.05
Total Area				2,538.16

2.4. Parks and Gardens

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

Table 2.7: Details of Parks and Gardens

(in Acre)

Sl. No	Name of the Park / Garden	District	Area
1.	Government Botanical Garden, Ooty	Nilgiris	55.00
2.	Government Rose Garden, Ooty		36.00
3.	Sim's Park, Coonoor		30.35
4.	Kattery Park at State Horticulture Farm, Kattery.		47.40
5.	Tea Park at DoddaBetta & Butterfly Garden, Devala		10.50
6.	Bryant Park, Anna Park & Chettiyar Park, Kodaikanal	Dindigul	25.70
7.	Anna Park & Lake Park, Yercaud.	Salem	7.85
8.	Rose Garden at SHF, Yercaud.		15.26
9.	Genetic Heritage Garden, Yercaud.		20.68
10.	Government Botanical Garden, Yercaud.		36.45
11.	Semmozhi Poonga	Chennai	7.93
12.	ECO Park, Courtallam	Tirunelveli	37.23
13.	Genetic Heritage Garden, Achadipirambu	Ramnad	10.00

2.5. Annual Flower and Fruit Shows

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

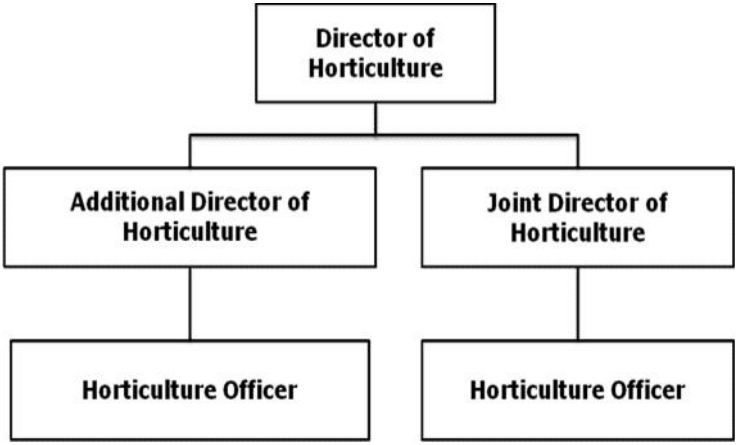
Fruit show at Sim's Park, Coonoor (The Nilgiris), Mango show at Krishnagiri, Vegetables show at Kotagiri (The Nilgiris) and Spices show at Gudalur (The Nilgiris) are very popular among the tourists.

Another important event conducted by the Department is the Rose Show at Government Rose Garden, Ooty. This show exhibits popular and interesting (attractive) structures made out of Roses of different colours. Similarly, 'Saral Vizha'

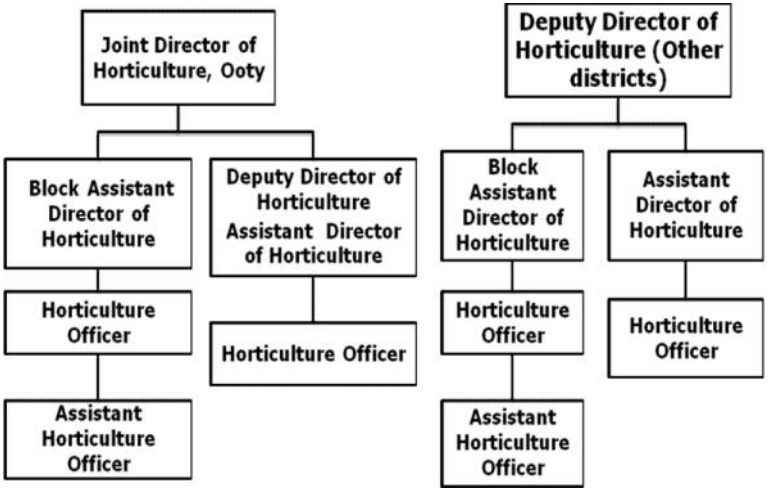
is held at ECO Park at Courtallam in Tirunelveli district.

2.6. Department of Horticulture and Plantation Crops

2.6.1. Organization set up of Directorate of Horticulture



2.6.2.Organizational set up in Districts



2.6.3.Tamil Nadu Horticulture Development Agency (TANHODA)

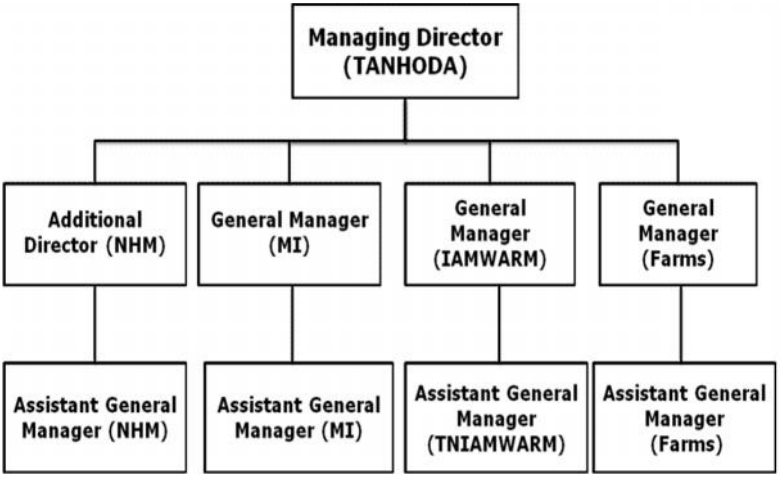


Table 2.8: Department of Horticulture and Plantation Crops Abstract of all staffs

(Technical and other staffs details)

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

Table 2.9: Details of Horticulture Department staff

S. No	Staffs details	Total posting
1	Additional Director of Horticulture	2
2	Joint Director of Horticulture	6
3	Deputy Director of Horticulture	39
4	Assistant Director of Horticulture	398

5	Horticulture officer	404
6	Deputy Horticulture officer	123
7	Assistant Horticulture officer	1,633
8	Assistant Seed Officer	5
9	Non Technical Staff details Deputy Director(Admin), Chief Account Officer, Administrative officer, Accounts officer, Assistant Accounts officr, Superintendent, Assistant, Junior Assistant, other posts)	1,223
	Total	3,833

2.7. Tamil Nadu Horticulture Development Agency (TANHODA)

Tamil Nadu Horticulture Development Agency is registered as society under Tamil Nadu Societies Registration Act, 1975 and acts as “Special Purpose Vehicle” in implementing various Horticulture Schemes funded by Government of India and Government of Tamil Nadu. The major schemes operated through

TANHODA are Mission on Integrated Development of Horticulture (National Horticulture Mission and National Agroforestry and Bamboo Mission), Micro Irrigation scheme under Per Drop More Crop component of Pradhan Mantri Krishi Sinchayee Yojana, National AYUSH Mission - Medicinal Plants, State Horticulture Farms and Tamil Nadu IAMWARM Project.

TANHODA also serves as a Special Purpose Vehicle for procurement and supply of quality inputs of seeds and Water Soluble Fertilizers for Agricultural and Horticultural schemes. The Governing Council of TANHODA acts as an Empowered Committee for the Special Purpose Vehicle. An interest free amount of Rs.50 Crore as revolving fund is utilized for purchase of seeds and water soluble fertilizers for timely supply to the farmers.

2.8. Tamil Nadu Horticultural Producers Co-Operative Enterprises Limited (TANHOPE)

Tamil Nadu Horticultural Producers Co-operative Enterprises Limited (TANHOPE) was registered in the year 1994 as a primary Horticultural Co-operative Society under Tamil Nadu Co-operative Societies Act 1983 for the benefit of small and marginal horticultural farmers.

The main objective is to encourage and support horticultural activities with market linkages in the State. The President is elected by Board of Directors and a Joint Director of Horticulture act as Managing Director of TANHOPE.

3. AGRICULTURAL ENGINEERING

3.1. Introduction

Agricultural Engineering Department is working for the Conservation, Development and Management of the Land and Water Resources of Tamil Nadu. Agricultural Mechanisation, Water management in Command Areas, Soil and Water Conservation in catchment areas and Rain Water Harvesting and Runoff Management, Artificial recharging of ground water and Promotion of Solar Pumping systems, Solar driers as a Green Energy Initiative are the schemes implemented by the Agricultural Engineering Department.

3.2. Agricultural Mechanisation

Farm Power plays a vital role in agricultural production. Agricultural Mechanization assumes greater importance in the context of growing labour scarcity during peak agricultural seasons, completing farming operations in time and

reducing the drudgery of labourers. By ensuring timely Agricultural operations, mitigating the impact due to the shortage of agricultural labourers bringing more area under cultivation. The overall agricultural productivity is increased due to Agricultural mechanisation practices. Small, marginal, scheduled caste, scheduled tribe and woman farmers will be provided with upto 50% subsidy and other category farmers will be provided with upto 40% subsidy.

3.2.1. National Agriculture Development Programme (NADP)

In 2015-2016, 4,897 agricultural machinery and implements were distributed to farmers with a subsidy allocation of Rs.19.56 Crore. During the year 2016-2017, the agricultural machinery and implements such as Power Tiller, Rice Transplanter, Seed Drill, Power Weeder, Balers, Multi Crop Thresher, Chaff Cutter, Brush Cutter, Zero Till Seed Cum Fertilizer Drill, Coconut Tree Climber, Sprayers, etc. are

proposed to be distributed to the individual farmers under subsidy programmes. The farmers would benefit by selecting any make and model of Agricultural Machinery and Implements according to their own choice from the approved list of firms manufacturing Agricultural Machinery and Implements.

3.2.2. Mechanisation of Sugarcane Cultivation

The Agricultural Machinery suitable for sugarcane cultivation right from planting to harvest is being provided with 40% subsidy to the entrepreneurs for formation of sugarcane custom hiring centres. In 2015-2016, Rs.2.05 Crore was provided to entrepreneurs for establishing such, Sugarcane custom hiring centres. This has helped the Sugarcane farmers for timely harvesting of Sugarcane. It is proposed to continue the programme during the year 2016-2017.

3.2.3. Agricultural Mechanisation under Sub Mission on Agricultural Mechanisation (SMAM)

Under this scheme, a total subsidy of Rs.20.31 Crore was provided to the farmers towards the purchase of 3236 agricultural machinery and implements during the year 2015-2016. It is proposed to continue the programme during the year 2016-2017.

3.2.4. Formation of Custom Hiring Centres

This Scheme is implemented with subsidy assistance of 40% and 60% contribution from Farmers group / Entrepreneur / Farmers for procuring machinery as per the guidelines of Sub-mission on Agricultural Mechanisation.

In 2014-2015, the Hon'ble Chief Minister of Tamil Nadu made an announcement to create Custom Hiring Centres in all 385 blocks in Tamil Nadu. It is to provide the required machinery support to the farmers. A total of 22 Custom Hiring Centres with a subsidy of

Rs.2.15 Crore was established in the first phase. During the year 2015-2016, 190 block level Custom Hiring Centres were established with a subsidy of Rs.18.84 Crore.

During the year 2016-2017, it is proposed to create 324 Custom Hiring Centres.

3.3. Land Development Scheme

Undulated lands and Fallow lands in the rainfed area are levelled, reclaimed and revived to cultivation by engaging bulldozers available in Agricultural Engineering Department. Desilting of rivers and water bodies are also taken up using these machinery.

To enable farmers to reclaim their lands under nominal hire charges, 90 bulldozers are being hired through Agricultural Engineering Department. Also 163 tractors are available in the Department and hired to farmers for taking up farming operations in agricultural lands.

The Tractors are also engaged during flood for dewatering and desilting of sand cast areas are carried out by Bulldozers.

A total of 63 land laser levellers are available for hiring to farmers. These equipments will take up precise land levelling for uniform irrigation in paddy fields. Seven transplanters and 50 harvesters are also available for hiring to farmers. This scheme is well received by farmers.

3.4. Minor Irrigation Scheme

To utilize the ground water for irrigation by drilling new bore wells and deepening of old open wells, 28 Rotary Drills, 7 Percussion Drills, 19 Mini Drills, 55 Hand Boring Sets, 7 Long Hole Equipment and 30 Rock Blasting Units are available for farmers with nominal hiring charges. Further, the ground water potential and suitable location to sink new bore well is assessed using 10 Resistivity Meters. Two Electrical Loggers are used for locating the aquifers for erecting the

slotted pipes. These Resistivity meters and loggers are hired out to the farmers. This scheme is popular among the farmers.

3.5. Solar Energy in Agriculture – New Initiative in usage of Green Energy.

Lift irrigation consumes a substantial quantity of electrical energy in Tamil Nadu. A total of 20.47 lakh electrical agricultural pump sets are in operation in Tamil Nadu.

Solar energy is completely sustainable and green. It is available in abundance. In Tamil Nadu the Solar Energy became a viable alternate technology. Tamil Nadu is a pioneer state in encouraging the utilization of solar energy in all possible means by formulating “Tamil Nadu Solar Energy Policy 2012”

Government is providing 80% subsidy assistance to the farmers for the installation of solar powered pumping systems.

Solar driers are very useful tool to process the agricultural produces in a most energy efficient way. The solar dried products are well preserved in quality. The temperature inside the solar driers are regulated by thermostatic mechanism. It is variable according to the specific requirement of different crops. The solar driers are provided to the farmers and farmers' groups with 50% subsidy.

3.5.1. Solar Powered Pumping Systems

To promote solar energy in farm sector, the Hon'ble Chief Minister had announced the programme of providing 2,000 solar powered pumping system linked with Micro irrigation system at 80% subsidy to the farmers during the year 2013-2014.

Up to 2015-2016, 1,630 Nos. of 5 HP-AC tracking type panelled Solar pumps and 500 Nos. of 5 HP- AC fixed type panelled Solar pumps were installed. Thus, a total of 2,130 solar pump sets

have been installed with a subsidy assistance of Rs.75.62 Crore and put into use. The total capacity of solar pumps installed is equivalent to 10 MW power plant. By virtue of utilisation of solar energy through the solar pumps, 10,080 tonnes of carbon dioxide emission is reduced per annum. Besides, the farmers who replaced diesel pumps sets with solar pumps were able to save up to Rs.57,000 each towards cost of diesel per annum.

In the light of visible benefits of solar pumps, there is a growing demand from the farmers. By taking into account of needs of the farmers, it is proposed to expand the programme for their benefits. The scheme is to be continued and to be implemented by Agricultural Engineering Department during the year 2016-2017.

3.5.2. Provision of Solar Driers

Up to 2015-2016, 74 Solar Driers were installed in various districts of Tamil Nadu and subsidy to the tune of Rs.1.29 Crore has been released to the farmers. With help of solar driers, the farmers of Trichy, Thanjavur, Virudhunagar, Kancheepuram and Krishnagiri districts, have made value added products like dry fruits of banana, pineapple and mango, dry chillies, dried moringa leaves and curry leaves, copra etc. and got higher profit by selling the value added products.

The scheme is to be continued during the year 2016-2017.

3.6. Water Management

The national annual average rainfall is 1200 millimeters, whereas, the annual average rainfall of Tamil Nadu is only 921 millimeters. Tamil Nadu has utilised 95% of the surface Water Resources and about 85% of the Ground Water

Resources with a limited scope of expanding irrigation, the state has initiated number of water management initiatives to ensure Water Security. Hence, the projects are designed and implemented to increase the productivity by efficiently managing the available water.

3.6.1. Pradhan Mantri Krishi Sinchaye Yojana–Har Khet Ko Pani Component (Providing Irrigation to Every Field)

In order to reduce the wastage of water in the earthen channels in canal and tank irrigated areas and to ensure equitable distribution of water among head and tail reach farmers by adoption of equitable water distribution and rotational water supply system, the Centrally Sponsored Command Area Development and Water Management Programme (CAD&WMP), equally shared between Central and State Governments, was implemented in Tamil Nadu till 2014-2015.

In the year 2015-2016, this scheme has been implemented under Pradhan Mantri Krishi Sinchayee Yojana - Har Khet Ko Pani component (providing irrigation to every field).

Under this scheme, in the approved command area projects, On farm Development (OFD) works such as, construction of concrete field channels or providing pipelines, construction of diversion box with shutters and construction of cart track for crossing, are being executed by Agricultural Engineering Department.

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

During 2015-2016, works were executed in the following commands.

Table 3.1: Command Area Projects : Districtwise

S. No.	Name of the Project	Districts
1	Kalingarayan Anaicut Project	Erode
2	Manimuktha Nadhi System	Villupuram, Cuddalore
3	Pelandurai Anaicut Project	Cuddalore
4	Ellis Anaicut Project	Villupuram
5	Cheyyar Anaicut System	Tiruvannamalai
6	Kalingalar Nichabanadhi Irrigation Project	Tirunelveli
7	Kelavarapalli Reservoir Project	Krishnagiri
8	Kudhiraiyar Reservoir Project	Dindigul

Command Area Development works were executed, in an area of 5,139.72 hectares, with an expenditure of Rs.13.38 Crore during 2015-2016.

In 2016–17, it is proposed to continue the On Farm Development works in the eight command area projects to cover an area of 17,986 hectares at an outlay of Rs.85.15 Crore. Out of the total outlay, the repair and renovation of sluices and branch canals at a cost of Rs.18.59 Crore, is programmed and will be implemented by the Water Resources Department.

3.6.2. Participatory Irrigation Management

In the command area projects, land owning farmers are integrated and Water Users Associations are formed. One time functional grant of Rs.1,200 per hectare is being given to Water Users Associations for sustainable functioning. This amount is deposited as Fixed Deposit in Water Users Association's account in a Nationalised Bank. Maintenance of the field channels and other repair works are carried out by the Water Users Associations with the interest

accrued from the fixed deposits. So far, 1,989 Water Users Associations have been formed covering an area of 9,35,664 hectares in 33 command areas and Functional Grant of Rs.42.52 Crore has been deposited in the Nationalised Banks.

3.6.3. World Bank Aided Tamil Nadu IAMWARM Project

Under the world Bank assisted Tamil Nadu IAMWARM Project Phase-I, the Agricultural Engineering Department executed Micro Irrigation works in 48,302 hectares, 2,691 Farm ponds and distributed 800 farm machinery and implements to the water users associations in the TN IAMWARM sub basins, constructed 882 Rain water harvesting structures and installed 12 buried pipe line systems at a total cost of Rs.175.57 Crore. This scheme will be continued under TN IAMWARM Phase-II.

3.7. Management of Soil & Water Conservation

In Tamil Nadu, 44% of cultivable area comes under rain fed category. The rainfed area act as the cachment for the tanks and reservoirs. These lands are prone to flood and soil erosion during the rainy seasons. Hence soil and water management practices are being implemented to prevent the soil erosion in rainfed areas to conserve the soil fertility and to harvest the rainwater.

3.7.1 Soil & Water Conservation in River Valley Project Catchments

Reducing the soil erosion in the catchment areas and reduction of sedimentation of the reservoirs and improvement of soil moisture regime in the catchments are the main objectives of the River Valley Project. Under this programme, Soil and Water conservation measures such as water harvesting structures and

drainage line treatments works are taken up. In Tamil Nadu River Valley Project is being implemented in the South Pennaiyar and Mettur (Cauvery) catchments from the year 2013-2014 onwards. For the year, 2016-2017 soil and water conservation measures are proposed to be implemented in 25 micro watersheds in the above areas for an outlay of Rs.4.57 Crore.

3.7.2 Soil Conservation works under Dam Rehabilitation and Improvement Project

The World Bank aided Dam Rehabilitation and Improvement project (DRIP) is being implemented in the reservoirs selected by Water Resource Organisation and Tamil Nadu Electricity Board. As a part of this project, soil conservation works in Catchment Areas of Kundha and Krishnagiri reservoirs are undertaken by the Agricultural Engineering Department with an aim of reducing the siltation of reservoirs. The main objective of the scheme is to reduce siltation of

reservoirs by adoption of multi-disciplinary integrated approach of soil conservation and watershed management in catchment area. The conservation measures like, construction of check dams, silt detention tanks and silt monitoring station are taken up in the catchments of the above reservoirs.

It has been planned to implement Soil Conservation works for a period of 3 years i.e from 2015-2016 to 2017-18 with a total outlay of Rs.15.41 Crore by the Agricultural Engineering Department. During 2015-2016 the soil conservation and drainage line treatment works were implemented in Udhagamandalam, Hosur and Soolagiri Blocks at a cost of Rs.2.88 Crore. During 2016-2017, it is proposed to take up soil conservation and drainage line treatment works in Udhagamandalam, Soolagiri and Veppanahalli Blocks at a cost of Rs. 7.30 Crore.

3.7.3. Farm Ponds in Ramanathapuram District

The farm ponds are rain water harvesting structures which are well received among farmers. The water stored in the farm pond can be used one or two irrigations for pulses, chillies and millets during critical stages of growth and as life saving irrigation.

Farm ponds store the excess rain water and provide water during the most required time, by balancing the monsoon variability impact. These ponds are taken up by the Rural Development Department for deepening up to half metre by manual labour component in Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). After that the ponds are further deepened to a depth of two metres by the Agricultural Engineering Department using machinery. During 2015-2016. 1,734 Farm Ponds were deepened at a cost of Rs.8.58 Crore. It is programmed to deepen 2131 farm ponds at a

cost of Rs.10.65 Crore in the financial year 2016-2017.

3.7.4. National Mission for Sustainable Agriculture (NMSA)

During the year 2015-2016, 68 Farm Ponds were taken up at a cost of Rs.38.70 Lakh in Perambalur, Pudukottai, Sivaganga, Virudhunagar and Thoothukudi under National Mission for Sustainable Agriculture. In this scheme 50 % subsidy for individual farm ponds and 100% grant for community ponds are provided.

In 2016-2017, 98 Community Water Harvesting Structures have been proposed to be constructed at a cost of Rs.4.80 Crore.

3.8. Remote Sensing and Geographical Information System Centre.

Remote sensing and Geographical Information centre is functioning in Agricultural Engineering Department. This centre provides implementation support to the schemes / projects

of Agricultural Engineering Department right from the project preparation to project monitoring and evaluation. This centre can provide support to various departments, with geographical data, village maps and geotagged photos required for the preparation of the project proposals.

4. AGRICULTURAL EDUCATION, RESEARCH AND EXTENSION EDUCATION

Tamil Nadu Agricultural University is focusing its activities in six major domains such as; Agricultural Education, Agricultural Research, Agricultural Extension Education, Agri business Development, Agricultural Policy support and Open and Distance learning to enable youth to develop their skills in farming, farming related activities and farm business ventures, all to meet the Global challenges of food production and to run farming as a profitable venture.

To accomplish the above, the TNAU, apart from its mandated functions, is taking up the following activities. Production and supply of quality seeds, production and supply of bio-control agents such as; Trichoderma viride;, Pseudomonas fluorescence, bio – fertilizers of different kinds; growth promoters such as; maize maxim, pulse wonder, groundnut rich, cotton

plus, sugar cane booster and coconut tonic, Precision farming, Integrated Farming systems, farm mechanization, Promotion of improved crop husbandry and decisions in choice of crops, extend of area and farm operations including input usage through Price forecasting, Weather forecasting for better crop husbandry and optimized use of inputs, e-Agriculture and Market extension; and distance learning programmes to support rural youth, agriculturists and job goers; and to help increase income through Agri business promotion.

During the year 2015-2016, Tamil Nadu Agricultural University was conferred with four prestigious awards namely; 1. ‘Best University for Agriculture and Allied Courses of the Year 2016’ in the Asia Education Summit and Awards 2016 in a Ceremony held on 15.03.2016 at New Delhi; 2. ‘RICOH Education Excellence Award’ for best technology implementation (IT Infrastructure and Systems) by Ricoh India Ltd., on 19.02.2016

at New Delhi; 3. The 'Krishi Shiksha Samman' award by Mahindra Samriddhi India Agri Awards 2016 on 03.03.2016 and 4. The 'Golden Jubilee Best AICRIP Centre Award' for outstanding contribution in the last 50 years in rice research on 15.04.2015 by Indian Institute of Rice Research, Hyderabad.

4.1. Agricultural Education

Tamil Nadu Agricultural University currently offers 13 Under Graduate, 39 Master degree, 26 Regular Doctoral degree programmes and 27 Part time Ph.D by research programmes through its 14 constituent colleges, and eight constituent diploma institutes operating under TNAU. During the year 2015-2016, 1,357 students in Under graduate, 392 in Postgraduate and 159 in Doctoral programmes were admitted. In the year 2015-2016, 1,350 Under graduate students,

387 Postgraduate students and 152 students in Doctoral programmes passed out.

Tamil Nadu Agricultural University also runs correspondence courses through its Directorate of Open and Distance Learning. At present, five postgraduate diploma, three postgraduate degree, one bachelor degree programme and 16 Certificate courses are offered by the directorate.

The University (TNAU) provides career counselling to its students through the Directorate of Students Welfare (DSW). During 2015-2016, totally, 117 students were placed in various industries namely; Agro Industry (53), Seed Industry (8), Food Industry (4), Fertilizer Industry (10), NGO (1), Plantation (3), Banking (30), Civil Services (1) and other institutions (8). It also has an “Overseas Employment Unit” to facilitate graduates to get placement in organisations abroad. A state-of-the-art

‘Communication Laboratory’ is also available to improve the soft skills of the students.

4.2. Agricultural Research

There are 39 Agricultural research stations located across the State for undertaking location specific and crop specific research apart from the 14 colleges.

The University so far has released 807 new crop varieties, 164 new agricultural implements and 1,523 management technologies. A total of 373 research articles were published in the year 2015-2016 in reputed international and national journals for the benefit of different stakeholders including the farming community.

The following eight crop varieties and three farm machinery and implements were released during the year 2015-2016.

4.2.1. Crop Varieties

4.2.1.1. Pearl millet Co 10

Pearl millet Co 10 matures in 85-90 days. It is suitable for cultivation under irrigated (March/April; January/February) and under rainfed (June/July; September/October) conditions. The mean grain yield recorded was 3,526 kg/ha under irrigated conditions and 2,923 kg/ha under rainfed conditions. The highest yield obtained was 4,800 kg/ha. It is suitable for cultivation in the entire state of Tamil Nadu. It has resistance to downy mildew. The variety has high protein content (12.07%) with compact ear heads and bold seeds.

4.2.1.2. Blackgram VBN 8

Blackgram VBN 8 has duration of 65 - 75 days. It is suitable for cultivation under Adi Pattam (June – Aug), Purattasi Pattam (Sep-Oct) and Thai Pattam (Jan-Feb). The mean grain yield recorded was 900 kg/ha under irrigated conditions

which was 11.94% and 13.49% increase over the check varieties VBN 6 and CO 6, respectively. The highest yield obtained was 2,050 kg/ha. It is suitable for cultivation in all the districts of Tamil Nadu except The Nilgris and Kanniyakumari. It is non- shattering and has synchronous maturity. It is resistant to Yellow Mosaic Virus and leaf crinkle diseases. The protein content is 21.9% and Arabinose content is 7.5 %.

4.2.1.3. Groundnut – VRI 8

Groundnut VRI 8 has duration of 105 – 110 days. It is suitable for cultivation as rainfed crop in April-May, June-July, October-November sowing and under irrigated conditions in December-January, February-March and April-May seasons with mean grain yield of 2,130 kg/ha under rainfed conditions and 2,700 kg/ha under irrigated conditions which was 22% and 26.6% higher respectively, over the check variety VRI 6. The highest yield obtained was 5,170 kg/ha. It is

suitable for all groundnut growing districts of Tamil Nadu. It is moderately resistant to Tikka leaf spot and rust diseases. The shelling out-turn is 70% and oil content is 49% with medium bold kernels.

4.2.1.4. Cotton – Co 14

Cotton – Co 14 matures in 150 days. The suitable season is August - February (Winter irrigated) and suitable for cultivation in the districts of Tamil Nadu viz., Coimbatore, Erode, Salem, Dharmapuri, Namakkal, Dindigul and Theni. It has recorded an average yield of 1768 kg/ha (18.3% over MCU 13). The highest yield obtained was 3500 kg/ha. It is an Extra long staple cotton (span length - 35.0 mm) with good ginning out turn of 34.8% and fibre strength of 23.4 g/tex which is capable for spinning upto 70's counts.

4.2.1.5. Sugarcane Co 0212

The duration of sugarcane Co 0212 variety is 12 months and suits for January – March planting season. The cane yield is 150.56 t/ha, cane sugar percentage is 12.80% and cane sugar yield is 19.27 t/ha. The highest yield obtained was 175.30 t/ha of cane. The area of adoption is Tamil Nadu and Puducherry. It has higher cane and sugar yield over CO 86,032. It is a good ratooner; erect with medium thick canes; good quality sugar and jaggery; moderately resistant to red rot disease and tolerant to drought and salinity.

4.2.1.6. Fodder Cowpea Co 9

Fodder Cowpea Co 9 recorded 50 – 55 days duration for green fodder and 90 – 95 days for seed production. It is suitable for Kharif, Rabi and Summer seasons with an average yield of 22.82 t/ha [18.42% increase over CO (FC) 8]. The highest yield obtained was 28 t/ha and suitable for the entire Tamil Nadu. It has higher

green fodder and dry matter yield (22.82 and 3.85 t/ha); more number of branches with broader leaves; higher protein content (21.56%); reduced fibre with increased digestibility, palatability and intake; shorter in duration; suited for intercropping with sorghum and maize.

4.2.1.7. Bhendi hybrid Co 4

Bhendi hybrid Co 4 recorded a duration 110 days. It is suitable for growing in May – June, February-March and October – November seasons. The mean fruit yield is 25.60 t/ha which is 19.6% and 23.1% increase over COBhH 1 and Sakthi, respectively. The highest yield obtained was 32.40 t/ha. It is suitable for cultivation in all the districts of Tamil Nadu except hilly regions. The special features are; tall plants - 135-150 cm; dark green, tender, medium size fruits; 25-29 fruits/plant; 22 harvests in 110 days starting from 39 days after sowing and resistant

to bhendi Yellow Vein Mosaic Virus (YVMV) disease.

4.2.1.8. Lime VRM 1

Lime VRM 1 is an introduction from Tahiti Islands, France. The fruits can be harvested from 4th year onwards. It is suitable for planting in December-January and June-September seasons. The mean yield is 69 kg/tree. The highest yield obtained was 78.56 kg/tree. It is suitable for cultivation all over Tamil Nadu except The Nilgiris district. The special features are; it is suitable for home garden; suitable for preparation of juice, pickle and cooking. It has high vitamin 'C' (96 mg/100 ml) content and resistant to Leaf miner and citrus canker.

4.2.2. Farm machinery and released

4.2.2.1. Tamarind De-seeder

It is used for deseeding dried dehulled tamarind fruits. Various sizes of the dehulled

tamarind fruits can be deseeded. The roller gap can be adjusted as per the size of the tamarind fruits. The deseeded fruits are separated into pulp strip, seeds and broken pieces. The cost of the unit is Rs.60,000/-. The cost of operation is Rs. 2.5 /kg. The capacity of the machine is 40 kg/hr.

4.2.2.2. Double chamber centrifugal de-huller for millets.

De-hulling of small millets (little millet, proso millet, foxtail millet, barnyard millet and kodo millet) using the newly designed double chamber centrifugal de-huller results in the removal of husk without any damage to the bran and endosperm. It has the capacity of removing husk from 300 kg of grains in one hour with 95% efficiency and requires only one person to operate the machine. The unit is powered by 5 HP motor with suitable power transmission system and the unit cost is Rs.1,20,000/-.

4.2.2.3. Tractor drawn precision pulse seeder

Tractor drawn precision pulse seeder has a saving of 19.1 per cent in cost and 97 per cent in time of opération compared to conventional method of sowing. It also results in 40 per cent saving in seed rate when compared to conventional method of sowing, when hill to hill spacing of 10 cm is maintained. The capacity of the unit is one hectare per day. It is suitable for sowing black gram and green gram. The cost of the unit is Rs.50,000/-

4.2.3. Schemes taken up during 2015-16 for Infrastructure development

4.2.3.1. Tamil Nadu Innovation (TANII) programme

1. Plant health manipulation through innovative tools and techniques: rhizotron-based plant-microbe-soil interaction studies for yield sustainability (Sanctioned Amount Rs. 9.00 crore)

2. Ultra high density orcharding and Modern method of Fruit Cultivation (Sanctioned Amount Rs. 1.57 crore)

3. Integrated Seed Production Hub for Southern Districts of Tamil Nadu (Sanctioned Amount Rs. 5.00 crore)

4. Large area impact demonstration of fruit flies trapping technology to minimize yield losses to mango farmers in Dharmapuri and Krishnagiri Districts of Tamil Nadu (Sanctioned Amount Rs. 1.35 crore)

4.2.3.2. National Agricultural Development Project

1. During the year, 2015-2016, the following six centres of excellence in Tamil Nadu Agricultural University were established at a total financial outlay of Rs.22.96 crore:

i. Centre of Excellence in Molecular Breeding at Coimbatore.

ii. Centre of Excellence in Dry farming at Dry land Agricultural Research Station, Chettinad.

iii. Centre of Excellence for Soil health at Agricultural College and Research Institute, Tiruchirappalli.

iv. Centre of Innovation at Agricultural College and Research Institute, Madurai.

v. Farm Women Knowledge Centre at Horticultural College and Research Institute for Women at Tiruchirappalli.

vi. Centre of Excellence for Oil Palm Research to augment edible oil Production at Agricultural Research Station, Pattukottai.

2. Skill Development Centre at Kumulur at a total financial outlay of Rs.20 Crore.

(Amount released for the year 2015-06: Rs.4.49 crore)

3. Establishment of New Citrus Research Station at Sankarankoil in Tirunelveli district at a total financial outlay of Rs.4 Crore: (Amount released for the year 2015-06: Rs.0.45 crore)

4. Implantation of food safety and quality of Agri-horti produces through NABL Accredited laboratories in Tamil Nadu Agricultural University (Amount released for the year 2015-06: Rs.6 crore)

5. Active additive application of Bioinoculants through seed Pelletization for enhancing productivity and profit of dry-Land agriculture (Amount released for the year 2015-06: Rs.1.07 crore)

6. Strengthening of insect Museum at Tamil Nadu Agricultural University, Coimbatore

(Amount released for the year 2015-06: Rs.1.10 crore)

7. Establishment of cryoconservation modules for the conservation of farmers varieties / Land Races of Tamil Nadu for Posterity (Amount released for the year 2015-06: Rs.1.96 crore)

4.2.3.3. Capital Works

1. Rs.10.00 crore for construction of new buildings of three new Agricultural College and Research Institutes.

2. Rs.4.25 crore for construction of 4 Girl students hostels at Coimbatore and Trichy.

3. Rs.2.25 crore for construction of student amenities centre at Agricultural College and Research Institute, Madurai.

4. Civil works for Six centres of Excellence: Rs. 3.00 crore @ Rs. 50 Lakh per centre.

4.3. Agricultural Extension Education

The Directorate of Extension Education functions with the vision to make extension system ‘Farmer driven’ and ‘Market led’ for augmenting production, productivity and income of the farming community. It also lays importance to networking of extension and development systems through ICT-mode. The following units are functioning under this Directorate:

4.3.1. Krishi Vigyan Kendras (KVK-s)

Farm Knowledge Centres were established in 1974, with primary objective of transferring agricultural technology from Lab to Land. Later they were renamed as Krishi Vigyan Kendras. The mandate of the KVK includes Assessment and Demonstration of technology/ products.

The specific objectives of KVKs are;

i. On-farm testing to identify the location specificity of agricultural technologies under various farming systems.

ii. Organize Frontline Demonstrations to establish production potential of technologies in the farmers' fields.

iii. Training of farmers, extension personnel and rural youth.

iv. Training of the progressive farmers and in turn popularize the technologies among other farmers.

v. To work as resource and knowledge centre of agricultural technology for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district.

There are as 14 KVKs run by TNAU. During 2015-2016 TNAU KVKs have organized: 66 On Farm Testing (OFT) in 330 locations covering an area of 190 ha, 256 Front Line Demonstrations (FLDs) of newly released varieties and technologies in 2,048 locations covering an area of 906 ha; besides, conducting 487 On and Off campus training programmes benefitting 20,466 farmers; 27 vocational training programmes benefitting 2,023 farmers apart from training extension officers.

4.3.2. Educational Media Centre (EMC)

The Educational Media Centre of TNAU is responsible for video documentation of important programmes and events of the University. During the year 2015-2016, a total of 260 video programmes were produced; 152 video lessons sold; 290 video shows were conducted for the benefit of farming community. A 52 Week Television programme covering 210 technologies

was telecast in Pothigai Channel, Doordarshan Kendra, Chennai for the benefit of farming community.

4.3.3. Information and Communication Technology (ICT) mediated e-extension

In an era of e-transformation, TNAU is pioneering in the use of ICT mediated e-extension through its following units.

4.3.3.1. TNAU Agritech Portal

(http://agritech.tnau.ac.in):

The world's largest farm technology portal contains A to Z of agriculture and allied subjects related technical information, which amounts to more than eight and half lakh pages in Tamil and English.

4.3.3.2. Expert System

An Expert systems developed for paddy, sugarcane, ragi, coconut, banana and Animal husbandry enterprises like cow, goat, poultry has;

a). Decision Support System which deals with Query based multi-optional system; b) Crop Doctor which deals with diagnosing the pests, diseases and nutritional disorders through key visual symptoms and c) an information system that deals with production technologies of crops. It was extensively used by KVK scientists; extension professionals and progressive farmers for technology solutions.

4.3.3.3. Community Radio Station:

The community Radio Station at TNAU, Coimbatore benefits the farming community living within 18 km radius by broadcasting farm related information. It is functioning as 'Velaan Palkalaikazhaga Vivasaayee FM' at 107.4 MHz frequency. Daily broadcast of three hours is made between 10.00 and 13.00 hours and repeated between 14.00 and 17.00 hours.

The FM also broadcasts information on weather, market prices and technical information

by scientists. During the year 2015-2016, 278 recorded programmes were broadcast and 216 programmes were uploaded in http://agritech.tnau.ac.in/comm-e-radio.html website for the benefit of the farmers. It reaches 10,000 farm families residing in 22 villages around Tamil Nadu Agricultural University campus at Coimbatore.

4.3.3.4. Kisan Call Centre (KCC) provides services to farmers through a toll free number 1551 or 1800-180-1551. The caller can interact in their local language with the experts. This Centre functions on all working days between 7.00 am. and 10.00 pm and receives on an average 1072 calls per day.

4.3.4. Farmers Facility Centre

Farmers Facility Center at Coimbatore serves the farming community by transferring the agricultural technologies through single window delivery system. It facilitated 158 farmers

scientists meet and the farmers have obtained first hand information about the technologies from the scientists.

4.3.5. Agricultural Technology Information Centre (ATIC)

ATIC acts as a single window delivery system of technology and inputs. Through ATIC; seeds, planting materials were sold for the benefit of the farmers. During 2015-2016, over 4,000 packets of seeds, 250 litres of tree killer, 220 kgs of crop boosters, coconut tonic, bio fertilizers were sold and over 4500 farmers were benefitted.

4.3.6. 'Uzhavarin Valarum Velanmai' a monthly Tamil magazine of Tamil Nadu Agricultural University Coimbatore is published since 1975. It has a subscriber base of 14,248.

4.3.7. Farmers Mela / Exhibitions

In Coimbatore, State-level Farmers' Day was conducted on 08-01-2016 in which more than

5000 farmers from different districts participated in the celebrations and benefitted from the new crop varieties and technologies released by the University.

TNAU participated in the CODISSIA Agricultural fair in which stalls, demonstrations on various technologies were organized and it benefited over 30000 people including farmers.

The KVKs and research stations of TNAU have actively participated in the Farmers fair and exhibition organised by Vellore Institute of Technology wherein more than 5000 farmers participated.

4.3.8. TNAU – Information and Training Centre, Chennai.

TNAU Information and training Centre, Chennai, periodically conducts training programmes for the benefit of farmers/ youth, urban men and women. During the year 2015 – 2016, 95 training programmes were

conducted benefitting 3707 participants on varied topics such as; roof gardening, kitchen gardening, indoor plants, flower arrangement and bouquet making, mushroom cultivation, vermicomposting, organic farming, preparation of spicy products and bakery products.

4.4. Production and distribution of quality seeds

Tamil Nadu Agricultural University also produces and distributes various classes of seed such as; breeder seeds, foundation seeds and truthful labelled seeds (TFL) of 175 varieties of principal crops.

During the year 2015-2016, 1,171 quintals of breeder seeds, 4261 quintals of foundation seeds, 11,076 quintals of certified / TFL seeds and 27,58,397 number of planting materials was produced and distributed.

Automatic Seed Vending Machines have been installed at Tamil Nadu Agricultural

University, Coimbatore. During the year, 3.00 Lakh seed packets have been sold through the machine. Due to the over - whelming response among the consumers, the Seed Centre of TNAU installed 10 more such machines across state for the benefit of consumers in Trichy, Pudukottai, Madurai, Theni, Thirunelveli, Salem, Thiruvannamalai, Chennai, Paiyur, and Vridhachalam to cater to the flower and vegetable seed requirements of small growers and kitchen gardeners.

4.5. Agri-Business Development

The Directorate of Agri Business Development looks after incubation of agriculture based start-up companies and commercialization of technologies developed by the University. More than 100 incubatees were enrolled with this Directorate and 23 technologies have been commercialized. Through National Research Development Corporation (NRDC), Ministry of

Science and Technology, GOI, New Delhi, the following technologies have been short listed for commercialization.

1. TNAU Coconut tonic
2. TNAU Panchagavya
3. TNAU strains of Pseudomonas and Trichoderma
4. TNAU Master Trap
5. Ready to cook Mix Food from Pearl millet

4.6. Price forecast and Market intelligence

Tamil Nadu Agricultural University renders Price forecasting and Market intelligence services through its Domestic and Export Market Intelligence Cell (DEMIC). It forecasts local market prices of agricultural produces before sowing and also before the harvest. The information is published in news papers, broadcast through radio and television. Price

forecasting is done by the centre for 24 agricultural crops like; Maize, Sorghum, Ragi, Cumbu, Blackgram, Bengalgram, Greengram, Groundnut, Gingelly, Sunflower, Coconut, Copra, Cotton, Potato, Carrot, Beetroot, Tomato, Bhendi, Brinjal, Small onion, Turmeric, Coriander, Red chilly and Banana (Nendran & Poovan). The price forecast has been proven to have more than 90% reliability.

4.7. Intellectual Property Protection is facilitated by the Department of Trade and Intellectual Property of the university which assisted in obtaining seven patents and 59 findings have been applied for approval.

The TNAU will continue and expand its activities during 2016-2017 also to support the State Government in implementation of programmes benefitting farmers besides its regular teaching, research and extension education and other responsibilities.

5. SUGARCANE

Sugarcane is second important Agro Based Industrial Crop in Tamil Nadu. Sugarcane is cultivated in 5.7% of the total cultivable area in Tamil Nadu. Sugar production in the Tamil Nadu is about 5 to 7 % of the production in the Country. A new technology, ie. Sustainable Sugarcane Initiative (SSI) is being promoted. Use of Micro Irrigation, raising shade net nursery using single bud chips, transplantation of seedlings of 25-30 days age wider spacing and fertigation are encouraged. As per the fourth advance estimate for 2015-2016, 2.57 L.Ha is the area under sugarcane crop with an estimated sugarcane production of 264.97 LMT.

Cane produced is crushed in 43 Sugar Mills functioning in the State. Out of these 16 Sugar Mills are in Co-operative Sector, 2 Sugar Mills are in Public Sector and 25 Sugar Mills are in Private Sector.

The Government of India announces Fair and Remunerative Price (FRP) every year on all India Basis. The Government of Tamil Nadu announces State Advised Price (SAP) to encourage the growers, based on FRP and other expenditure. For the Crushing season 2015-2016 Government of India announced FRP of Rs.2,300/- per Mt of sugarcane for 9.5% recovery with an incentive of Rs.24.20 per MT for every 0.1% increase in recovery. The Government of Tamil Nadu have announced State Advised Price (SAP) of Rs.2,850/- MT for the crushing season 2015-2016.

6. SEED CERTIFICATION & ORGANIC CERTIFICATION

Seed is the most valuable input in Agriculture. The quality and the traits of the seed used play the decisive and vital role in the total yield and the quality of the agricultural produce. Ensuring the supply of quality certified seeds in the right time to the farmers should be given the foremost importance. Assured supply of quality certified seeds plays a vital role in safeguarding the economic growth and financial stability of the farming community.

This Department of seed certification & Organic Certification implements the following programmes which ensure distribution of quality certified seeds to the farmers of the state.

i. Seed Certification programme, for carrying out certification of seeds of notified crop varieties, in accordance with

the Indian Minimum Seed Certification Standards (IMSCS).

ii. Seed Quality Control programme, to monitor and regulate seed quality by enforcement of the existing seed legislations.

iii. Seed Testing Programme, to analyze and ensure seed qualities in the notified Seed Testing Laboratories.

iv. Training programmes in skill development to all the persons involved in seed production, seed certification and seed marketing.

v. Organic Certification programmes, involving farmers to register under organic certification and implement organic certification as per the standards of the National Programme on Organic Production (NPOP).

6.1. Functioning of the Department

This Department carries out the various scheme activities with the technical officers for each of the schemes, as positioned in the various head quarters all through the State.

6.2. Seed Certification

Seed certification activities are carried out in accordance with the provisions of The Seeds Act 1966 and The Seeds Rules 1968.

The seeds certified by this wing will have assured seed qualities of germination, physical purity, genetic purity and seed health as prescribed under the Indian Minimum Seed Certification Standards (IMSCS).

In the year 2015-2016 this Department has certified 92,671 M.T of seeds in paddy crop which is predominantly cultivated in the State and this Department has set its priorities in increasing the

quantity of seeds certified under the Pulses, Millets and Oilseed crops also.

There are 843 approved seed processing units functioning in Tamil Nadu.

Table 6.1: Details of Seed Processing Units

(in numbers)

Sector	Giant	Medium	Small	Hand processing	Total
Government	16	37	63	492	608
Quasi Govt	4	12	9	0	25
Private	81	103	13	13	210
Total	101	152	85	505	843

During the year 2015-2016, an area of 56,907 Hectares have been registered for certification and 97,895 M.T of various crop seeds have been certified.

It is programmed to achieve the quantity of 1,10,000 M.T of certified seeds during the year 2016-2017.

6.3. Seed Quality Control

The seed quality control wing of this department monitors and maintains quality of seeds distributed to the farmers of the state by implementing the existing seed legislations viz.., The Seeds Act 1966, The Seeds Rules 1968, The Seeds (Control) Order 1983 and The Environment (Protection) Act 1986. Seed selling licenses are issued to all the seed dealers in state under provisions of The Seeds (Control) Order, 1983. At present, 9,274 licensed seed dealer points are functioning under this wing. These licensed seed dealer points are inspected regularly for adherence to seed legislations and maintenance of seed quality. Any violation under the seed legislations or sale of sub standard seed lots is dealt with legal/departmental actions.

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

Table 6.2: Details of Licensed Seed Selling Points

(in numbers)

Detail	Government	Quasi-Govt	Private	Total
Licensed seed selling Points	1,310	1,814	6,150	9,274

During the year, 2015-2016, 69,126 inspections were conducted in seed selling points and 61,285 seed samples were drawn for quality check. During the inspections, Sub standard seeds of 1,513 seed lots valued at 893 Lakh Rupees, weighing 1,383 M.T. were identified and prevented from being sold to the farmers.

During the year 2016-2017, seed inspections and drawing of seed samples for will be continued.

6.4. Seed Testing

Seed Testing is essential to support the implementation of the seed certification and seed quality control. Analytical reports furnished by the seed testing laboratories form the basis for these activities. Seed Testing Laboratories evaluate seed quality parameters such as germination, physical purity, moisture, seed health and other distinguishable varieties. Genetic purity of seed lots is determined at the Grow Out Test farm, the Glass house and the DNA Finger Print Laboratory.

In total there are 33 notified seed testing laboratories are functioning under this department. Of these, 29 seed testing laboratories are functioning in different districts. Apart from this, Grow Out Test farm is functioning at Kannampalayam, Coimbatore. Referral Laboratory with BT toxin analysis facility, Glass House and DNA Finger Print Laboratory are functioning at headquarter Coimbatore.

In the whole of India, among the Government Institutions for first of its kind the Seed Testing Laboratory functioning at Coimbatore has been accreditated in the year 2014 by the International Seed Testing association (ISTA), Zurich, Switzerland. All necessary steps are being taken to continue the accreditation status of this laboratory.

The Seed Testing Laboratory, Coimbatore was awarded The Best Performing Laboratory in India by the Government of India, Ministry of Agriculture & Farmers Welfare during the eighth National Seed Congress held at Hyderabad during October 2015. This laboratory has facilities and the capabilities to analyse seed samples from countries around the world.

During 2015-2016, a total number of 98,363 seed samples were analyzed.

It is proposed to analyze the seed samples during 2016-2017 also.

6.5. Training

Training programmes are conducted to officials of this Department. Trainings are also imparted to update the skills and knowledge of the seed producers, seed dealers and farmers involved in certified seed production.

During 2015-2016, a total number of 49,846 persons were trained by this Department.

During 2016-2017 training to the persons involved in the seed industrywill be continued.

6.6. Organic Certification

Organic Certification intends to assure quality of organic products and aims at regulating thereby assuring certified organic products to consumers. It addresses the growing worldwide demand for organic food. Tamil Nadu Organic Certification Department (TNOCD) takes up inspection and certification of organic production system in accordance with NPOP (National Programme for Organic Production).

Tamil Nadu Organic Certification Department (TNOCD) is accreditated by APEDA (Agricultural and Processed Food Products Exports Development Authority).

A sustained effort with successful performance by the Tamil Nadu Government has ensured the continuation & extension of the accreditation status till 2018. This Organic Certification wing has the unique feature of having the largest number of individual farmers among the 25 organic certification bodies in the country.

During the year 2015-2016, 29,720 acres of land have been registered under Organic Certification. This includes 329 individual farmers possessing 9,199 acres of land, 12 groups containing 4,070 farmers having 19,598 acres of land and 13 corporate possessing 923 acres of land.

The target for 2016-2017 has been fixed at 31,000 acres of land under Organic Certification.

7. AGRICULTURAL MARKETING AND AGRI BUSINESS

Agricultural Marketing continues to be the mainstay of life for majority of the Agrarian population. Agricultural marketing plays an important role not only in stimulating production and consumption, but also accelerating the pace of economic development. Marketing is an integral part of agriculture, it encourages the farmers to invest more and increase the production. Apart from performing physical and facilitating functions of transferring the goods fr om producers to consumers, the marketing system also performs the function of discovering the prices at different stages of marketing and transmitting the price signals in the marketing chain.

Agribusiness activities primarily encompass backward and forward linkages related to production, processing, marketing, trade and distribution of raw and processed agricultural products. Agribusiness sector is responding to the

strong consumer demand for high-value commodities, processed products and pre-prepared foods. Promotion of the agribusiness sector can also substantially augment the availability of farm products besides creating job opportunities to rural youth. In this context, the Department of Agricultural Marketing, which functioned separately since 1977, with the main objective of “Regulation of Agricultural Marketing”, through Regulated markets was renamed from the year 2001 as “Department of Agricultural Marketing and Agri Business” to focus on post harvest management infrastructure, value addition, food processing and export.

7.1. Major activities

1. Creating infrastructure facilities for Marketing and Post Harvest Management.
2. Promoting Farmer Producer Organisation (FPO) for empowerment of farmers.

3. Formation of Commodity Groups in lead crops and creation of market linkage.

4. Facilitating services to farmers through Regulated Markets, Farmers' Markets, Specialized Market Complexes, etc.,

5. Minimising post harvest losses and enabling the farmers to handle their marketable surplus through storage godowns, cold storages, ripening chambers and drying yards.

6. Creation of infrastructure for value addition and processing through Public Private Partnership mode.

7. Disseminating market price information and intellenge and crop advisory to the registered farmers.

8. Ensuring quality and unadulterated food products to consumers through Agmark laboratories.

9. Capacity building programmes to impart skills on post harvest management, processing, value addition, grading to the farmers.

7.2. AGRI MARKETING ACTIVITIES

7.2.1. Market Committees and Requlated markets

Nearly seventy percent of our people earn their livelihood through agricultural and allied activities. The rapid development in agricultural research and technology has led to a substantial increase in the production of agricultural products. Today, the main challenges faced by the farmers are marketing their produce. "Our farmers are “price-takers than price-makers". In general, middleman, rather than farmers control the agricultural marketing. Hence, an assurance of remunerative price to the farmers is a prerequisite, and it can be given to the farmers by offering them an efficient marketing system. In Tamil Nadu 22 Market Committees are established under which 277 Regulated Markets are

functioning to enforce the provisions of Tamil Nadu Agricultural Produce Marketing (Regulation) Act 1987, Rules 1991 and to ensure fair prices to farmers, to reduce marketing charges, for the protection of farmers from price fluctuation and for the provision of better marketing facilities, basic infrastructure etc.,

Regulated Markets act as a common forum to farmers and traders on equal footing for marketing of agricultural produce without middlemen. 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. Through Regulated Markets, about 117.42 Lakh MT of agricultural produce was sold by farmers and Rs. 479.18 crore has been collected as revenue from traders for last five years.

Under Marketing Research and Information Network (MRIN) computers were provided to

184 regulated markets. These regulated markets upload the prevailing agricultural produce price and commodity arrival information to web portal www.agmarknet.nic.in on daily basis.

7.2.2. Facilities provided in the Regulated Markets

1. Godown
2. Transaction shed
3. Drying Yard
4. Market Complex with cold storage
5. Cold storage
6. Traders shop
7. Rural Business Hub, Input shop
8. Automatic weighing and bagging machine
9. Weigh bridge, weighing balance
10. Display of daily price information, free medical aid
11. Farmers and traders rest room, drinking water facility

7.2.3. Pledge Loan

Farmers can avail pledge loan to avoid distress sale during glut seasons by storing their farm produce in the godowns of Regulated Markets in a scientific way to minimise the storage losses and to bridge the credit gap of the farmers preparing for next cropping season and also to meet their immediate money requirement. Small and marginal farmers can avail pledge loan upto 75% of the value of the produce and other farmers can avail 50% of the value of produce or upto the maximum of Rs.2.00 Lakh. No interest for first 15 days of loan period. Interest at the rate of 5% will be charged beyond 15 days. For the last five years 13,746 farmers availed pledge loan to the tune of Rs.172.53 crore.

Traders can avail pledge loan upto 50% of value of the produce limited to the maximum of Rs.one Lakh with 9% rate of interest upto 3 months period. For the last five years,

1,556 traders have availed pledge loan of Rs.15.05 crore.

7.2.4. Drying yards at villages

Post production losses of farm produce is substantial in agriculture and it accounts for 10-15% in total cereals and pulses production. Post harvest losses occur throughout the supply chain from farm to market. Drying yards at village level or farm gate level are essential to help the farmers to handle their agricultural produce immediately after harvest for drying, cleaning, winnowing, etc. About 1,359 village level drying yards were constructed and are being utilized by the farmers.

7.2.5. National Agriculture Market (NAM)

National Agriculture Market launched during this year by Government of India is aimed to increase the income of farmers which will also have the incidental benefit of moderating price raises. The scheme is to be implemented in 585

Regulated Markets all over the country in a phased manner.

Benefits of NAM

1. More selling option for farmers produce.
2. Traders get more access to larger national market for secondary trading.
3. Direct participation of bulk buyers, processors, exporters in local mandi .
4. Increased transaction in Regulated Market gives opportunity for collection of better fee.

In the Budget Speech 2016-2017, it was announced that the Tamil Nadu Agricultural Produce (Regulation) Act 1987 will be amended for improving the marketing of agricultural produce. In order to implement NAM, amendments are required in the existing Tamil Nadu Agricultural Marketing (Regulation) Act 1987 to include e-Trading, Single Point Levy of Market Fee, Unified Single License, Private Market, Direct whole sale market, Contract Farming, Farmers consumer market. For the

promotion of NAM, 100 Regulated Markets are selected on the basis of commodity arrival for availing financial assistance for hardware and assaying equipments under central scheme for promotion of NAM through Agri-Tech Infrastructure Fund (ATIF) is under progress.

7.2.6. Infrastructure facilities created under Rural Infrastructure Development Fund (RIDF):

Rural Infrastructure Development Fund (RIDF) gives low cost supports to the State Government and State owned Corporations for quick completion of ongoing projects relating to medium and minor irrigation, soil conservation, watershed management and other forms of rural infrastructure.

For the last five years, utilising the Rural Infrastructure Development Funds 70 cold storages (25 MT each) at a cost of Rs.22.26 crore, 88 storage godowns (5 Nos.- 10,000 MT,

8 Nos. – 5,000 MT and 75 Nos. – 2,000 MT) at a cost of Rs.127.60 crore, Specialised Market Complex with 200 MT cold storage for Banana in Ambasamudhram Regulated Market at a cost of Rs.1.30 crore, Collection centres (Hub & Spoke Model) for fruits and vegetables in Mettupalayam and Oddanchatram at a cost of Rs.3.60 crore and Integrated commodity Management through Aggregation in Avalpoonthurai and Palani Regulated Market at a cost of Rs.1.18 crore have been created. In addition Central Market for vegetables, fruit and flowers at Kallikudi in Trichy District at a cost of Rs.65 crore is being constructed.

7.2.7. Infrastructure facilities created under Warehouse Infrastructure Fund (WIF)

NABARD from 2014-2015 has extended its financial allocation to rural sector in the name of Warehouse Infrastructure Fund (WIF). This fund

envisages extension of loans to Public and Private sectors for construction of warehouses, silos, cold storages and other cold chain infrastructure.

During 2014-2015, Market Infrastructure in Regulated Markets have been augmented by creating 100 market infrastructures viz. 35 storage godowns, 49 Transaction sheds, 1 Market Complex, 2 cold storages, 3 Office blocks, 4 weigh bridges, 5 Rubber roller and 1 Processing centre for at a total cost of Rs. 83.35 crore.

In the Budget Speech 2016-2017, it was announced that action has been taken to implement a special scheme for the establishment of Supply Chain Management for Fruits, Vegetables and Perishables in 10 districts at a total project cost of Rs.398.75 crore. In this connection administrative sanction has been obtained for the project and preliminary work has been initiated in Dharmapuri,

Krishnagiri, Ramanathapuram, Thoothukudi, Trichy, Theni, Dindigul, Tirunelveli, Coimbatore and The Nilgiris Districts.

7.2.8. Agmark Grading

Agmark is a scheme for promotion of Grading and Standardisation of agricultural and allied commodities under Agricultural produce (Grading and Marking) Act 1937 (and amended in 1986) implemented and enforced as a voluntary scheme by the Directorate of Marketing and Inspection. As per the quality standards laid down by the Government of India, Quality Certification Mark is given to 213 products. The products graded based on these standards, which bear the stamp of Agmark as a symbol of purity and quality are known as Agmark products.

The Agmark certification is employed through fully state-owned 30 Agmark laboratories which act as testing and certifying centres. One Principal Laboratory is functioning to coordinate

the activities of State Grading Laboratories. During the last five years 85.31 lakh quintals of food products were graded through State Agmark Grading Laboratories.

7.2.9. Farmers Market

The Farmers Market / Uzhavar Sandhai ensures fair price to the Farmer's produce without Intermediaries interference and supply of fresh fruits and vegetables to the consumer's at a nominal price. At present 179 Uzhavar Sandhai's are functioning in Tamil Nadu.

The prevailing prices of fruits and vegetables in 179 Farmers markets are also disseminated in the web portal www.tnsamb.gov.in. Everyday on an average Rs.5.34 Crore worth of 2,532 M.T Vegetables and fruits were sold by 9,285 farmer's and 5.14 lakh consumers were benefitted in the last five years through Farmers markets.

7.3. AGRI BUSINESS ACTIVITIES

Value addition to agricultural produces fetch good price to farmers. This requires specialised market complexes with good infrastructures like grading, sorting, storage, packing, drying yards, pre cooling unit, cold storage units etc.,

7.3.1. Specialized Market Complexes

7.3.1.1 Market Complex for Paddy

Paddy Market Complex has been established in an area of 9.85 acres at Mattuthavani in Madurai district at a total cost of Rs.17.06 crore from Market committee fund with facilities such as 276 shops for traders of paddy, flowers and agricultural inputs. In this complex, regulated market office, rural godown, auction shed, canteen, bank, post office and fire fighting equipment facilities are also available.

7.3.1.2 Market Complex for Turmeric

A Market complex has been established at a cost of Rs.6.62 crore for Turmeric at Karumandichellipalayam in Erode District under

Market Committee Fund. The Market complex is provided with godown, transaction sheds, drying yards, office building, bank facility, rest room, canteen, parking facility, weigh bridge facility for the benefit of turmeric growers. So far 5,376 MT has been transacted and Rs.46.67 lakh revenue has been obtained as market fee.

7.3.1.3 Market Complex for Coconut

In order to facilitate coconut growers of Thanjavur district to get better price, a Coconut Market Complex has been created at Ponnavarayankottai, Ukkadai village at a cost of Rs.4 crore under Market Committee and State Government funds. This Market complex is provided with rural godown, transaction sheds, godowns, drying yards, solar drier for copra, grading, sorting hall, input shops, trader shops, coconut de-shelling hall, electronic weighing balances and coconut oil mill unit with automatic oil packing facility for the benefit of

coconut growers. So far, 6,071.66 MT of copra were transacted to the value of Rs.31.06 crore. In addition 84.85 MT of coconut transacted to the value of Rs.15.72 Lakh.

In Tiruppur District at Pethappampatti, a coconut market complex has been established at a cost of Rupees one crore. So far, 564 coconut growers transacted 3,421.40 MT Coconut and 1,434.42 MT copra to the value of Rs.15.66 crore in the complex.

7.3.1.4 Tender coconut Market Complex Thippampatti

In Coimbatore District, Pollachi Taluk at Thippampatti, Market Complex for Tender Coconut was established at a cost of Rs.3.25 crore. Market complex was established with the facilities of 300 MT capacity of godown, transaction shed etc. So far, 40,518 numbers of tender Coconut and 22.39 MT of Copra has been transacted to value of Rs.19.59 lakh and

78 farmers got benefited through this Market Complex.

7.3.1.5 Market complex for Vegetables

In Nilgiris District, Vegetable Market complex was established at Ooty at a cost of Rs.85 Lakh under NADP. Market complex was established with the facilities such as transaction shed, traders shop, and administrative office.

In Erode District, a Market Complex with Cold Storage (1,000 M.T) for fruits and Vegetables at Gobichettipalayam has been created at a cost of Rs.4 crore. In Trichy District at Thuraiyur a market complex with 100 MT cold storage unit for vegetables also established under NADP at a cost of Rs.2.95 crore.

For the benefit of vegetables growers under NADP two cold storage units with 500 MT capacity has been established at Kinathukadvu in

Coimbatore district and Sankarankoil in Tirunelveli District each at a cost of Rs.2.25 crore. In Vellore District at Jolarpet 25 MT of Cold storage was constructed at a cost of Rs.35 lakh. 25 MT cold storage at Vazhapadi Salem District has been established at a cost of Rs.44 lakh.

7.3.1.6. Market Complex with cold storage for Hilly vegetables

To facilitate hilly vegetable growers in and around Coimbatore District, a Market Complex with 50 MT capacity Cold Storage for hilly vegetables at Karamadai Regulated Market has been created at a cost of Rupees one crore under NADP. So far, 32 hilly vegetable commodity groups are formed and 118.23 MT of vegetables and 163.20 MT hilly vegetables has been stored and transacted in cold storage.

7.3.1.7 Market Complex with Cold storage facilities for Tomato

To facilitate tomato growers, a Market complex with cold storage facility has been established at a cost of Rupees one crore at Palacode Regulated Market in Dharmapuri District under Tamil Nadu State Agricultural Marketing Board and State Government funds. About 3,703.12 MT of tomato has been transacted to the value of Rs.2.43 crore.

In Salem district, at Mecheri Tomato cold storage unit with 100 MT capacity has been established under NADP at a cost of Rupees one crore. So far, 2049 MT of agriculture produce have been stored in the cold storage.

7.3.1.8 Market Complex for Onion

To facilitate the long term storage of onion and to get the remunerative price at right time. Market complex for onion has been established at a project cost of Rupees one crore at Pongalur

Regulated Market in Tiruppur District under Tamil Nadu state Agricultural Marketing Board and State Government funds. Through this complex 205.70 MT of onion, copra, tomato and maize has been transacted to the value of Rs.58.41 Lakh.

In Perambalur District at Chettikulam, Market complex for onion and cold storage facility for other vegetables has been established under NADP at a project cost of Rs.1.15 crore. Through this complex so far 2,206 M.T of small onion has been transacted to the value of Rs.3.70 crore.

7.3.1.9 Market Complex with Cold facilities for Mango

For the welfare of small and marginal farmers in Krishnagiri District, a Market complex with cold storage facility has been established at a cost of Rupees one crore for Mango at Krishnagiri Regulated Market under Tamil Nadu State Agricultural Marketing Board and State

Government funds. So far 910.91 MT of Mango and Banana has been transacted to the value of Rs.1.14 crore.

7.3.1.10 Market Complex with Cold storage facilities for Grapes

For the welfare of small and marginal grapes growing farmers, a Market complex with cold storage facility has been established at a cost of Rupees one crore for Grapes at Odaipatti in Theni District under Tamil Nadu State Agricultural Marketing Board and State Government funds. About 4,525.36 MT of grapes and banana has been transacted to the value of Rs.4.98 crore. Besides in Cumbum Regulated Market, Market Complex with cold storage (500 MT) for Grapes has been created at a cost of Rs.3.95 crore for the benefit of grape growers. So far 386 MT commodities have been stored in the Cold Storage.

7.3.1.11 Market Complex with cold storage for Banana.

To increase the income of banana growers in and around Trichy District, a Market Complex with Cold Storage (1,000 M.T) for Banana at Thiruchendurai has been created at a cost of Rs.4 crore. Through this complex 396 farmers and 481 traders were benefited and 602.17 MT of banana transacted to the value of Rs.10.29 lakh.

7.3.1.12 Banana Ripening Chamber

Post harvest management loss in banana is 30-40 per cent. Hence ripening chamber has been established at Trichy, Srivaikundam, Chinnamanur and Mohanur at a total cost of Rs.2 crore under NADP to reduce the post harvest loss and for uniform ripening. About 15 banana commodity groups each at Trichy, Srivaikundam and Mohanur and 23 banana

commodity groups in Chinnamanur have been formed. So far 109.75 MT of banana has been kept for ripening purpose. In Thanjavur District at Thiruviayaru 50 MT ripening chamber was established with the cost of Rs.1.74 crore.

7.3.1.13 Market Complex with cold storage for Lemon.

Market complex with cold storage facility (200 MT) for lemon has been established at a cost of Rs.2.20 crore at Kadaiyanallur Regulated Market, Tirunelveli district under NADP.

7.3.1.14 Cold storage for Chillies

In Ramanathapuram district, cold storage unit with a capacity of 100 MT for Chillies at Paramakudi Regulated Market at a cost of Rs.99.50 Lakh has been established for the benefit of the chilly growers. Till now, 332.59 MT of chillies has been stored in cold storage.

7.3.1.15 Rural Business Hubs (RBH)

Rural Business Hubs aim to achieve higher incomes for farmers by aggregating products enabling larger buyers and processors to make direct purchase from farmers. This RBH's provide infrastructure facilities like input shop, storage shed, drying yard, electronic balance, moisture meter etc.,

10 Rural Business Hubs were established in the Regulated Markets of Sathyamangalam, Kalavai, Krishnagiri, Gangavalli, R.Ponnapuram, Ulundurpet, Panruti, Pavoorchatiram, Batlagundu and Rajapalayam at a cost of Rs.1.50 crore under National Agricultural Development Programme (NADP). For past 2 years 1,161 commodity groups have been formed, 17,443 MT of Agricultural Commodities has been transacted to the value of Rs.26.50 crore and 11,013 farmers are benefitted from 10 RBHs.

7.3.2. Terminal Market Complexes

Terminal Market Complex are being established at Chennai, Madurai and Coimbatore to reduce post harvest losses and add value to fruits, vegetables and other perishables produced by farmers.

7.3.3. National Agriculture Devlopment Programme (NADP)

The National Agriculture Development Programme (NADP) a 100% centrally sponsored programme aims at achieving and sustaining desired annual growth during XII plan period, by ensuring holistic development of agriculture and allied sectors. In the year 2015-2016 onwards, the funding pattern has been changed to 60:40 as central and state share.

Under NADP, infrastructure facilities for marketing and post-harvesting management are created based on the institutional gap identified from District and State Action Plan which includes

storage godowns, cold storages, ripening chambers, Market Complex with cold storage, Traders shop, Transaction shed, own building and provision of computers to strengthen the Regulated Markets.

During 2014-2015 construction of Integrated Market Complex with cold storage for chillies at Parmakudi, Building for Muthukulathur Regulated Market in Ramanathapuram district 25 MT cold storage in Vazhapadi Regulated Market, 500 MT and 1,000 MT Godowns at Monday Market and Theroor respectively, Spices market complex at Thovalai in Kanniyakumari district, Ripening Chamber for banana at Thiruvaiyaru, Thanjavur district, 7 Transaction sheds in Regulated Markets and Formation of 19 Nos. of Farmer Producer Organisation for lead crops at a total cost of Rs.19.44 crore under NADP were completed . In the year 2015-2016, formation of 5 Farmer Producer Organisations, strengthening of Salem training centre, TNSAMB and purchase

of computers to 31 Agmark labs are in progress at a total cost of Rs.7.08 crore.

For the year 2016-2017, State Level Sanctioning Committee has approved projects at a total cost of Rs.42.71 crore for implementation.

7.3.4. Agricultural and Processed Food Export Development Authority (APEDA)

25 MT cold storage at Oddanchatram Regulated Market, 15 MT cold storage each at Villupuram and Coimbatore, 5 MT cold storage each at Battlagundu, Palani and Oddanchatram were constructed at a total cost of Rupees one crore under integrated cold storage project.

A proposal for establishment of integrated post harvest infrastructure for Banana and other fruits and Vegetables in Mekkudi Village, Trichirappalli District at total project cost is Rs.4 crore has been sent to APEDA for approval.

7.3.5. Food Processing Incubation Cum Training Centre

Food Processing Incubation cum Training Centres at Kinathukadavu in Coimbatore district and at Srirangam in Trichy district were established at the cost of Rs.2.20 crore under State Fund. These centres will be implemented in co-ordination with Department of Agricultural Marketing and Agri Business and Tamil Nadu Agricultural University.

7.3.6. Tamil Nadu Small Farmers Agri-business Consortium (TNSFAC)

The Tamil Nadu Small Farmers' Agribusiness Consortium [TNSFAC] functions with the objective of linking Small farmers to technologies as well as to markets by providing both forward and backward linkages. The TNSFAC is a society functioning with the interest accrued from corpus fund of Rupees one crore, in association with Government, Private sector, Co-operatives, banks

notified by the Reserve Bank of India / financial institutions to fulfil the above objectives. TNSFAC is implementing Venture Capital Assistance scheme and Farmer Producer Organisation programme in Tamil Nadu.

7.3.6.1 Venture Capital assistance (VCA)

Venture Capital Assistance is sanctioned by central SFAC wherein Agri entrepreneurs are encouraged to set up Agri Business projects. It is a soft loan to be repaid by the beneficiary after completion of the project.

The Quantum of Venture Capital Assistance (VCA) would be 26 % of the Promoter's equity (or) Rs.50 Lakh whichever is less. For registered Farmer Producers Organisation, VCA would be 40 % of the Promoter's equity (or) Rs.50 Lakh whichever is less.

Agri Business development in Tamil Nadu is achieved by sanctioning Venture Capital Assistance and Project Development Facility. So

far, 78 projects with Venture Capital Assistance for Rs.25.07 crore have been sanctioned by the Tamil Nadu Small Farmers' Agribusiness Consortium (TNSFAC) to develop agri business activities.

7.3.6.2 Farmer Producers Organisation(FPO)

Government of India launched a pilot programme for promoting member-based Farmer Producer Organizations [FPOs] during 2011-12, in partnership with state Governments, which is being implemented through the Small Farmers' Agribusiness Consortium. The project period is for 3 years. TNSFAC is the nodal agency for implementing FPO programme in the State.

Project objectives:

1) Mobilising farmers into groups at the village level and building up their associations to Farmer Producer Organisations [FPOs] to plan and implement product - specific cluster / commercial crop cycles.

2) Strengthening farmer capacity through best agricultural practices for enhanced productivity.

3) Ensuring access to and usage of quality inputs and services for intensive agriculture production and enhancing cluster competitiveness.

4) Facilitating access to fair and remunerative markets including linking of producer groups to marketing opportunities through market aggregators.

Under NADP and NMSA in accordance with the Process and Policy Guidelines of Farmer Producer Organization of Government of India, during 2014-2015, 20 FPOs and in 2015-2016, 8 FPOs have been formed.

During the year 2016-2017, 14 FPOs are to be formed for different crops in various districts.

Table 7.1: Details of FPOs sanctioned

Sl. No.	District	Crop
2014-2015 National Agricultural Development programme (Rs.839.72		
1.	Dindigul	Guava
2.	Trichy	Banana
3.	Krishnagiri	Mango
4.	Coimbatore	Vegetables
5.	Dharmapuri	Minor Millets
6.	Cuddalore	Maize
7.	Ramnathapuram	Chillies
8.	Thiruvannamalai	Samai
9.	Virudhunagar	Millets

Sl. No.	District	Crop
10.	Thanjavur	Pulses
11.	Salem	Pulses
12.	Pudukkottai	Pulses
13.	Villupuram	Pulses
14.	Tuticorin	Pulses
15.	Nagapattinam	Pulses
16.	Tiruvannamalai	Pulses
17.	Dharmapuri	Pulses
18.	Krishnagiri	Pulses
19.	Vellore	Pulses
2014-2015 National Mission for Sustainable Agriculture (Rs. 42.50 lakh)		
20.	Villupuram	Millets & pulses
2015-2016 National Agriculture Development Programme (Rs. 214.50 lakh)		
21.	Pudukottai	Coconut
22.	Pudukottai	Organic cereals
23.	Tiruppur	Maize
24.	Virudhunagar	Mango
25.	Namakkal	Millets & pulses

2015-2016 National Mission for Sustainable Agriculture (Rs.128.68 lakh)		
26.	Perambalur	Maize & onion
27.	Theni	Coconut
28.	Nagapattinam	Pulses

Except two FPOs at Tiruppur and Perambalur, all others have been registered. Out of the total sanctioned FPOs, 19 have entered into commercialising and started business transaction.

Table 7.2: FPOs Proposed to be formed in 2016-2017

Sl. No.	District	Crop
National Agricultural Development Programme (Rs. 518.52 lakh)		
1.	Salem	Minor millets
2.	Virudhunagar	Maize
3.	Erode	Ragi
4.	Virudhunagar	Millets
5.	Kanchipuram	Millets &Pulses

6.	Thiruvanamalai	Pulses
7.	Thiruvanamalai	Oilseeds
8.	Trichy	Groundnut
9.	Cuddalore	Pulses
10.	Coimbatore	Coconut
11.	Madurai	Coconut
12.	Sivagangai	Coconut
National Mission on Sustainable Agriculture (Rs. 86.42 lakh)		
13.	Thanjavur	Coconut
14.	Thiruvarur	Pulses

Table 7.3: Schemewise, Yearwise FPO details.

Sl. No.	Year / scheme	No. of FPOs	Budget outlay (Rs. in Lakh)
1	2014-2015 (NADP)	9	413.00
2	2014-2015 (NADP Pulses)	10	426.72

Sl. No.	Year / scheme	No. of FPOs	Budget outlay (Rs. in Lakh)
3	2014-2015 - NMSA	1	42.50
4	2015-2016 (NADP)	5	214.50
5	2015-2016 (NMSA)	3	128.68
	Total	28	1225.40
	Proposed in 2016-2017		
1	NADP	12	518.52
2	NMSA	2	86.42
	Total	14	604.94

During 2016-2017, under National Food Security Mission Rs.1.54 Crore has been sanctioned for effective functioning of 10 Pulses FPOs, each FPOs will be provided with Rs.15.40 lakh for the supply of mini dhall mill at a cost of Rs.5.40 Lakh, branding and marketing of milled

pulses at a cost of Rs.5 lakh and to set up procurement centre at a cost of Rs.5 lakh.

7.3.7.IAMWARM

IAMWARM Project primarily aims at rehabilitating tanks and to obtain more income per drop of water. The TN IAMWARM I Project has been implemented with the World Bank assistance covering 5,012 tanks from 61 sub-basins with an extent of 6.70 lakh hectares at a total cost of Rs. 53.78 crore. The interventions like creation of infrastructure facilities, formation of Commodity Groups and linking with markets to create a platform between Commodity Groups and local traders in order to get more price for the commodity. The major impact of the TN IAMWARM I Project were formation of 6,577 Commodity Groups which benefited 1.73 lakh farmers.

In TN IAMWARM I Project, post harvest infrastructures such as Agri Business Centre,

Drying yard, Collection Centre, Storage shed, Storage-cum-drying yard, pack house and for handling Post Harvest Management Techniques, distribution of Post harvest equipments like moisture meter, electronic weighing balance tarpaulin, dunnage, computer with internet facility, plastic crates, copra dryers, coconut dehusker, goods auto, mini lorry etc. were provided to commodity groups and are being utilised.

The Tamil Nadu Irrigated Agriculture Modernisation Project (TNIAMP-II) is planned for six years period. It aims at rehabilitating more than 4,000 tanks in 66 sub-basins covering 5.43 lakh hectares of irrigated land.

7.3.8. Agro Marketing Intelligence and Business Promotion Centre (AMI & BPC)

To protect the farmers from the onslaught of fluctuating agricultural commodity price and to

ensure economic viability of farming community, an Agro Marketing Intelligence and Business Promotion Centre (AMI & BPC) was established at Trichy in coordination with TNAU as a new initiative at a cost of Rs.43 lakh under Part II Scheme. Through this centre crop advisory, market information and intelligence services are disseminated through mobile SMS to the registered farmers and other stakeholders. So far 1,629 SMS on different topics were delivered to 22.50 lakh farmers and other stakeholders. Besides, 79 Marketing Intelligence advisories (37 Pre-sowing and 42 Pre-harvesting) were developed and disseminated thorough various media. In addition to that 1,117 newsletters were developed and disseminated to staff of Department of Agricultural Marketing and Agri Business to sensitize recent development in agricultural marketing.

7.4. TAMIL NADU STATE AGRICULTURAL MARKETING BOARD

The Tamil Nadu State Agricultural Marketing Board (TNSAMB) was constituted in 1970. The Market Committees contribute fifteen per cent of their revenue to the Board. Out of this contribution, fifty percent is set apart as Market Development Fund for taking up developmental activities of markets.

The training centre, publicity and propaganda wing of Tamil Nadu State Agricultural Marketing Board focus on capacity building training to the Farmers and staff of the Department. Tamil Nadu State Agricultural Marketing Board implements Tamil Nadu Farmers Welfare Development scheme for providing financial assistance to farmers and handles market research projects in co-ordination with Tamil Nadu Agricultural University. Engineering wing of the Board carries out the construction works.

Table 7.4: District-wise Regulated Markets

District	Regulated Market	District	Regulated Market
1. Kanchee-puram	1. Kancheepuram	5. Vellore	38. Vellore
	2. Madurantagam		39. Thirupathur
	3. Uthiramerur		40. Arcot
	4.Thirukkalukundram		41. Arakonam
	5.Sunguvarchatram		42. Vaniyambadi
	6. Achirupakkam		43. Kaveripakkam
	7. Chengalpet		44. Gudiyatham
2. Tiruvallur	8. Thiruthani		45. Kalavai
	9.Thiruvallur		46. Ammoor
	10. Red hills		47. Katpadi
	11. Ponneri		48. Ambur
	12. Pallipattu		49. Thimiri
	13. Uthukottai	6. Cuddalore	50. Virudhachalam
	14. Gummidipoondi		51. Cuddalore
	15. Nasarethpettai		52. Panruti
1. Tiruvanna-malai	16. Thiruvannamalai		53. Thittakudi
	17. Arani		54. Kattumannarkoil
	18. Vandavasi		55. Chidambaram
	19. Chetpet		56. Kurunchipadi
	20. Cheyyar		57. Sethiyathoppu
	21. Polur		58. Srimushnam
	22. Chengam		59. Bhuvanagiri
	23. Pudupalayam	7.Villupuram	60. Tindivanam
	24. Vanapuram		61. Thirukoilur
	25. Vettavalam		62. Ulundurpet
	26. Thellar		63. Villupuram
	27.MangalaMamandoor		64. Chinnasalem
	28. Desur		65. Kallakkurichi
	29. Peranamallur		66. Gingee
	30. Dhusi		67. Thiagadurgam
	31. Kilpennathur		68. Sankarapuram
4. Namakkal	32. Namakkal		69.Thiruvennainallur
	33.Rasipuram		70. Manalurpet
	34. Thiruchengodu		71. Avalurpet
	35. Velur		72. Marakkanam
	36. Namagiripettai		73. Vikaravandi
	37. Cholakkadu		74. Ananthapuram
			75. Valathi
			76.Moongilthuraipattu

District	Regulated Market	District	Regulated Market
8. Dharmapuri	77. Dharmapuri	12. Erode	116. Erode
	78. Palacode		117. Avalpoonthurai
	79. Pennagaram		118. Kodumudi
	80. Harur		119. Sivagiri
	81. Pappireddipatti		120. Chithode
	82. Kambainallur		121. Bhavani
	83. Denkanikkottai		122. Boothapadi
	84. Papparapatti		123. Anthiyur
9. Krishnagiri	85. Krishnagiri		124. Mylampadi
	86. Hosur		125.Kavundhampadi
	87. Kelamangalam		126.Gobichettipalayam
	88. Pochampalli		127. Nambiyur
	89. Kaveripattinam		128. Vellakkoil
	90. Uthangarai		129.Sathyamangalam
	91. Bargoor		130.Punjai Puliyampatti
	92. Rayakottai		131. Thalavadi
10. Salem	93. Salem		132. Perundurai
	94. Athur		133. Elumathur
	95. Sankagiri	13. Tiruppur	134. Kunnathur
	96. Konganapuram		135. Kangayam
	97. Kolathur		136. Vellankoil
	98. Meicheri		137. Dharapuram
	99. Vazhapadi		138. Moolanur
	100. Thammampatti		139. Alangiam
	101. Thalaivasal		140. Muthur
	102. Omalur		141. Tiruppur
	103. Kadayampatti		142. Avinashi
	104. Gangavalli		143.Sevur
	105. Karumanthurai		144. Palladam
11. Coimbatore	106. Annur		145. Udumalpettai
	107. Karamadai		146.Madathukkulam
	108. Coimbatore		147.Pethappampatti
	109. Sulur		148. Pongalur
	110. Anaimalai	14. Karur	149. Kulithalai
	111. Pollachi		150. Karur
	112.Malayadipalayam		151. Irumputhipatti
	113. Negamam		152. Chinnatharapuram
	114. Kinathukkadavu		
	115. Thondamuthur		

District	Regulated Market	District	Regulated Market
15. Tiruchirapalli	153. Manapparai	21. Madurai	193. Thirumangalam
	154. Thuraiyur		194. Usilampatti
	155. Lalgudi		195. Melur
	156. Thiruchirapalli		196. Madurai
	157. Thottiyam		197. T.Kallupatti
	158. Manachanallur		198. Vadipatti
	159. Thuvarankurichi	22. Pudukottai	199. Alangudi
	160. Pullambadi		200. Aranthangi
	161. Thathaiyangarpet		201. Pudukkottai
	162. Kattuputhur		202. Kandarvakkottai
16. Ariyalur	163. Ariyalur		203. Avudayarkoil
	164. Jayankondam		204. Keeranur
	165. Andimadam		205. Keeramangalam
	166. Melanikuzhi		206. Ponnamaravathi
17. Perambalur	167. Perambalur		207. Illuppur
18. Thanjavur	168.Athirama pattinam		208. Karambakkudi
	169. Ammapettai	23. Virudhunagar	209. Virudhunagar
	170. Budalur		210. Rajapalayam
	171. Kumbakonam		211. Sathur
	172. Madukkur		212. Aruppukottai
	173. Orathanadu		213. Srivilliputhur
	174. Pattukottai		214. Watrap
	175. Papanasam		215. Vembakkottai
	176. Peravoorani	24. Sivagangai	216. Sivagangai
	177. Thanjavur		217. Thiruppuvanam
	178. Vallam		218. Manamadurai
	179. Thirupananthal		219. Singampuneri
	180. Pappanadu		220. Karaikudi
19. Ramanatha puram	181. Ramanathapuram		221. Ilayankudi
	182. Paramakudi		222. Devakkottai
	183. Kamuthi	25. Thoothukudi	223. Kovilpatti
	184. Thiruvadanai		224. Thoothukudi
	185.Rajasingamangalam		225. Pudur
	186. Mudukulathur		226. Kadambur
20. Kanniyakumari	187. Ethamozhi		227. Kalugumalai
	188. Vadaseri		228. Srivaikundam
	189. Kaliyakkavilai		229. Vilathikulam
	190. Monday Market		230. Ettayapuram
	191. Kulasekaram		231. Sathankulam
	192. Thoduvatti		

District	Regulated Market	District	Regulated Market
26. Tirunelveli	232. Sankarankoil	29. Theni	255. Theni
	233. Thenkasi		256. Cumbum
	234. Ambasamudram		257. Bodinayakanur
	235. Valliyur		258. Chinnamanur
	236. Thirunelveli		259. Andipatti
	237. Kadayanallur		260. Uthamapalayam
	238. Thisayanvilai		261. Periyakulam
	239. Pavurchatram	30. Dindigul	262. Dindigul
	240. Thiruvenkadam		263. Oddanchatram
	241. Sivagiri		264. Palani
	242. Alangulam		265. Natham
27. Nagapatti-nam	243. Kivalur		266. Batlagundu
	244. Kuttalam		267. Gopalpatti
	245. Mayiladuthurai		268. Vadamadurai
	246. Nagapattinam		269. Vedachandur
	247. Sembanarkoil	31. Thiruvarur	270. Valangaiman
	248. Sirkazhi		271. Koradacheri
	249. Vedaranayam		272. Mannarkudi
	250. Thirupoondi		273. Poonthottam
28. The Nilgiris	251. Udagamandalam		274. Vaduvur
	252. Kothagiri		275. Kudavasal
	253. Coonoor		276. Thiruvarur
	254. Gudalur		277. Thiruthuraipoondi

Table 7.5: Infrastructure facilities available in Regulated Markets (in Nos)

S. No	Market Committee	Own Land	Godown	Transaction Shed	Drying Yard	Market Complex with Cold Storage	Market Complex	Cold Storage	Rural Business Hub	Automatic Weighing and Bagging Machine	Trader Shops
1	Kancheepuram	8	9	8	16	-	-	-	-	-	-
2	Vellore	8	24	11	15	-	-	3	1	-	-
3	Tiruvannamalai	14	30	26	27	-	-	7	-	1	10
4	Cuddalore	6	12	15	15	-	-	1	1	-	10
5	Villuppuram	14	28	45	21	-	-	4	1	2	-
6	Salem	12	19	12	21	-	-	9	1	-	-
7	Dharmapuri	8	16	8	20	2	-	7	1	-	10
8	Coimbatore	10	29	15	28	1		7	1	3	10
9	Erode	15	34	49	34	-	-	7	1	-	10
10	Tiruchirapalli	14	27	24	20	1	-	1	-	-	
11	Thanjavur	7	23	14	8	--	1	1	--	1	-
12	Pudukkottai	2	3	2	4	-	-	2	-	-	-
13	Madurai	4	8	4	7	-	1	1	-	-	-
14	Ramanathapuram	14	22	6	19	-	-	6	1	-	25
15	Tirunelveli	16	28	17	15	1	-	12	1	-	10
16	Kanniyakumari	5	11	5	4	-	2	1	-	-	-
17	Theni	5	12	4	7	2	-	2	-	-	-

18	Dindigul	6	12	6	8	-	-	7	1	1	-
19	Thiruvarur	5	11	4	8	-	-	-	-	-	-
20	Nagapattinam	5	14	4	7	-	-	-	-	-	-
21	Nilgiris	0	0	-	-	-	1	-	-	-	-
22	Tiruppur	13	49	30	43	1	-	4	-	-	-
	Total	191	421	309	347	8	5	82	10	8	85

Table 7.6: District-wise Agmark Grading Laboratories

Sl. No.	District	Name of the Agmark Grading Laboratory	
1	Chennai	Principal laboratory	Located in the Commissionerate of Agrl. Marketing and Agri Business
2	Kancheepuram	Chennai (North)	
		Chennai (South)	
3	Vellore	Vellore	
4	Cuddalore	Panruti	
5	Thanjavur	Thanjavur	
6	Thiruchirapalli	Trichirapalli – I	
		Trichirapalli – II	
7	Karur	Karur	
8	Madurai	Madurai (North)	
		Madurai (South)	
9	Theni	Theni	
10	Dindigul	Dindigul	

11	Virudhunagar	Virudhunagar
12	Thirunelveli	Thirunelveli
		Thenkasi
13	Thoothukudi	Thoothukudi
14	Kanniyakumari	Nagerkoil
		Marthandam
15	Salem	Salem
16	Dharmapuri	Dharmapuri
17	Coimbatore	Coimbatore
18	Erode	Perundurai
		Erode – I
		Erode – II
		Chithode
19	Thiruppur	Thiruppur
		Palladam
		Kangayam – I
		Kangayam – II
		Vellakkoil

8. Tamil Nadu Watershed Development Agency (TAWDEVA)

8.1. Introduction

Tamil Nadu Watershed Development Agency was established in 2002 with objectives to conserve water resources and promote efficient use of water for increasing productivity of the agricultural crops.

Following are the two watershed development programmes implemented by Tamil Nadu Watershed Development Agency (TAWDEVA).

1. Pradhan Mantri Krishi Sinchayee Yojana

   - Watershed Development (PMKSY-WD)

2. Watershed Development Fund (WDF)

In addition, TAWDEVA acts as the Nodal Agency for channelizing funds for the following schemes funded by the Government of India.

1. National Agriculture Development Programme (NADP)

2. National Mission for Sustainable Agriculture (NMSA)

3. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

4. National Food Security Mission (NFSM)

5. Support to State Extension Programmes for Extension Reforms Schemes (SSEPERS - ATMA)

8.2. Pradhan Mantri Krishi Sinchayee Yojana -Watershed Development (PMKSY-WD) (the erstwhile Integrated Watershed Management Programme)

Integrated Watershed Management Programme (IWMP) has been subsumed into Pradhan Mantri Krishi Sinchayee Yojana – Watershed Development (PMKSY-WD) and is proposed to be implemented in convergence with the existing irrigation development programmes.

This scheme is being implemented in 26 districts through 24 DWDAs covering 2,770 watersheds for the past 7 years. The scheme expenditure is shared by the Central and State Governments up to 2014–15 in the ratio of 90:10. From 2015-2016 onwards the sharing pattern has been revised as 60:40 between Central and State. The following development activities are carried out.

Activity	Components
Land Development	Land leveling, Contour Bunding, Stone Bunding, Retaining Wall, Summer Ploughing, Vegetative Bunding and Continuous Trenching
Water Resources Development	Formation of New Tank / Oorani, Farm Pond, Percolation Pond, Desilting of Existing Tanks and Supply Channels
Plantation	Plantation relating to Horticulture, Socio-Agro Forestry, Fodder Development, Crop Demonstration and Homestead Garden

Activity	Components
Common Property Development	Construction of Check dams, Cattle ponds, Supply channels, Desilting of Ooranis, Desilting of tanks and ponds.
Farm Production System and Micro Enterprises	A grant of maximum of Rs.24,000 is provided to carry out farm based activities and non-farm activities to formers.
SHG and Livelihood Interventions for Landless Farmers	Revolving fund Rs. 24,000/- is provided to Self Help Group and grant is provided to Landless Farm Laborers and user groups of Watershed.

Under PMKSY – WD for the past 5 years ie. from 2011-12 to 2015-2016, a total of Rs.781.731 cr. of funds were received as Central and State share, out of which Rs.674.302 Crore of expenditure was incurred.

For the past 5 years ie. from 2011-12 to 2015-2016, 33,661 Nos. of water harvesting structures were newely formed, 5,881 Nos. of of old and traditional water harvesting structures were renovated, 87,904 Hec., of additional area

was brought under irrigation and 3.42 lakh farmers were benefitted.

During 2015–16 an amount of Rs.113.70 crore was received from Government of India and an amount of Rs.75.80 crore from the State Government.

8.3. Watershed Development Fund (WDF assisted by NABARD:

The watershed development fund projects are implemented under loan assistance from NABARD. These works are similar to PMKSY-WD works discussed earlier. Full grant for 12 watersheds are provided by NABARD and it extended loan assistance for another 156 watersheds. Out of 156 watersheds, works are in progress in 58 watersheds in TAWDEVA fold. These works are implemented by NGOs and closely monitored by NABARD. The Government of Tamil Nadu funds are used for 50% of full implementation phase works.

8.4. State Level Data Centre

A State Level Data Centre (SLDC) with GIS facilities has been established for scientific planning and efficient management of watersheds. All the works are monitored using GIS by which the clarity of watershed boundaries are improved.

In the SLDC, so far an area of 13.69 Lakh Ha covering 2,770 watershed data are fully digitized and Cadastral Maps are incorporated in the watershed boundary using GIS. All developmental works carried out in watersheds are Geo tagged and verified with available satellite imagery. All the Geo tagged details are uploaded in the website www.bhuvan.nrsc.gov.in.

9. DEMAND NO.5 AGRICULTURE

2016-2017 REVISED BUDGET ESTIMATE

(Rupees in Thousands)

	Revenue	Capital	Loan	Total
DEMAND FOR GRANT –Voted	6,434,20,72	356,55,68	150,50,00	6,941,26,40
Appropriation Charged	4	...	...	4

Net Expenditure

(Rupees in Thousands)

Head of Account		2014-15	2015-16	2016-17	2016-17
		Accounts	Revised Estimate	Interim Budget Estimate	Revised Budget Estimate
2059	PUBLIC WORKS	2,17,77	2,42,00	2,52,00	2,52,00
2401	CROP HUSBANDRY	4,387,24,89	5,243,42,95	5,635,68,31	5,555,94,03
2402	SOIL AND WATER CONSERVATION	109,32,26	93,29,08	94,23,78	95,23,77
2408	FOOD STORAGE AND WAREHOUSING	62,44	...	...	...

Head of Account		2014-15	2015-16	2016-17	2016-17
		Accounts	Revised Estimate	Interim Budget Estimate	Revised Budget Estimate
2415	AGRICULTURAL RESEARCH AND EDUCATION	289,73,59	369,32,79	415,54,72	415,54,72
2435	OTHER AGRICULTURAL PROGRAMMES	127,40,86	127,54,56	142,88,63	144,83,42
2501	SPECIAL PROGRAMMES FOR RURAL DEVELOPMENT	130,50,77	189,50,00	189,50,00	189,50,00
2551	HILL AREAS	3,72,76	82,19	93,15	93,15
2702	MINOR IRRIGATION	8,42,55	8,98,43	10,04,78	10,04,78
2705	COMMAND AREA DEVELOPMENT	13,65,33	6,43,04	3,50,34	3,50,34
2810	NEW AND RENEWABLE ENERGY	15,39,12	17,72,61	76,50	76,50
2852	INDUSTRIES	...	48	...	...
3451	SECRETARIAT – ECONOMIC SERVICES	9,21,22	9,21,13	10,23,55	10,23,55
4401	CAPITAL OUTLAY ON CROP HUSBANDRY	9,41,44	105,85,44	95,00,03	95,50,03

Head of Account		2014-15	2015-16	2016-17	2016-17
		Accounts	Revised Estimate	Interim Budget Estimate	Revised Budget Estimate
4402	CAPITAL OUTLAY ON SOIL AND WATER CONSERVATION	38,83,61	16,37,14	15,65,02	22,94,89
4435	CAPITAL OUTLAY ON OTHER AGRICULTURAL PROGRAMMES	79,15,94	81,68,60	100,00,02	167,15,13
4551	CAPITAL OUTLAY ON HILL AREAS	6,44,00	6,50,01	6,50,01	6,50,01
4705	CAPITAL OUTLAY ON COMMAND AREA DEVELOPMENT	5,78,08	55,23,55	64,45,62	64,45,62
6401	LOANS FOR CROP HUSBANDRY	...	150,00,00	150,00,00	150,00,00
7610	LOANS TO GOVERNMENT SERVERNTS ETC.	...	50,00	50,00	50,00

DEMAND NO.5 AGRICULTURE
REVISED BUDGET ESTIMATE 2016-2017

[Rupees in Thousands (Gross)]

Sl. No.	Head of Department			Revenue	Capital	Loan	Total
1	05 01	Secretariat	Voted	10,23,55	...	50,00	10,73,55
2	05 02	Directorate of Agriculture	Charged	2	…	…	2
			Voted	5,064,04,16	95,00,02	150,00,00	5,309,04,18
3	05 03	Directorate of Agricultural Marketing and Agri. Business	Voted	94,04,20	167,15,13	…	261,19,33
4	05 04	Directorate of Seed Certification	Voted	45,72,83	…	…	45,72,83
5	05 05	Directorate of Horticulture and Plantation Crops	Charged	1	…	…	1
			Voted	518,08,66	50,01	…	518,58,67
6	05 06	Agricultural Engineering Department	Charged	1	…	…	1
			Voted	287,76,77	93,90,52	…	381,67,29
7	05 07	Agro Engineering Services	Voted	46,45	…	…	46,45
8	05 08	Tamil Nadu Agricultural University, Coimbatore	Voted	412,98,05	…	…	412,98,05
9	05 09	Directorate of Organic Certification	Voted	86,05	…	…	86,05
Total			Charged	4	…	…	4
			Voted	6,434,20,72	356,55,68	150,50,00	6,941,26,40

10. Conclusion:

Under the dynamic leadership of Hon'ble Chief Minister, the efforts of the Government to usher in Second Green Revolution, followed by innovative policies, path breaking initiatives and proactive steps have brought in considerable impact not only in the qualitative and quantitative production but also in increasing income of the farmers in the State.

The Government, with a serious concern to place the agriculture sector on a high growth trajectory, has infused good agricultural practices such as diversified farming system with regional specialisation, sustainable management of natural resources, increased availability of quality seeds and pedigree planting materials, modernisation of state owned farms, creation of more farm ponds, promotion of judicious use of water through subsidised MI structures, massive farm mechanization, custom hiring centres, protected

cultivation, Hi-tech horticulture practices, roof-top vegetable cultivation, perimetro vegetable clusters, farm women empowerment, agro processing linkage of production systems with marketing, creation of scientific godowns and cold storages and other value added activities at farm level as well as use of Information and Communication Technology (ICT) based systems for information and knowledge management. Further, the special packages announced by Hon'ble Chief Minister to mitigate the calamities, have also paid rich dividend to the State's Production and made the State achieve record production in Food grains in the last 5 years.

Due to the proactive initiatives of the Government, Tamil Nadu will continue to be in the forefront at National level in the Agriculture sector and achieve the vision of "Doubling the Agriculture production and tripling the farmers income", as envisioned for the Second Green Revolution. The vision of the Agriculture

Department is well elaborated in the statement of the Hon'ble Chief Minister as given below:

> "Food Security and the Second Green Revolution constitute an important part of our overall Growth Strategy. My Vision is to achieve substantial improvement in agricultural productivity by introducing scientific agricultural methods and building an institutional network to support the continued adoption of the same."

R. DORAIKKANNU
Minister for Agriculture